COMMUNITY LIFE, INFRASTRUCTURE AND PUBLIC PROPERTY (CLIPP) COMMITTEE MEETING AGENDA

February 02, 2026 at 6:00 PM

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

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1. **CALL MEETING TO ORDER**
   - **A.** Roll Call
2. **PUBLIC COMMENT**
   Please be advised per State Statute Section 19.84(2), information will be received from the public. It is the policy of this Village that Public Comment will take no longer than 15 minutes with a three-minute time period, per person, with time extension per the Chief Presiding Officer's discretion. Be further advised that there may be limited discussion on the information received, however, no action will be taken under public comments.
3. **APPROVAL OF MINUTES - DISCUSSION AND POSSIBLE ACTION**
   - **B.** January 5, 2026 CLIPP Committee Meeting Minutes
4. **REPORTS AND DISCUSSIONS**
   - **C.** Police Chief Report
   - **D.** Fire Chief Report
   - **E.** Public Works Director Report
   - **F.** Community Development Director Report
   - **G.** Complaint Log
5. **OLD BUSINESS - DISCUSSION AND POSSIBLE ACTION**
   - **H.** Absentee Voting Ordinance
   - **I.** Chapter 382 Nuisance Revision
6. **NEW BUSINESS - DISCUSSION AND POSSIBLE ACTION**
   - **J.** Railroad Blockage Project
   - **K.** Road Accessibility RFP
   - **L.** Upcoming Road Projects
7. **NEXT MEETING:** March 2, 2026
8. **CONSIDERATION OF ITEMS FOR FUTURE AGENDA**
9. **ADJOURNMENT**

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

Posted: 01/29/2026 Kronenwetter Municipal Center and www.kronenwetter.org

Faxed: WAOW, WSAU, City Pages, Mosinee Times | Emailed: Wausau Daily Herald, WSAW, WAOW, Mosinee Times, Wausau Pilot and Review, City Pages, The Wausonian

COMMUNITY LIFE, INFRASTRUCTURE AND PUBLIC PROPERTY (CLIPP) COMMITTEE MEETING MINUTES

January 05, 2026 at 6:00 PM

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

1. **CALL MEETING TO ORDER**
   Trustee Ken Charneski called the January 5, 2026 Community Life, Infrastructure and Public Property Committee Meeting to order at 6 p.m.
   - **A. Roll Call**
     PRESENT: *Trustee Ken Charneski, President Dan Joling, Patty Tikalsky, Garrett Lysne, Paul Mijal*
     STAFF: *Police Chief Terry McHugh, Fire Chief Theresa O'Brien, Administrator Jim Davel, Public Works Director Greg Ulman, Clerk Jennifer Poyer*
2. **PUBLIC COMMENT**
   Sandi Sorensen- 1946 Deerwood Trail, Kronenwetter, WI, 54455 – *Sorensen commented on 4G. Complaint Log and 6J. Train Blockage Issue Along Business Highway 51 in Kronenwetter. Sorensen inquired whether there was a timeframe for complaints to be resolved. She also said she has received phone calls from residents regarding the train blockage. She said the Village should decide the best option for a resolution.*
3. **APPROVAL OF MINUTES - DISCUSSION AND POSSIBLE ACTION**
   - **B. December 1, 2025 CLIPP Committee Meeting Minutes**
     Motion by Joling/Tikalsky to approve the minutes as presented. Motion carried by voice vote. 5:0.
4. **REPORTS AND DISCUSSIONS**
   - **C. Police Chief Report**
     Police Chief McHugh presented his report and answered a question from the committee.
   - **D. Fire Chief Report**
     Fire Chief O'Brien presented her report. No questions were asked.
   - **E. Public Works Director Report**
     Public Works Director Ulman presented his report. He commented on damage to the speed board and Municipal Center roof leaks. He answered questions regarding the HVAC controllers, salt and snow removal budget.
   - **F. Community Development Director Report**
     Administrator Davel fielded questions regarding the report. Questions regarding the FAA property; county highway shop building meeting; fake invoices and property easement were asked.
   - **G. Complaint Log**
     The committee requested more details regarding the complaint log and status of each complaint. Also, questions were asked regarding the multiple complaints of businesses in residences.
5. **OLD BUSINESS - DISCUSSION AND POSSIBLE ACTION**
   - **H. In-person Absentee Voting Ordinance**
     No action taken. Clerk Poyer tasked with revision of language regarding the locked box.
   - **I. Chapter 382 Nuisance Revision**

No action taken. Staff tasked with researching Marathon County public health guidelines and bringing them to the committee.

Committee discussion included the legal definition of public nuisance; enforcement challenges; public health standards; duplicate rules found in Village ordinances; gray areas of ordinance; past challenges with a mink farm in the Village; and differing interpretations.

6. NEW BUSINESS - DISCUSSION AND POSSIBLE ACTION

J. Train Blockage Issue Along Business Highway 51 in Kronenwetter

Motion by Tikalsky/Joling to take this issue to the Village Board for guidance and direction. Motion carried by voice vote. 5:0.

Administrator Davel gave a brief background on this issue. The committee discussed the financial aspect; possible solutions; WPS's involvement; train length; emergency plan; trail usage by emergency vehicles; and steps moving forward.

K. Preliminary Plans for a 6-Bay Garage

Public Works Director Ulman described the current and next steps of this project. He discussed the upcoming RFP and answered questions from the committee members. The committee suggested looking at similar community facilities and offering alternate estimate opportunities in the RFP.

7. NEXT MEETING: February 2, 2025

The next meeting will take place on February 2, 2026.

8. CONSIDERATION OF ITEMS FOR FUTURE AGENDA

Parks

9. ADJOURNMENT

Motion by Tikalsky/Lysne to adjourn. Motion carried by voice vote. 5:0.

Meeting adjourned at 7:38 p.m.

KRONENWETTER POLICE DEPARTMENT
Office of the Chief of Police
Executive Summary for February 2026 CLIPP

TO: CLIPP COMMITTEE MEMBERS

DEPARTMENT ACTIVITY SUMMARY – In December, we handled 561 total calls for service. Some highlights included the following:

- One natural death investigation
- Two ID theft complaints
  - One victim was swindled out of $7000 worth of gift cards on an online romance scam
  - A second victim was tricked into paying for a dog online, which of course never materialized
- One harassment complaint after the victim reported harassing text messages.
- One mental health welfare check on a juvenile, who was referred to services.
- An arrest for OWI, first offense, after an officer responded to a traffic crash for a vehicle in the ditch.
- An arrest for felony bail jumping after an individual violated his bond conditions by contacting the victim multiple times.
- A citizen found a rifle along the road, which we posted notices for both on Facebook and outside the Municipal Center. Fortunately, the owner saw the Facebook post, came to the PD, and described his rifle with specificity. As such, we were able to return the weapon to the rightful owner.
- One arrest for two counts of disorderly conduct and battery after officers responded to a domestic dispute.
- An assist for the fire department on a structure fire to a large outbuilding.
- A theft of prescription medication, which remains under investigation.
- Two drug cases:
  - One subject was arrested for possession of meth and drug paraphernalia, as well as being cited for operating without a valid driver's license.
  - Another subject was arrested for possession of heroin and drug paraphernalia, as well as a probation hold, after officers responded to an overdose. Not surprisingly, we received little cooperation on scene from anyone.

DEPARTMENT PERSONNEL ISSUES & STATUS – With the new year upon us, the officers begin their new work rotations. Each year in October, the patrol officers pick their shifts for the upcoming year by seniority. Working 12-hour shifts, they work in two teams on opposite rotations with a Patrol Sergeant in charge of each team. We begin shorthanded on Team Yellow, as Ofc Guyer is on maternity leave until the end of March.

As the number of years I will be here count down, it's important for us to prioritize training that falls in line with our succession plan. This year, *First Line Supervisor* school, which is a mandatory school for anyone aspiring to become a Sergeant, is being held in Stevens Point. We already have two seats in that class, with one officer from each team attending. This is a two-week school, so having it in Stevens Point saves us considerable money in hotel and travel costs. Officers S. Xiong and Dallman will attend this school in May.

Additionally, we are sending two officers to *Field Training Officer* (FTO) school this year and have them signed up as well. This will give us two additional Field Training Officers to help with the new hires this year. Being an FTO not only helps develop the new officers, but it also develops the field trainer. This role is a quasi-supervisor, albeit in a limited term capacity, and is a good means for an officer to acquire formal leadership skills. Officers Dallman and Konopacki will attend these schools in March and April respectively. In 2027, we hope to get additional officers to these schools.

KRONENWETTER POLICE DEPARTMENT
Office of the Chief of Police
Executive Summary for February 2026 CLIPP

Lt. Smart is taking part in the FBI National Academy Associate's Leadership Certification Program. There are four components to this certification, consisting of various courses. He has completed two courses and has one more to go. Once he's finished with the three core courses, he must complete an independent capstone project. According to their website, the program "encompasses the latest strategies, techniques, and real-world leadership scenarios to prepare each participant to better lead their respective units, shifts, or agencies into the unpredictable future of law enforcement."

I've always been a believer that even though we're a small department, there is no reason why we can't emphasize leadership and supervisory training as part of the overall succession plan.

CURRENT GRANTS AND EQUIPMENT — — I've ordered two new squad car computers (MDC's) to start replacing aging units that need replacement. I did check with CCIT (City County IT) to inquire if they had any serviceable used units, but they unfortunately did not. As you may recall, we've gotten used units from them in the past for free. The two new squad cars arrived as well, so now we will begin the steps to get them outfitted with equipment.

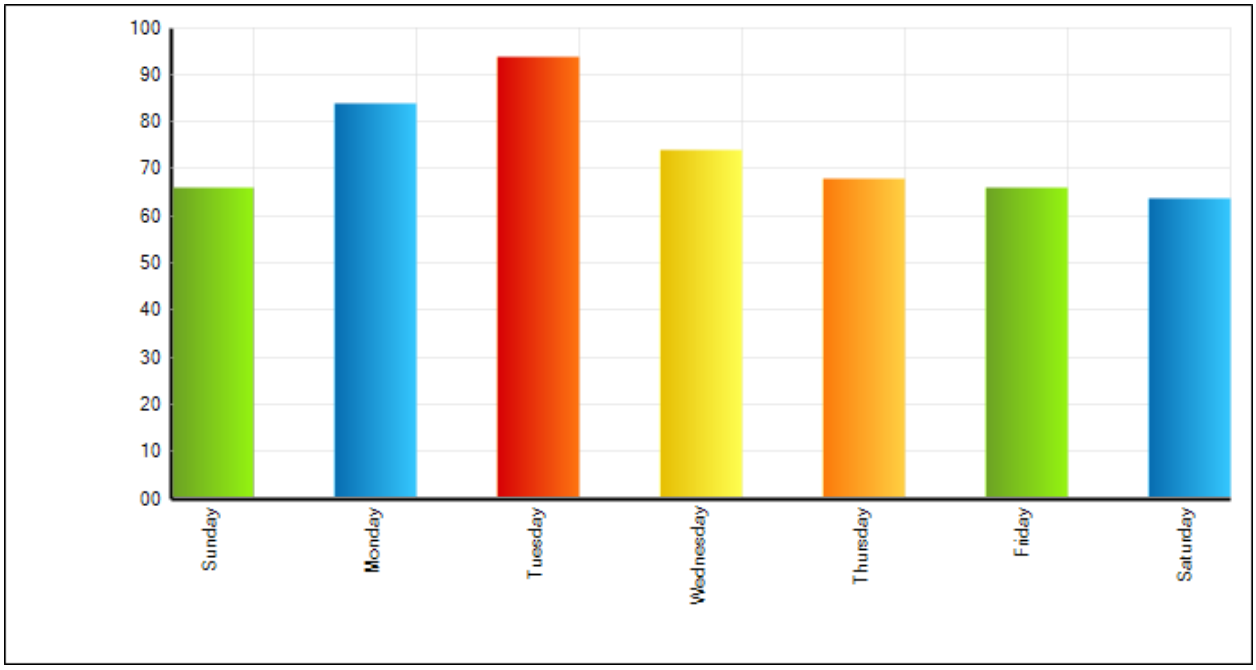
December 2025 Calls for Service Info

EVENTS BY NATURE CODE BY AGENCY

KP	911 HANG UP	9
	ALARMS	2
	ANIMAL COMPLAINT	4
	BATTERY	1
	BUSINESS SECURITY CHECK	46
	CIVIL COMPLAINT	4
	CRIMINAL DAMAGE TO PROPERTY	1
	CRIMINAL MISCELLANEOUS	18
	DISABLED VEHICLE	13
	EXPLOSIVE EVENT	1
	EXTRA PATROL	77
	FAMILY DISTURBANCE	1
	FIELD INTERVIEW	1
	FINGERPRINTING	6
	FOLLOW-UP INVESTIGATION	50
	JUVENILE DISTURBANCE	2
	LOST AND FOUND	8
	OVERNIGHT PARKING	3
	PARKING MISCELLANEOUS	3
	PROCESS SERVICE	3
	SCHOOL WALK THROUGH	15
	SERVICE MISCELLANEOUS	30
	SUSPICIOUS ACTIVITY	12
	TRAFFIC HAZARD	14
	TRAFFIC MISCELLANEOUS	6
	TRAFFIC STOP	98
	VEHICLE LOCKOUT	2
	WARRANT SERVICE	1
	WELFARE CHECK	7
	HIT & RUN CRASH	1
	TRAFFIC CRASH - INJURY	1
	TRAFFIC CRASH PDO	18
	CO ALARM	2
	GRASS FIRE	1
	STRUCTURE FIRE	1
	DEAD ANIMAL	2
	COMMUNITY RELATIONS ACT	2
	TELEPHONE MESSAGE	6
	VACANT HOME CHECK	10
	VEHICLE ATL	9
	MEDICAL EMERGENCY	25

December 2025 Calls for Service Info

Calls by Day of the Week



Agency: KRONENWETTER PD, Date Range: 12/01/2025 00:00:(

Charges	Count
EXCEEDING SPEED ZONES, ETC. (1-10 MPH)	1
EXCEEDING SPEED ZONES, ETC. (11-15 MPH)	6
EXCEEDING SPEED ZONES, ETC. (16-19 MPH)	4
EXCEEDING SPEED ZONES, ETC. (20-24 MPH)	2
EXCEEDING SPEED ZONES/POSTED LIMITS	2
FAIL/STOP AT STOP SIGN	1
FAILURE TO KEEP VEHICLE UNDER	3
IID TAMPERING/FAIL TO INSTALL/VIOLATE	1
IMPROPER DISPLAY OF LICENSE	1
NON-REGISTRATION OF AUTO, ETC	7
NON-REGISTRATION OF VEHICLE	3
OPERATE MOTOR VEHICLE W/O INSURANCE	9
OPERATE MOTOR VEHICLE W/O PROOF OF	1
OPERATE W/O VALID LICENSE	1
OPERATE W/O VALID LICENSE (2ND W/IN 3	1
OPERATING A MOTOR VEHICLE W/O	4
OPERATING LEFT OF CENTER	1
OPERATING WHILE REVOKED (REV DUE TO	1
OPERATING WHILE SUSPENDED	5
OPERATING WHILE UNDER THE INFLUENCE	1
PROB LICENSEE OPER CLASS D VEH	1
RESTRICTED OVERNIGHT PARKING	3
SPEEDING ON CITY HIGHWAY (11-15 MPH)	1
TRESPASS TO DWELLING	1
UNREASONABLE AND IMPRUDENT SPEED	1
VIOLATE GDL RESTRICTIONS - PASSENGER	1
Total:	63

Kronenwetter Fire Department

EMS

Year-End Report 2025

Kronenwetter Fire Department
First Responders
Reporting Year: 2025
Prepared By: Alexa Corazalla, EMS Coordinator

Executive Summary

In 2025, the Kronenwetter Fire Department First Responder Group demonstrated exceptional operational reliability by responding to 371 out of 395 with 22 of the unanswered calls being to the Aspirus Kronenwetter Clinic. When adjusting for calls that fall outside of the facility, the KFD achieved an effective response rate of 371 out of 373 calls (or 99.46%) for all emergency dispatches. **Understanding the gap—22 calls occurred at the Aspirus Kronenwetter Clinic, to which KFD EMR's do not respond during standard business hours (8am-4pm) as the facility is already staffed by medical professionals. These incidents typically involve patients already under clinical supervision seeking transportation to an Emergency Room for diagnostic testing or higher-level of care that is unavailable at the clinic. It should be noted there is flexibility for special circumstances for this location; historically KFD EMR's have responded to this location in instances where a patient is not yet inside the facility (e.g. an emergency occurring in the parking lot) and requires immediate intervention.*

An average response time from time of dispatch notification to First Responder being en-route was 1.73 minutes. The department's 14 active responders, ranging from EMRs to Registered Nurses, manage a diverse caseload that primarily served an aging population, with individuals aged 71–80 representing the highest volume of patients. Medical data shows that acute pain (61 calls) and falls (51 calls) were the leading reasons for dispatch, with notable seasonal spikes in pain-related emergencies during August and falls in December. To maintain this high standard of care, the team completed 19 specialized drills, covering advanced topics like OB/Childbirth and trauma assessment, while simultaneously fostering community safety through public education and youth outreach.

1. Mission & Program Overview

Mission Statement:
The mission of the Kronenwetter Fire Department is to minimize loss of life, property and the environment from fires, natural disasters, life threatening situations, and to assist other emergency agencies.

Role of the First Responder Group:
Under direction of the EMS Coordinator or Chief, respond to emergency medical calls when requested. First Responders respond to the call from their home directly to the patients location/home. First Responders render EMS services according to their State of Wisconsin license level protocols and operational plan. First responders receive training by the EMS Coordinator regarding first responder skills. They maintain all equipment that has been provided to them. They maintain their EMS licensure with the State of Wisconsin per state rules.

Beyond clinical interventions, our role often extends into providing essential psychological/emotional support and comfort to the patient's loved ones. We recognize that an emergency affects the entire household, so we also prioritize caring for family members both during and after the medical crisis. This might mean staying behind to provide a calming presence until additional supports arrive or even stepping in to finish a task the patient was working on—like securing a home or tending to a chore—to lift a small burden off the family's shoulders. We make it a point to demystify the chaos by clearly explaining the process, walking them through the next steps once the patient is loaded into the ambulance and before the ambulance departs, and ensuring they are emotionally supported and have a clear plan for what comes next.

2. Staffing & Personnel

Total Active First Responders: 12 Responders

Certifications Held:

- EMR: 6
- EMT: 4
- AEMT: 2
- Paramedic/RN: 2

Personnel Changes:

- New Members Added: 4
- Members Separated (resignation/retirement): 1

3. Equipment

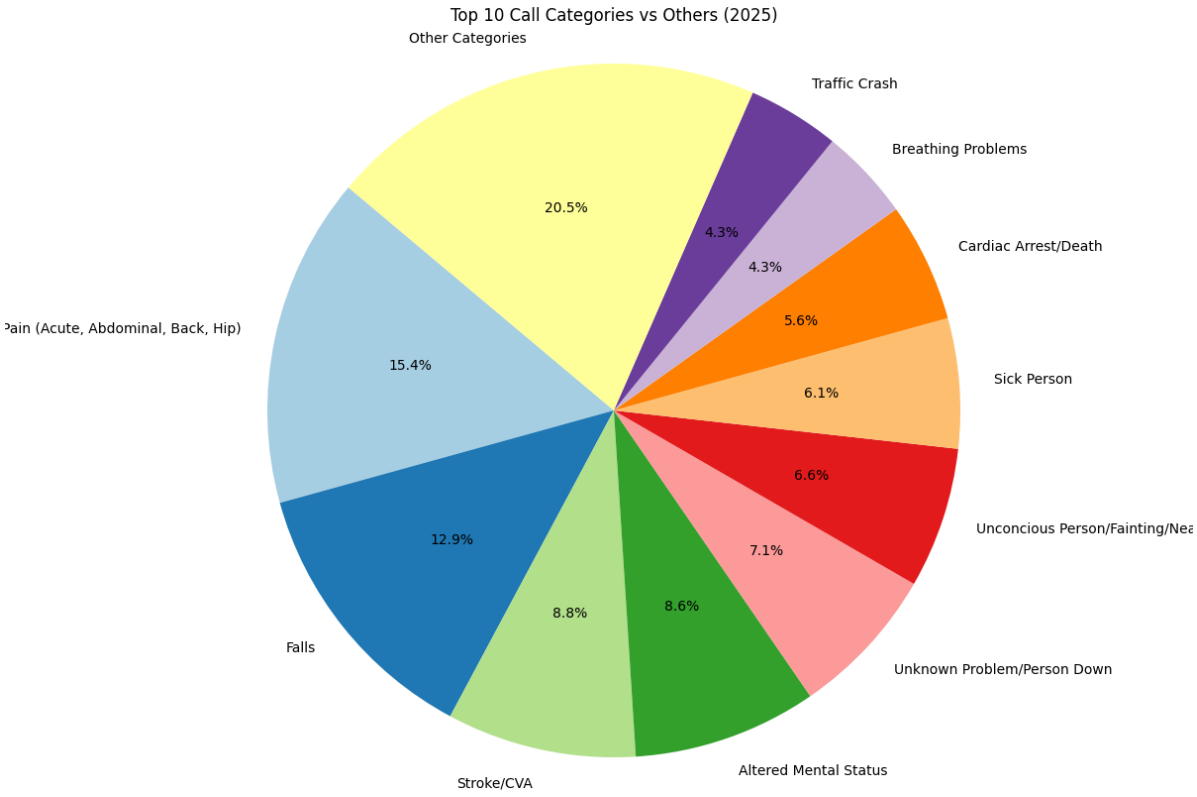
Each first responder is provided with a Medical Bag or 'Jump Bag'

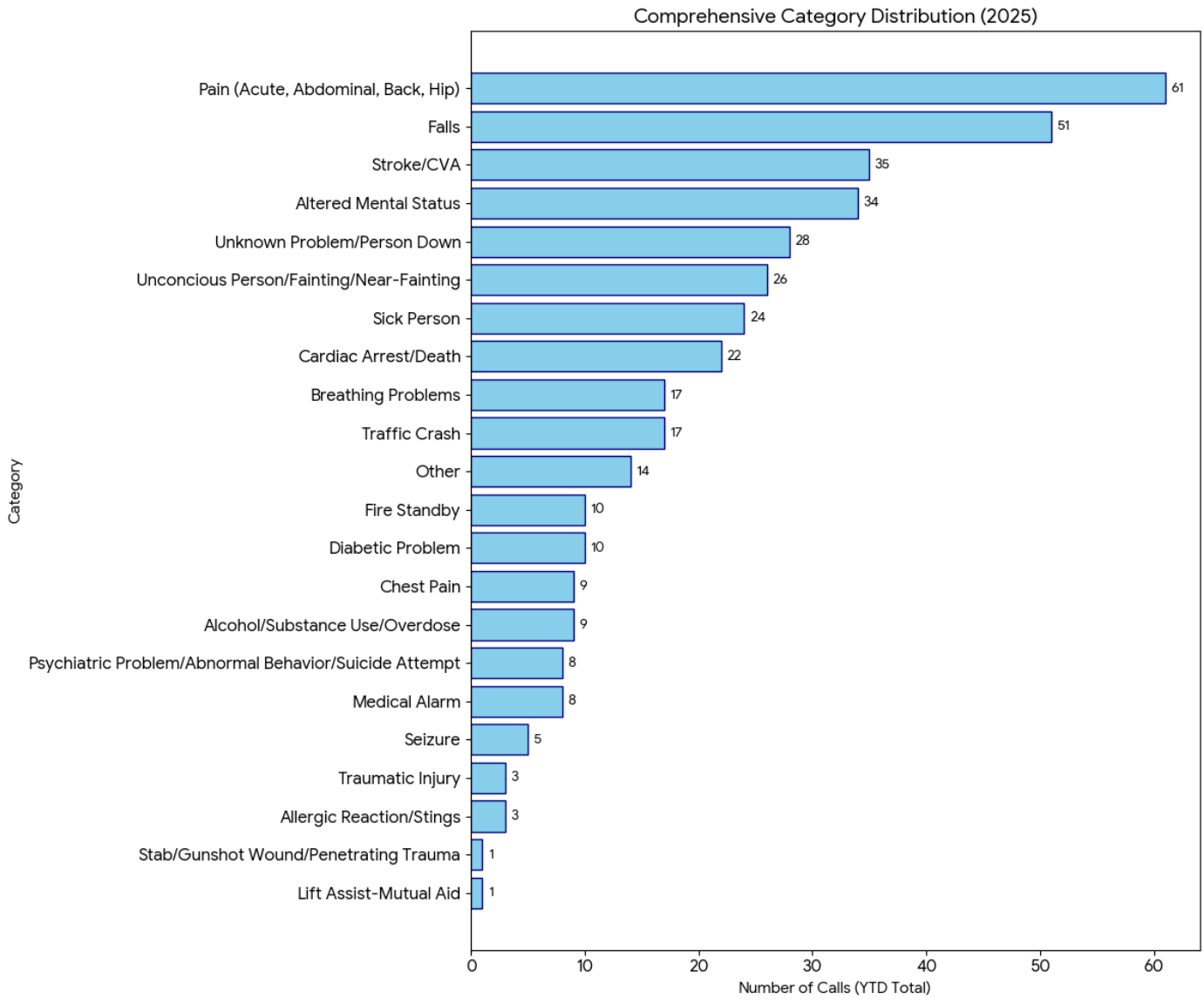
Our jump bags are meticulously organized to turn any location into a makeshift treatment room, starting with diagnostic tools to capture vital signs using a BP cuff, stethoscope, thermometer, glucometer, and SpO2 monitor. For physical injuries, we carry an array of trauma supplies—including gauze, wraps, bandages, chest seals, trauma shears, and specialized tools, splints for rapid immobilization of fractures/sprains and C-Collars for cervical spine immobilization. To manage critical life functions, the bag includes a portable oxygen tank and airway management tools, ranging from basic OPAs and NPAs to advanced supraglottic (iGel) devices. Finally, the bag is stocked with emergency medications designed for immediate intervention, such as Narcan for overdoses, Aspirin for cardiac events, Oral Glucose for diabetic crises, and Epi-Pens for life-threatening anaphylaxis.

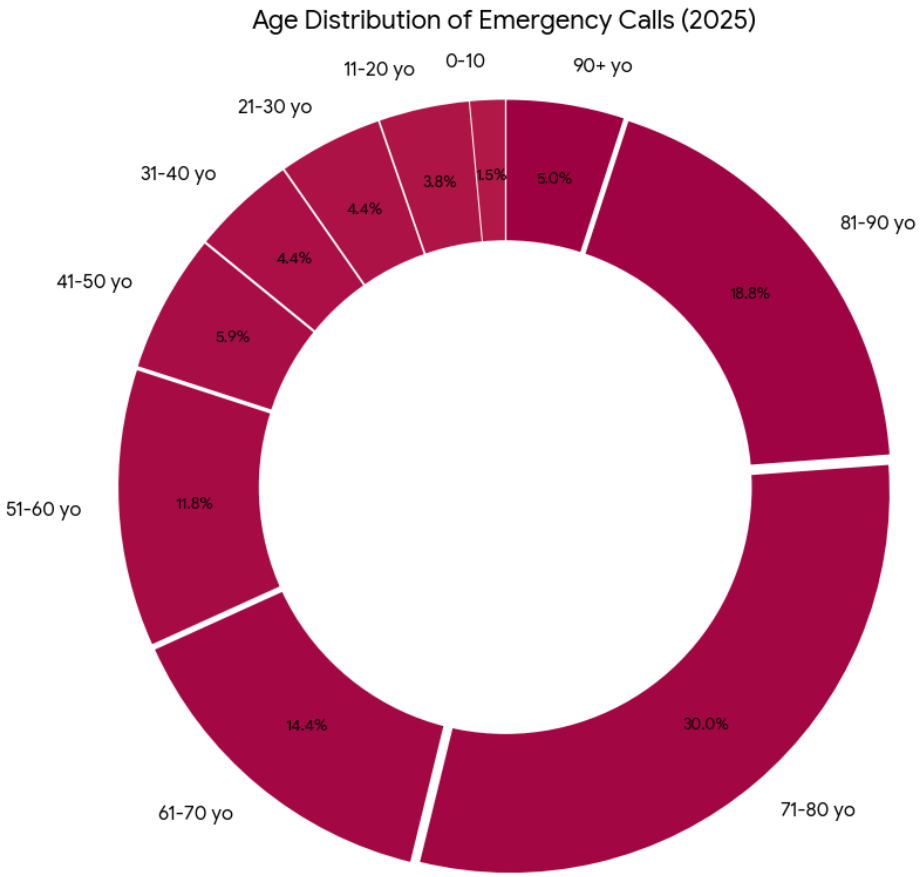
4. Response & Call Volume Statistics

Total Calls: 395 calls

Call Type Breakdown: ***Please see graphs located below and on following pages****




Comprehensive Category Distribution (2025)
Category
Pain (Acute, Abdominal, Back, Hip)
Falls
Stroke/CVA
Altered Mental Status
Unknown Problem/Person Down
Unconcious Person/Fainting/Near-Fainting
Sick Person
Cardiac Arrest/Death
Breathing Problems
Traffic Crash
Other
Fire Standby
Diabetic Problem
Chest Pain
Alcohol/Substance Use/Overdose
Psychiatric Problem/Abnormal Behavior/Suicide Attempt
Medical Alarm
Seizure
Traumatic Injury
Allergic Reaction/Stings
Stab/Gunshot Wound/Penetrating Trauma
Lift Assist-Mutual Aid
61
51
35
34
28
26
24
22
17
17
14
10
10
9
9
8
8
5
3
3
1
1
0
10
20
30
40
50
60
Number of Calls (YTD Total)



2025 Call Data Overview:

- The data shows that the most affected age group was individuals ages 71-80 years old accounting for the highest volume of calls, a notable concentration of calls for patients over the age of 60. The youngest patient recorded was 3 mo. old and the eldest was 98 years old. The Primary call category for Pain (acute, abdominal, back, hip, etc). accounted for 61 calls, following this is the remainder of the top 5 categories including: Falls 51 calls, Stroke/CVA 35 calls, Altered Mental Status 34 calls, 28 calls for Unknown Problem/Person Down.

- Pain-related calls peaked in August with 10 calls specifically related to various pain types, while Falls saw a significant spike in December (12 calls).

5. Training & Continuing Education

- 19 total EMR Drills were conducted throughout the year on the 2nd and 4th Thursday evenings from 6-8, including 4 combined trainings with Riverside Fire District.
- Training topics included but not limited to:
    - HIPPA/EMS Documentation
    - CPR Renewal
    - Cold Weather Emergencies
    - Advanced Directives in EMS, CPR, Stroke Related Calls
    - Impalement Injury Stabilization
    - Training with Aspirus MedEvac OB/Childbirth
    - Airway/Advanced Airway/Oxygen Administration
    - Administrative/Compliance Review
    - Pool Rescue
    - Epinephrine Administration Training
    - Trauma Assessments
    - MCI (Mass Casualty Incident) and MCI Triage
    - Spinal Immobilization with Helmet Removal (ATV/UTV/Snowmobile)
    - Pediatric Seizures/Trauma
    - Scenario based training for assessment/treatment
    - Joint Training with RSFD included EKG review, lead placement, pediatric trauma, creative scenarios with downed firefighters, traumatic call reviews, and staff introductions.

6. Community Engagement & Public Outreach

- Public Education Events (CPR, First Aid, etc.): CPR-BLS Training requested through KFD for two local Assisted Living Facilities

- Community Events / Standbys: KFD Open House in Oct. 2025, Village of Kronenwetter Events (National Night Out, and the Bike and Walk Event)

- School or Organization Outreach: Station tours to Developmentally Disabled Adults, Learn at home students, public school students, and visits to local Daycare Center. First Responder First Aid Care with Local Girl Scout Troops

7. Recognition & Acknowledgments

In 2025—we recognized our Top 3 First Responders for making the most Medical Emergency Calls which included Timothy O'Brien, Alexa Corazalla, Matthew Neyrinck.

8. Grant Award & Financial Stewardship

To further support our operational capabilities, the department is pleased to announce that it has been awarded **$33,939.78** through the **Wisconsin EMS Funding Assistance Program (FAP Grant)** for the state fiscal year 2026 (July 1, 2025-June 30,2026).

These funds provide critical financial support for the department's infrastructure by helping cover costs associated with:

- **Training and Education:** Ensuring our responders maintain the highest level of life-saving certifications.
- **Medical Supplies and Equipment:** Upgrading the tools used daily in the field.
- **Medication Purchases:** Maintaining our inventory of necessary emergency pharmaceutical interventions.

Kronenwetter Fire Department

2025 Year-End Report

Fire Chief Theresa O’Brien

Executive Summary

The Kronenwetter Fire Department, led by Fire Chief Theresa O'Brien, remained dedicated to providing professional emergency services to our community throughout 2025. This year, our department successfully responded to 465 total fire and emergency calls, which included 94 fire requests and 371 EMS/Ambulance requests. Beyond emergency response, we prioritized operational readiness through the completion of all annual fleet maintenance, DOT inspections, pump testing, hose testing and ladder testing. Our commitment to the community was further demonstrated by conducting 290 fire inspections across the Village of Kronenwetter and the Town of Guenther, alongside our continued focus on comprehensive personnel training and active community engagement.

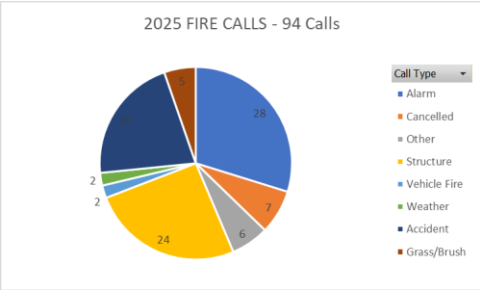
Call Volume & Operational Statistics ***ems calls included on EMS year end report*

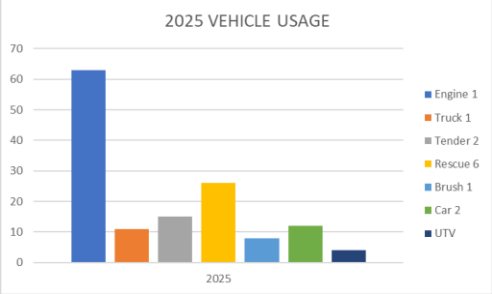
Fire and Emergency Call Summary

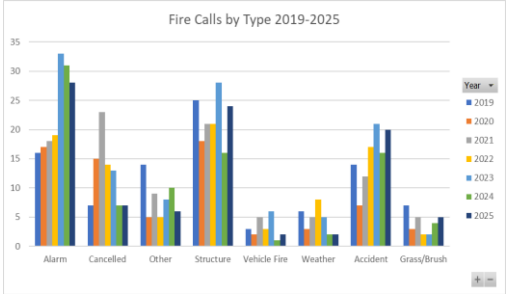
- Total Fire Requests for 2025: 94
- Mutual Aid Received: 11
- Mutual Aid Given: 25

Fire Call Breakdown by Category:

- Alarms: 29
- Structure Fires: 21
- Vehicle Accidents: 20
- Cancelled Calls: 8
- Grass/Brush Fires: 6
- Weather Related: 4
- Vehicle Fires: 3
- Others: 3



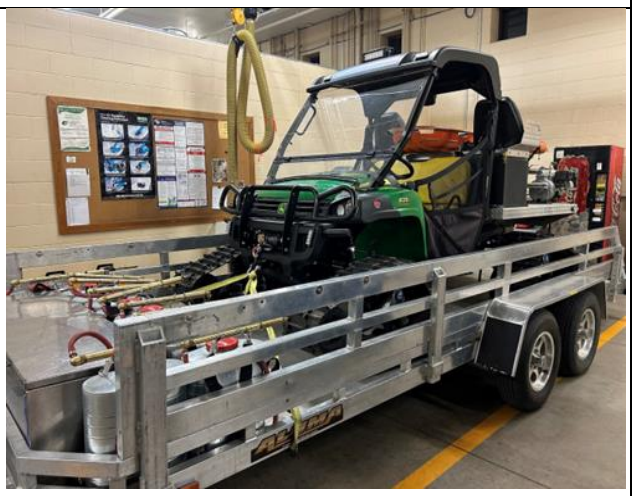




Fleet & Equipment Status:

Annual Maintenance completed on all trucks including DOT Inspections, Hose Testing, Pump Testing, Ladder Testing

Car 2 – 2024 Ford F250 Crew Cab	EMS 1 – 2022 Ram 1500
	
Tender 2 – 2015 Peterbilt	Brush 1 – 2019 Ford F550
	

Engine 1 – 2019 Pierce	Rescue 6 – 2010 Kenworth
	
Truck 1 – 2023 Pierce Aerial	UTV – 2016 John Deer Model 825 E with Skid Unit
	

Personnel & Staffing

Total Firefighters: 28
Total EMS First Responders: 14

Department Members:

Fire Chief Theresa O'Brien **
Captain Matt Berndt
Captain Tim O'Brien **
Captain Kyle James
Captain Chris Charneski
Lieutenant Kurt Swenson
Lieutenant Keign Charneski
Lieutenant & EMS Coordinator Alexa Corazalla **
Josh Wiese
David Levorson
Kevin Balk
Cindy Smith **
Ashton Hocking
Travis Plisch
Brice Maier
Sean Andraschko
Oliva Stone
Connor Young **
Matt Neyrinck **
Jarret Imlach **
Mason Hoffmann **
Jordyn Wadle-Leff **
Eric Podoski
Samuel Wing
Brennan Weitzel
Jordan Wiskerchen **
Kaye James **
Esteban Carreon
Evan Peak **
Jamie Balk **
Jocelyn Van Rixel **

** *EMS*

Training & Professional Development

Annual CPR Refresher
CN Railroad
Communications
DNR Wildland annual refresher
Grass/Brush Fire Simulation
Driving/Scavenger Hunt
Ladders
Search and Rescue
Venting
Self-Rescue

Salvage and Overhaul
Pumping – Relay Pumping
Emergency Vehicle Operations
Electric/Hybrid Vehicle Emergencies
Ropes/Knots
Vehicle Extrication
Hose Operations
Fire Ground Operations
Bleeding Control
Helicopter/Landing Zone
Chimney Fire
Marathon County/Kronenwetter Forest Units
**not an all-inclusive listing

Fire Prevention & Community Engagement

- **Fire Inspections completed in 2025**
  Town of Guenther – 16
  Village of Kronenwetter – 274
- **Business involved training in 2025**
  Fire Extinguisher training
  CPR Training
- **Community Events attended in 2025:**
  Open House Event
  Bike and Walk event
  National Night Out
  Trick or Treating in the Village
  Fire Prevention – Daycare/Schools/Aurora Health
  Lions Fall Fest
  Mosinee 4th of July and Christmas Parades
  Fire Alarm replacement program
  **not an all-inclusive listing

Recognition & Acknowledgements

Years of Service Awards
Chris Charneski – 25
Theresa O'Brien – 20
Kyle James – 20

Top Responders: Tim O'Brien, Keign Charneski, Mason Hoffmann

Following awards are chosen by the department members:
Officer of the Year – Kyle James
Newbie of the Year – Jarret Imlach
Firefighter of the Year – Matt Neyrink
Most Improved Firefighter – Connor Young

Future Outlook and Planning:

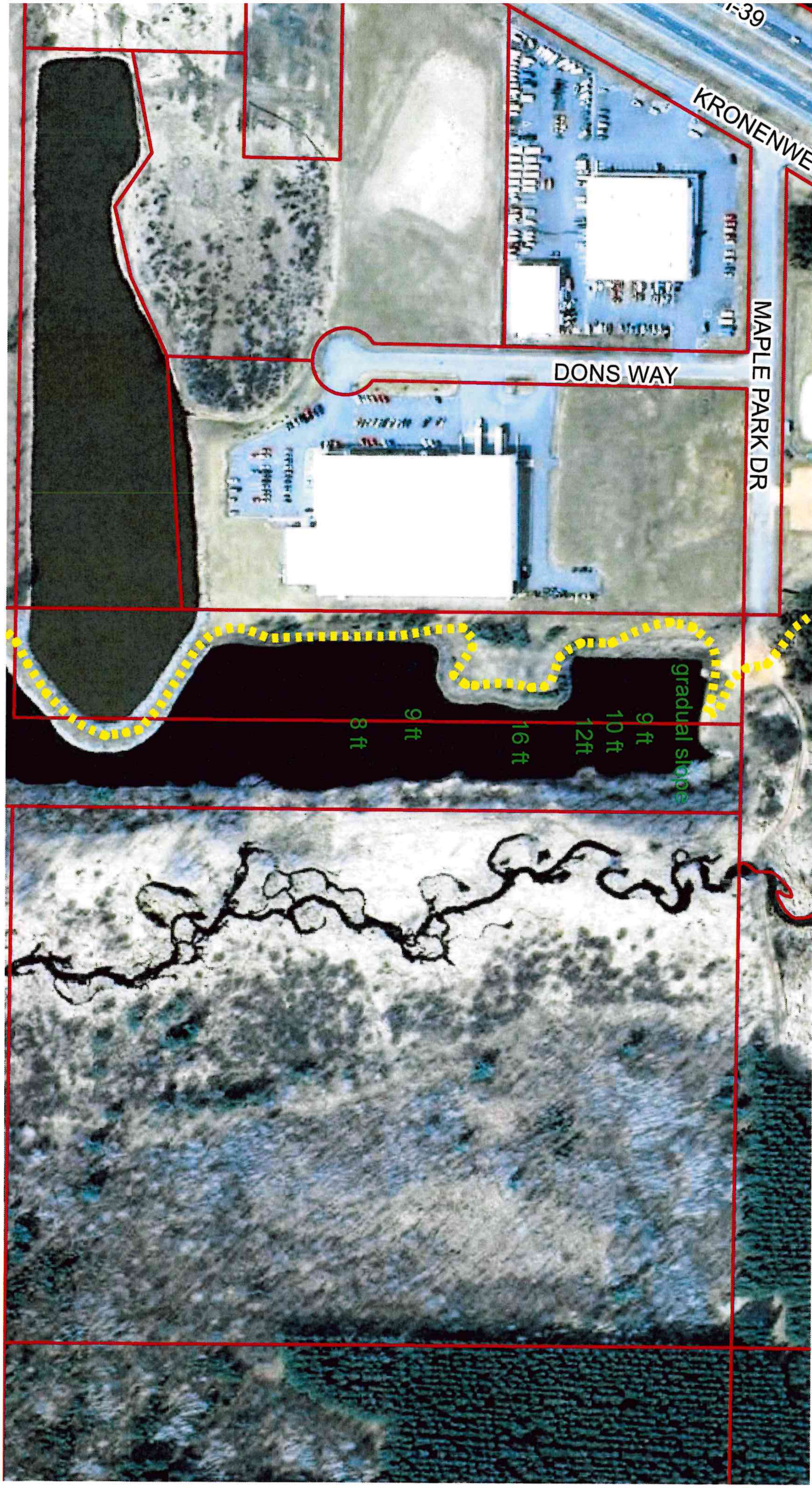
- Continuing recruitment events
- Utilize training opportunities to grow staff knowledge
- Community engagement and public education programs- expand open house type events, including potential pancake breakfasts or spaghetti dinners to include “hands only CPR” and fire extinguisher trainings.
- Continue specialized training opportunities with local businesses
- Research grant opportunities – to assist with replacement of equipment that is otherwise not supported through general funds
- Mental Health Initiatives – implement behavioral health emergency training for members to better serve the community and support staff well-being

village of Kronenwetter

Report to CLIPP

Item Name: Director of Public Works and Utilities Report
Meeting Date: February 2, 2026
Referring Body:
Committee Contact:
Staff Contact: Greg Ulman
Report Prepared by: Greg Ulman

- The Well #1 rehab project finished up by Municipal Well and Pump. This project includes cleaning and refurbishing any worn-out parts of the well. Typically, it is done every 10 years, but hasn't been done since 2009. The contractor finished on January 28th.
- Public Works crews have been busy with many weather events in January.
- Contractors are working on the lift station 2 & 6 projects, with completion this winter.
- PGA was working on the meter exchanges at the Weston Power Plant and have been running into issues replacing them, staff and crews have been working on getting this remedied. PGA wasn't able to finish the job so the Village hired Fore-Front Mechanical to complete the project. Monday January 12th Fore-Front completed the job in roughly 6 hours.
- Because of all the snow events the Public Works crews have not started trimming the right-of-way trees which overhang the roads or could impede traffic. We have sent out letters to residents where trimming may take place. If it continues to be a snowy winter, there is no guarantee we will finish the list.
- Many fiber optic projects will be taking place this summer around the Village, the bulk of the permits I have received so far are concentrated just to the east of County Road X.
- With the cold temps, we are reminding residents that the salt doesn't work below 20 degrees. We have been placing sand at various intersections, but ice still remains below the sand.
- Staff is working on obtaining a utility easement for the water and sewer lines off of Kowalski Dr. by Tropical Gardens. This is located just to the west of the interstate on the north side of the road. When the line was installed 20+ years ago the Village and engineer only had a temporary easement, we need a permanent easement to maintain our lines. There are about seven other locations in the Village where this is an issue as well.
- The metering station telemetry will be delivered hopefully sometime in February, then after a few days we can get water to flow through the station to test it per DNR requirements. After all testing is complete, we would be able to purchase water if need be from Rothschild.
- Staff went out to the Municipal Pond to measure depths on January 21st, on the proceeding page I listed a few areas of depth. On the north side of the pond there is a gradual slope, with no steep drop-off.


KRONENWE
MAPLE PARK DR
DONS WAY
gradual slope
9 ft
10 ft
12ft
16 ft
9 ft
8 ft

Community Development/Planning and Zoning Director Report

February 2, 2025

Peter S. Wegner, Community Development/Planning and Zoning Director

- Complaints and Correspondence.
- Correspondence with Marathon County regarding proposed Highway Shop Facility.
- Open records request related to the rezoning of Tax Parcel ID Number: 145-2707-021-0980 and 145-2707-021-0981.
- Research and correspondence with potential buyer of 1598 Kowalski Road.
- Research and correspondence regarding development options on property located at 1260 Kronenwetter Drive.
- Review Planning Tech Job Description.
- Milestone Materials, Junior Ridge Nonmetallic Mining Conditional Use Permit Appeal.
- Preliminary review Residential Business (Copper Wire Recovery) Conditional Use Permit Application.
- Review permitted and conditional uses along with buildable area on Village owned Kronenwetter Drive parcels.
- Research/correspondence regarding using the right-of-way east of the proposed Marathon County Highway Facility as a stormwater swale.
- Correspondence with REI regarding Zone A floodplain mapping removal request. Unnamed Zone A Tributary west of Hwy 51/Railroad.
- Meeting with Developer to discuss permitted and conditional use options on property located at 2071 Queenland Drive.
- Research 520-27 E. Home occupation requirements.
- Meeting with Attorney VanderWaal, Village President and Village Administrator regarding Conditional Use Permit appeal.
- Meeting with Village resident regarding complaints and enforcement process.
- Preliminary Review Rezone Application for Tax Parcel ID Number: 145-2708-062-0983.
- Research Chapter 270 - EROSION CONTROL AND STORMWATER MANAGEMENT and §520-124. - Site plan procedures as it relates to plan review and approval.
- Village Board Decision to reverse the Plan Commission denial of Milestone Materials, Junior Ridge Nonmetallic Mining Conditional Use Permit.
- Research 520-76. - Design standards for multifamily and nonresidential buildings and § 520-25. - Transportation land use types. D. Distribution center. (2)Performance standards.

Violation #	Date Received	Property Address	Owner Name	Zoning	Complainant name	Nature of the Complaint	Valid?	Action Taken	Status
26-0122-001	1/22/2026	1714 Judy Drive	Chris Manteufel	SF	Chris Zimmerman	2 trucks at 1714 Judy drive have not moved in 6 years. One has been missing wheels and up on jacks the whole time.	Yes	01/29/2026: updated pictures and there are 2 trucks in the driveway, one has no front tires and the other is broken down, sending letter.	Open
26-0122-002	1/22/2026	1724 Judy Drive	Marty & Spring Varga	SF	Chris Zimmerman	a truck at 1724 judy dr hasn't moved in nearly 2 years	Yes	01/29/2026: Updated pictures. One truck in the driveway. Sending letter.	Open
25-0304-001	3/4/2025	1849 Deerwood Trail	Steven & Stephanie Woytasik	SF	Neighbor	Rubbish piles in yard	Yes	Called Steven on 03-04-2025 and VM was full. Steven called back later and I talked to him about the rubbish piles in the yard. I informed him he had 10 days to get the rubbish cleaned up. If he did not, there would be a citation given. 10 days are up 03/11/2025, I will check on the property on 03/12/2025 to see if the rubbish has been cleaned up. 03/11/2025: The large pile of rubbish was removed, there are a few item left to clean up. I talked to the owner of the land next door and they have given permission to go on the land to get more pictures. 03/19/2025 Called left a VM, Gave the owner 10 days to finish up the clean-up then will issue a citation. Letter sent 03/19/2025. 03/25/2025 Steven called and will be removing the wood, lawn mower, wheel barrow and dolley when the snow melts. I will check back after the snow is gone. 07/30/2025 checked on property, unable to get pictures due to trees blocking view. 08/29/2025: Yard has improved with rubbish and junk. Photos taken 09/16/2025, 10/15/2025 photos taken	Open
25-0314-002	3/14/2025	2054 Paintbrush	Jody Strenz - Hugh Dombeck	SF	Sonja Kurtzweil	Rubbish piles in yard, Tires, lawn tractors,	Yes	03/14/2025- Called Owner of house and she would like me to go over to the house as her sons live there. She would like me to give guidance on what needs to be cleaned up so they can be compliant. Will call to schedule an appointment to do that. 03/17/2025 Called and talked to Hue (The son). He is going to work on cleaning up the corner of the yard with all the mowers and tires. I told him I would be doing drive - by's to check on the progress. 06/04/2025 Drive by and the items have not moved. Letter to be sent with 10 day notice. 06/13/2025 Tenent called they are getting a storage unit to put all the items in there. Hugh will call with updates. 07/30/2025 Items are still in the yard and no update from Hugh. 08/29/2025: No update from Hugh. Photos taken 09/16/2025, 10/15/2025 photos taken and spoke with hugh, advised a friend is suppose to be getting the items in s.e. side of property. in addition hugh said if the friend doesn't come "soon" he will be scrapping items. i told hugh i will be coming in approx ten days to reassess property and if there is no progress then he may receive citation. hugh was receptive	Open
25-0904-033	9/4/2025	839 Oak Road	Sean Dumais	RR5	Neighbor	Building an addition to kennel and updating old building with no permit. Also has no kennel permit.	Yes	09/04/2025: Received complaint and looking into the issue. 09/04/2025 Talked to Sean and no construction is taking place, only cement pad. Waiting on committee to see if a kennel permit is needed.	Open
25-0915-034	9/15/2025	2157 Orange Court	Tory Lee		annonymous	junk in yard, old camper, garbage all over outside, vehicle not registered to tory, possibly someone living in camper	Yes	09/16/2025 photos taken 09/17 called Tory, hungup on me after I asked if it was Tory -- requesting letter to be sent 10/15/2025 photos taken, requesting letter to be sent due to Tory's non cooperation. 10/15/2025: updated pictures. 11/06/2025: Sent letter. 11/25/2025: working on ticket due to no compliance or contact. 01/29/2026: Updated pictures.	Open
25-0915-035	9/15/2025	2272 Falcon Crest	Lori, Dana, Maverick Weyer		annonymous	junked vehicles in driveway, old boats, yard not maintained, junk piles in back yard and alongside house, unregistered vehicles in driveway	On Hold	09/16/2025 photos taken. 09/17/25 Lori and Dana both called. Dana receptive, Lori angry. Lori said she'll call on other neighbors. I advised lori she has 10 days and I will observe property again. 09/20/2025 PD issue, on hold.	On hold--PD ISSUE
25-1016-36	10/16/2025	2531 Moondance Drive	Lorena Cruz-Cortes	SF	annonymous	Running a Business in SF		10/24/2025 Spoke with renter Dustin Dean. He advised he would remove trailer, excavator and other contractor materials by the end of the day 10/27/2025. Needs pictures.	Resolved
25-1028-037	10/28/2025	2555 Sunny Meadow	Anna Ziemendorf and Logan Hortsman	SF	annonymous	Running a Business in SF		10/29/2025: Took pictures and there is no evidence of a home business.	Resolved
25-1028-038	10/28/2025	2596 Annamarie	Christopher Churkey	SF	annonymous	Running a Business in SF		10/29/2025: Took pictures and there is no evidence of a home business.	Resolved
25-1028-039	10/28/2025	2068 Josephine	Justin Simms	SF	annonymous	Running a Business in SF		10/29/2025: Took pictures and there is no evidence of a home business.	Resolved
25-1028-040	10/28/2025	2033 Amber Drive	Maria Sorenson	SF	annonymous	Running a Business in SF		10/29/2025: Took pictures and there is no evidence of a home business. There is a tractor in the yard for decoration.	Resolved
25-1028-041	10/28/2025	2052 Gary Lee	Eric and Stephany Tatro	SF	annonymous	Running a Business in SF	Yes	10/29/2025: Took pictures. Large Utility truck, trailer, skid steer and attachments. Need to send letter. 01/29/2026: Updated pictures.	Open
25-1117-042	11/16/2025	2104 Peach Road	Amber Petersohn	SF	annonymous	Large Metal storage containers in driveway	Yes	11/16/2025: Received complaint of 2 large metal storage containers in the driveway. 01/29/2026: Updated pictures. Need to send letter	Open

25-1124-043	11/20/2025	2157 Meadow	Jacob & Mckenzie Wobig	SF	annonymous	Running a Business in SF		11/24/2025: Looking into the issue. No evidence of running a business.	Resolved
Violation #	**Date Received**	**Property Address**	**Owner Name**	**Zoning**	**Complainant name**	**Nature of the Complaint**	**Valid?**	**Action Taken**	**Status**
25-1124-044	11/20/2025	2165 Paniolo	Frank & Ma Vang	SF	annonymous	Running a Business in SF	Yes	11/24/2025: Looking into the issue. 01/29/2026: Updated pictures, need to send letter.	Open
25-1124-045	11/20/2025	2215 Johnson	Chai Xiong	SF	annonymous	Running a Business in SF	Yes	11/24/2025: Looking into the issue. Two large cube vans. Need to send letter. 01/29/2026 Updated pictures	Open
25-1124-046	11/20/2025	2301 Courtland	Aaron & Christina Hackbart	SF	annonymous	Running a Business in SF	Yes	11/24/2025: Looking into the issue. Numerous work trucks and trailers. Need to send letter.	Open
25-1124-047	11/20/2025	2311 Courtland	John Springer	SF	annonymous	Running a Business in SF	Yes	11/24/2025: Looking into the issue. Numerous work trucks and trailers. Need to send letter. 01/29/2026: Updated pictures.	Open
25-1124-048	11/20/2025	2302 Bonneydune	Neil Kuckkahn	SF	annonymous	Running a Business in SF	Yes	11/24/2025: Looking into the issue. Work can and trailer. Neils heating and cooling. Need to send letter.	Open
25-1124-049	11/20/2025	2583 Annamarie	Joseph Weidman	SF	annonymous	Running a Business in SF	Needs onsite	11/24/2025: Looking into the issue. 01/29/2026: Updated pictures, no evidence of a business.	Open
24-0424-013	4/24/2024	2092 South Road	Faye Parker and Orman Boggs	SF	anonymous	Junkyard	Needs onsite	Updated picture, the junk is still in place.. 04/11/2025 - Updated Pictures Junk is still in place, sending 10 day letter. Letter sent as the property has improved, more work is still needed.	Open
24-0827-052	8/27/2024	2302 & 2304 Bonneydune	The Hot Spot	SF	Unknown, anonynous	Building garden shed without permit	Yes	04/14/2025: Pictures updated. 07/31/2025: Pictures updated. Needs letter.	Open

REPORT TO CLIPP

ITEM NAME:	Absentee Voting Ordinance
MEETING DATE:	February 2, 2026
PRESENTING COMMITTEE:	
COMMITTEE CONTACT:	Trustee Ken Charneski
STAFF CONTACT:	Jennifer Poyer
PREPARED BY:	Jennifer Poyer

ISSUE: Creating local ordinance language for the absentee elector process

OBJECTIVES:
The Wisconsin Election Commission has received multiple election complaints regarding elections in the Village of Kronenwetter. The Village's ordinances contain very little guidance and information related to the local election process. CLIPP committee members would like to create local election ordinances for clarification of the process and to address the issues behind the complaints.

The current topic being discussed is absentee electors and their ballots.
During the January 5, 2026 CLIPP Meeting, Trustee Charneski presented ordinance language outlining absentee specifications within Kronenwetter. Clerk Jennifer Poyer was tasked with revising the ordinance.
The revision is attached.

ISSUE BACKGROUND/PREVIOUS ACTIONS:

PROPOSAL:
ADVANTAGES:
DISADVANTAGES:
ITEMIZE ALL ANTICIPATED COSTS (Direct or Indirect, Start-Up/One-Time, Capital, Ongoing & Annual, Debt Service, etc.)

RECOMMENDED ACTION: Committee members can vote to recommend the absentee voting ordinance to the Village Board or revise it further.

OTHER OPTIONS CONSIDERED:
TIMING REQUIREMENTS/CONSTRAINTS:
FUNDING SOURCE(s) – Must include Account Number/Description/Budgeted Amt CFY/% Used CFY/$
Remaining CFY
Account Number:
Description:
Budgeted Amount:
Spent to Date:
Percentage Used:
Remaining:

ATTACHMENTS (describe briefly): Revised Voting Absentee Ordinance Document

41.5 Voting Absentee

1.Construction.

The Kronenwetter Village Board finds that voting is a constitutional right for legal citizens of Wisconsin, and that the vigorous exercise of which should be strongly encouraged.

In contrast, voting by absentee ballot is a privilege exercised wholly outside the traditional safeguards of the polling place. The Village Board hereby incorporates into this ordinance the provisions and regulations of Wisconsin statutes 6.84 to 6.89, and finds that the privilege of voting by absentee ballot must be carefully regulated, and that such regulations must be meticulously observed by the Village Clerk and/or the Clerk's subordinates.

The matters relating to the absentee ballot process as described in the above statutes and in this Section shall be construed as mandatory. Ballots cast in contravention of the procedures specified in those provisions may not be counted. Ballots counted in contravention of the procedures specified in those provisions may not be included in the certified result of any election.

2. Absent elector; definition.

(a) An absent elector is any otherwise qualified elector who for any reason is unable or unwilling to appear at the polling place in his or her ward or election district.

(b) Any otherwise qualified elector who changes residence within this state by moving to a different ward or municipality later than 28 days prior to an election may vote an absentee ballot in the ward or municipality where he or she was qualified to vote before moving.

(c) An elector qualifying under this section may vote by absentee ballot under ss. 6.86 to 6.89.

3. Absentee ballot site.

The Village Board designates the office of the ~~municipal~~ Village Cclerk as the location from which electors of the municipality may request and vote absentee ballots and to which voted absentee ballots shall be returned by electors for any election.

The location for returning absentee ballots shall include the front desk and/or lobby area of the Municipal Center.

In-person absentee ballots shall be filled out in the designated area of the Municipal Center. In-person absentee electors shall only place their ballots in a locked ballot box provided by the Village Clerk. ~~or filling out in-person absentee ballots shall include the front desk and/or lobby area of the Village Hall, only if a a locked ballot box is provided for the voter to directly put their completed ballot into.~~

The locked ballot box may be opened only in the Clerk's office, whereupon ballots shall be recorded and processed in accordance with Wisconsin Statute 6.88, and secured in a way that they are not accessible to anyone not authorized by the Clerk.

Absentee ballots received by mail shall be brought to the Clerk's office, recorded, processed, and secured as soon as practicable.

In no case may completed ballots be allowed to remain in areas readily accessible to unauthorized persons.

4. Obtaining and returning an absentee ballot.

The method of obtaining and returning an absentee ballot shall be in accordance with Wisconsin statute 6.86, 6.865, 6.869 and 6.87.

5. Voting and recording the absentee ballot.

Voting and recording of absentee ballots shall be done in accordance with Wisconsin Statute 6.88

6. Absent electors list public. The Village ~~municipal c~~Clerk shall keep a list of all electors who make application for an absent elector's ballot and who have voted under the absent elector provisions giving the name, address and date of application. The list shall be open to public inspection.

village of Kronenwetter

Report to CLIPP

Agenda Item:
Meeting Date: Feb 2, 2026
Referring Body: CLIPP
Committee Contact: Trustee Charneski
Staff Contact: Greg Ullman
Report Prepared by: Ken Charneski

AGENDA ITEM: Railroad Blockage Project

OBJECTIVE(S): For CLIPP to discuss feasibility of finding a workaround to the train blockages which create a potential safety risk to west side residents.

HISTORY/BACKGROUND: At the Jan 12 Village Board meeting we discussed this issue and I said the logical next step would be to gather information from the previously approved firm, who had offered pro bono basic information and recommendations. The Board voted to send this issue back to CLIPP .

As we can see from the following report, the Public Works director was directed by administrator Davel to get RFP's before this issue even came to CLIPP for discussion. Unfortunately Mr Davel's instructions were ill-advised and premature, as the Board had discussed the issue wasting vendor's time asking for RFP's for projects that we may not award.

I thank Richard Schneider of Kapur and Associates for the pro bono information that he has very generously provided.

Attached are emails, a summary on how to approach this project, a brochure on land owner rights, an article on project bidding, and a cost breakdown to build the road in the most logical, cost effective location. All very good information for this project, and for DPW to keep on hand for the future.

The evaluation study would not necessarily be needed, because options are limited to a new road, and a more cost-effective approach would be to apply that money to the engineering for the actual road that would be needed.

So that is the good news.

The bad news is that a key property owner who was interested in this project up to two weeks ago, has changed his mind, and this project won't help the accessibility problem without his cooperation.

The $500K anticipated cost would balloon to many times the cost if we went with a second-best option.

PROPOSAL: Given the abrupt change of circumstances, the committee should reconsider the feasibility of the project, and whether or not RFP's were called for.

RECOMMENDED ACTION:

FINANCIAL

Financial Consideration/Action: None at this time

FUNDING SOURCE: N/A
Account Number/Title: #
Current Adopted Budget: $
Spent to Date: $
Remaining Budget: $
Requested Amount: $
Remainder of Budgeted Amount, if approved:

ATTACHMENTS: Email thread, a summary on how to approach this project, a brochure on land owner rights, an article on project bidding, cost breakdown of the original project plan.

APPROACH TO RAILROAD ACCESS PROJECT

FUNDING METHOD

Village must determine funding method. Basically 3 alternatives:

- Special Assessment
- 2027 Budget
- General Obligation Bonds

CONTRACT WITH ENGINEER

DETERMINE METHODOLOGY

Engineer provides alternatives to solving access problem and Village chooses alternative.

- Underpass – Underpass under railroad could cost upwards of $3,000,000 if railroad would even allow.
- Connecting road between W. Nelson Road and Happy Hollow Road. Engineer provides multiple routes for Village to choose from. Cost estimated to be $500,000.

ENGINEER CONDUCTS PRELIMINARY STUDY FOR ROAD LOCATION

- Engineer prepares preliminary plan for road location to present to Village.
- Village authorizes road location.
- Engineer prepares right-of-way plat.
- Village contracts with Abstract firm to prepare Letter Report for title search for affected properties.

CONDEMNATION (Eminent Domain)

Assuming connecting road method and route is chosen, the Village must enact the condemnation procedure.

- Relocation Order -Village must pass order under 35.05(1)
- Appraisal- Village must contract with appraisal firm to establish cost per parcel. 35.05(2)
- Negotiation- Village must attempt to negotiate a price with landowner. 35.05(2a)
- A jurisdictional offer is made (35.05(3)
- Award made and filed with County Clerk

ENGINEER PREPARES DESGN, PLANS, SPECIFICATIONS AND BID DOCUMENTS

- Water and Sewer Utility determines if infrastructure should be included.

RE: [External] Kronenwetter Railroad Accessibility Assessment Study

From Richard H. Schneider <rhschneider@kapurinc.com>
Date Sat 1/24/2026 7:44 AM
To Ken Charneski <kcharneski@kronenwetter.gov>

The cost for the right-of-way acquisition is not included since an appraiser would determine that. Wild guess about $35,000.

RICHARD H. SCHNEIDER, , PE

Project Manager

700 Eagle Nest Boulevard, Rothschild, WI 54474

o: 715.803.6415 m: 715.573.1269

rhschneider@kapurinc.com

Call me on Microsoft Teams
Chat/Message me on Microsoft Teams

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From: Ken Charneski <kcharneski@kronenwetter.gov>
Sent: Friday, January 23, 2026 7:17 PM
To: Richard H. Schneider <rhschneider@kapurinc.com>
Subject: Re: [External] Kronenwetter Railroad Accessibility Assessment Study

Yes, Got it. So then, this 449 is the whole enchilada to put that road in place up to Prohaska's property? What about buying the land or anything like that?
Thanks!

From: Richard H. Schneider <rhschneider@kapurinc.com>
Sent: Friday, January 23, 2026 4:19 PM
To: Ken Charneski <kcharneski@kronenwetter.gov>
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

Ken-
Just checking to verify you received this info.
Thanks

Project Manager

700 Eagle Nest Boulevard, Rothschild, WI 54474

o: 715.803.6415 m: 715.573.1269

rhschneider@kapurinc.com

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From: Richard H. Schneider
Sent: Thursday, January 22, 2026 8:55 AM
To: kcharneski@kronenwetter.gov
Subject: FW: [External] Kronenwetter Railroad Accessibility Assessment Study

Ken-
Below is a copy of email conversation with Greg.
As to Engineering cost see attached. There is an additional engineering cost involving the acquiring of the right-of-way, i.e. survey, ROW Plat, etc. which I do not have at this time.
The Village can contract with a professional by 3 ways not of which are mandatory by State Statute:
1. Direct negotiation with an Engineering Firm
2. Qualification/Experience based RFP
3. Cost Based RFP
In #2 after a firm is chosen based on qualifications accost is then negotiated.
Hope this helps.
Thanks

RICHARD H. SCHNEIDER, , PE

Project Manager

700 Eagle Nest Boulevard, Rothschild, WI 54474

o: 715.803.6415 m: 715.573.1269

rhschneider@kapurinc.com

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From: Greg Ulman <gulman@kronenwetter.gov>
Sent: Thursday, January 15, 2026 10:37 AM
To: Richard H. Schneider <rhschneider@kapurinc.com>
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

I appreciate the information!

Have a good day,

Greg Ulman
Director of Public Works/Utilities Superintendent

village of Kronenwetter

1582 Kronenwetter Drive
Kronenwetter, WI 54455
715-693-4200 ext. 1731
715-693-4202 Fax
www.kronenwetter.org

From: Richard H. Schneider <rhschneider@kapurinc.com>
Sent: Thursday, January 15, 2026 10:17 AM
To: Greg Ulman <gulman@kronenwetter.gov>
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

Greg-
Ken Charneski requested I prepare a suggested approach for completing an access project for the CLIPP Committee., since I was very familiar with the infrastructure. See attached.
As I had told Dan & Jim, I agreed to provide info pro bono without expectation of a design contract.
Thanks

kapur 45 YEARS

RICHARD H. SCHNEIDER, , PE

Project Manager

700 Eagle Nest Boulevard, Rothschild, WI 54474

o: 715.803.6415 m: 715.573.1269

rhschneider@kapurinc.com

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From: Richard H. Schneider
Sent: Thursday, January 15, 2026 9:52 AM

To: Greg Ulman <gulman@kronenwetter.gov>
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

Thanks Greg. We will not be submitting .

RICHARD H. SCHNEIDER, , PE

Project Manager

700 Eagle Nest Boulevard, Rothschild, WI 54474

o: 715.803.6415 m: 715.573.1269

rhschneider@kapurinc.com

Call me on Microsoft Teams
Chat/Message me on Microsoft Teams

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From: Greg Ulman <gulman@kronenwetter.gov>
Sent: Thursday, January 15, 2026 9:50 AM
To: Richard H. Schneider <rhschneider@kapurinc.com>
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

Hi Richard,

The direction given to me was to receive updated pricings from the returned RFP's from 2024 and present that to the next CLIPP committee meeting in February. I'm not sure if our Village Administrator would like a change to the RFP's, you could talk with him for more clarity on the topic if you like. James Davel jdavel@kronenwetter.gov

Hope this helps.

Thanks!

Greg Ulman
Director of Public Works/Utilities Superintendent

1582 Kronenwetter Drive
Kronenwetter, WI 54455
715-693-4200 ext. 1731
715-693-4202 Fax
www.kronenwetter.org

From: Richard H. Schneider <rhschneider@kapurinc.com>
Sent: Thursday, January 15, 2026 9:45 AM

To: Greg Ulman <gulman@kronenwetter.gov>
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

Hi Greg-
Would this be an update for a study? It is my observation, having designed most of the infrastructure west of the railroad, a study would not be necessary. The only solution would be a connecting road between Happy Hollow and W. Nelson. Preliminary design would suffice as a "study". Should I revise the original submittal to reflect this?
Thanks

RICHARD H. SCHNEIDER, , PE

Project Manager

700 Eagle Nest Boulevard, Rothschild, WI 54474

o: 715.803.6415 m: 715.573.1269

rhschneider@kapurinc.com

Call me on Microsoft Teams
Chat/Message me on Microsoft Teams

An Equal Opportunity/Affirmative Action Employer

www.kapurinc.com

From: Greg Ulman <gulman@kronenwetter.gov>
Sent: Thursday, January 15, 2026 9:38 AM
To: Richard H. Schneider <rhschneider@kapurinc.com>
Subject: Kronenwetter Railroad Accessibility Assessment Study

Good morning,

Our Village Board is looking to revisit the returned RFP's for the railroad accessibility study from early 2024. While we are not asking you to rewrite the returned RFP, I'm inquiring if you could give an updated cost if we would select you for doing the work.

Let me know if you have any questions.

Thanks,

Greg Ulman
Director of Public Works/Utilities Superintendent

1582 Kronenwetter Drive
Kronenwetter, WI 54455
715-693-4200 ext. 1731

The Rights of Landowners Under Wisconsin Eminent Domain Law

Procedures Under Wis. Stat. § 32.05: Highways, Streets, Storm & Sanitary Sewers, Watercourses, Alleys, Airports and Mass Transit Facilities

This brochure provides information on the condemnation process in Wisconsin, including the rights of impacted property owners. More detailed information is available in Wis. Stat. Ch. 32.

September 2018

INTRODUCTION

The Wisconsin Constitution, Article 1, section 13, establishes eminent domain authority, which is the power to take private property for a public purpose with payment of just compensation. The Eminent Domain Law, Wis. Stat. Ch. 32, vests several public and private entities with eminent domain power. Condemnation is the legal process by which the acquiring agency exercises its eminent domain power.

The following are jurisdictional requirements the acquiring agency must obey in order to condemn property. Even if an acquiring agency does not intend to obtain property via condemnation, it must comply with the requirements of Chapter 32 when proceeding with an activity that may involve displacement of persons, business concerns, or farm operations.

RELOCATION ORDER

Specific entities are required to make a relocation order that provides for the laying out, relocation and improvement of a transportation-related facility prior to initiating negotiations. The order must include a map or plat showing the old and new facility locations, as well as the land and interests required for the project. Within 20 days of issue, a copy of the order must be filed with the county clerk where the lands are located.

APPRAISAL

The acquiring agency must obtain at least one appraisal for each property it will acquire prior to initiating negotiations. When obtaining and drafting the appraisal, the appraiser must consult with the property owner. Once completed, the appraiser must provide the owner with a full narrative appraisal. Also, the acquiring agency must notify the owner that he/she may obtain his/her own appraisal at the (reasonable) expense of the acquiring agency. The owner's appraisal must be submitted to the acquiring agency within 60 days of receiving the agency's appraisal.

NEGOTIATIONS

The acquiring agency must negotiate with the property owner for purchase of the property and must consider the full narrative appraisal to establish the property's fair market value. It must provide a map showing all property the project impacts and the names of at least 10 neighbors who are receiving offers. If the project affects fewer than 10 owners, the acquiring agency must give the names of all offerees. Property owners may inspect and make copies of any maps the acquiring agency holds. The acquiring agency may present relocation benefits during negotiations, if relocation of displaced persons is required.

In partial acquisitions, fair market value is the greater of (1) the fair market value of the part acquired, or (2) the difference between the entire property value before and after acquisition. If only part of the property is acquired and an uneconomic remnant remains, the acquiring agency must offer to acquire the uneconomic remnant. An uneconomic remnant is the property remaining after a partial taking, if it is of such size, shape or condition to be of little value or of substantially impaired economic viability.

Compensation for an easement is the difference between the property value immediately before and immediately after the date of evaluation. The date of evaluation is the date the conveyance is recorded by the county register of deeds.

If the property owner agrees to a negotiated sale, the acquiring agency must record the conveyance with the county register of deeds. After recording, the acquiring agency must provide notice of the conveyance to all owners of record, by certified mail or personal service, as well as of their right to appeal the compensation award within 6 months of the recording date.

JURISDICTIONAL OFFER

If negotiations fail, the acquiring agency must provide the property owner with a jurisdictional offer. The offer must be delivered by certified mail or personal service and include (1) a description of the nature of the project; (2) a description of the property to be acquired; (3) the proposed date of occupancy; (4) the compensation offer; (5) notice that any additional items payable may be claimed for relocation assistance; (6) a statement that the appraisal on which the offer is based is available for viewing; and (7) notice that the owner has 2 years from the date the acquiring agency takes the property by award to appeal for greater compensation, even if the owner has already accepted and used the award.

A *lis pendens* gives notice to interested parties that the property may be acquired for public use. One must be filed with the county register of deeds within 14 days of personal service or mailing of the jurisdictional offer. An owner must accept or reject the jurisdictional offer within 20 days of personal service or mailing. If accepted, title transfers to the acquiring agency and the owner must be paid within 60 days. If rejected in writing by all owners of record, the acquiring agency may make an award of compensation.

CONTESTING THE RIGHT OF CONDEMNATION

Within 40 days from the date of service or mailing of the jurisdictional offer, an owner who wants to contest the right of condemnation for any reason other than inadequacy of the amount of compensation, may commence an action in the circuit court of the county where the property is located, naming the acquiring agency as the defendant. However, if the owner has already accepted and retained any of the compensation, such an action may not be filed.

AWARD OF COMPENSATION

If the owner fails to accept the jurisdictional offer within 20 days of personal service or mailing, or if all owners of record reject the offer in writing, the acquiring agency may deliver a written award of damages by certified mail or personal service. This is called the award of compensation and must include (1) a property description; (2) a description of the interest to be acquired; (3) the date of occupancy; (4) the amount of compensation (at least equal to the jurisdictional offer); and (5) a statement that the acquiring agency has complied with all jurisdictional requirements.

After the acquiring agency has served the award and provided payment, it shall record the award with the county register of deeds. At the time of recording, title vests in the acquiring agency. This date is called the date of evaluation.

OCCUPANCY & WRIT OF ASSISTANCE

No person occupying real property may be required by the acquiring agency to move from a home or business without at least a 90-day written notice. If title vests with the acquiring agency before the 90-day period ends, the occupant may remain in the property rent-free for the first 30 days, beginning on the 1st or 15th day of the month after title vests with the acquiring agency. If the occupant denies the agency the right of possession at the end of the 90-day period, the agency may apply to the circuit court for a writ of assistance to be put in possession of the property upon 48-hour notice to the occupant. The court shall grant the writ of assistance if all jurisdictional requirements to condemn have been met, the award has been paid and a comparable property has been made available.

CONTESTING THE COMPENSATION AWARD

Any party having ownership interest in the acquired property has 2 years from the date of evaluation to challenge the compensation award. To challenge the award, any party of interest may apply to the judge for the circuit court where the property is located for assignment to the condemnation commission. When one party of interest appeals the award, no other party may file a separate appeal, but instead may join the existing appeal by serving notice on the condemnation commission and appellant within 10 days of receiving notice of the appeal. The jurisdictional offer or basic award may not be disclosed to the condemnation commission. Whether the commission decides that the fair market value is greater or less than the compensation award, payments should be made within 70 days after the date of filing of the award unless it is appealed to the circuit court.

Any party to the condemnation commission proceeding may appeal the award to the circuit court. The sole issues to be tried are questions of title, if any, and the amount of just compensation the acquiring agency must pay. A jury must try this appeal unless waived by both parties. The jurisdictional offer, basic award, or condemnation commission's award may not be disclosed during trial. Awarded money must be paid within 60 days of entry of judgment.

Parties with ownership interest in the acquired property may waive the appeal to the condemnation commission and appeal directly to the circuit court within 2 years of the evaluation date. This appeal takes priority over all other actions not then on trial. No other party of interest can file a separate appeal, but may join the existing appeal by providing notice to all parties by certified mail or personal service within 10 days of receipt of notice of the appeal.

LITIGATION EXPENSES/COSTS

"Litigation expenses" is defined as "the sum of the costs, disbursements and expenses, including reasonable attorney, appraisal and engineering fees necessary to prepare for or participate in actual or anticipated proceeds before the condemnation commissioners, board of assessment or any court under [Chapter 32]." Wis. Stat. § 32.28(1)(b). There are several conditions under which litigation expenses may be awarded to a complainant in a just compensation matter. These conditions include but are not limited to: (1) the acquiring authority abandons the proceeding; (2) the court determines the acquiring agency does not have the right to condemn the property or there is no necessity for its taking; (3) the judgment is for the plaintiff in an action under Wis. Stat. § 32.10; etc. For a complete listing, please review Wis. Stat. § 32.28(3)(a)-(i).

This pamphlet is published by the Wisconsin Department of Administration in cooperation with the Attorney General pursuant to Wis. Stat. § 32.26(6). It is not to be construed as legal advice. A displacing agency must make this pamphlet available to a displaced person before initiation of negotiations for acquisition of property for a public project.

Relocation Assistance
Division of Legal Services
Department of Administration
101 E. Wilson Street
Madison, WI 53703
Phone: (608) 266-2887
Email: TracyM.Smith@wisconsin.gov
www.doa.wi.gov

FINAL - 02/23/2022

Counties Searched: Marathon, Lincoln, Wood, Portage
Dates Searched: 2/9/19 to 2/9/22

X .RD.
W. Nelson Rd. - Happy Hollow Rd.
Village of Kronenwetter
Marathon County

						BIDX Information			
Bid Item	**Item Description**	**Item Unit**	**Quantity**	**Bid Price**	**Total Price**	**BIDX Avg Unit Price**	BIDX Qty Range Entered, 2/9/19 - 2/9/22	BIDX Qty Number/Range Found	Comments
205.0100	EXCAVATION COMMON	CY	7,600	$11.50	$87,400.00	$11.29	10000-100000	11151-40538	
213.0100.01	FINISHING ROADWAY 1009-52-28	EACH	1	$1,000.00	$1,000.00				
305.0110	BASE AGGREGATE DENSE 3/4-INCH	TON	4,000	$24.00	$96,000.00	$23.80	500-2000	504-1959	
455.0605	TACK COAT	GAL	1,000	$4.00	$4,000.00	$3.85	1000-5000	1000-5000	
460.6224	HMA PAVEMENT 4 MT 58-28 S	TON	1,300	$84.00	$109,200.00	$83.44	1000-10000	2160-8652	
625.0100	TOPSOIL	SY	9,000	$5.00	$45,000.00	$4.67	500-5000	535-4890	
628.1504	SILT FENCE	LF	5,365	$2.10	$11,266.50	$2.10	2000-10000	2170-6350	
628.1520	SILT FENCE MAINTENANCE	LF	5,365	$0.10	$536.50	$0.07	2000-10000	2120-6457	
628.2004	EROSION MAT CLASS I TYPE B	SY	9,000	$2.00	$18,000.00	$1.75	500-5000	525-1100	
628.7504	TEMPORARY DITCH CHECKS	EACH	10	$12.00	$120.00	$11.57	5-50	15-50	
629.0210	FERTILIZER TYPE B	CWT	1.1	$155.00	$170.50	$154.18	0.5-2.0	0.5-1.7	
630.0140	SEEDING MIXTURE NO. 40	LB	28	$23.00	$644.00	$22.73	10-50	10-44.4	
645.0120	GEOTEXTILE TYPE HR	SY	91	$9.00	$819.00	$8.96	10-100	10-66	
645.0140	GEOTEXTILE TYPE SAS	SY	4,678	$2.50	$11,695.00	$2.49	1000-10000	1054-7300	
646.1020	MARKING LINE EPOXY 4-INCH	LF	5,500	$1.10	$6,050.00	$1.10	10000-100000	10696-85675	
690.0150	SAWING ASPHALT	LF	878	$2.15	$1,887.70	$2.12	500-2000	510-1810	
				TOTAL	$393,789.20				
		PRELIMINARY DESIGN			$5,000.00				
		FINAL DESIGN			$28,000.00				
		CONSTRUCTION ENGINEERING			$23,000.00				
		PROJECT COST			$449,789.00				

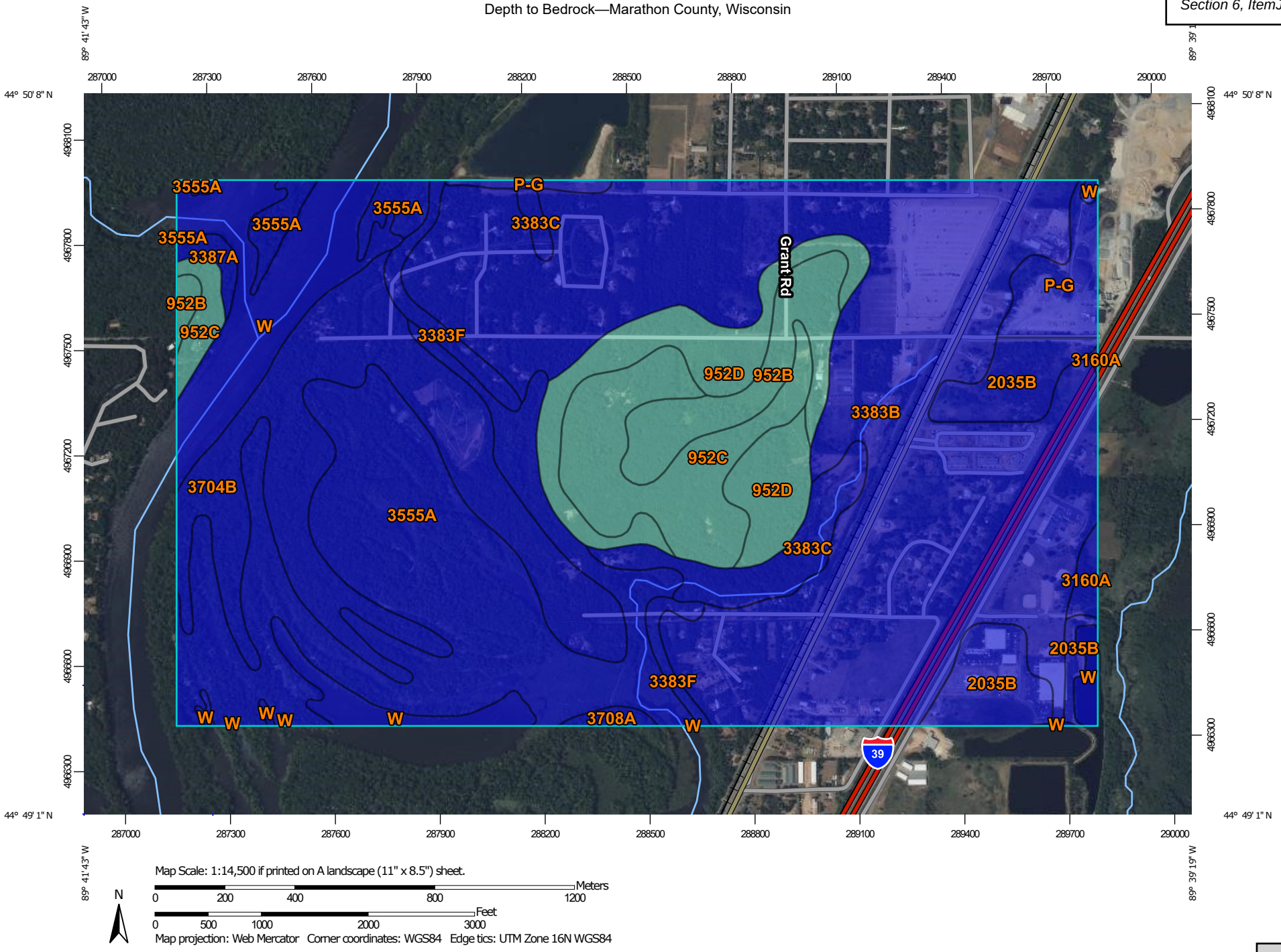
Contract Project Item Summary Report
Contract: Railroad Access Project

8% Markup for future construction

Project	Item	Description	Unit	Unit Price	Current Qty	Subtotal
	201.0105	Clearing	STA	$794.28	27.00	$21,445.43
	201.0205	Grubbing	STA	$329.93	27.00	$8,908.09
	205.0100	Excavation Common	CY	$17.06	6000.00	$102,384.00
	205.0200	Rock Excavation	CY	$176.88	Unknown	
	213.0100	Finishing Roadway (project)	EACH	$1,500.00	1.00	$1,500.00
	305.0110	Base Aggregate Dense 3/4-Inch	TON	$33.49	275.00	$9,209.97
	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	$23.09	4250.00	$98,111.25
	455.0605	Tack Coat	GAL	$5.00	500.00	$2,497.50
	460.6224	HMA Pavement 4 MT 58-28S	TON	$108.97	1500.00	$163,458.00
	502.0005	Culvert Pipe Rock Excavation	CY	$317.78	30.00	$9,533.54
	520.0118	Culvert Pipe Class III 18-Inch	LF	$63.05	65.00	$4,097.93
	520.1018	Apron Endwalls for Culvert Pipe 18-Inch	EACH	$600.48	4.00	$2,401.92
	606.0200	Riprap Medium	CY	$191.00	5.00	$955.02
	619.1000	Mobilization	EACH	$23,215.30	1.00	$23,215.30
	624.0100	Water	MGAL	$51.30	100.00	$5,130.00
	625.0500	Topsoil	SY	$2.86	6500.00	$18,603.00
	628.1504	Silt Fence	LF	$2.27	3250.00	$7,371.00
	628.1520	Silt Fence Maintenance	LF	$0.28	1000.00	$275.40
	628.2008	Erosion Mat Urban Class I Type B	SY	$2.30	6500.00	$14,917.50
	628.7504	Temporary Ditch Checks	LF	$10.50	312.00	$3,276.94
	629.0210	Fertilizer Type B	CWT	$132.30	4.00	$529.20
	630.0120	Seeding Mixture No. 20	LB	$9.36	275.00	$2,573.51
	645.0120	Geotextile Type HR	SY	$35.75	10.00	$357.48
	646.1020	Marking Line Epoxy 4-Inch	LF	$1.01	5300.00	$5,351.94
	690.0150	Sawing Asphalt	LF	$5.45	140.00	$763.56
					Est. Project Total	**$506,867.46** *

*Does not include engineering

Depth to Bedrock—Marathon County, Wisconsin



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

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

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

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

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

Soil Survey Area: Marathon County, Wisconsin
Survey Area Data: Version 23, Sep 10, 2025

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

Date(s) aerial images were photographed: Jun 7, 2023—Jun 8, 2023

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

Depth to Bedrock

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
952B	Mosinee sandy loam, 2 to 6 percent slopes	107	33.4	3.3%
952C	Mosinee sandy loam, 6 to 12 percent slopes	107	59.5	5.9%
952D	Mosinee sandy loam, 12 to 20 percent slopes	107	54.7	5.4%
2035B	Udorthents, loamy, gently sloping	>200	39.4	3.9%
3160A	Oesterle sandy loam, 0 to 3 percent slopes	>200	4.1	0.4%
3383B	Mahtomedi loamy sand, 0 to 6 percent slopes	>200	375.5	36.9%
3383C	Mahtomedi loamy sand, 6 to 15 percent slopes	>200	25.7	2.5%
3383F	Mahtomedi loamy sand, 15 to 45 percent slopes	>200	14.1	1.4%
3387A	Mahtomedi loamy sand, moderately well drained, 0 to 3 percent slopes	>200	4.1	0.4%
3555A	Fordum silt loam, 0 to 1 percent slopes	>200	198.7	19.5%
3704B	Dunnville fine sandy loam, 1 to 4 percent slopes	>200	113.2	11.1%
3708A	Sturgeon silt loam, 0 to 2 percent slopes	>200	2.6	0.3%
P-G	Pits, gravel	>200	20.6	2.0%
W	Water	>200	71.5	7.0%
Totals for Area of Interest			**1,017.0**	**100.0%**

Description

The term bedrock in soil survey refers to a continuous root and water restrictive layer of rock that occurs within the soil profile.

There are many types of restrictions that can occur within the soil profile but this theme only includes the three restrictions that use the term bedrock. These are:

1) Lithic Bedrock

2) Paralithic Bedrock

3) Densic Bedrock

Lithic bedrock and paralithic bedrock are comprised of igneous, metamorphic, and sedimentary rocks, which are coherent and consolidated into rock through pressure, heat, cementation, or fusion. Lithic bedrock represents the hardest type of bedrock, with a hardness of strongly coherent to indurated. Paralithic bedrock has a hardness of extremely weakly coherent to moderately coherent. It can occur as a thin layer of weathered bedrock above harder lithic bedrock. Paralithic bedrock can also be much thicker, extending well below the soil profile.

Densic bedrock represents a unique kind of bedrock recognized within the soil survey. It is non-coherent and consolidated, dense root restrictive material, formed by pressure, heat, and dewatering of earth materials or sediments. Densic bedrock differs from densic materials, which formed under the compaction of glaciers, mudflows, and or human-caused compaction.

If more than one type of bedrock is described for an individual soil type, the depth to the shallowest one is given. If no bedrock is described in a map unit, it is represented by the "greater than 200" depth class.

Depth to bedrock is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: centimeters

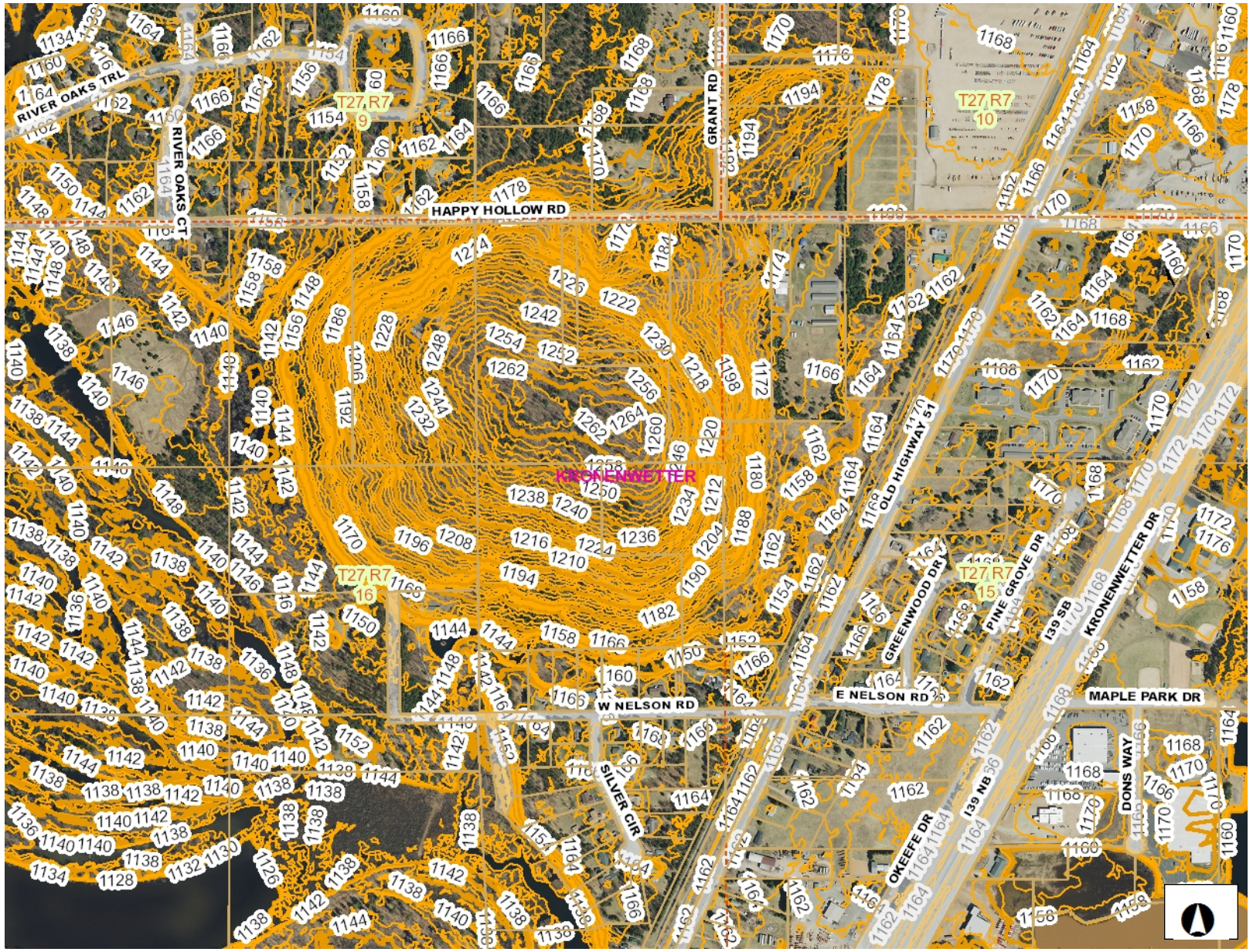
Aggregation Method: Dominant Component

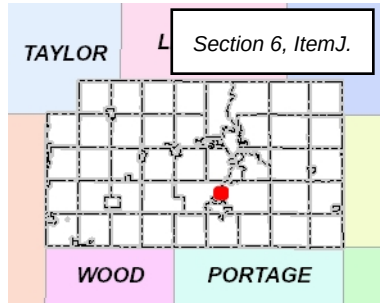
Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Land Information Mapping System





Legend

- Road Names
- Parcels
- Parcel Lot Lines
- Land Hooks
- Section Lines/Numbers
- Right Of Ways
- Named Places
- Municipalities
- 2ft Contour Labels
- County-wide 2ft Contours (2012)
  - Index
  - Intermediate
- 2020 Orthos Countywide
  - Red: Band_1
  - Green: Band_2
  - Blue: Band_3

398.78 0 398.78 Feet

NAD_1983_HARN_WISCRS_Marathon_County_Feet

Notes

village of Kronenwetter

Report to CLIPP

Item Name: Road Accessibility RFP
Meeting Date: February 2, 2026
Referring Body:
Committee Contact:
Staff Contact: Greg Ulman
Report Prepared by: Greg Ulman

AGENDA ITEM: Road Accessibility RFP

OBJECTIVE(S): To get direction and/or make a motion to the Village Board from CLIPP on Returned RFPs.

HISTORY/BACKGROUND: On February 16, 2024 proposals were due for the Railroad Accessibility Assessment Study to have an engineering firm come up with solutions to gain accessibility to W. Nelson Rd, Happy Hollow Rd, and others in the area when a trail could potentially stop and block access to the crossings. Village staff at the time requested proposals from any and all engineering firms, the firms who returned a proposal were; Kapur & Associates, Inc., Trotter & Associates, Inc., Becher-Hoppe, Roth Professional Solutions, and Ruekert Mielke. Since almost two years have passed since the proposals were due and the discussion came up again with our elected officials, staff reached out to all firms who submitted in 2024 to get an updated pricing for the study if they so choose. Each firm's response is listed below in no particular order.

- Trotter & Associates - **$60,000**
- Becher Hoppe – $68,500 (2024 price) + 10% = **$75,350**
- Roth Professional Solutions –
- Kapur & Associates – **Declined to re-submit an RFP, but told Ken Charneski, Dan Joling, and Jim Davel they would provide pro bono information.**
- Ruekert Mielke –

ATTACHMENTS: Request for proposals, Responses

Request for Proposals

Railroad Accessibility Assessment Study

village of Kronenwetter

Marathon County, Wisconsin

Date: February 16, 2024

PROPOSALS DUE:
Monday, March 11, 2024
4:00 p.m.

Leonard Ludi
Village Administrator
Village of Kronenwetter
1582 Kronenwetter Drive
Kronenwetter, WI 54455
Phone - (715) 693-4200
Fax - (715) 693-4202
lludi@kronenwetter.org

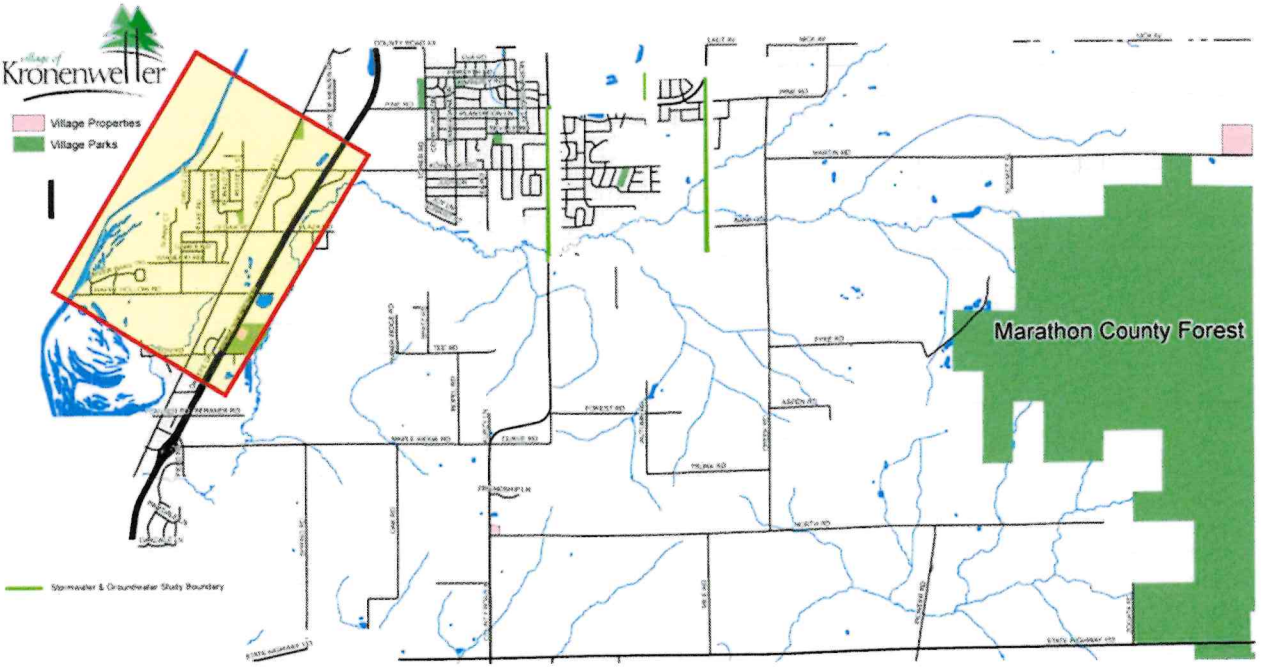
Table of Contents

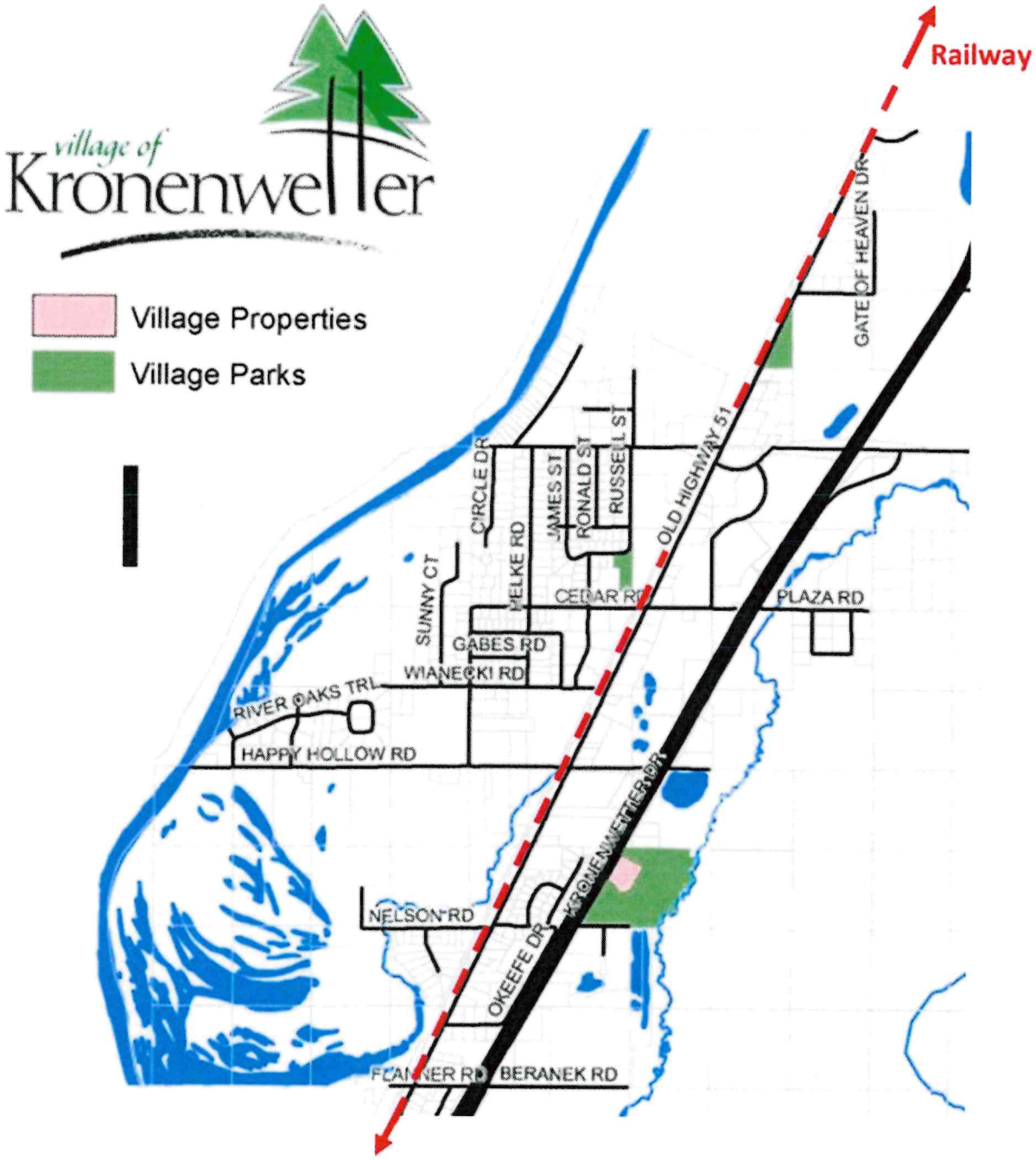
Request for Proposals
Village of Kronenwetter
Railroad Accessibility Assessment Study

BACKGROUND

The Village of Kronenwetter is a progressive community located in southern Marathon County, between Wausau and Mosinee. Kronenwetter is the largest Village by area in the State of Wisconsin and has a mixture of urban and rural development (see map of Village). A citizen complaint brought up at the Community Life, Infrastructure and Public Property committee (CLIPP) meeting asking for attention to be placed on additional access needed in the West Nelson Road and Happy Hollow Road area and other residents in the areas west of the Railroad Track. The scope of work and project objective has been presented to the Village's Community Life, Infrastructure and Public Property Committee (CLIPP) and approved by the Village Board to move forward on February 12, 2024.

The purpose of this RFP is to solicit engineering services to study the alternatives and feasibility of those alternatives to address vehicle delays and impacts to emergency services in the event a Canadian National Railroad train west of Old 51 restricts traffic, to include exit impacts in an emergency evacuation scenario. The subject area surrounding West Nelson and Happy Hollow Road is illustrated below:




village of
Kronenwetter
Village Properties
Village Parks
Railway
GATE OF HEAVEN DR
OLD HIGHWAY 51
CIRCLE DR
JAMES ST
RONALD ST
RUSSELL ST
MELKE RD
SUNNY CT
CEDAR RD
PLAZA RD
GABES RD
WIANECKI RD
RIVER OAKS TRL
HAPPY HOLLOW RD
KRONENWETTER DR
NELSON RD
OKEEFFE DR
BERANEK RD

VILLAGE INFORMATION

The Village has the following information available for consultant review:

1. 2019 Village Comprehensive Plan
2. 2019 to 2024 Village Strategic Plan
3. Planning, Land Use and Road Data from the Community Development and Public Works Departments
4. Emergency Response data from the Village of Kronenwetter Police and Fire Department
5. Community input regarding concerns as more information becomes available

PURPOSE

The purpose of this "Railroad Accessibility Assessment Study" (hereinafter, RFP) is to select a qualified professional consultant to evaluate the Village's emergency access management strategy resulting in an appropriate balance between the safety and operating efficiency of the roadway. Impact to property owners to the west of the railway adjacent to Old 51 Highway should be addressed in this study as well.

Also, the consultant is to study the alternatives, and feasibility of those alternatives to address vehicle delays and impacts to emergency services in the event the CN Railroad west of Old 51 restricting traffic, and recommend solutions for road improvements and study/evaluate access to residents and emergency services in the event there is a natural and/or manmade disaster. Satisfaction of proposal requirements and consultant's approach to the project(s) will be key criteria for selection, among others including future. The Village is seeking to identify qualified firms with experience in housing development egress and ingress codes; system design and management; public relations and outreach; and funding options, to include any alternatives in coordinating efforts with the CN Railroad system.

As the range of experience required is broad, the Village may consider firms in partnership. The Village also reserves the right to award the contract to multiple firms based on their individual expertise.

DETAILS OF SERVICES

1. The consultant's firm, including principals, project managers, and key personnel, shall have relevant experience with similar work and shall be competent to perform the services required under this RFP.
2. The work contemplated is professional in nature. It is understood that the consultant, acting as an individual, corporation, or other legal entity, is of professional status, is licensed to perform in the State of Wisconsin, is licensed for all applicable professional disciplines requiring licensing, and shall be governed by the professional ethics of said professions in its relationship to the Village.
3. It is understood that all reports, information, or data prepared or assembled by the consultant for the benefit of the Village of Kronenwetter and shall not be made available in whole or in part to any individual or organization, except the Village Kronenwetter,

without the prior written approval of the Village of Kronenwetter.

4. The consultant shall be responsible for complying with local, state and federal codes, legislation procedures, and regulations affecting work in their profession.

SCOPE OF SERVICES

The selected consultants(s) will provide recommendations to the Village within the "Railroad Accessibility Assessment Study" by evaluating the Village's access proposing improvement scenarios and collaboration with other agencies the Village can utilize in their strategic plan.

Railroad Emergency Accessibility Assessment & Report

The scope of services shall include the following elements:

Phase 1: Preliminary Research

- Investigate, review and inventory at-grade railroad crossings, road characteristics, etc.
- Collect all pertinent data regarding emergency accessibility and evacuations.
- Define concerns, issues and opportunities to work with other agencies.
- Identify and compare alternatives to address those concerns and solutions.

Phase 2: Qualifications of Preliminary Recommendations

- Evaluate existing 2019 Village Comprehensive and 2019-2024 Village Strategic Plan.
- Evaluate current and future railroad activity that will impact community ingress and egress.
- Establish recommendations for one (1) primary solution & two (2) alternate scenarios showing associated opportunities and constraints.
- Final alternative will define any impacts if no improvements were to take place.

Phase 3: Funding Evaluation

- Identify preliminary budgetary cost of primary and alternate scenarios.
- Identify grant funding opportunities.
- Define any alternatives if no improvements were to take place.

Phase 4: Finalize Report

- Public input regard preliminary concepts

- Village of Kronenwetter Staff review of final draft accessibility study report.
- Finalize study and present findings to the committee and thereafter, Village Board.

SCHEDULE

The proposals are due in the village administrator's office by 4:00p.m. Monday, March 11, 2024. The intent is to have the proposals initially screened by the Village staff and then reviewed by the CLIPP Committee at its April 1, 2024 meetings with final Village Board action to follow.

The project timetable is as follows:

1. Consultant selection: mid-March recommendation to award prepared.
2. Prepare/approval consultant agreement (attached): late March 2024
3. Present recommendation to CLIPP Committee – thereafter, present award packet to Village Board early- April 2024
4. Project kickoff meeting with staff, CLIPP Committee and/or Village Board: late April 2024
5. Complete report Presentation: July - August 2024

The consultant shall provide three printed sets of the initial draft report. When the draft report is accepted, the consultant will provide three sets of the final report. The consultant will also provide a complete, matching electronic PDF copy of the report narrative, maps, tables, charts, figures and any appendices. This includes full-size map presentation boards where necessary for public review.

PROPOSAL REQUIREMENTS

The successful firm(s) shall respond to the RFP with the information requested below. This information shall be provided in the order shown in this request. Information can be provided in multiple sections but must appear in the requested section. Each tab must contain a narrative on the requested subject and examples of direct experience when requested. Examples are limited by number and length as indicated under each tab.

The Village of Kronenwetter will not be responsible for considering information provided under the wrong tab. Questions regarding this RFP should be directed to Mr. Leonard Ludi, Village Administrator, by email request for information to lludi@kronenwetter.org by 4:00p.m. March 4, 2024. The proposing consultant is solely responsible for its interpretation of this RFP. For the purpose of this RFP the term "firm" shall be interpreted to mean firm or firms. In the case of partnerships, the requested information shall be provided for each firm in the partnership and shall be provided in separate sections under the requested tab. Failure to respond in the requested format may result in the firm being disqualified from consideration. All submitted materials become the property of the Village of Kronenwetter.

Proposals shall include:

Tab 1. **Cover Letter** - Shall be on company letterhead and addressed to the village administrator with a statement of the consultant's basic understanding of the Village's needs. The name, business address and telephone number of the firm's primary point of contact and any subconsultants, if any, shall be clearly listed.

Tab 2. **General Background of Firm & Organizational Chart** - This section shall include the general background of the firm. Information on the complete services of the firm should be provided but should be kept in a concise format. Examples of specific firm experience will be requested in following tabs. An 0rganizational chart shall be provided with specific qualified personnel.

Tab 3. **Overall Municipal Experience** - Each firm shall provide a summary of overall municipal experience to not exceed two (2) pages.

Tab 4. **Experience of Project Manager** - Each firm shall designate a project manager and provide detailed information on that individual's experience in municipal affairs especially in accessibility studies, planning, design, modeling, funding and other related items. Only information on the lead project manager should be submitted.

Tab 5. **Main Project Team and Resumes** - This section should include the resumes of "key" project team members. As the experiences of individuals vary, it is up to the proposing firm to determine who would be "key" to the successful implementation of this project. Only the resumes of actual team members should be included. There is no limit to the number of resumes provided. After award of this contract, substitution of "key" personnel will only be allowed by written permission of the Village of Kronenwetter.

Tab 6. **Special Project Experience for Project Scope** – The firm may provide specific examples of related scope of services performed or provide related examples of work relative to the project. This section shall be limited to two (2) pages.

Tab 7. **Project Approach** - Describe the firm's approach for each phase of the project. Incorporate any adjustments or recommendations the firm may have on the work scope.

Tab 8. **Cost** - The consultant shall provide professional services costs for phase of the scope of work as lump sum fees for each phase. The attached Engineering Services Agreement shall be utilized unless the firm provides a similar format.

METHOD OF EVALUATION

Each PROPOSAL shall be reviewed by our evaluation team and shall be scored on the basis of the following criteria and point system:

General Compliance with RFP / Organization	10

Tab 1.	Submitted Cover Letter Meeting RFP Requirements	10
Tab 2.	General Background of Firm	Pass / Fail
Tab 3.	Overall Municipal Experience	20
Tab 4.	Experience of Project Manager	50
Tab 5.	Main Project Team Resumes or Experience	20
Tab 6.	Specific Project Experience for Project Scope	25
Tab 7.	Project Approach	75
Tab 8.	Cost	40
	TOTAL	250

SUBMISSION REQUIREMENTS AND DEADLINES

Please submit five (5) copies of your Proposal on or before 4:00 p.m., Monday, March 11, 2024. Proposals should be delivered to:

Village of Kronenwetter
Attn: Leonard Ludi
1582 Kronenwetter Drive
Kronenwetter, WI 54455

Proposals should include all items as requested in the "PROPOSAL REQUIREMENTS" section of this document in the order and format specified. Questions regarding this RFP should be directed to Mr. Leonard Ludi, Village Administrator, by email RFI to lludi@kronenwetter.org by 4:00p.m. March 4, 2024.

SELECTION PROCESS

The Village will select a respondent on the basis of responsiveness of the proposal to the RFP requirements and willingness to execute an acceptable written contract. The Village reserves the right to reject any or all proposals, and to request written clarification of proposals and supporting materials.

Interviews may be conducted, if deemed necessary by staff or by committee, with one or more responsible entities that have submitted proposals in order to clarify certain elements. The selection shall be made by the Community Life, Infrastructure and Public Property Committee (CLIPP) and will be recommended to the Village Board for final approval.

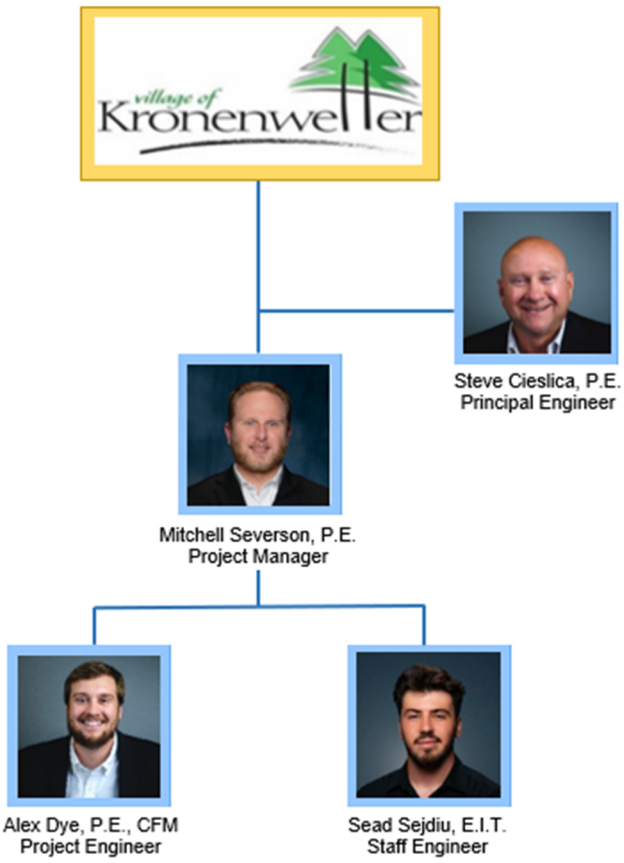
The individual and/or consulting team to be recommended to the Village Board will be one whose proposal and overall qualifications are

determined to be the most advantageous to the Village.

At the conclusion of the selection process, staff will negotiate the terms and conditions of a contract with the recommended consultant(s). See attached Engineering Services Agreement draft format.

ORGANIZATION CHART

Steve Cieslica is the Vice President of Trotter & Associates, Inc. and is heavily involved in all aspects of project management for the firm, and will serve as Project Manager for this project, helping with the preliminary site investigation and providing quality control of the reports to be provided. Mitchell Severson will serve as the project lead, guiding the design and cost estimates for the alternatives. Alex Dye and Sead Sejdiu will serve as project engineer and staff engineer respectively, assisting with the design, cost estimates, and reports as needed. The resumes of these core team members can be found further in this submittal.



SCHEDULE

Below is a list of the major milestones identified for the project. TAI has the staff and manpower necessary to begin the project immediately upon contract execution.

Task Description	Target Completion
Contract Execution/Kick-Off	March 2026
Phase 1: Preliminary Research	April 2026
Phase 2: Qualification of Preliminary Recommendations	May 2026
Phase 3: Funding Evaluation	May 2026
Phase 4: Finalize Report	June 2026
Final Report Presentation to Committee & Board	July 2026

COST

A **Lump Sum** amount of **$ 60,000.00** based on the following assumed distribution of compensation:

Phase 1: Preliminary Research	$ 13,000.00
Phase 2: Qualification of Preliminary Recommendations	$ 21,000.00
Phase 3: Funding Evaluation	$ 10,000.00
Phase 4: Finalize Report & Presentation	$ 16,000.00
Total Authorized for Project	**$ 60,000.00**

ENGINEER may alter the distribution of compensation between individual phases noted herein to be consistent with services rendered but shall not exceed the total Lump Sum amount unless approved in writing by the CLIENT. The Lump Sum includes compensation for ENGINEER's services and services of ENGINEER's Consultants, if any. Appropriate amounts have been incorporated in the Lump Sum to account for labor, overhead, profit, and Reimbursable Expenses. The portion of the Lump Sum amount billed for ENGINEER's services will be based upon ENGINEER's estimate of the proportion of the total services actually completed during the billing period to the Lump Sum.

ENGINEER's Reimbursable Expenses Schedule and Standard Hourly Rates are attached to this Exhibit B. Reimbursable Expenses included in the contract are limited to items listed in Exhibit B. All expenses that are not included in Exhibit B shall be considered outside the contract and shall be considered as extra and compensated for at cost. For example: title commitments, permit fees, architectural renderings, special public meetings, out of town travel expenses, consultant services beyond those identified in the scope, or items specifically requested by the own.

Steve Cieslica, P.E.

Qualifications

Mr. Steve Cieslica is a professional engineer with over 30 years of experience working as both a contractor and a consulting engineer on municipal improvement projects. In addition, he has experience with completing/managing site & subdivision improvement projects for multiple municipalities. Mr. Cieslica has specialized in evaluating local roads and preparing MFT maintenance improvement projects for several municipalities and township road districts in Northern Illinois. Steve assists communities with obtaining grant funding and has experience working with STP, CDBG and DCEO funds. Steve is currently serving as the City Engineer for North Chicago and Village Engineer for the Village of Barrington Hills.

Education

B.S., Civil Engineering, Montana State University

Registration

Professional Engineer, P.E., IL

Memberships

American Water Works Association (AWWA)
American Public Works Association (APWA) – Past Fox Valley Branch President
Underground Contractors Association

Certifications

- Documentation of Contract Quantities
- Bridge Construction Inspection
- Motor Fuel Tax Auditing and Accounting
- ICORS Documentation
- MUTCD Training

Projects

City of North Chicago – City Engineer
Mr. Cieslica provides day-to-day engineering consulting and is responsible for: planning/design/construction of capital projects (roads/sewers/water systems/etc.) and managing the development of new residential and commercial subdivisions, and site improvement projects in the City. This work included: organizing/coordinating the review of engineering plans and documents among the various City departments and technical consultants; overseeing construction of the improvements and LOC/bond reductions; preparing punch lists once the improvements are substantially completed; accepting the improvements by the City Council; attending council meetings and City functions.

▼ Projects (cont.)

Various Communities – Municipal Engineer
Mr. Cieslica assisted many municipalities (Antioch, Richmond, Spring Grove, Johnsburg, McHenry, Mundelein, Port Barrington, Lake in the Hills, Carpentersville, Union, and North Chicago) by: reviewing engineering plans and documents for new developments; coordinating the review work with relevant authorities (various highway DOT's, townships road districts, Lake County SMC, etc.); assisting with the design and preparation of various capital projects (sewer, water and roads); providing QC/QA review services of 60% and 90% complete engineering plans for capital projects; overseeing the construction of the improvements; reviewing and approving LOC/bond reductions; preparing punch lists; coordinating with developers and contractors to complete the work and gain acceptance by the municipality. Mr. Cieslica has assisted several communities (Antioch, Lake in the Hills, McHenry and Elgin) with preparing punch lists of uncompleted or deficient items of work and coordinating with the surety companies to complete the subdivision improvements. In some cases, this required Mr. Cieslica to prepare bid documents and specifications and solicit bids for completing the improvements.

City of North Chicago – 2018/19/20/21/22/23/24- 2025 Annual MFT Road Programs
TAI prepares Plans, Specifications and Estimates (PS&E's), oversees the bidding, and provides construction engineering services for North Chicago's annual MFT Road Programs from 2018 through 2025. The programs typically range in value from $1.1 - $1.3 million/per year and are of varying lengths and widths, consist of residential and collector streets. Work typically includes HMA pavement removal, utility spot repairs, ADA compliance with sidewalk ramps, curb & gutter-sidewalk replacement, HMA pavement patching, installation of HMA binder and surface courses, and landscape restoration.

Village of Campton Hills – Campton Hills Drive LAFO (Design/Construction)
Trotter and Associates, Inc. completed the STP grant application on behalf of the Village and obtained $480,000 in STP funding in 2013 through the Kane Kendall Council of Mayors. Campton Hills Drive is a rural 2-lane road that was last resurfaced during the mid-1990's. TAI completed Phase I, II and III engineering on the project. The 1.45-mile-long project consisted of removing 2-inches of the existing HMA pavement surface, pavement patching, installing HMA binder and surface, aggregate shoulders, pavement markings and recessed pavement markers to improve safety. The project was designed during the winter of 2014, let in June 2015, was constructed on time, and within budget in August & September of 2015.

City of Elgin – Collector Street Resurfacing
Trotter and Associates, Inc. prepared preliminary design, final design and contract documents for the resurfacing and rehabilitation of 2.83 miles of streets. The contract documents included a base bid and 5 alternates in order to obtain "economy of scale" The streets include segments of Allen Drive; Bode Road; Bruce Drive; Campus Drive, Channing Street, Chester Court; Fletcher Drive; North Lyle; Springfield Court; Valley Creek Drive; Waverly and Weld Roads. The resurfacing work consists of HMA surface removal, pavement patching, installing strip reflective crack control fabric, removing/replacing sidewalk ramps to meet ADA requirements; curb removal/replacement; installing HMA binder and surface courses; pavement markings and restoration work. TAI coordinated with IDOT and Kane County DOT for maintenance of traffic signals. Campus Drive and Weld Road will be rehabilitated utilizing full depth reclamation (FDR) with cement to stabilize the roadway base. Once stabilized, the base will be resurfaced with HMA binder and surface courses. This rehabilitation alternative was more economical than the completely removing and replacing the existing roadway. The project was bid in the winter of 2016 for $2,030,000.00 and construction started in July 2016 and was successfully completed in October 2016.

Mitchell Severson, P.E.

Qualifications

Mr. Mitchell Severson is a graduate in Civil Engineering from the University of Illinois at Urbana-Champaign, with a focus on transportation engineering and construction management. He has experience in all three phases of federally funded and locally funded municipal projects and IDOT projects, including Phase 1 reports, funding acquisition, planning, design, and construction management and inspection. He has field experience in roadway construction, water main construction, bituminous paving, lighting, landscaping, and drainage.

Education

B.S., Civil Engineering, University of Illinois at Urbana-Champaign
Transportation and Construction Management emphasis

Registration

Professional Engineer P.E., IL
#062.075160

IDOT – Documentation of Contract Quantities
(#24-21595, exp. 1/25/2028)

National Disaster & Emergency Management University – NFIP Floodplain Development Mgr. Cert.

Projects

Village of Fox Lake – Hillside Court – Phase III Project Manager

TAI was engaged to design and oversee the deconstruction of a retaining wall, the construction of a timber lagging soldier pile wall, over 100 LF of storm sewer, a segmental block retaining wall, gabion baskets, and a riprap ditch. Project complexities included a confined right-of-way, the need to deconstruct a significant portion of the roadway to accommodate the soldier pile wall, and slopes exceeding 50% at locations where stormwater structures were installed. With the project complexities coordination with residents and emergency services were critical to ensure access to homes during construction. Mr. Severson handled the project management aspect of the work, coordinating field changes with the Village and ensuring all residents and stakeholders involved in the project were aware of the happenings on site and how the work may impact them.

Village of River Forest – Annual Water Main, Street Improvement, and Alley Reconstruction Program – Construction Inspection

Mr. Severson provided Resident Engineer services for Phase III construction for the Village of River Forest's 2019/2020 Water Main Program, 2020 Street Improvement Program, and 2020 Alley Reconstruction Program. The 2019/2020 Water Main Program was a combined $675K water main replacement program including the installation of approximately 610 lineal feet of 8" ductile iron water main on Keystone Ave and approximately 140 lineal feet of 12" ductile iron water main on Franklin Ave, along with installation of water main in casing under the Union Pacific (UP) railroad tracks. The 2020 Water Main Improvement Project locations included Thomas St, Iowa St, and Augusta St, between Thatcher Avenue and Forest Avenue and consisted of the installation of approximately

▼ Projects (cont.)

1,500 lineal feet of 8" ductile iron water main. The 2020 SIP was an $800K MFT resurfacing project that included over 41,000 square yards of hot-mix asphalt surface removal, 1,800 feet of combination concrete curb and gutter replacement, and over 10,000 square feet of sidewalk replacement, including ADA curb ramp upgrades. The 2020 Alley Reconstruction Project, located between Thatcher Ave and Gale Ave from Hawthorne Ave to Linden Street, included the reconstruction of the existing alley pavement with a new concrete pavement and a 3' strip of permeable pavers down the centerline of the alley. Pipe underdrain was also included along the centerline of the alley and connected into the existing storm sewer system. The alleys were surrounded by residential properties on all sides and required extensive coordination to minimize impacts to private property.

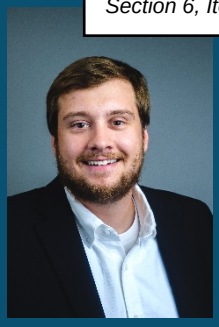
Village of Woodridge – Janes Avenue Reconstruction – Phase I and II
Mr. Severson provided Phase I and Phase II design engineering services for this $2.3 million federally funded STP project, utilizing STP federal funds administered through the DuPage Mayors and Managers Conference (DMMC). The project consisted of the reconstruction of Janes Avenue, between 75th Street and Spring Street. The net length of improvements was approximately 0.76 miles. The project scope included full-depth pavement reconstruction and 12" aggregate subgrade replacement, utility adjustments, intermittent curb and gutter replacement, intermittent sidewalk replacement, and ADA curb ramp upgrades. Mr. Severson obtained Phase 1 Design Approval, a DuPage County right-of-entry permit, designed the plan sheets, wrote the specifications for the project, and coordinated with the DuPage County Division of Transportation (DuDOT) for the use of 75th Street and Wooward Avenue as parts of the construction detour.

City of Wheaton – President Street LAFO Resurfacing Project – Phase I, II, and III
Mr. Severson completed Phase I, II, and III engineering for the President Street LAFO Resurfacing Project, located between Harrison Avenue and Geneva Road, a major north-south collector street in the heart of Wheaton. This $677K project consisted of 1.02 miles of conventional STP resurfacing with HMA surface removal, leveling binder, HMA surface course, Class D patches, ADA curb ramp upgrades, curb and gutter removal and replacement, utility structure adjustments, detector loop replacements, and thermoplastic pavement markings. Mr. Severson assisted in obtaining Phase 1 Design Approval, as well as with the plan design and specifications in Phase II, and was the Resident Engineer overseeing the construction phase as well.

Village of Fox Lake – 2025 MFT Roadway Improvement Project – Phase I, II, and III
TAI was engaged to design and oversee the construction of 1.14 miles of roadway rehabilitation within the Village of Fox Lake utilizing MFT funding. The project consisted of Full Depth Reclamation (FDR) with cement and base stabilization. Due to the use of MFT funds, IDOT documentation was used to stay in accordance with IDOT procedure. Mr. Severson was responsible for the review of the design, the preparation of the contract documents, and the execution of the contract via MFT funding documentation and coordination with IDOT. Mr. Severson also assisted with construction observation as necessary when more field engineers were needed to watch production. The project was completed on time and under budget.

City of Wheaton – President Street LAFO Resurfacing Project – Phase I, II, and III
Mr. Severson completed Phase I, II, and III engineering for the President Street LAFO Resurfacing Project, located between Harrison Avenue and Geneva Road, a major north-south collector street in the heart of Wheaton. This $677K project consisted of 1.02 miles of conventional STP resurfacing with HMA surface removal, leveling binder, HMA surface course, Class D patches, ADA curb ramp upgrades, curb and gutter removal and replacement, utility structure adjustments, detector loop replacements, and thermoplastic pavement markings. Mr. Severson assisted in obtaining Phase 1 Design Approval, as well as with the plan design and specifications in Phase II, and was the Resident Engineer overseeing the construction phase as well.

Alex Dye



Qualifications

Mr. Alex Dye has more than seven years' experience in design and construction of a variety engineering projects and has obtained his Wisconsin Professional Engineering License. During his time at Trotter and Associates, Inc., Alex, has worked with the Municipal team and has gained extensive experience in the design and construction of stormwater management and transportation projects that have been installed across Illinois and into Wisconsin.

Education

B.S., Civil Engineering, University of Wisconsin – Madison

Licensure & Certifications

Professional Engineer, IL
No. 062.075783
Certified Floodplain Manager
No. US-20-11746
IDOT Documentation Certification
No. 20-16379

Memberships

Member of the American Public Works Association (APWA)
Member of the Illinois Association for Floodplain and Stormwater Management (IAFSM)

Projects

City of North Chicago – Lewis Avenue Detention Basin Grant
TAI successfully secured funding for the construction of a large storm water detention basin to mitigate regional flooding concerns in the City of North Chicago. Alex provided the calculations and concept plan showing how the regional problem could be addressed and the project is now in preliminary design.

Medicoil, Inc. – Building Addition Site Design and Permitting
Alex was the lead designer for the building addition site which included design of site grading, paving, parking lot, and stormwater conveyance system. The project was in a Lake Geneva Business Park site and required the design to conform with the state and city's stormwater requirements that had been updated since the initial development of the business park. This included peak flow requirements, TSS removal standards, and infiltration requirements for the redevelopment of the site. Alex designed the site utilizing WISDOT standards and commonly implemented solutions to achieve stormwater management approvals.

City of North Chicago – IDOT Location Drainage Study
TAI was tasked with performing the IDOT Location Drainage Study for the intersection of Buckley Road (IL Route 137) and Lewis Avenue in North Chicago. Alex performed the drainage analysis of the site, compiled the results, and drafted the report for the proposed layout per IDOT BDE requirements.

Fox Waterway Agency – 2019 Site Improvements
Alex participated in the design and served as the resident engineer for the construction of the 2019 Fox Waterway

Projects (cont.)

Agency Site Improvements. The project included repairing the failing steel seawall under US Army Corp permits installing shoreline stabilization with fabric and RR 4 rip rap, removing and replacing a failing boat launch with a new PCC boat launch, and driving steel shell piles to support a new concrete wharf to allow for boat servicing and refueling.

Village of Barrington Hills - Plan Review and Construction Permitting
Alex provided plan review services to the Village of Barrington Hills. Plans reviewed ranged from residential site development, proposed septic systems, proposed commercial sites, As-built conditions of completed work and various other projects. TAI also provided guidance in updating Village code and adhering to Lake County Stormwater requirements throughout the Village.

Village of Barrington Hills – Chapel Road Drainage
TAI provided design, permitting, and construction observation services for the emergency drainage repair of Chapel Road. During the heavy rains of 2018 and 2019 Chapel Road had become inundated and was impassable. This project consisted of installing storm sewer outfalls, landscape restoration and significant coordination with property owners. Alex assisted with the design of the improvement by completing site analysis, ACOE/LC SMC storm water permitting, and provided construction observation services.

Canadian National Railroad - Railroad Drainage Analysis
TAI was contacted by Canadian National Railroad to perform analysis of an area with a drainage concern adjacent to their property. The site had been experiencing heavy ponding during rain events. Alex performed a delineation of the drainage area using site contours and assisted in identifying cost effective local drainage solutions.

Projects – write-ups available upon request

City of North Chicago – Annual Sewer Maintenance Program
Village of Barrington Hills – Resurfacing Programs
City of North Chicago –Resurfacing Programs
Village of Barrington Hills – Resurfacing Program
City of North Chicago – 14th Street Sanitary Sewer Lining
City of North Chicago – MFT Resurfacing Program
Village of Barrington Hills – Resurfacing Program
City of North Chicago – MFT Resurfacing Program
City of North Chicago - Water Main Replacement
City of North Chicago – 14th Street Sanitary Sewer Spot Repairs
City of North Chicago – Brookstone and Regency at Coles Park

Sead Sejdiu, E.I.T.

Qualifications

Mr. Sead Sejdiu obtained his Civil Engineering degree from the University of Illinois at Urbana-Champaign in 2024. During his internship in 2023, he gained valuable experience in value engineering and played a key role in overseeing the new construction of the North Access Road to Lakefront Park in Fox Lake. This new construction included installation of storm sewer installation, water main and services installation, and replacement of a sanitary services. Since joining our team as a Staff Engineer in July 2024, Sead has successfully managed multiple road programs and wall projects. His design experience includes developing stormwater management plans, site drainage plans, overseeing a sewer separation project, and contributing to a detention basin project.

Education

B.S., Civil and Environmental Engineering, University of Illinois – Urbana Champaign
Transportation and Construction emphasis

Registration

Engineer in Training E.I.T., IL

Projects

Village of Fox Lake – Lakefront Park Redevelopment
TAI was engaged to value engineer the Lakefront Park design (by others) to lower construction costs from 15 million dollars to 12 million dollars. Performed design engineering and construction management services to realize 3 million dollars in cost savings and proceed with commencement of construction. Design scope included: roadways, lighting, landscaping, material substitutions, swimming area and beach design, and dry utility coordination. Construction management included: cost analysis, material viability investigation, and scheduling. The hydrology and hydraulics were analyzed for the 100-year floodplain onsite along with lake water level interaction. Compensatory storage for the floodplain elevation was designed and provided in the new beach section that involved County, Army Corps, and Health Department permitting.

Village of Fox Lake – 2024 Roadway Program
TAI has been engaged to design the rehabilitation of 1.2 miles of residential street within the Village of Fox Lake. Design includes proposed watermain for all the streets with residential services provided, existing pavement pulverization, and new HMA surface course. Stormwater is being analyzed to maintain conveyance and outfall patterns. Wetlands and floodplain are prevalent to the site which includes mitigation analysis and permitting. The retaining wall for one of the roadways is experiencing failure which will entail a new sheet pile wall being built to replace it. The project is out to bid and construction commencing summer of 2024.

▼ Projects (cont.)

Village of Fox Lake – Nippersink Boulevard Relocation
TAI was engaged to design and oversee the construction of a new roadway within the Village of Fox Lake. The roadway design consisted of 530 LF of new roadway connecting Forest Avenue to the old Nippersink Road terminus. The existing Nippersink Road was reconfigured to terminate at the new Lakefront Park development and the existing alignment connecting to Oak Street was removed. Project design intricacies included grading down a 14% hillside slope, adding new watermain, stormwater capture, conveyance, and infiltration, and a retaining wall mirroring the existing Village wall near the Metra station. Performing construction observation duties involving inspection services for 535 LF of watermain, 550 LF of storm sewer, retaining wall installation, subbase integrity, base construction, and pavement installation. The project's successful low bid was $1.4 million, and the project was completed on schedule, and under budget.

Village of Fox Lake – Lead Service Line Replacement
TAI was engaged to secure funding from the Illinois Environmental Protection Agency (IEPA), design, and manage the replacement of approximately 200 homes in Fox Lake. TAI successfully secured $2,755,000 in Principal Forgiveness from the IEPA for the project. The project's successful low bid was $1,584,872.25. TAI coordinated with residents to schedule inspections and facilitate the removal and replacement of water services at each home, ensuring smooth execution and minimal disruption.

Glenbard Wastewater Authority – Parking lot Improvements
TAI was engaged in designing and construction oversight of the Glenbard Wastewater Authority (GWA) parking lot. This parking lot was constructed from asphalt paving and is undersized for the number of staff and visitors to the GWA administrative building. TAI included additional parking in front of the building, while minimizing the impacts of stormwater runoff volume and quality to the East Branch DuPage River, which is immediately downstream of the project site. The proposed parking lot design incorporated Post Construction Best Management Practices (PCBMPs) in addition to increasing the parking stall count. The project scope included verifying the pavement type for the new parking lot whether it be pervious pavers or asphalt, stormwater management as required by Village code, and coordinating with the Village of Glen Ellyn and their engineer to incorporate the design plans and specs into their roadway program.

Village of Addison – North Wastewater Treatment Plant (NWWTP) Expansion
TAI was engaged in design and expansion of the NWWTP. Sead worked on designing drainage structures, pipes, Post Construction Best Management Practices (PCBMPs), compensatory storage, and detention in accordance to DuPage County stormwater ordinances. The site intricacies included two base floodplain elevations from separate waterways, existing low building elevations, use of existing excess flow clarifier for proposed detention, and confined site due to structures/underground piping.

Village of Fox Lake – 2025 MFT Roadway Program
TAI was engaged to design and oversee the construction of 1.14 miles of roadway rehabilitation within the Village of Fox Lake. The project consisted of Full Depth Reclamation (FDR) with cement and base stabilization. Due to the use of MFT funds, IDOT documentation was used to stay in accordance with IDOT procedure. The project was completed on time and under budget.

Village of Fox Lake – Hillside Court

TAI was engaged to design and oversee the deconstruction of a retaining wall, the construction of a timber lagging soldier pile wall, over 100 LF of storm sewer, a segmental block retaining wall, gabion baskets, and a riprap ditch. Project complexities included a confined right-of-way, the need to deconstruct a significant portion of the roadway to accommodate the soldier pile wall, and slopes exceeding 50% at locations where stormwater structures were installed. With the project complexities coordination with residents and emergency services were critical to ensure access to homes during construction.

Greg Ulman

From: Richard H. Schneider <rhschneider@kapurinc.com>
Sent: Thursday, January 15, 2026 10:45 AM
To: Greg Ulman
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

Ten Four!!

RICHARD H. SCHNEIDER, , PE
Project Manager
700 Eagle Nest Boulevard, Rothschild, WI 54474
o: 715.803.6415 m: 715.573.1269
rhschneider@kapurinc.com
Call me on Microsoft Teams
Chat/Message me on Microsoft Teams
An Equal Opportunity/Affirmative Action Employer
www.kapurinc.com

From: Greg Ulman <gulman@kronenwetter.gov>
Sent: Thursday, January 15, 2026 10:37 AM
To: Richard H. Schneider <rhschneider@kapurinc.com>
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

I appreciate the information!

Have a good day,

Greg Ulman
Director of Public Works/Utilities Superintendent

1582 Kronenwetter Drive
Kronenwetter, WI 54455
715-693-4200 ext. 1731
715-693-4202 Fax
www.kronenwetter.org

From: Richard H. Schneider <rhschneider@kapurinc.com>
Sent: Thursday, January 15, 2026 10:17 AM
To: Greg Ulman <gulman@kronenwetter.gov>
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

Greg-
Ken Charneski requested I prepare a suggested approach for completing an access project for the CLIPP Committee., since I was very familiar with the infrastructure. See attached.
As I had told Dan & Jim, I agreed to provide info pro bono without expectation of a design contract.
Thanks

RICHARD H. SCHNEIDER, , PE
Project Manager
700 Eagle Nest Boulevard, Rothschild, WI 54474
o: 715.803.6415 m: 715.573.1269
rhschneider@kapurinc.com
Call me on Microsoft Teams
Chat/Message me on Microsoft Teams
An Equal Opportunity/Affirmative Action Employer
www.kapurinc.com

From: Richard H. Schneider
Sent: Thursday, January 15, 2026 9:52 AM
To: Greg Ulman <gulman@kronenwetter.gov>
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

Thanks Greg. We will not be submitting .

RICHARD H. SCHNEIDER, , PE
Project Manager
700 Eagle Nest Boulevard, Rothschild, WI 54474
o: 715.803.6415 m: 715.573.1269
rhschneider@kapurinc.com
Call me on Microsoft Teams
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An Equal Opportunity/Affirmative Action Employer
www.kapurinc.com

From: Greg Ulman <gulman@kronenwetter.gov>
Sent: Thursday, January 15, 2026 9:50 AM
To: Richard H. Schneider <rhschneider@kapurinc.com>
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

Hi Richard,

The direction given to me was to receive updated pricings from the returned RFP's from 2024 and present that to the next CLIPP committee meeting in February. I'm not sure if our Village Administrator would like a change to the RFP's, you could talk with him for more clarity on the topic if you like. James Davel jdavel@kronenwetter.gov

Hope this helps.

Thanks!

Greg Ulman
Director of Public Works/Utilities Superintendent

village of Kronenwetter

1582 Kronenwetter Drive
Kronenwetter, WI 54455
715-693-4200 ext. 1731
715-693-4202 Fax
www.kronenwetter.org

From: Richard H. Schneider <rhschneider@kapurinc.com>
Sent: Thursday, January 15, 2026 9:45 AM
To: Greg Ulman <gulman@kronenwetter.gov>
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

Hi Greg-
Would this be an update for a study? It is my observation, having designed most of the infrastructure west of the railroad, a study would not be necessary. The only solution would be a connecting road between Happy Hollow and W. Nelson. Preliminary design would suffice as a "study". Should I revise the original submittal to reflect this?
Thanks

kapur 45 YEARS

RICHARD H. SCHNEIDER, , PE
Project Manager
700 Eagle Nest Boulevard, Rothschild, WI 54474
o: 715.803.6415 m: 715.573.1269
rhschneider@kapurinc.com
Call me on Microsoft Teams
Chat/Message me on Microsoft Teams
An Equal Opportunity/Affirmative Action Employer
www.kapurinc.com

From: Greg Ulman <gulman@kronenwetter.gov>
Sent: Thursday, January 15, 2026 9:38 AM
To: Richard H. Schneider <rhschneider@kapurinc.com>
Subject: Kronenwetter Railroad Accessibility Assessment Study

Good morning,

Our Village Board is looking to revisit the returned RFP's for the railroad accessibility study from early 2024. While we are not asking you to rewrite the returned RFP, I'm inquiring if you could give an updated cost if we would select you for doing the work.

Let me know if you have any questions.

Thanks,

Greg Ulman
Director of Public Works/Utilities Superintendent

Village of Kronenwetter

1582 Kronenwetter Drive
Kronenwetter, WI 54455
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www.kronenwetter.org

Greg Ulman

From: Joe Kafczynski <jkafczynski@becherhoppe.com>
Sent: Thursday, January 22, 2026 9:51 AM
To: Greg Ulman
Cc: Matthew T. Graun
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

Good morning Greg,

In short, we believe our costs would increase by around 10% mostly due to inflation.

In reviewing the Village selection results from back in 2024, our proposal was the highest cost out of the five proposals the Village received. We still believe that our costs, with a 10% increase, is accurate to what was requested in the request for Proposal (RFP) and would provide the Village with the services they were looking for. However, since we submitted a response to this RFP, some things have changed. The project manager we had slated for the project is no longer with Becher Hoppe and we would propose a new project manager if it came to it.

If you have any questions, please feel free to contact us.

Thanks,

Joe Kafczynski, PE
Project Engineer

Becher-Hoppe Associates, Inc.
330 N. 4th Street | Wausau WI | 54403
Direct 715-845-0436 | Mobile 715-574-6031
Main 715-845-8000
jkafczynski@becherhoppe.com | www.becherhoppe.com

From: Greg Ulman <gulman@kronenwetter.gov>
Sent: Thursday, January 15, 2026 9:52 AM
To: Joe Kafczynski <jkafczynski@becherhoppe.com>
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

The CLIPP committee would like to discuss this on February 2, 2026.

Thanks again Joe.

Greg Ulman
Director of Public Works/Utilities Superintendent

Village of Kronenwetter

1582 Kronenwetter Drive
Kronenwetter, WI 54455

715-693-4200 ext. 1731
715-693-4202 Fax
www.kronenwetter.org

From: Joe Kafczynski <jkafczynski@becherhoppe.com>
Sent: Thursday, January 15, 2026 9:50 AM
To: Greg Ulman <gulman@kronenwetter.gov>
Subject: RE: [External] Kronenwetter Railroad Accessibility Assessment Study

Greg,

Received. Thank you for reaching out to us on this. We will review. Do you have a timeline on when you would like a response back by?

Thanks,

Joe Kafczynski, PE
Project Engineer

Becher-Hoppe Associates, Inc.
330 N. 4th Street | Wausau WI | 54403
Direct 715-845-0436 | Mobile 715-574-6031
Main 715-845-8000
jkafczynski@becherhoppe.com | www.becherhoppe.com

From: Greg Ulman <gulman@kronenwetter.gov>
Sent: Thursday, January 15, 2026 9:44 AM
To: Joe Kafczynski <jkafczynski@becherhoppe.com>
Subject: Kronenwetter Railroad Accessibility Assessment Study

Good morning Joe,

Our Village Board is looking to revisit the returned RFP's for the railroad accessibility study from early 2024. While we are not asking you to rewrite the returned RFP, I'm inquiring if you could give an updated cost if we would select you for doing the work.

Let me know if you have any questions.

Thanks,

Greg Ulman
Director of Public Works/Utilities Superintendent

Village of Kronenwetter

1582 Kronenwetter Drive
Kronenwetter, WI 54455
715-693-4200 ext. 1731

Proposal

for Engineering Design Services

Railroad Accessibility Study

Village of Kronenwetter, Marathon County

5

PSW

3/12/2024

Presented to:

Leonard Ludi
Village Administrator

Village of Kronenwetter

March 11, 2024

BECHER HOPPE

TADI
TRAFFIC ANALYSIS & DESIGN, INC.

330 N. 4th Street
Wausau, WI 54403-5417
715-845-8000

becherhoppe.com

BECHER HOPPE

330 N. 4th Street, Wausau, WI 54403-5417
715-845-8000 | becherhoppe.com

March 11, 2024

Leonard Ludi
Village Administrator
Village of Kronenwetter
1582 Kronenwetter Drive
Kronenwetter, WI 54455

Subject: Proposal for Engineering Evaluation - Railroad Accessibility Assessment Study

Leonard,

Thank you for the invitation to assist the Village of Kronenwetter with an Engineering Evaluation regarding the RFP for the Railroad Accessibility Assessment Study. Becher Hoppe Associates, Inc. (BHA) and Traffic Analysis and Desing, Inc (TADI) have experience performing traffic analysis and evaluating alternatives. We have partnered together on other local street projects and have experience working with the local railroad companies.

Becher-Hoppe Associates, Inc. is pleased to submit this proposal for providing engineering design services. As you will see:

- ✓ Our team of Becher Hoppe and TADI recently completed local street reconstruction and traffic analysis.
- ✓ We have recently completed several street and intersection improvement projects for the City of Schofield, Village of Rothschild, City of Wausau, and Village of Weston.
- ✓ In teaming with Becher Hoppe and TADI, Kronenwetter will have the firsthand local street and railroad knowledge and practical approach to make your project a success.

We wish you the best in achieving all the goals for this project and please know that we are well suited to be a part of your team.

Respectfully,

Matthew Patterson, PE
Project Manager

Matthew T Graun
Vice President

BECHER HOPPE

Corporate Profile

Becher-Hoppe Associates, Inc.

Membership

American Council of Engineering Companies (ACEC)

American Public Works Association (APWA)

American Society of Civil Engineers (ASCE)

American Water Works Association (AWWA)

Institute of Transportation Engineers (ITE)

International Right of Way Association (IRWA)

National Society of Professional Engineers (NSPE)

National Society of Professional Surveyors (NSPS)

Wisconsin Airport Management Association (WAMA)

Wisconsin Society of Land Surveyors (WSLS)

Awards

2019 ACEC Engineering Excellence – Best in State for Special Project: Alexander Airport Park

2017 WisDOT Excellence in Highway Design – Best Rural Project: WIS 54 & CTH U Intersection

Engineering Excellence State Finalist Award (ACEC)
2023 – Central Wisconsin Airport Runway/Taxiway Improvements
2021 – City of Schofield Maryland/Radtke Roadways
2014 – Wausau Downtown Airport SRE Building
2013 – Wausau Wastewater Treatment Plant
2012 – City of Wausau - 400 Block

Excellence in Airport Engineering (WisDOT Bureau of Aeronautics)
2022 – Price County Airport
2021 – Central Wisconsin Airport
2014 – Price County Airport
2013 – Merrill Municipal Airport
2012 – Crandon-Steve Conway Municipal Airport

Project of the Year Award (APWA)
2012 – City of Wausau 400 Block

Our Mission

To improve communities through engineering excellence.

Becher Hoppe provides professional services to government, business, and individuals from our headquarters in Central Wisconsin. We offer planning, design, and construction services for civil engineering projects that involve airports, highways, roadways, trails, water and wastewater treatment systems, municipal utilities, stormwater management, dams, solid waste facilities, and agricultural site development. Other services include real estate appraisal and acquisition, mapping, land planning, and land surveying. We have been serving our clients since 1954.

Our Core Values

Service, Integrity, Excellence, Partnership

The Associates at Becher Hoppe carefully assess each client's project needs to create innovative solutions. Our employee group is diverse in education, expertise and experience. Employees with construction review responsibilities also have substantial field experience. Our knowledgeable team works hard and enjoys the collaborative effort with our clients to fulfill their project goals.

Company Information

Address: 330 N. 4th Street, Wausau, WI 54403-5417

Telephone Number: 715-845-8000

Website Address: www.becherhoppe.com

70 Years Anniversary 1954 - 2024 BECHER HOPPE

BECHER HOPPE

Project Team

A Committed Team

Matt Patterson, PE, will manage the project and be the primary point of contact for the Village of Kronenwetter. Matt will utilize his extensive experience to lead the study and coordination. Matt Graun, Vice President, will be the secondary contact and will oversee the engineering and design of the project. Jed Mattmiller, PE, will lead field survey, base maps, Aaron Wallner, PE, will lead the intersection design and be lead contact for communication with the Railroad.

Our team has a close working relationship with Traffic Analysis & Design Inc. (TADI) will provide the traffic analysis required for the study. We have partnered with TADI on numerous occasions in the past and have had great results for our clients.

village of Kronenwetter

Matt Patterson, PE
Project Manager

Aaron Wallner, PE
Intersection Design/ Railroad Coordination

Matt Graun
CAD Designer

Jed Mattmiller, PE
Survey Crew Chief

TADI
TRAFFIC ANALYSIS & DESIGN, INC.

Traffic Analysis

BECHER HOPPE

Municipal Water Treatment
Background of Firm

Becher Hoppe has a long and extensive background of providing design and analysis for local street projects for the Village of Kronenwetter and similar-sized communities. Some examples are as follows:

1. Village of Weston
    a. Zinser Street Utility Extension and Street Reconstruction - Design and Construction Oversight
    b. Birch Street Reconstruction and Multi-use Path – Design and Construction Oversight.
    c. Ross Avenue – Metro Drive to Alderson Street - In Design
    d. Ross Ave – Riverbend Rd to Kramer Ln – In Design
    e. Fuller Street - Ross Avenue to Schofield Avenue - In Design
2. City of Schofield
    a. Maryland Ave and Radtke Street Reconstruction – Design and Construction Oversight
    b. Sternberg Street Reconstruction – Design and Construction Oversight
    c. Grand Avenue Reconstruction – Design and Construction Oversight
    d. Drott Street Reconstruction – Design and
    e. Grossman Drive – Design and Construction Oversight
3. Village of Rothschild
    a. Edgar and Hazel Street Reconstruction – Design and Construction Oversight
    b. Schmidt Ave Reconstruction - Design and Construction Oversight
    c. Military Avenue – Design and Construction Oversight
    d. Military Avenue/ Business 51 Railroad Crossing – Design and Construction Oversight
4. Town of Weston
    a. Gusman Road – In Design
5. Marathon County
    a. Hwy J and Hwy N Intersection – In design
6. City of Wausau
    a. Downtown Mall Redevelopment (2nd Street, 3rd Street, Jackson Street) – Design
    b. West Business Campus – Design and Construction Oversight
    c. East Riverfront – Construction Oversight
    d. STH 52 – Lighting and Marking
7. Village of Kronenwetter –
    a. Construction Inspection – Ponds Subdivision

As shown on the following project data sheets, Becher Hoppe and TADI have substantial experience in completing projects very similar to this RFP.

BECHER HOPPE

Experience of Project Manager

Matt Patterson, PE

Becher Hoppe's Project Manager will be Matt Patterson. Matt's areas of specialization include planning and design for water supply, treatment, distribution, and storage facilities and project management of street reconstruction design, traffic analysis, and construction oversite. Matt's experience covers the gamut of work activities for water facilities including:

1. Project management from conception through start-up
2. Bench-scale laboratory water treatment testing
3. Pilot scale water treatment testing
4. Design including cost-effectiveness analyses
5. Project management of variety of projects, including intersection design, street reconstruction, water and wastewater treatment
6. Loan/grant funding applications
7. Bidding of projects
8. On site resident project representative
9. Construction administration
10. Construction performance testing
11. Loan/grant construction administration

Five examples of projects Matt has designed and managed:

Village of Weston

Management of street reconstruction traffic analysis, intersection design, design, bidding, and construction oversite.

City of Wausau Treatment Facility

Bench and pilot testing of iron and manganese oxidants, eventually selecting permanganate oxidation, followed by filtration and anion exchange treatment.

Village of Rothschild PFAS Treatment Facility

Engineering report for treatment alternatives and pilot testing including WNDR coordination, equipment selection, and pilot operation.

Marathon County – Parks Department

Project management, water main design, and restoration plan for water main replacement. Coordination with City of Wausau on watermain connections and street restorations.

BECHER HOPPE

Matthew R. Patterson, PE

Project Manager

Education

Bachelor of Science
Chemical Engineering
Michigan Technological University

Registration

Professional Engineer Wisconsin

Membership

American Waterworks Association (AWWA)

Central States Water Environment Association (CSWEA/WEF)

Wisconsin Rural Water Association (WRWA)

Community

Muddy Waters Retriever Club – Website Manager

Contact Information :
mpatterson@becherhoppe.com
715-845-0419

Mr. Patterson is a Project Engineer in the Water and Wastewater Group. He assists with the planning, design, and construction oversight for water supply and wastewater facilities.

Matt's diverse background in research and development enables him to use information used in prior tasks and apply it to current projects.

Experience

Matt joined Becher Hoppe in January of 2019, with a background in water and wastewater treatment, research and development of wastewater treatment technologies, and chemical applications for treatment systems. Previously a research and development engineer, he brings experience managing project teams while adhering to project budgets and schedules.

Reviewing customer equipment performance and recommending process improvements are other skills Matt brings to his work. He enjoys presenting technical information to stakeholders about new technologies and new solutions.

Projects

Village of Weston

- Harlyn Avenue Lift Station design, permitting, and construction oversite
- Tanya Street/Tricia Avenue Lift Station design, permitting, and construction oversite
- Zinser Street Utilities permitting and construction oversite
- Birch Street Reconstruction utilities design, permitting, project management and construction oversite
- In design street reconstruction - Ross Ave (Metro to Alderson), Ross Ave (River Bend to Pauls), Fuller (Ross to Schofield)

Rib Mountain Sanitary District

- Main Lift Station Evaluation, design, permitting, and construction oversite

City of Wausau

- Water Treatment Facility pilot design and operation.
- Waste Water Treatment Facility underground piping design, site work and construction oversite.
- Downtown mall redevelopment utility design and permitting

Central Wisconsin Airport

- Design, permitting, and construction oversite of water and sewer extension to Odyssey Aviation Hanger
- Design, permitting, and construction oversite of water and sewer extension to Productivity Advantage Hanger

BECHER HOPPE

Matthew T. Graun

Vice President / Designer

Education

Associate Degree
Architectural Residential Design
Northcentral Technical College
Wausau

Adjunct Instructor
Northcentral Technical College
Civil Engineering Program

Certification

Remote Pilot, Small Unmanned Aircraft System Rating

Continuing Education

Autodesk Certified Professional Civil 3D

ACEC Leadership Institute Graduate 2019

Inside the Factory- International Autodesk Software Development Influencing Team

Wausau Flying Service – Ground School (Pilot Training)

Membership

Autodesk User Group International (AUGI)

ACEC Wisconsin
Civil 3D User Group Chair

Awards

Top Presenter at
Midwest University

Presentations

Autodesk University
Las Vegas, Nevada

Recognized Presenter
Midwest University

ACEC Wisconsin
Civil 3D Workshop

Contact Information :
mgraun@becherhoppe.com
715-845-0420

Mr. Graun is Vice President and one of the firm's owners. Matthew has 16 years of design and project leadership experience on various civil engineering projects.

His primary responsibilities include aiding in the civil design of projects and managing the firm's resources. Matthew manages all the resources it takes to complete a successful project and run a civil engineering firm. This includes everything from staffing needs to providing cutting edge software and hardware to the team at Becher Hoppe. He also brings a great deal of experience in designing projects from multiple disciplines within the firm.

In addition to Matthew being a leader within the firm, he is also a leader in the industry when it comes to software and technology development. Matthew co-chairs the ACEC Civil 3D User Group in Wisconsin, adjunct teaches at North Central Technical College in the Civil Engineering Program, worked with the software development team at Autodesk, and presented at local, regional, and international conferences on the design software driving the industry.

Projects

STH 54 and CTH U, J-Turn Intersection, Wisconsin Rapids to Plover
CAD 3D Design for a complex intersection focused on traffic safety. Over a 6-year study period, there were 11 crashes at the intersection of STH 54 and CTH U, resulting in 18 injuries. The team at Becher Hoppe recommended a J-Turn intersection for this location, which at the time was only the 2nd one in the state. Matthew was responsible for all CAD modeling and plan production associated with the intersection. This project was awarded Best Rural Project through ACECs WisDOT Excellence in Highway design criteria.

USH 8 and STH 46 Intersection, St. Croix Falls
CAD 3D Design for the intersection of USH 8 and STH 46. Over a 5-year study period, there were 8 crashes at the intersection of USH 8 and STH 46 north, resulting in 3 injuries. The intersection was in need of a safety enhancement and Becher Hoppe was contracted by WisDOT to make the necessary improvements. Matthew aided in the layout and 3D design of this intersection along with developing plans to meet WisDOT requirements.

CTH G, Forest County
CAD 3D Designer for a rural 2-lane major collector connecting the Town of Argonne and Cavour and provides a major trucking route between STH 32/STH 55 and USH 8. The project consisted of pavement improvements as a result of a deteriorated roadway from heavy logging truck traffic, a single span bridge structure, intersection improvements, and culvert replacements. Matt was responsible for all plans and design modeling to accomplish a successful project.

West Grand Avenue, City of Schofield, Marathon County
CAD 3D Designer of this utility replacement and street reconstruction project. The project featured approximately one mile of roadway and utility reconstruction, curb extensions for pedestrian crossing, improved stormwater drainage, and new signage and pavement markings. Responsibilities included intensive software modeling of the entire project including over 75 driveway accesses, multiple phase construction, sidewalk replacements, constricted right of way, and utility improvements. These models aided engineers in the design and construction of this project.

BECHER HOPPE

Aaron J. Wallner, PE
Project Manager

Education

Bachelor of Science
Engineering
University of Wisconsin-Platteville

Registration

Professional Engineer
Wisconsin

Certification

Highway Technician Certification Program (WisDOT)

- *Transportation Materials Sampling*
- *Portland Cement Concrete Technician I*

Continuing Education

Federal Highway Administration

- *Intro to Highway Hydraulics*
- *Culvert Design*
- *Hybrid Roadside Design*
- *Urban Drainage Design – NHI Course*

Membership

American Council of Engineering Companies, ACEC, WI

Wisconsin County Highways Association

Midwest Hydro Users Group

Association of Dam Safety Officials, Inc.

Mr. Wallner is a Project Manager responsible for storm water analysis, environmental studies, river studies, and the design of highways, local roads or dams.

Aaron brings extensive experience and knowledge of WisDOT standard procedures and specifications for highway design and construction through his past tenure with the WisDOT Northeast and North Central Regions. He is well-versed in highway rehabilitation requirements set forth in the WisDOT FDM. His experience includes serving as lead designer and construction engineer for interchange, urban highway, and rural highway projects.

Projects

USH 141 and CTH E J-Turn, Oconto County (1490-28-01)*
*While employed at WisDOT
Lead Designer responsible for all agency, utility, and environmental coordination on this rural 0.87-mile reconstruction project which was one of the earlier WisDOT projects fully developed in Civil 3D. This project required close coordination with the regional traffic safety engineer, which resulted in a basic template for J-turns used throughout the region. Extensive public outreach was also required for this project.

Maryland Ave And Radtke Street, City of Schofield (2017.056)
Operated as lead design engineer, standard Civil 3d design, utility coordination, storm sewer, waste water, and watermain design. The project was a full urban reconstruct, replacing all the watermain and a large portion of the storm and sanitary sewer system. This 0.670-mile project also included .239 miles of curb and gutter replacement as well as .431 miles of curb that was replaced with ditches and shoulders.
Oversaw all construction operation, drafted payment requests, reviewed and approved change orders. Coordinated in house survey operations as well as consulted testing procedures. Other operations included grading, block retaining wall construction, BAD placement, and HMA paving.

Tomahawk Bike Trail, City of Tomahawk (2012.054/9862-00-70)
Served as construction project manager while overseeing and inspecting construction operations. The project had a mix of new rural trail construction and urban roadway expansion to expand the paved shoulders. As a WisDOT local program project, coordination was required between the contractor, the City of Tomahawk, and WisDOT. Wet soil conditions required unique problem solving on a tight budget.

Drott Street, City of Schofield (2019.046)
While working as the lead designer, coordinated between the City of Schofield, and RAO Construction, LLC to put together roadway and utility improvement plans as well as site development plans for an adjacent set of parcels. The 0.303-mile-long project included roadway reconstruction, full replacement of watermain and sanitary systems, and earthwork balancing between sites. The project also had several unique features including high ground water, site contamination, and adjacent waterways which limited grading areas.

BECHER HOPPE

Jed D. Mattmiller, PE

Partner / Project Engineer / Survey Crew Chief

Education

Bachelor of Science
Civil Engineering
Michigan Technological University

Registration

Professional Engineer – Wisconsin

Memberships

ACEC Wisconsin

WSLS Wisconsin

Continuing Education

ACEC Civil 3D User Group

Autodesk Midwest University

Autodesk University

Wausau Flying Service – Ground School (Pilot Training)

St. Cloud State University Land Surveying Certificate Program

Mr. Mattmiller began his engineering career as an intern on the BH survey crew and never lost touch with the surveying practice as he built his engineering expertise. Jed has gained experience on a wide variety of survey projects including topographic surveys for infrastructure design, underground mapping for utility projects, boundary surveys, flood plain and hydrologic surveys, bathymetric surveys, and construction staking. Jed has surveying experience working for clients such as WisDOT, Wisconsin BOA, Wisconsin DFD, many counties and municipalities, and countless private entities. His engineering fundamentals provide him great understanding and foresight as he plans and executes survey work.

Projects

USH 45, City of Eagle River, Vilas County
Worked on the survey crew collecting topographic survey and as an engineer on the design team. Designed curb ramps to match existing drainage and produced construction plans for this 4.5-mile resurfacing, lane reconfiguration, and sidewalk improvements for ADA compliance project along STH 45 through Eagle River. Also worked with survey and engineering teams on right-of-way acquisition and associated plat work.

CTH H, Lake Duroy Bridge, City of Phillips, Price County (ID 9480-00-70)
Design engineer for the rehabilitation of the CTH H Lake Duroy Bridge in Phillips. Worked on gradings design on approaches to the bridge, giving attention to adjacent drives and pedestrian walks. Also performed plan production.

Grossman Drive-Industrial Park, City of Schofield, Marathon County
Design engineer for the extension of Grossman Drive serving a new industrial park. Designed intersection layouts using vehicle tracking software to accommodate large trucks, water and sewer mains to service the expansion, and a complex grading model to accommodate multiple industrial users in the challenging site. Assisted in the plan production process.

Marshfield Hangar Area - Marshfield Municipal Airport, Marshfield, WI
Worked as design engineer on the layout of airside and landside infrastructure including taxilanes, hangar sites, access roads, security fencing, and gates. Designed a detailed grading model to provide site drainage now, and in the future as development occurs. Performed earthwork calculations as part of a detailed Engineer's estimate.

West Grand Avenue, City of Schofield, Marathon County
Worked on the survey field crew assisting with topographic design survey. Performed data processing and base mapping within the design software.

Military Road, Village of Rothschild, Marathon County
Worked as the Survey Crew Chief coordinating construction staking services.

Lincoln Ave. Lift Station, City of Marshfield, WI
Worked on the survey field crew performing construction staking for utility installation.

Contact Information :
jmattmiller@becherhoppe.com
715-845-0427

TRAFFIC ANALYSIS & DESIGN, INC.

JOHN BIEBERITZ, P.E., PTOE

Senior Traffic Engineer

Specialties:

Traffic Impact Studies

Corridor Studies

School Studies

Parking Studies

Traffic Signal Design & Timing Plans

Traffic Calming

Roundabout Analyses

Teaching and Training

Education:

B.S. Civil Engineering, University of Wisconsin-Milwaukee, 1989

M.S. Transportation Engineering, University of Wisconsin-Milwaukee, 1994

Certifications:

Professional Engineer: Wisconsin, 1992

Professional Traffic Operations Engineer, 2003

WisDOT SE Region Certified TIA Preparer

Professional Affiliations:

Institute of Transportation Engineers, Wisconsin Chapter

Chairman of the ITE Traffic Engineering Workshop

Tau Beta PI, National Engineering Honor Society

1.800.605.3091

Direct: 262.377.1845

jbieberitz@tadi-us.com

www.linkedin.com/in/jbieberitztraffic

Mr. Bieberitz is a Senior Traffic Engineer and also the President of Traffic Analysis & Design, Inc. (TADI). Mr. Bieberitz manages the staff of 30 traffic engineering professionals in addition to project management and traffic engineering tasks. Mr. Bieberitz is responsible for traffic engineering tasks including corridor studies, traffic impact studies, signalized intersection analyses, signal progression analyses, development of traffic signal timing plans, roundabout analyses, traffic calming and traffic simulation.

Mr. Bieberitz has over 35 years of traffic engineering experience ranging from traffic signal designs/timing to traffic impact studies. Mr. Bieberitz has conducted over several hundred traffic impact studies, designed over one hundred traffic signals, and has retimed several hundred traffic signals. Mr. Bieberitz serves as an “on-call” traffic engineer for several Wisconsin communities.

Mr. Bieberitz has presented and published several papers on traffic engineering for both the Institute of Transportation Engineers and the American Society of Civil Engineers. Mr. Bieberitz regularly teaches traffic engineering for the University of Wisconsin-Milwaukee on topics such as traffic impact analyses, access control and site design.

TRAFFIC ANALYSIS & DESIGN, INC.

DANIEL BIEBERITZ, P.E., PTOE

Senior Traffic Engineer

Specialties:

Corridor Studies
Traffic Impact Studies
Traffic Signal Timings
Traffic Safety Studies
Comprehensive Safety Action Plans
Pedestrian Safety Studies
Federal and State Aid Applications

Education:

B.S. Civil Engineering,
University of Wisconsin, Milwaukee, 1994

Certifications:

WI Professional Engineer
Professional Traffic Operations Engineer (PTOE)

Direct: 614.483.1297
dbieberitz@tadi-us.com

Mr. Bieberitz has 28 years of traffic engineering experience, which includes 23 years in private consulting and five years at WisDOT Northwest Region.

While at TADI, Dan has completed over 40 traffic studies, including traffic impact studies, operational studies and signal timing studies.

At WisDOT, Dan was the Region's Traffic Safety Engineer. His role at WisDOT included completing over 60 Highway Safety Improvement Program (HSIP) applications which included roundabouts, RCUT/J-Turns, correcting left-turn lane offsets, road diets, and many other intersection and roadway improvements.

Previous to WisDOT, Dan was Project Manager/Traffic Engineer in Ohio and managed/performed numerous traffic signal and interconnect designs, coordinated traffic signal retimings, signing plans, safety studies, corridor improvement projects, redevelopment projects, TIAs, and Safe Routes to School plans.

Employment History:

TADI: 2022 to present
WisDOT: 2017 to 2022
DLZ Ohio, Inc: 2004 to 2017
Parsons: 1998 to 2004
MSA Professional Services: 1995 to 1998

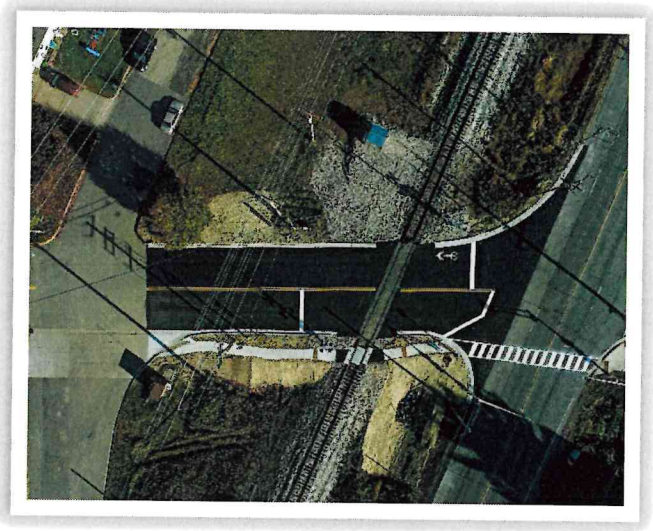
Presentations:

Roundabouts – Why They Work, February 2021 at UW-Eau Claire – Barron County

Tallmadge Circle Safety Study, April 2013 at ITE Great Lakes District Annual Meeting

BECHER HOPPE

Military Road
BUS 51 Intersection
Village of Rothschild



Project Description

Military Rd in the Village of Rothschild is mostly an east-west urban collector connecting the middle of the Village for both pedestrians and motor vehicle traffic. Military Road provides access to the Marathon County Bike Route 7, which is a popular multi use path along the Wisconsin River, but it also intersects with Business 51, which is a busy roadway. Becher Hoppe was contracted by the Village of Rothschild to provide design engineering services to oversee a project that will provide safe access for pedestrians to access the recreational trail through the busy intersection.

Project Features

- New railroad crossing features
- New sidewalk installed on Military Road
- Installation of signage and Rapid Flashing Beacons to alert traffic of pedestrian crossings
- Additional Pavement Markings
- Enhanced pedestrian crossing with advanced signage and marking

Firm's Involvement

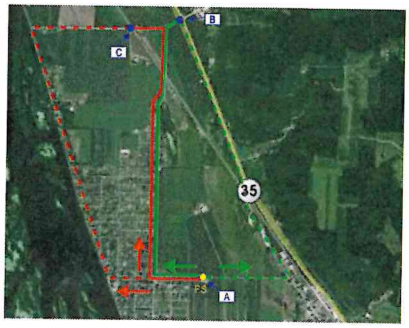
- Design alternatives
- Coordination with state and local agencies
- Public involvement
- Environmental documentation
- Stormwater management plan
- Preliminary and final design of roadway and utilities
- Completion of state applications and review process
- Preparation of project plans, specifications, and cost estimate

TADI
TRAFFIC ANALYSIS & DESIGN, INC.

1.800.605.3091
www.tadi-us.com

Trans Modal Loading Facility Traffic Study & Public Grad Crossing Closures

Great River Road/STH 35, City of Cochrane, WI



Client: Superior Silica Sands and BNSF Railway

Year: 2014

Contact: Scot J. Balsavich, Vice President; Cooper Engineering (715) 234-7008

Project Description:
TADI performed a traffic study for a proposed rail line trans modal loading facility proposed to be located along the west side of STH 35 at the Foegen Road intersection. The project also included preparation of a Public Grade Crossing Closure Study for the removal of two at-grade rail crossings at Foegen Road and at Herman Street, located adjacent to the proposed facility. The traffic study investigated the amount of truck traffic expected with the new transload facility and analyzed the operation of the adjacent intersections along the transportation network. Peak hour as well as daily traffic volumes were investigated to determine the intersection and roadways cross section modifications necessary to provide for the proposed facility. The closure report looked at alternate routes for the road network including documenting travel distances for the remaining transportation network with the removal of two roadway connections (at-grade rail crossings) within the vicinity. The report also looked at the number of roadway vehicles, number of trains, types of railroad crossing infrastructure as well as location of emergency services and schools for each alternate route. Approaching and clearing sight distance was also documented.

The following elements were conducted as part of this project:

- Data Collection & Trip Generation/Distribution/Assignment
- SYNCHRO analysis and modeling
- Improvements to the roadway network
- At-grade rail crossing closure analysis including sight distance
- Existing and alternate routes distance and timing comparison
- Traffic Impact Analysis report
- Public Grade Crossing Closure report
- Coordination with the Superior Silica Sands and BNSF Railway

Providing Traffic Engineering Solutions

BECHER HOPPE

Project Understanding and Approach

Project Understanding

Our team understands the Village of Kronenwetter's interest in conducting an engineering study to assess accessibility options west of the CN railroad tracks, spanning from West Nelson Road to Happy Hollow Road, with the area of access extending north to Gardner Park Road. The village aims to scrutinize the current access to these regions, encompassing traffic analysis, and explore alternative solutions to mitigate traffic delays and mitigate impacts on emergency services during instances where train activity restricts access.

Approach – Phase 1: Preliminary Research

During Phase 1, Becher Hoppe and TADI will conduct an examination of the current railroad crossings within the study area. Becher Hoppe will utilize a drone or to gather current imagery and planning grade survey data of the area. Additionally, traffic counts will be conducted at the railroad crossings along Garner Park Road, Cedar Road, Happy Hollow Road, and Nelson Road. This traffic data is crucial for understanding the volume of traffic in the vicinity and determining the crossing needs relative to the railroad. These assessments will furnish essential data for reviewing the crossings' current functionalities concerning emergency access and evacuation. The evaluation process will pinpoint any existing access issues and unveil opportunities for alternative solutions to better cater to the areas. Finally, the identified alternatives will be compared and ranked for review by the Village.

Approach – Phase 2: Qualifications of Preliminary Recommendations

Phase 2 will entail a comprehensive examination of the Village's 2019 Comprehensive Plan and 2019-2024 Strategic Plans. These plans will be analyzed in light of the alternatives identified during Phase 1. Additionally, peak traffic hours at the crossings will be identified based on the traffic counts to gauge the typical traffic flow that would need to be rerouted through alternative routes in the event of railroad crossing blockages.

Phase 2 involves contacting the railroad to gain deeper insight into both present and forthcoming operations within the study area, aiming to discern their impact on access to the area. Utilizing the acquired data, the previously identified alternatives will undergo reassessment, culminating in a recommendation for a primary solution and two additional alternatives. Each alternative will be accompanied by a thorough analysis of its advantages and drawbacks for Village staff review. Furthermore, in addition to the proposed alternatives, the repercussions of leaving the study area unaltered will be presented. Emergency response times will also be calculated based on the alternatives, particularly in scenarios where one or more railroad crossings are obstructed for each alternative.

Approach – Phase 3: Funding Evaluation

In Phase 3, a budgetary cost estimate will be compiled for all three alternatives. Furthermore, our team will conduct a thorough assessment of potential grant funding opportunities, focusing on health and safety funding, as prioritized by the Village of Kronenwetter. The findings will be reviewed and presented to the Village for their consideration.

Approach – Phase 4: Finalize Report

Phase 4 will involve hosting a public information meeting to present the alternatives and their respective budgets. Feedback collected during this meeting will be carefully reviewed with Village Staff, and any relevant suggestions will be integrated into the alternatives as appropriate. Subsequently, utilizing all gathered information, an engineering report will be compiled and presented to Village Staff for review. The report will undergo finalization based on staff input. Additionally, a presentation will be prepared and delivered to both the Village committee and the Village Board.

Additional Services

We can provide additional services as may be required and will provide a Proposal for such services upon request. Additional services may include:

- Land and easement acquisition. Becher Hoppe has a certified general appraiser on staff who specializes in assisting our clients with appraising, negotiating, and acquiring road right-of-way.
- Additional resident outreach/public information meetings.
- Environmental services (wetland delineation, etc.)
- Army Corp of Engineers Coordination
- Additional exhibits and additional preliminary design efforts
- Additional field survey work to support construction of a preferred alternative
- Plans, Specifications, and Estimates for preferred alternative
- Additional access studies outside of the project limits
- Construction services (Resident Engineer, Construction Administration, Construction Staking)

BECHER HOPPE

Estimated Project Cost & Schedule

Project Costs – Design

Phase 1: Preliminary Research	
• Existing railroad crossing review • Collection of emergency accessibility and evacuations • Define concerns and opportunities • Compare alternatives	**$24,100**
Phase 2: Qualifications of Preliminary Recommendations	
• Review of 2019 Village Comprehensive and 2019-2024 Village Strategic Plans • Evaluate existing and future railroad activity • Establish one primary and 2 secondary alternatives • Define impacts if no improvements are made	**$15,400**
Phase 3: Funding Evaluation	
• Prepare budgetary cost for alternatives • Identify grant opportunities, to include health and safety funding opportunities	**$10,500**
Phase 4: Finalize Report	
• Participate in public information meeting • Prepare draft report for Village Staff review • Finalize report, and present to Village Committee and Village Board.	**$18,500**
Total Design (Lump Sum)	**$68,500**

Additional Services

Becher-Hoppe Associates, Inc. will provide additional services as may be required, and will provide a Proposal for such services upon your request. Please review the additional services section in our Project Understanding and Approach.

village of Kronenwetter

Report to CLIPP

Item Name: Upcoming Road Project Estimated Costs
Meeting Date: February 2, 2026
Referring Body:
Committee Contact:
Staff Contact: John Jacobs
Report Prepared by: John Jacobs

AGENDA ITEM: Upcoming Road Project Estimated Costs

OBJECTIVE(S): To get direction from CLIPP on possible upcoming road projects.

HISTORY/BACKGROUND: In the 2026 budget, approved in November 2025, staff included a 5-year CIP with staff recommended road projects. In January 2026 we received firm estimates on what the projects could potentially cost. The roads listed below are in order of importance according to Village staff.

#1 - Maple Ridge Road (CTH X to Kronenwetter Dr.) 2.36 miles - $2,890,000
#2 – **Peplin Road** (STH 153 to South Rd.) 5,280 feet - $522,000
IF borrowed in 2028: Total CIP Costs = $3,412,000

#3 – **Martin Road** (Creek Rd to Village Limits) 4.12 miles - $5,000,000
IF borrowed in 2029: Total CIP Costs = $5,000,000

#4 – **South Road** (Village Limits to Wisz Rd) 2,689 feet - $234,000
#5 – **Forest Road** (CTH X to Autumn Rd) 4,230 feet - $587,000
#6 – **Autumn Road** (Forest Rd to Trunk Rd) 2,600 feet - $436,000
IF borrowed in 2030: Total CIP Costs = $1,257,000

Referring to the attachment, the pink column refers to the current annual debt service payment (tax levy) schedule.

There are significant drops in the debt service payments in the following years:

- 2029 – drop of $226,850
- 2030 – additional drop of $165,450
- 2033 – additional drop of $61,553
- 2034 – additional drop of $317,975

Therefore, my QUESTION for the CLIPP Committee, APC Committee, and Village Board would be:

- **Do you want to maintain the PRESENT debt service tax levy at the same 2026 amount for future years, with potential $5,000 - $10,000 increases in the Debt Service tax levy beginning in year 2030? This would mean "deferring" any street CIP projects until the 2028 budget year.**

If the answer is "YES", then the hypothetical debt service payment schedules for the 2028-2030 CIP Street Projects could be undertaken as shown.

The orange column shows what impact the new (3) borrowing issues could make to the Cumulative Hypothetical Annual Debt Service Tax Levy in the years of 2026-2048.

A couple important things to know about this brief summary analysis:

1) The Village would switch to borrowing 20-year General Obligation Bonds, instead of 10-year G.O. Notes. This would add about 10 years onto the debt amortization schedule, and require more interest costs to be paid annually.
2) I am presently using a 4% interest rate in my calculations.
3) The Village would be unable to issue 10-year debt, if the Village does not want to significantly increase the overall Annual Debt Service Tax Levy amount above the $780,000-$800,000 level.
4) This analysis only includes CIP Street Projects in it at this time. Costs for major repairs to the Village Municipal Center and for any major capital equipment (including the Fire Department needs starting in 2029-2030) not included in these future capital borrowing amounts at all.
5) I have estimated that any annual debt issuance costs would add $50,000-$75,000 to each debt borrowing issue.
6) The blue shaded area would represent the 1st 10 years of each debt issuance.

If the committees or Village Board would wish to start construction of any Street projects sooner than 2028, that would be possible, of course, because we are far below our maximum General Obligation Debt Limit as of 12/31/2025. However, it would mean that the Village's tax rate for Debt Service would need to increase upward beginning in 2027 and for future years.

Bring your questions to the meeting on Monday night.

ATTACHMENTS: Spreadsheet – Current & Hypothetical Future Debt Service Payments for Tax Levy

VILLAGE OF KRONENWETTER

Schedule of Current Debt Service Fund - Tax Levy & Projected Future Debt Service Tax Levy

Prepared as of 1/29/2026

Name of Debt Obligation

EXISTING DEBT SERVICE PAYMENTS - TAX LEVY

	2018 G.O. Notes	2021 G.O. Bonds	2023 Fire Truck Note	2024B G.O. Notes	CURRENT ANNUAL DEBT SERVICE FUND (TAX LEVY)	Annual Increase or Decrease in Debt Service Tax Levy	Hypothetical 2028 G.O. Notes $3,487,000 Issued after 7/1/2028	Hypothetical 2029 G.O. Notes $5,075,000 Issued after 7/1/2029	Hypothetical 2030 G.O. Notes $1,307,000 Issued after 7/1/2030	CUMULATIVE Hypothetical Annual Debt Service Tax Levy
2026	$ 167,075.00	$ 477,900.00	$ 90,027.77	$ 63,000.00	$ 798,002.77		$ -	$ -	$ -	$ 798,002.77
2027	$ 167,350.00	$ 455,600.00	$ 90,027.77	$ 67,875.00	$ 780,852.77	$ (17,150.00)	$ -	$ -	$ -	$ 780,852.77
2028	$ 167,475.00	$ 433,500.00	$ 90,027.77	$ 87,125.00	$ 778,127.77	$ (2,725.00)	$ -	$ -	$ -	$ 778,127.77
2029	$ -	$ -	$ 90,027.77	$ 461,250.00	$ 551,277.77	$ (226,850.00)	$ 230,000.00	$ -	$ -	$ 781,277.77
2030	$ -	$ -	$ 90,027.77	$ 295,800.00	$ 385,827.77	$ (165,450.00)	$ 230,000.00	$ 170,000.00	$ -	$ 785,827.77
2031	$ -	$ -	$ 90,027.77	$ 290,300.00	$ 380,327.77	$ (5,500.00)	$ 230,000.00	$ 170,000.00	$ 10,000.00	$ 790,327.77
2032	$ -	$ -	$ 90,027.77	$ 289,500.00	$ 379,527.77	$ (800.00)	$ 230,000.00	$ 170,000.00	$ 20,000.00	$ 799,527.77
2033	$ -	$ -	$ 88,474.51	$ 229,500.00	$ 317,974.51	$ (61,553.26)	$ 230,000.00	$ 170,000.00	$ 90,000.00	$ 807,974.51
2034	$ -	$ -	$ -	$ -	$ -	$ (317,974.51)	$ 270,000.00	$ 450,000.00	$ 90,000.00	$ 810,000.00
2035	$ -	$ -	$ -	$ -	$ -	$ -	$ 270,000.00	$ 460,000.00	$ 90,000.00	$ 820,000.00
2036	$ -	$ -	$ -	$ -	$ -	$ -	$ 270,000.00	$ 470,000.00	$ 90,000.00	$ 830,000.00
2037	$ -	$ -	$ -	$ -	$ -	$ -	$ 270,000.00	$ 480,000.00	$ 90,000.00	$ 840,000.00
2038	$ -	$ -	$ -	$ -	$ -	$ -	$ 270,000.00	$ 490,000.00	$ 90,000.00	$ 850,000.00
2039	$ -	$ -	$ -	$ -	$ -	$ -	$ 270,000.00	$ 500,000.00	$ 90,000.00	$ 860,000.00
2040	$ -	$ -	$ -	$ -	$ -	$ -	$ 270,000.00	$ 510,000.00	$ 90,000.00	$ 870,000.00
2041	$ -	$ -	$ -	$ -	$ -	$ -	$ 270,000.00	$ 520,000.00	$ 90,000.00	$ 880,000.00
2042	$ -	$ -	$ -	$ -	$ -	$ -	$ 270,000.00	$ 530,000.00	$ 90,000.00	$ 890,000.00
2043	$ -	$ -	$ -	$ -	$ -	$ -	$ 270,000.00	$ 540,000.00	$ 90,000.00	$ 900,000.00
2044	$ -	$ -	$ -	$ -	$ -	$ -	$ 270,000.00	$ 550,000.00	$ 90,000.00	$ 910,000.00
2045	$ -	$ -	$ -	$ -	$ -	$ -	$ 270,000.00	$ 560,000.00	$ 90,000.00	$ 920,000.00
2046	$ -	$ -	$ -	$ -	$ -	$ -	$ 270,000.00	$ 570,000.00	$ 90,000.00	$ 930,000.00
2047	$ -	$ -	$ -	$ -	$ -	$ -	$ 270,000.00	$ 306,585.71	$ 363,414.29	$ 940,000.00
2048	$ -	$ -	$ -	$ -	$ -	$ -	$ 260,544.82	$ -	$ 432,244.89	$ 692,789.71
2049	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	$ 501,900.00	$ 1,367,000.00	$ 718,668.90	$ 1,784,350.00	$ 4,371,918.90		$ 5,190,544.82	$ 7,616,585.71	$ 2,085,659.18	$ 19,264,708.61

CIP Street Projects:			
Maple Ridge Road	$ 2,890,000		
Peplin Road	$ 522,000		
Martin Road		$ 5,000,000	
South Road			$ 234,000
Forest Road			$ 587,000
Autumn Road			$ 436,000
Est. Issuance Costs	$ 75,000	$ 75,000	$ 50,000
Est. Debt Issuance Amount	**$ 3,487,000**	**$ 5,075,000**	**$ 1,307,000**

ROTH PROFESSIONAL SOLUTIONS

Robert J. Roth, P.E., *President*
315 DeWitt Street, Portage, WI 53901
(608) 697-5857
robert@rpsprofessionalsolutions.com
rpsprofessionalsolutions.com

PROJECT CONCEPT ESTIMATES

AUTUMN ROAD (TRUNK ROAD TO FOREST ROAD)
FOREST ROAD (CURVE ROAD TO AUTUMN ROAD)
PEPLIN ROAD (SOUTH ROAD TO STH 153)
SOUTH ROAD (S OAK RD TO KANE LANE)

ROAD REHABILITATION
(NO UTILITY WORK INCLUDED)

Date: January 29, 2026

To: Village of Kronenwetter

This memo is intended to provide a high-level planning document for decision making and budget estimate purposes for a specific portion of the above-referenced road segments. For this budgetary purpose, no significant engineering has been completed, but we have relied solely on subsurface pavement roadcores (See attached documentation).

Further, our assessment and estimates are based on the low roadway traffic volumes, which were not documented but were noted by Staff as very low travel roadways. Although all of the above-referenced roads are currently paved with HMA asphalt, the low roadway traffic volume allows the use of a seal coat wear surface versus full HMA so there is an opportunity to reduce cost. Therefore, the estimates are provided with seal coat surfacing, which actually includes a primary seal on the aggregate surface, and then a regular chip seal following.

We have not taken these projects as drainage improvement projects, although we do estimate for culvert replacement where we can see in the aerial that culverts are present. Any ditching or additional drainage work can be taken from contingencies. Also, in this estimate, we combined engineering and contingencies (15%) since engineering will be low to modest in total and will likely be combined for multiple roadways. We are planning to complete a survey and a section-based design with bidding documents but not a full-blown engineering report and planset.

Please note the general character of the work is for a mill and rehabilitation of the base-sections, with some areas being either undercut or new base restoration. From conversations with the Geotech firm, the quality of the subbase aggregate was found to be more of the “rotten granite” that is found in the area, where the quality of the aggregate has broken down over time. But it is still aggregate just not as structural as it once was. We feel that the asphalt material can be pulverized and worked into the base structure to generate the required gradation and roadway structure.

Some areas appear to have high ground water and potentially heavier subsoils and may require a rebuild or undercut. We have accounted for this in some of the roads/estimates based on the elevations, proximity to low-lying or wetland areas, and the geotechnical information. Further design is needed to maximize the Village dollars towards the most appropriate improvement.

BUDGETARY COST AND WORK PROGRAM

The high-level budgetary rehabilitation scope used as the basis of our estimates is as follows:

Autumn Road	$436,000	Pavement and Base Removal to 10” Geotextile Fabric New Base Material 10” Seal Coat Prep and Finishing Shouldering and Finishing
Forest Road	$587,000	Pavement and Base Removal to 10” Geotextile Fabric New Base Material 10” Undercut East End 1,000 LF ± Bring up Undercut Areas Seal Coat Prep and Finishing Shouldering and Finishing
Peplin Road	$522,000	Mill and Removal South 1/3 ± to 12” New Base Material 12” Pulverize In-place North 2/3 ± to 12” Seal Coat Prep and Finishing Shouldering and Finishing
South Road	$234,000	Pulverize In-place to 4” Utilize Existing Base Depths to 16” Seal Coat Prep and Finishing Shouldering and Finishing

Please contact me with any questions or if any additional information is needed.

Respectfully Submitted,

ROTH PROFESSIONAL SOLUTIONS

Robert J. Roth, PE
Municipal Engineer

ENGINEER'S PRELIMINARY COST ESTIMATE

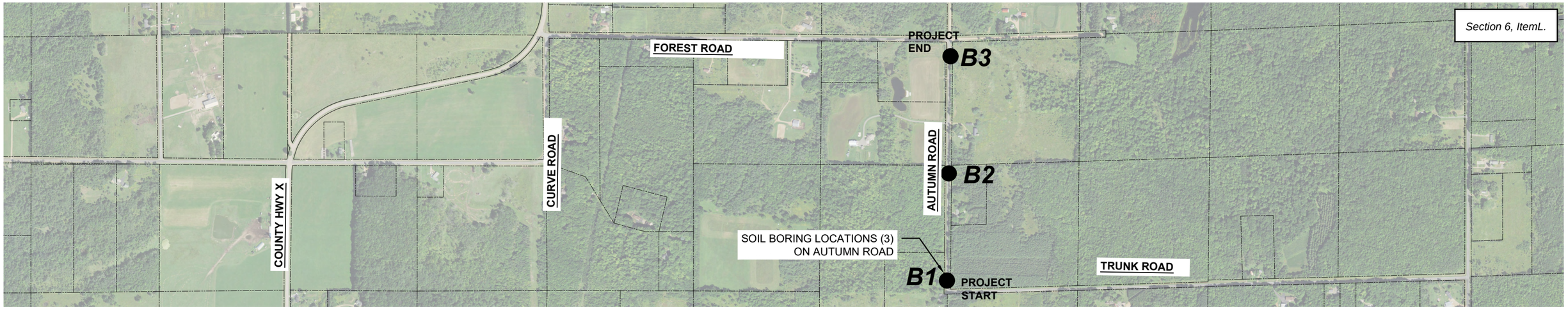
ROTH PROFESSIONAL SOLUTIONS

PEPLIN ROAD, SOUTH RD TO S.T.H. 153, VILLAGE OF KRONENWETTER

Total 5,260 Feet

Updated 1/28/2026

Item No.	Bid Item	Quanity	Units	Unit Cost	Total Amount
1	Performance & Payment Bonds	1	LS	$20,000.00	$20,000.00
2	Mobilization & Demobilization	1	LS	$10,000.00	$10,000.00
3	Removal Ditch Topsoil, 6", 10' wide	11689	SY	$3.00	$35,066.67
4	Mill & Remove Pavement South 1/3	4107	SY	$5.00	$20,533.33
5	Pulverize North 2/3	12258	SY	$5.00	$61,288.89
6	Excavate for Road Section-south to 16th	1369	CY	$20.00	$27,377.78
7	Culvert Replacement	1	LS	$10,000.00	$10,000.00
8	12" 1-1/4" CABC-(South to 16th)	1478	CY	$50.00	$73,920.00
9	Seal Coat	12858	SY	$1.75	$22,501.11
10	Chip Seal	12858	SY	$4.50	$57,860.00
11	3/4" CABC shoulder	195	CY	$50.00	$9,740.74
12	Repair Top soil ditches 3:1 slope & emat	11689	SY	$7.00	$81,822.22
13	Pave at driveway & cross roads 20'	283	Ton	$7.00	$1,983.33
14	10" 1-1/4" CABC at intersections	61	CY	$50.00	$3,074.07
	Sub-Total Road Construction Cost				**$435,000.00**
	Engineering & Contigency				$66,000.00
	Total Project Construction				**$522,000**



B1

DEPTH	VISUAL NOTES
0	4" ASPHALT
	8" CABC
1	FILL: SILT WITH SAND(ML) TRACE FINE GRAVE, FEW FINE-MEDIUM SAND, MOSTLY SILT, MOIST, DARK BROWN
	WATER LEVEL
2	FILL:LEAN CLAY (CL); TRACE FINE GRAVEL, FEW FINE-MEDIUM SAND, FEW SILT, MOSTLY CLAY, MEDIUM PLACICITY, VERY STIFF,WET, DARK BROWN
3	POORLY GRADED SAND WITH SILT AND GRAVEL(SP-SM), MOSTLY FINE-MEDIUM GRAINED SAND, LITTLE FINE-COARSE GRAVEL, FEW SILT, DENSE, MOIST, GRAY, (WEATHERED GRANITE BEDROCK)
4	
5	END AT 5 FT.

B2

DEPTH	VISUAL NOTES
0	6.5" ASPHALT
	5" CABC
1	WATER LEVEL
	POORLY GRADED SAND WITH SILT (SP-SM), MOSTLY FINE GRAINED SAND, FEW FINE GRAVEL, FEW SILT, LOOSE, WET, DARK BROWN, (FEW ORGANICS)
2	POORLY GRADED SAND WITH SILT AND GRAVEL(SP-SM), MOSTLY FINE GRAINED SAND, LITTLE FINE-COARSE GRAVEL, FEW SILT, MEDIUM DENSE, WET, GRAY, (WEATHERED GRANITE BEDROCK)
3	
4	
5	END AT 5 FT.

B3

DEPTH	VISUAL NOTES
0	4" ASPHALT
	8" CABC
1	WATER LEVEL
	POORLY GRADED SAND WITH SILT (SP-SM), MOSTLY FINE GRAINED SAND, FEW FINE GRAVEL, FEW SILT, MEDIUM DENSE, WET,GRAY
2	POORLY GRADED SAND WITH SILT AND GRAVEL(SP-SM), MOSTLY FINE GRAINED SAND, LITTLE FINE-COARSE GRAVEL, FEW SILT, MEDIUM DENSE, WET, GRAY, (WEATHERED GRANITE BEDROCK)
3	
4	
5	END AT 5 FT.

NOTE: THESE ARE ABBREVIATED BORING LOGS, SEE GEOTECH REPORT FOR FULL LOG & DESCRIPTIONS

SECTION FROM TRUNK ROAD TO FOREST ROAD
12" BREAKER RUN-3" SIZE OVER GEOTEXTILE FABRIC
6" 1-1/4" C.A.B.C.
1 SEAL COAT
1 CHIP SEAL

ROTH PROFESSIONAL SOLUTIONS

AUTUMN ROAD CONCEPT

KRONENWETTER STREET PLANNING

ROAD IMPROVEMENT PROJECT

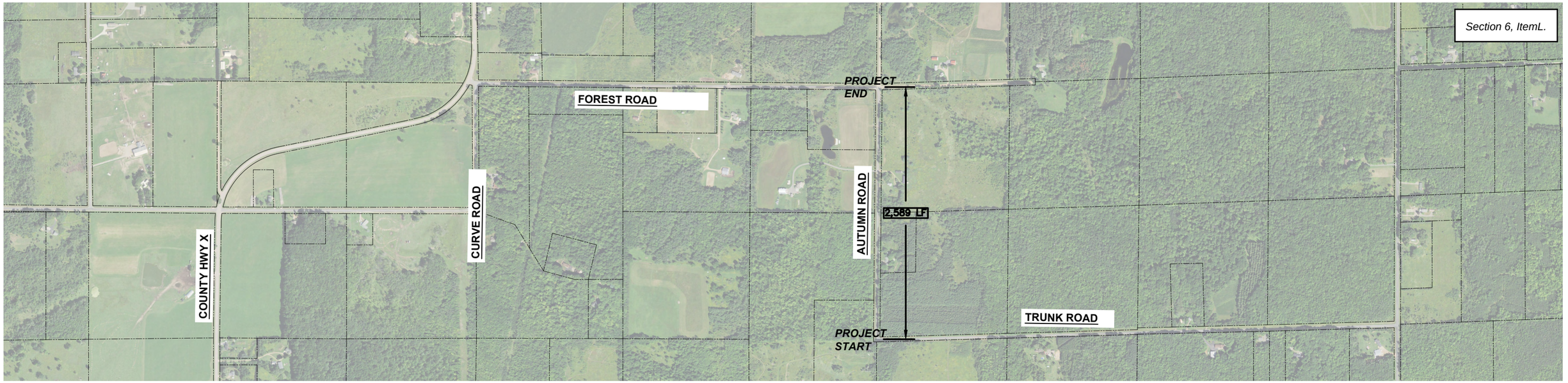
VILLAGE OF KRONENWETTER, WI

N W E S

0 500 1000

SCALE: 1" = 1000FEET
(PRINTED AT 11"x 17")

DATE:	1/8/26
DESIGNED BY:	RJR
DRAWN BY:	WAC
PROJECT NO:	2026-020
SHEET:	100



AUTUMN ROAD REHABILITATION - TRUNK ROAD TO FOREST ROAD

12" BREAKER RUN-3" SIZE OVER GEOTEXTILE FABRIC
6" 1-1/4" C.A.B.C.
1 SEAL COAT
1 CHIP SEAL

ROTH PROFESSIONAL SOLUTIONS

AUTUMN ROAD CONCEPT

KRONENWETTER STREET PLANNING

ROAD IMPROVEMENT PROJECT

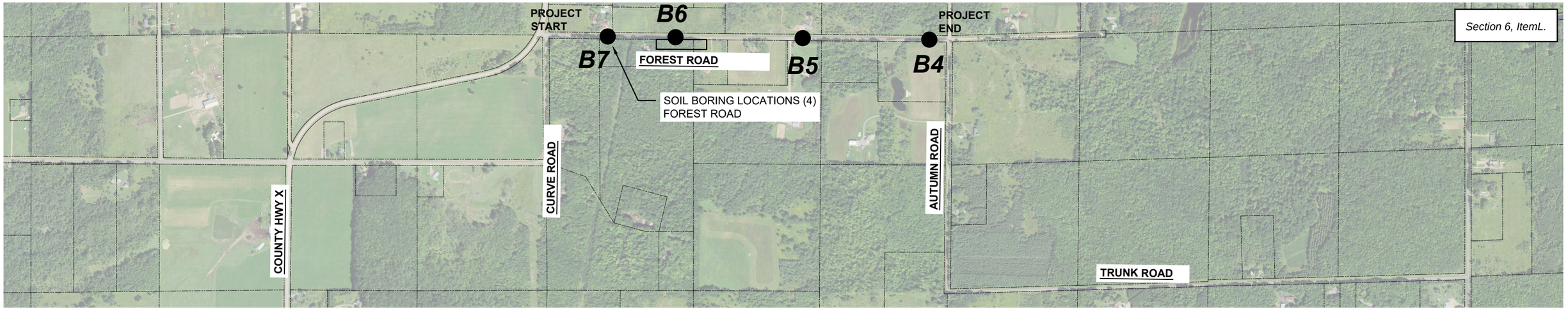
VILLAGE OF KRONENWETTER, WI

N W E S

0 500 1000

SCALE: 1" = 1000FEET
(PRINTED AT 11"x 17")

DATE:	01/08/25
DESIGNED BY:	RJR
DRAWN BY:	WAC
PROJECT NO:	2026-020
SHEET:	101



B7

DEPTH	VISUAL NOTES
0	4.5 ASPHALT
	8" CABC
1	FILL: POORLY GRADED SAND WITH SILT(SP-SM): MOSTLY FINE GRAINED SAND, FEW FINE GRAVEL, FEW SILT, LOOSE, MOIST, DARK BROWN
	WATER LEVEL
2	POORLY GRADED SAND WITH CLAY(SP-SC); MOSTLY FINE-MEDIUM GRAINED SAND, FEW FINE GRAVEL, FEW SILT, FEW CLAY, LOOSE, WET, BROWN
3	POORLY GRADED SAND WITH SILT (SP-SM); MOSTLY FINE GRAINED SAND, TRACE FINE GRAVEL, FEW SILT, TRACE CLAY, MEDIUM DENSE, MOIST, BROWN
4	LEAN CLAY(CL); FEW FINE GRAVEL, FEW FINE-MEDIUM SAND, FEW SILT, MOSTLY CLAY, MEDIUM PLACICITY, MOIST, BROWN
5	END AT 5 FT.

B6

DEPTH	VISUAL NOTES
0	4" ASPHALT
	8" CABC
1	LEAN CLAY(CL): FEW FINE GRAVEL, FEW FINE-MEDIUM SAND, FEW SILT, MOSTLY CLAY, MEDIUM PLASTICITY, MOIST, DARK BROWN
2	LEAN CLAY(CL): FEW FINE GRAVEL, FEW FINE-MEDIUM SAND, FEW SILT, MOSTLY CLAY, MEDIUM PLASTICITY, MOIST, DARK BROWN
3	
4	
5	END AT 5 FT.

B5

DEPTH	VISUAL NOTES
0	4.5" ASPHALT
	7" CABC
1	POORLY GRADED SAND WITH SILT(SP-SM); MOSTLY FINE GRAINED SAND, FEW FINE GRAVEL, FEW SILT, MEDIUM DENSE, MOIST, BROWN
2	POORLY GRADED SAND (SP); MOSTLY FINE-MEDIUM GRAINED SAND, TRACE FINE GRAVEL, TRACE SILT, MEDIUM DENSE, MOIST, BROWN
3	
	WATER LEVEL
4	POORLY GRADED SAND (SP); MOSTLY FINE-MEDIUM GRAINED SAND, TRACE FINE GRAVEL, TRACE SILT, LOOSE,WET, BROWN
5	END AT 5 FT.

B4

DEPTH	VISUAL NOTES
0	7" ASPHALT
	4" CABC
1	POORLY GRADED SAND WITH SILT(SP-SM); MOSTLY FINE GRAINED SAND, FEW FINE GRAVEL, FEW SILT, MEDIUM DENSE, MOIST, DARK BROWN
2	
3	WATER LEVEL
	POORLY GRADED SAND WITH SILT(SP-SM), MOSTLY FINE GRAINED SAND, FEW FINE GAVEL, FEW SILT, LOOSE, WET, DARK BROWN
4	
5	
6	SILT WITH SAND(ML): FEW FINE GRAVEL, LITTLE FINE SAND, MOSTLY SILT, SATURATED, DARK BROWN
7	
8	POORLY GRADED SAND WITH SILT AND GRAVEL(SP-SM), MOSTLY FINE GRAINED SAND, LITTLE FINE-COARSE GRAVEL, FEW SILT, MEDIUM DENSE, WET, GRAY, (WEATHERED GRANITE BEDROCK)
9	
10	END AT 10 FT.

NOTE: THESE ARE ABBREVIATED BORING LOGS, SEE GEOTECH REPORT FOR FULL LOG & DESCRIPTIONS

SECTION FROM CURVE ROAD TO AUTUMN ROAD
PULVERIZE EXSTING TO GET=12" BASE
1-SEAL COAT
1-CHIP SEAL

ROTH PROFESSIONAL SOLUTIONS

FOREST ROAD CONCEPT

KRONENWETTER STREET PLANNING

ROAD IMPROVEMENT PROJECT

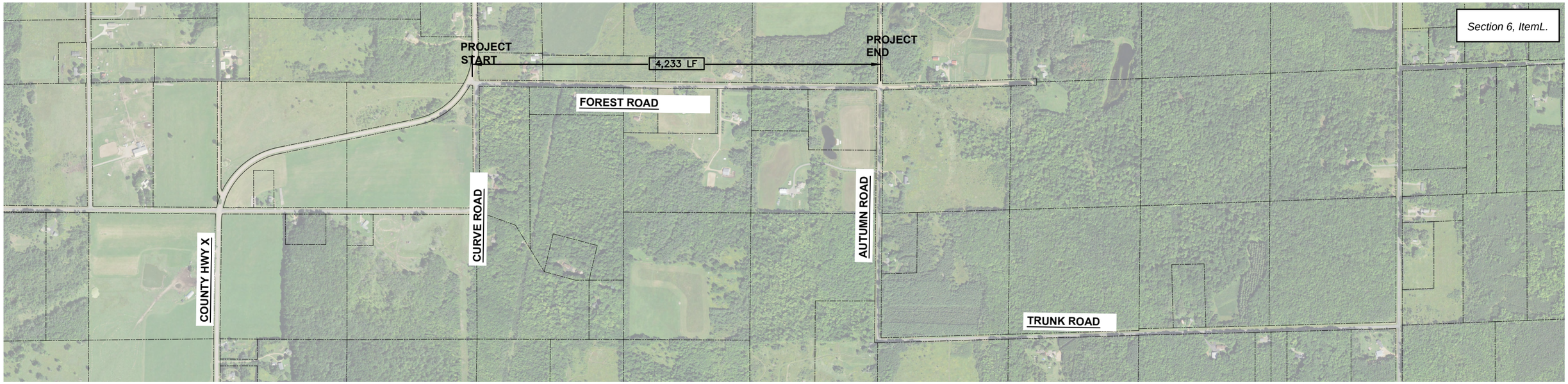
VILLAGE OF KRONENWETTER, WI

N W E S

0 500 1000

SCALE: 1" = 1000FEET
(PRINTED AT 11"x 17")

DATE: 01/08/26
DESIGNED BY: RJR
DRAWN BY: WAC
PROJECT NO: 2026-020
SHEET:



FOREST ROAD REHABILITATION - CURVE ROAD TO AUTUM ROAD

PULVERIZE EXSTING TO GET=12" BASE -ADD 1-1/4 C.A.B.C. AS NEEDED
1-SEAL COAT
1-CHIP SEAL

ROTH PROFESSIONAL SOLUTIONS

FOREST ROAD CONCEPT

KRONENWETTER STREET PLANNING

ROAD IMPROVEMENT PROJECT

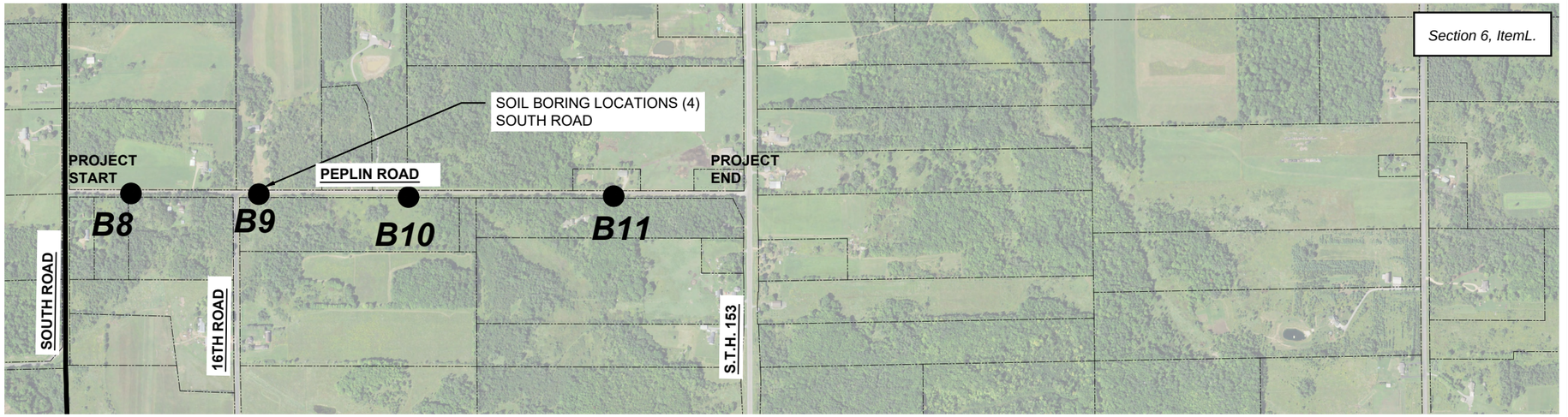
VILLAGE OF KRONENWETTER, WI

N W E S

0 500 1000

SCALE: 1" = 1000FEET
(PRINTED AT 11"x 17")

DATE:	01/08/26
DESIGNED BY:	RJR
DRAWN BY:	WAC
PROJECT NO:	2026-020
SHEET:	2



B8

DEPTH	VISUAL NOTES
0	2" ASPHALT
	4" CABC
	3.5" ASPHALT
1	FILL:POORLY GRADED SAND WITH SILT(SP-SM); MOSTLY FINE GRAINED SAND, FEW FINE GRAVEL, FEW SILT, MEDIUM DENSE, MOIST, BROWN
2	
3	POORLY GRADED SANDWITH SILT(SP-SM); MOSTLY FINE-MEDIUM GRAINED SAND, FEW FINE COURSE GRAEL, FEW SILT, MEDIUM DENSE, MOIST, GRAY, WEATHEED GRANITE BEDROCK
4	
5	
6	POORLY GRADED SAND WITH SILT (SP-SM); MOSTLY FINE-MEDIUM GRAINED SAND, FEW FINE-CORSE GRAVEL, FEW SILT, DENSE,MOIST, GRAY, 9WEATHERED GRANITE BEDROCK
7	
8	BEDROCK: PARTIALLY WEATHERED GRANITE BEDROCK
9	
10	END AT 10 FT.

B9

DEPTH	VISUAL NOTES
0	2.5" ASPHALT
	5" CABC
1	3" ASPHALT
	8" CABC
2	FILL:POORLY GRADED SAND WITH CLAY(SP-SC); MOSTLY FINE GRAINED SAND, FEW FINE GRAVEL, FEW SILT, FEW CLAY, MEDIUM DENSE, MOIST, BROWN, (ORGANICS)
3	WATER LEVEL LEAN CLAY (CL); TRACE FINE GRAVEL, FEW FINE-MEDIUM SAND, FEW SILT, MOSTLY CLAY, MEDIUM PLASTICITY, SATURATED, DARK GRAY
4	
5	
6	POORLY GRADED SAND WITH SILT (SP-SM); MOSTLY FINE-MEDIUM GRAINED SAND, FEW FINE-CORSE GRAVEL, FEW SILT, MEDIUM DENSE, SATURADED, DARK BROWN
7	
8	BEDROCK: PARTIALLY WEATHERED GRANITE BEDROCK
9	
10	END AT 10 FT.

B10

DEPTH	VISUAL NOTES
0	5" ASPHALT
	4" CABC
1	2.5" ASPHALT
	7" CABC
2	FILL: POORLY GRADED SANDWITH SILT AND GRAVEL(SP-SM); MOSTLY FINE-MEDIUM GRAINED SAND, LITTLE FINE-CORSE GRAVEL, FEW SILT,MEDIUM DENSE, MOIST, DARK BROWN
3	LEAN CLAY (CL); TRACE FINE GRAVEL, FEW FINE-MEDIUM SAND, FEW SILT, MOSTLY CLAY, MEDIUM PLASTICITY, STIFF, MOIST, DARK BROWN(FEW ORGANICS)
4	
5	WATER LEVEL
6	POORLY GRADED SAND WITH CLAY (SP-SC); MOSTLY FINE-MEDIUM GRAINED SAND, FEW FINE-CORSE GRAVEL, FEW SILT, MEDIUM DENSE, SATURADED, GRAY
7	
8	
9	POORLY GRADED SAND WITH SILT(SP-SM); MOSTLY FINE-MEDIUM GRAINED SAND, FEW FINE-COARSE GRAVEL, FEW SILT,MEDIUM DENSE, SATURATED, GRAY
10	END AT 10 FT.

B11

DEPTH	VISUAL NOTES
0	5" ASPHALT
	5" CABC
1	3.5" ASPHALT
	5" CABC
2	FILL:SILT WITH SAND(ML) FEW FINE GRAVEL, LITTLE FINE SAND, MOSTLY SILT, TRACE CLAY, MOIST FILL:POORLY GRADED SAND WITH SILT(SP-SM); MOSTLY FINE GRAINED SAND, FEW FINE COURSE GRAVEL, FEW SILT, MEDIUM DENSE, BROWN
3	LEAN CLAY (CL); TRACE FINE GRAVEL, FEW FINE-MEDIUM SAND, FEW SILT, MOSTLY CLAY, MEDIUM PLASTICITY, WET,DARK BROWN
4	WATER LEVEL
5	POORLY GRADED SAND WITH SILT (SP-SM); MOSTLY FINE-MEDIUM GRAINED SAND, FEW FINE GRAVEL, FEW SILT, TRACE CLAY, MEDIUM DENSE, WET, GRAY
6	
7	
8	POORLY GRADED SAND WITH SILT(SP-SM); MOSTLY FINE-MEDIUM GRAINED SAND, FEW FINE-COARSE GRAVEL, FEW SILT,MEDIUM DENSE, MOIST, BROWN, (WEATHERED GRANITE BEDROCK)
9	
10	END AT 10 FT.

NOTE: THESE ARE ABBREVIATED BORING LOGS, SEE GEOTECH REPORT FOR FULL LOG & DESCRIPTIONS

SECTION FROM SOUTH ROAD TO 16TH ROAD
MILL & REMOVE 10"
12"-1-1/4" C.A.B.C.OVER GEOTEXTILE FABRIC
1-SEAL COAT
1-CHIP SEAL

SECTION FROM 16TH ROAD TO S.T.H. 153
PULVERIZE 12" DEPTH, GRADE, COMPACT
1-SEAL COAT
1-CHIP SEAL

ROTH PROFESSIONAL SOLUTIONS

PEPLIN ROAD CONCEPT

KRONENWETTER STREET PLANNING

ROAD IMPROVEMENT PROJECT

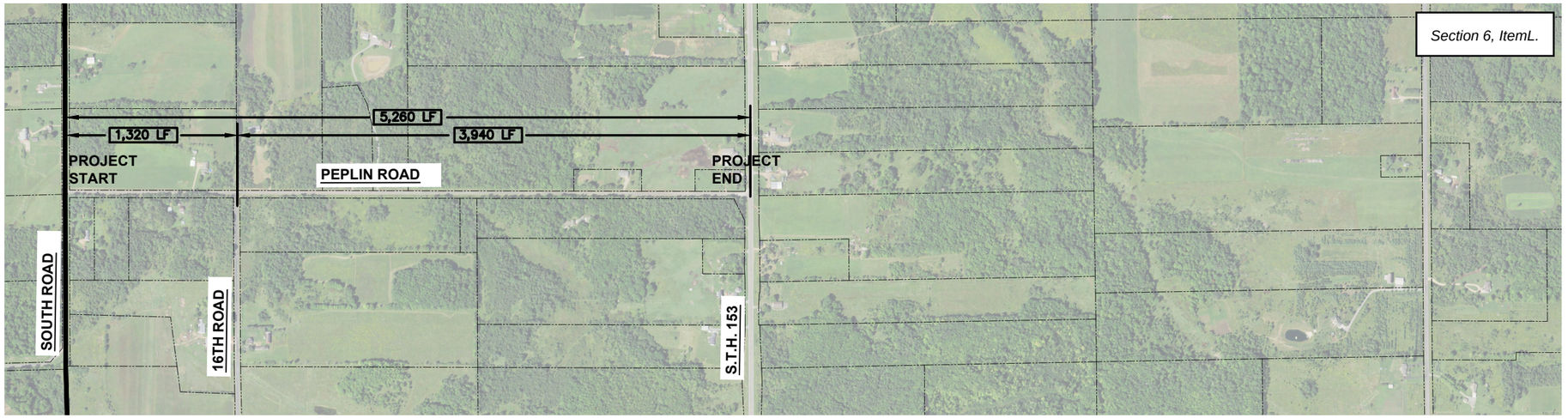
VILLAGE OF KRONENWETTER, WI

W S N E

0 500 1000

SCALE: 1" = 1000FEET
(PRINTED AT 11"x 17")

DATE:	01/08/26
DESIGNED BY:	RJR
DRAWN BY:	WAC
PROJECT NO:	2026-020
SHEET:	104



PEPLIN ROAD REHABILITATION - SOUTH ROAD TO S.T.H.153

SECTION FROM SOUTH ROAD TO 16TH ROAD
MILL & REMOVE 10"
12"-1-1/4" C.A.B.C.OVER GEOTEXTILE FABRIC
1-SEAL COAT
1-CHIP SEAL

SECTION FROM 16TH ROAD TO S.T.H. 153
PULVERIZE 12" DEPTH, GRADE, COMPACT
1-SEAL COAT
1-CHIP SEAL

ROTH PROFESSIONAL SOLUTIONS

PEPLIN ROAD CONCEPT

KRONENWETTER STREET PLANNING

ROAD IMPROVEMENT PROJECT

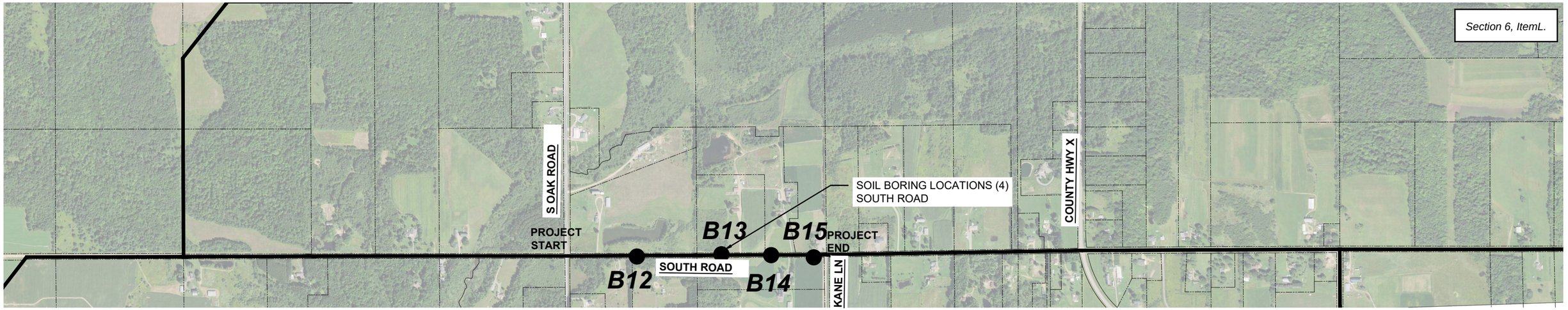
VILLAGE OF KRONENWETTER, WI

W S N E

0 500 1000

SCALE: 1" = 1000FEET
(PRINTED AT 11"x 17")

DATE:	01/08/26
DESIGNED BY:	RJR
DRAWN BY:	WAC
PROJECT NO:	2026-020
SHEET:	2



B12

DEPTH	VISUAL NOTES
0	1.5" ASPHALT
	10" CABC
1	FILL: POORLY GRADED SAND WITH SILT AND GRAVEL(SP-SM); MOSTLY FINE-MEDIUM GRAINED SAND, LITTLE FINE-CORSE GRAVEL, FEW SILT, MEDIUM DENSE, MOIST, DARK BROWN
2	
3	WATER LEVEL POORLY GRADED SAND (SP); MOSTLY FINE-MEDIUM GRAINED SAND, TRACE FINE GRAVEL, TRACE SILT, MEDIUM DENSE, SATURATED, BROWN
4	
5	END AT 5 FT.

B13

DEPTH	VISUAL NOTES
0	1.5" ASPHALT
	11" CABC
1	FILL: POORLY GRADED SAND WITH SILT AND GRAVEL(SP-SM); MOSTLY FINE-MEDIUM GRAINED SAND, LITTLE FINE-CORSE GRAVEL, FEW SILT, MEDIUM DENSE, MOIST, DARK BROWN
2	
3	WATER LEVEL
4	POORLY GRADED SAND (SP); MOSTLY FINE-MEDIUM GRAINED SAND, TRACE FINE GRAVEL, TRACE SILT, MEDIUM DENSE, SATURATED, BROWN
5	END AT 5 FT.

B14

DEPTH	VISUAL NOTES
0	1.5" ASPHALT
	10" CABC
1	FILL:POORLY GRADED SAND WITH SILT(SP-SM); MOSTLY FINE GRAINED SAND, FEW FINE GRAVEL, FEW SILT, TRACE CLAY, LOOSE , MOIST, GRAY
2	POORLY GRADED SAND WITH CLAY(SP-SC); MOSTLY FINE GRAINED SAND, TRACE FINE GRAVEL, FEW SILT, FEW CLAY, LOOSE , MOIST, BLACK,(ORGANICS)
3	WATER LEVEL LEAN CLAY(CL): TRACE FINE GRAVEL, FEW FINE-MEDIUM SAND, FEW SILT, MOSTLY CLAY, MEDIUM PLASTICITY, WET, DARK BROWN
4	POORLY GRADED SAND (SP); MOSTLY FINE GRAINED SAND, TRACE FINE GRAVEL, TRACE SILT, MEDIUM DENSE, SATURATED, LIGHT BROWN
5	
6	
7	
8	LEAN CLAY (CL); FEW FINE GRAVEL, FEW FINE-MEDIUM SAND, FEW SILT, MOSTLY CLAY, MEDIUM PLASTICITY, VERY STIFF, MOIST, BROWN, (WEATHERED GRANITE BEDROCK)
9	
10	END AT 10 FT.

B15

DEPTH	VISUAL NOTES
0	2" ASPHALT
	16" CABC
1	FILL: POORLY GRADED SAND WITH CLAY(SP-SC); MOSTLY FINE GRAINED SAND, TRACE FINE GRAVEL, FEW SILT, FEW CLAY, MEDIUM DENSE, MOIST, GRAY & BROWN
2	
3	POORLY GRADED SAND WITH CLAY(SP-SC); MOSTLY FINE GRAINED SAND, TRACE FINE GRAVEL, FEW SILT, FEW CLAY, MEDIUM DENSE, MOIST, REDDISH-BROWN, (WEATHERED GRANITE BEDROCK)
4	
5	END AT 5 FT.

NOTE: THESE ARE ABBREVIATED BORING LOGS, SEE GEOTECH REPORT FOR FULL LOG & DESCRIPTIONS

SECTION FROM KANE LN TO S. OAK ROAD
PULVERIZE & GRADE, COMPACT
1-SEAL COAT
1-CHIP SEAL

ROTH PROFESSIONAL SOLUTIONS

SOUTH ROAD CONCEPT

KRONENWETTER STREET PLANNING

ROAD IMPROVEMENT PROJECT

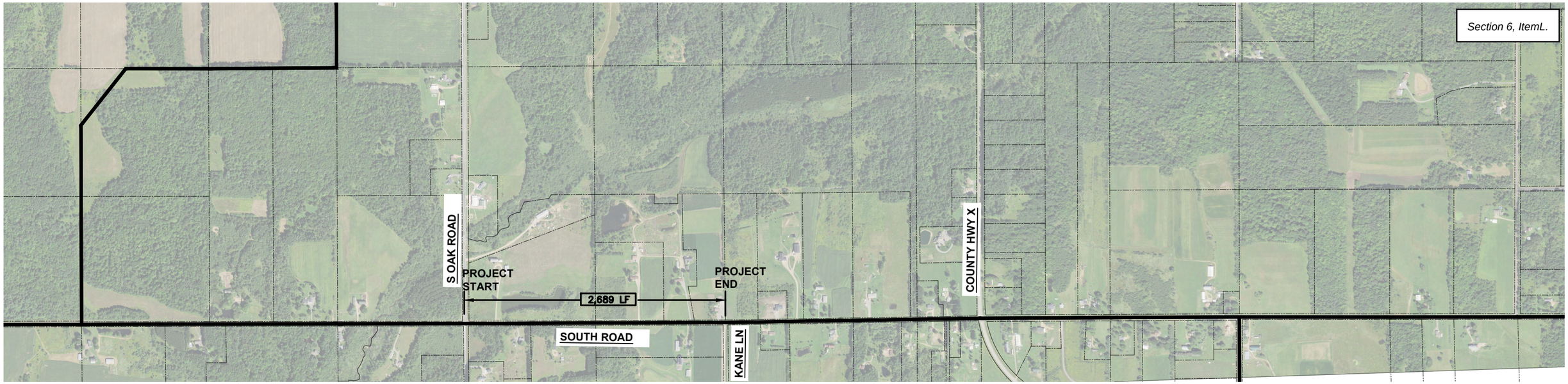
VILLAGE OF KRONENWETTER, WI

N W E S

0 500 1000

SCALE: 1" = 1000FEET
(PRINTED AT 11"x 17")

DATE:	01/08/26
DESIGNED BY:	RJR
DRAWN BY:	WAC
PROJECT NO:	2026-020
SHEET:	106



SOUTH ROAD REHABILITATION - SOUTH OAK ROAD TO KANE LN

SECTION FROM KANE LN TO S. OAK ROAD
PULVERIZE & GRADE, COMPACT
1-SEAL COAT
1-CHIP SEAL

ROTH PROFESSIONAL SOLUTIONS

SOUTH ROAD CONCEPT

KRONENWETTER STREET PLANNING

ROAD IMPROVEMENT PROJECT

VILLAGE OF KRONENWETTER, WI

N W E S

0 500 1000

SCALE: 1" = 1000FEET
(PRINTED AT 11"x 17")

DATE:	01/08/26
DESIGNED BY:	RJR
DRAWN BY:	WAC
PROJECT NO:	2026-020
SHEET:	2

ENGINEER'S PRELIMINARY COST ESTIMATE

ROTH PROFESSIONAL SOLUTIONS

FOREST ROAD, CURVE RD TO AUTUMN RD, VILLAGE OF KRONENWETTER

Total 4,233 Feet

Updated 1/28/2026

Item No.	Bid Item	Quanity	Units	Unit Cost	Total Amount
1	Performance & Payment Bonds	1	LS	$20,000.00	$20,000.00
2	Mobilization & Demobilization	1	LS	$10,000.00	$10,000.00
3	Removal Ditch Topsoil, 6", 10' wide	9407	SY	$3.00	$28,220.00
4	Mill & Remove Pavement	10347	SY	$5.00	$51,736.67
5	Mill drives to pave	1	Ls	$5,000.00	$5,000.00
6	Undercut Approx 1000'	1185	Cy	$10.00	$11,851.85
7	3" breaker run for Under Cutting	1185	Cy	$30.00	$35,555.56
8	1-1/4" CABC (10" New Material)	3658	CY	$50.00	$182,907.41
9	Seal Coat	10347	SY	$1.75	$18,107.83
10	Chip Seal	10347	SY	$4.50	$46,563.00
11	3/4" CABC shoulder	157	CY	$50.00	$7,838.89
12	Repair Top soil ditches 3:1 slope & emat	9407	SY	$7.00	$65,846.67
13	Pave at driveway & cross roads 20'	283	Ton	$7.00	$1,983.33
14	1-1/4" CABC at intersections as needed	61	CY	$50.00	$3,074.07
	Sub-Total Road Construction Cost				**$489,000.00**
	Engineering & Contigency				$74,000.00
	Total Project Construction				**$587,000**

ENGINEER'S PRELIMINARY COST ESTIMATE

ROTH PROFESSIONAL SOLUTIONS

AUTUMN ROAD, TRUNK RD TO FOREST RD, VILLAGE OF KRONENWETTER

Total 2,589 Feet

Updated 1/28/2026

\	Bid Item	Quanity	Units	Unit Cost	Total Amount
1	Performance & Payment Bonds	1	LS	$20,000.00	$20,000.00
2	Mobilization & Demobilization	1	LS	$10,000.00	$10,000.00
3	Removal Ditch Topsoil, 6", 10' wide	5753	SY	$3.00	$17,260.00
4	Mill & Remove Pavement	6329	SY	$5.00	$31,643.33
5	Mill drives to pave	1	CY	$5,000.00	$5,000.00
6	Excavate for Road Section	3068	CY	$10.00	$30,684.44
7	Dealing ground water	1	LS	$5,000.00	$5,000.00
8	Fabric	8630	SY	$5.00	$43,150.00
9	1-1/4" CABC (New Material 10")	2228	CY	$50.00	$111,422.89
10	Asphalt Seal Coat Top of Base for Seal	6329	SY	$1.75	$11,075.17
11	Chip Seal Wear Surface	6329	SY	$4.50	$28,479.00
12	3/4" CABC shoulder	96	CY	$50.00	$4,794.44
13	Repair Top soil ditches 3:1 slope & emat	5753	SY	$7.00	$40,273.33
14	Pave at driveway & cross roads 20'	283	Ton	$7.00	$1,983.33
15	1-1/4" CABC at intersections (as needed)	37	CY	$50.00	$1,851.85
	Sub-Total Road Construction Cost				**$363,000.00**
	Engineering & Contigency				$55,000.00
	Total Project Construction				**$436,000**

ENGINEER'S PRELIMINARY COST ESTIMATE

ROTH PROFESSIONAL SOLUTIONS

SOUTH ROAD, S OAK RD TO KANE LN, VILLAGE OF KRONENWETTER

Total 2,689 Feet

Updated 1/28/2026

Item No.	Bid Item	Quanity	Units	Unit Cost	Total Amount
1	Performance & Payment Bonds	1	LS	$20,000.00	$20,000.00
2	Mobilization & Demobilization	1	LS	$10,000.00	$10,000.00
3	Removal Ditch Topsoil, 6", 10' wide	5976	SY	$3.00	$17,926.67
4	Pulverize & Grade Pavement	6573	SY	$5.00	$32,865.56
5	Mill drives to pave	1	Ls	$5,000.00	$5,000.00
6	1-1/4" C.A.B.C (As needed)	100	CY	$10.00	$1,000.00
7	Culvert replacement	1	Ls	$10,000.00	$10,000.00
8	Seal Coat (over gravel as seal)	6573	SY	$2.00	$13,146.22
9	Chip Seal (over seal coat for wear surface)	6573	SY	$5.00	$32,865.56
10	3/4" CABC shoulder	100	CY	$50.00	$4,979.63
11	Repair Top soil ditches 3:1 slope & emat	5976	SY	$7.00	$41,828.89
12	Pave at driveway & cross roads 20'	283	Ton	$7.00	$1,983.33
13	10" 1-1/4" CABC at intersections	61	cy	$50.00	$3,074.07
	Sub-Total Road Construction Cost				**$195,000.00**
	Engineering & Contigency				$30,000.00
	Total Project Construction				**$234,000**

Point of Beginning

GEOTECHNICAL ENGINEERING REPORT

FOUR ROAD IMPROVEMENTS

KRONENWETTER, WISCONSIN

DECEMBER 22, 2025 | PROJECT NO. 25.2061

ROTH PROFESSIONAL SOLUTIONS
317 DeWitt Street
Portage, WI 53901

Point of Beginning

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

December 22, 2025

Roth Professional Solutions
Attn: Robert Roth, P.E.
317 DeWitt Street
Portage, WI 53901

RE: Four Road (Autumn Road, Forest Road, Peplin Road, & South Road) Improvements – Kronenwetter, WI

Dear Mr. Roth:

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

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

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

Sincerely,

Michael Frede, P.E.

Michael Frede, P.E.
Director of Geotechnical Engineering

Enclosure

Contents

EXECUTIVE SUMMARY

This report summarizes the findings of our geotechnical engineering services associated with the proposed reconstruction of four roads for Roth Professional Solutions in the Village of Kronenwetter, Wisconsin.

PROJECT DESCRIPTION

The project consists of repaving the following roads:

- About ½ mile of Autumn Road
- About ¾ mile of Forest Road
- About 1 mile of Peplin Road
- About ½ mile of South Road

STRUCTURAL CONSIDERATIONS

- There are no structures planned for the project.
- There are no retaining walls planned for the project.

CIVIL CONSIDERATIONS

- Minimum asphalt pavement section should consist of the following:
    - Traffic Class II = 5 inches of asphalt over 10 inches of base course
- No stormwater management systems are planned for the project.

CONSTRUCTION CONSIDERATIONS

- Soil improvement should be planned, consisting of removing any unsuitable soils, after the existing pavements are removed.
    - Undocumented fills exist within the project areas that are a concern for pavement support.
    - The soils exhibit variable strengths that can produce inconsistent pavement distress.
    - Organic matter exists within the subgrade soils in sporadic locations, which can be unsuitable for the support of pavements.
- Loose, clean (minimal fines) sands exist near the ground surface that will be sensitive to construction activity and actions to minimize disturbance during construction should be planned.
- Fine-grained (clay and silt) soils exist that are sensitive to construction activity and moisture changes and actions to minimize disturbance during construction should be planned.
- Shallow soils with high moisture content exist that can cause construction challenges.
- Shallow perched water or groundwater existing in localized areas that could cause construction challenges.

PROJECT DESCRIPTION

Point of Beginning is assisting Roth Professional Solutions with the design of new asphalt pavements for four roads in Kronenwetter, Wisconsin. The locations of the project areas are illustrated in Figure 1 in Appendix A.

The proposed project consists of the following:

- New Asphalt Pavement
  - About ½ mile of Autumn Road from Trunk Road to Forest Road.
  - About ¾ mile of Forest Road from Autumn Road to Curve Road.
  - About 1 mile of Peplin Road from South Road to Hwy 153.
  - About ½ mile of South Road from Kane Lane to Oak Road.
- Underground utilities
  - Occasional culverts will be replaced.
- The grading plan for the project has not been provided.
  - Maximum grade changes are estimated to be less than 1 foot.
- No structures are planned for the project.
- No stormwater management systems are planned for the project.

SITE DESCRIPTION

- The project is located in Marathon County.
- The land is currently owned by the Village of Kronenwetter.
- The ground surface elevations vary substantially along the road alignments.
  - From 1227 to 1252 feet along Autumn Road
  - From 1205 to 1278 feet along Forest Road
  - From 1189 to 1219 feet along Peplin Road
  - From 1153 to 1219 feet along South Road

SCOPE OF SERVICES

SUBSURFACE EXPLORATION

- The drilling program consisted of fifteen borings (B-1 through B-15).
  - Autumn Road
    - Three borings (B-1, B-2, and B-3) were drilled to depths of 5 feet.
  - Forest Road
    - Four borings (B-4 through B-7) were drilled to depths of 5 and 10 feet.
  - Peplin Road
    - Four borings (B-8 through B-11) were drilled to depths of 10 feet.
  - South Road
    - Four borings (B-12 through B-15) were drilled to depths of 5 and 10 feet.
- The boring locations are identified in the Boring Location Diagram (Figure 2) in Appendix A.

- The drilling and sampling procedures are described in Appendix D.

ADDITIONAL FIELD TESTING

No additional field testing was conducted.

LABORATORY TESTING

The laboratory testing program consisted of the following:

- All samples were visually examined and classified based on their physical characteristics as defined by the Unified Soil Classification System (USCS).
    - The boring logs are included in Appendix B.
    - The USCS summary is included in Appendix B.
- Water content testing on all samples.
    - The laboratory test results are presented on the boring logs.
- Calibrated hand penetrometer (Q_p) testing on all intact fine-grained (clay and silt) samples.
    - The laboratory test results are presented on the boring logs.
- Typical laboratory procedures are described in Appendix D.

SUBSURFACE CONDITIONS

SOIL CONDITIONS

The subsurface conditions encountered at the borings are summarized below. For detailed descriptions of the geologic conditions encountered at the boring locations, please refer to the attached logs in Appendix B. The size of the project and typical geologic variability between boring locations warrants considering all soil conditions within a project area when designing the various civil elements of the development.

General Soil Conditions

The general profile consisted of the following:

- Asphalt Pavement
    - Autumn Road
        - 4 to 6.5 inches of asphalt
        - 5 to 8 inches of crushed aggregate base course
    - Forest Road
        - 4 to 7 inches of asphalt
        - 4 to 8 inches of crushed aggregate base course
    - Peplin Road
        - Upper Layer
            - 2 to 5 inches of asphalt
            - 4 to 5 inches of crushed aggregate base course
        - Lower Layer
            - 2.5 to 3.5 inches of asphalt

- 5 to 8 inches of crushed aggregate base course
  - South Road
    - 1.5 to 2 inches of asphalt
    - 10 to 16 inches of crushed aggregate base course
- Soil Profile
  - Autumn Road
    - Undocumented clay and silt fill soil was encountered at B-1 to a depth of about 3 feet.
      - The fill was likely placed when the road was originally constructed.
      - The fill is "undocumented" because no reports were provided to indicate it was placed and compacted sufficiently to support pavements.
    - Native sand was encountered at B-2 and B-3 to depths of about 3 feet.
      - Soil containing organic matter was encountered at B-2.
    - Weathered granite bedrock was encountered at a depth of about 3 feet at all three borings.
      - The samples exhibited characteristics more consistent with sand soil and were therefore defined as soil.
  - Forest Road
    - Undocumented sand fill soil was encountered at B-7 to a depth of about 2 feet.
      - The fill was likely placed when the road was originally constructed.
      - The fill is "undocumented" because no reports were provided to indicate it was placed and compacted sufficiently to support pavements.
    - Stratified layers of native clay, silt, and sand were encountered.
      - The soils varied in their physical composition (clay, silt, sand, and gravel percentages).
    - Weathered granite bedrock was encountered at B-4 and B-6 at depths of about 3 feet.
      - The samples exhibited characteristics more consistent with sand soil and were therefore defined as soil.
  - Peplin Road
    - Undocumented silt and sand fill soil was encountered at B-8, B-10, and B-11 to depths of about 3 feet.
      - The fill was likely placed when the road was originally constructed.
      - The fill is "undocumented" because no reports were provided to indicate it was placed and compacted sufficiently to support pavements.
    - Native clay was encountered at B-9, B-10, and B-11 to depths of about 4.5 to 6 feet.
      - Clay samples containing organic matter were encountered at B-9 and B-10.
    - Stratified layers of native sand were encountered at all four borings.
      - The sand samples varied in their physical composition (clay, silt, and gravel percentages).
    - Weathered granite bedrock was encountered at B-8, B-9, and B-11 at depths of about 3, 8, and 6 feet, respectively.

- The weathered bedrock exhibited characteristics more consistent with sand soil at B-8 from 3 to 8 feet and at B-11 below 6 feet and was therefore defined as soil.
- The bedrock was less weathered at B-8 and B-9 below about 8 feet and was therefore defined as bedrock.

o South Road
- Undocumented sand fill soil was encountered at all four borings to depths of about 2 to 3 feet.
  - The fill was likely placed when the road was originally constructed.
  - The fill is "undocumented" because no reports were provided to indicate it was placed and compacted sufficiently to support pavements.
- Native clay was encountered at B-14 at depths of about 3 to 4 feet and below 9 feet.
- Stratified layers of native sand were encountered at all four borings.
  - The sand samples varied in their physical composition (clay, silt and gravel percentages).
  - One sand sample containing organic matter was encountered at B-14.

o Weathered granite bedrock was encountered at B-14 at a depth of about 8 feet and at B-15 at a depth of about 3 feet.
  - The weathered bedrock exhibited characteristics more consistent with clay and sand soil and was therefore defined as soil.

Physical Soil Conditions

The physical soil characteristics consisted of the following:

Autumn Road

- Fill Soil
  - o Fine-Grained (Clay) Fill
    - One clay fill sample was recovered.
      - The sample exhibited very stiff consistency.
        - o The Q_p value was 4,000 psf.
      - The moisture content was 26.0%
        - o Typically, moisture contents are considered high if they are above 20% in fine-grained soil.
        - o The sample was described as wet, suggesting the presence of perched water or groundwater.
- Native Soil (including weathered bedrock samples)
  - o Coarse-Grained (Sand) Soil
    - Five native sand samples were recovered.
      - The samples exhibited loose to dense relative density.
        - o The N-values ranged from 9 to 30.
          - The average was 15.
          - One sample (20%) was less than 10 (loose).

        - One sample (20%) was 30 (dense).
    - The moisture contents ranged from 4.9% to 17.6%.
        - The average was 12.5%.
        - Typically, moisture contents are considered high if they are above 15% in coarse-grained soil.
            - One sample (20%) exceeded 15%.
        - Three samples (60%) were described as wet, suggesting the presence of perched water or groundwater.

Forest Road

- Native Soil (including weathered bedrock samples)
    - Fine-Grained (Clay and Silt) Soil
        - Four native clay and silt samples were recovered.
            - Three samples were disturbed and could not be tested for their strength.
            - The fourth sample exhibited very stiff consistency.
                - The Q_p value was 4,000 psf.
            - The moisture contents ranged from 5.5% to 25.6%
                - The average was 11.9%.
                - Typically, moisture contents are considered high if they are above 20% in fine-grained soil.
                    - One sample (25%) exceeded 20%.
                - The sample was described as saturated, suggesting the presence of perched water or groundwater.
    - Coarse-Grained (Sand) Soil
        - Six native sand samples were recovered.
            - The samples exhibited loose to medium dense relative density.
                - The N-values ranged from 6 to 19.
                    - The average was 11.
                    - Three samples (50%) were less than 10 (loose).
            - The moisture contents ranged from 5.6% to 18.3%.
                - The average was 11.4%.
                - Typically, moisture contents are considered high if they are above 15% in coarse-grained soil.
                    - One sample (17%) exceeded 15%.
                - Four samples (67%) were described as wet, suggesting the presence of perched water or groundwater.

Peplin Road

- Fill Soil
    - Coarse-Grained (Sand) Fill
        - Three sand fill samples were recovered.

- The samples exhibited medium dense relative density.
    - The N-values were 13, 17, and 28.
- The moisture contents were 4.4%, 6.5%, and 15.3%.
    - Typically, moisture contents are considered high if they are above 15% in coarse-grained soil.

- Native Soil (including weathered bedrock samples, but excluding two partially weathered bedrock samples)
    - Fine-Grained (Clay) Soil
        - One clay sample was recovered.
            - The sample exhibited stiff consistency.
                - The Q_p value was 3,500 psf.
            - The moisture content was 36.9%
                - Typically, moisture contents are considered high if they are above 20% in fine-grained soil.
                - The sample contained organic matter, reflected by the high moisture content.
    - Coarse-Grained (Sand) Soil
        - Ten native sand samples were recovered.
            - The samples exhibited loose to dense relative density.
                - The N-values ranged from 8 to 46.
                    - The average was 21.
                    - One sample (10%) was less than 10 (loose).
                    - Two samples (20%) exceeded 30 (dense).
            - The moisture content ranged from 8.1% to 17.5%.
                - The average was 11.5%.
                - Typically, moisture contents are considered high if they are above 15% in coarse-grained soil.
                    - One sample (10%) exceeded 15%.
                - Five samples (50%) were described as wet or saturated, suggesting the presence of perched water or groundwater.

South Road

- Fill Soil
    - Coarse-Grained (Sand) Fill
        - Three sand fill samples were recovered.
            - The samples exhibited medium dense relative density.
                - The N-values were 12, 14, and 14.
            - The moisture contents were 11.3%, 13.2%, and 14.9%.
                - Typically, moisture contents are considered high if they are above 15% in coarse-grained soil.
- Native Soil (including weathered bedrock samples)

- Fine-Grained (Clay) Soil
  - One clay sample was recovered.
    - The sample exhibited very stiff consistency.
      - The Q_p value was 5,500 psf.
    - The moisture content was 14.2%
      - Typically, moisture contents are considered high if they are above 20% in fine-grained soil.
- Coarse-Grained (Sand) Soil
  - Six native sand samples were recovered.
    - The samples exhibited loose to dense relative density.
      - The N-values ranged from 9 to 30.
        - The average was 16.
        - One sample (17%) was less than 10 (loose).
        - One sample (17%) was 30 (dense).
    - The moisture contents ranged from 4.1% to 37.7%.
      - The average was 20.8%.
      - Typically, moisture contents are considered high if they are above 15% in coarse-grained soil.
        - Five samples (83%) exceeded 15%.
      - Three samples (50%) were described as saturated, suggesting the presence of perched water or groundwater.
      - The sample with 37.7% moisture contained organic matter, reflected by the high moisture content.

BEDROCK CONDITIONS

- Weathered granite bedrock was encountered at ten of the fifteen boring locations at depths that ranged from 3 to 8 feet.
  - Most of the bedrock samples exhibited characteristics more consistent with soil and therefore were addressed in the *Soil Conditions* section above.
  - Less (partially) weathered granite bedrock was encountered at two boring locations (B-8 and B-9).
    - Two samples were recovered from B-8 and B-9 (Peplin Road) at depths of 8 feet.
    - The samplers experienced refusal (N-values of 50 blows for less than 6 inches of penetration), indicating more competent bedrock.
  - The moisture contents were 5.5% and 16.5%.

GROUNDWATER CONDITIONS

- Perched water or groundwater was encountered at variable, but generally shallow depths.
  - Autumn Road
    - 1 to 2 feet
  - Forest Road

        - 2 feet to greater than 5 feet
    - Peplin Road
        - 3 feet to greater than 10 feet
    - South Road
        - 3 feet to greater than 5 feet
    - The water conditions are indicated on the cross sections (Figures 3 through 6).
- Fluctuations in the groundwater table elevation occur with variations in precipitation, evapotranspiration, surface runoff, etc.
- Shallow perched groundwater conditions should be expected where relatively permeable coarse-grained soils are underlain by relatively impermeable fine-grained soils, especially following precipitation events.

ANALYSIS AND RECOMMENDATIONS

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

- Soil improvement should be planned, consisting of removing any unsuitable soils, after the existing pavements are removed.
  - Undocumented fills exist within the project areas that are a concern for pavement support.
  - The soils exhibit variable strengths that can produce inconsistent pavement distress.
  - Organic matter exists within the subgrade soils in sporadic locations, which can be unsuitable for the support of pavements.
- Loose, clean (minimal fines) sands exist near the ground surface that will be sensitive to construction activity and actions to minimize disturbance during construction should be planned.
- Fine-grained (clay and silt) soils exist that are sensitive to construction activity and moisture changes and actions to minimize disturbance during construction should be planned.
- Shallow soils with high moisture content exist that can cause construction challenges.
- Shallow perched water or groundwater existing in localized areas that could cause construction challenges.

STRUCTURAL CONSIDERATIONS

Foundation Design

- No foundations are planned for the project.

Seismic Design

- Seismic Site Classification is not required for the project.

Floor Slab Design

- No floor slabs are planned for the project.

Retaining Wall Design

- No retaining walls are planned for the project.

CIVIL CONSIDERATIONS

Pavement Design

- The following design values are appropriate for the subgrade soils:
  - Predominant Soil = Sand with Silt (SP-SM)
  - AASHTO Classification = A-3
  - Soil Support Value = 5.1
  - Wisconsin Design Group Index = 6.0
  - CBR Value = 9
  - Subgrade Modulus (k) = 200

  - Soil Resilient Modulus M_R) = 4,700
  - Frost Index = F-2
- Localized areas of undocumented fills and fine-grained soils exist.
  - Therefore, greater than normal distress, faster deterioration, overall reduced service life, and increased maintenance are anticipated.
  - To reduce the potential for localized settlements and provide more consistent subgrade support, a geotextile fabric (e.g., SKAPS W315) could be placed, where encountered, below the base course materials.
- The Wisconsin Asphalt Pavement Association (WAPA) Design Guide should be utilized to design the new asphalt surface pavements.
- The minimum pavement section should consist of the following:

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

- Hot Mix Asphalt (HMA) and base course materials should be placed and compacted following the project requirements and guidelines of WisDOT Standard Specifications for Highway and Structure Construction, section 460.3.
- The pavement section above is not intended to support on-going construction traffic.
- These recommendations assume the subgrade is prepared as described in this report.
  - Additional corrective action may be warranted at the time of construction, depending on the site conditions.

Stormwater Management Design

- No stormwater management systems are planned for the project.

CONSTRUCTION CONSIDERATIONS

Subgrade Preparation

- All loose, wet, disturbed, or otherwise unsuitable surface soils should be stripped from structural and engineered fill areas prior to any construction activities.
- All pavement areas should be proof-rolled to identify low-strength or disturbed areas that need to be removed or improved.
- Clean sand soils will be sensitive to disturbances from construction activity.
  - Care should be taken during construction to protect exposed soils from disturbance from equipment.

- Fine-grained soils will be sensitive to disturbances from construction activity and increases in moisture content that can cause significant reduction in soil strength and support capabilities.
    - Moisture sensitive soils that become wet will likely impact grading and compaction schedules.
- Placing a working subbase layer of 3-inch crushed stone or utilizing a cement stabilization program could be beneficial in areas subjected to construction traffic and to reduce the potential need to strip disturbed soils.

Engineered Fill and Backfill

- Engineered (compacted and tested) Fill
    - Inorganic Materials
    - Free of Deleterious Debris
    - Non-Frozen
    - Maximum 3 inches in Size
    - Placed in 8 to 10-inch Loose Lifts
    - Minimum Compaction
        - Pavement Areas= 95 percent of the Maximum Dry Density (Modified Proctor)
        - Non-Pavement Areas = 90 percent of the Maximum Dry Density (Modified Proctor)
    - Moisture Content = 3± percent of the Optimum Moisture
    - Placed on Tested and Passing Subgrade Soils
    - Testing Frequency (where not specified by local ordinance)
        - One test per lift for every 5,000 square feet of compacted fill in pavement areas.
        - One test per 100 linear feet of compacted utility trench backfill.
- Imported Fill
    - Fine-Grained Soil (Clay)
        - Suitable for mass grading only.
        - Silt soil should not be used.
    - Coarse-Grained Soil (Sand, Gravel)
        - Suitable for utility, pavement, and mass grading.
    - Processed Aggregate (Crushed and Screened)
        - Suitable for all areas and subgrade undercut areas.
- Bedding of pipes should be performed in accordance with normally accepted procedures for the class of utility being placed.
    - Backfilling of excavations should be done in such a way as to provide relatively uniform lateral support until the backfill extends over the utility, accomplished by alternating fill placement at approximately 1-foot intervals to both sides.
    - Bedding and initial backfill requirements may be specified by the Owner based on planned utility types, bedding conditions, and other factors beyond the scope of this study.
- On-site soil can be reused as engineered fill if they meet the specifications in this report.
    - Due to the moisture sensitive nature of fine-grained soils, their use could pose construction challenges regarding achieving the required compaction requirements. Therefore, their use should be avoided.

Foundation Evaluation

- No foundation construction is planned for the project.

Utility Construction

- No utility construction is planned for the project.

Groundwater Management

- Excavations will likely encounter perched water or groundwater.
- The amount of infiltration will be influenced by predominant soil types at any given location.
- If excavations extend slightly into limited perched water or groundwater conditions, filtered sump pumps or other conventional means should be sufficient.
- For excavations that extend to significant depths into substantial perched water conditions or groundwater, prolonged dewatering with a series of sumps or well points and high-capacity pumps, or other more comprehensive means, may be necessary to facilitate construction.
    - Dewatering is recommended to be performed to a depth of at least 2 feet below the lowest excavation depth.
    - If sump pits are employed, they should be lined with a geotextile and filled with open-graded, free-draining aggregate.
- A qualified dewatering contractor could be engaged to review the soil and groundwater conditions to determine the appropriate means and methods for effective dewatering.

Surface Water Management

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

Excavation Safety

- Excavation walls may need to be sloped or braced for stability and safety reasons.
- The Owner and Contractor should be aware of, and become familiar with, applicable local, state, and federal safety regulations, including current OSHA Excavation and Trench Safety Standards.
- Construction-site safety generally is the responsibility of the Contractor, who should also be responsible for the means, methods, and sequencing of construction operations.
- The Contractor should be aware that slope height, slope inclination, or excavation depths should in no case exceed those specified in local, state, or federal safety regulations, (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926), or successor regulations.
- The prevalent soils encountered in the borings are Type C when applying the OSHA regulations.

- OSHA regulations are strictly enforced, and if they are not followed, the Owner, Contractor, and/or earthwork Subcontractor(s) could be liable for substantial penalties.

GENERAL QUALIFICATIONS

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

APPENDICES

APPENDIX A
Diagrams

APPENDIX B
Geologic Information

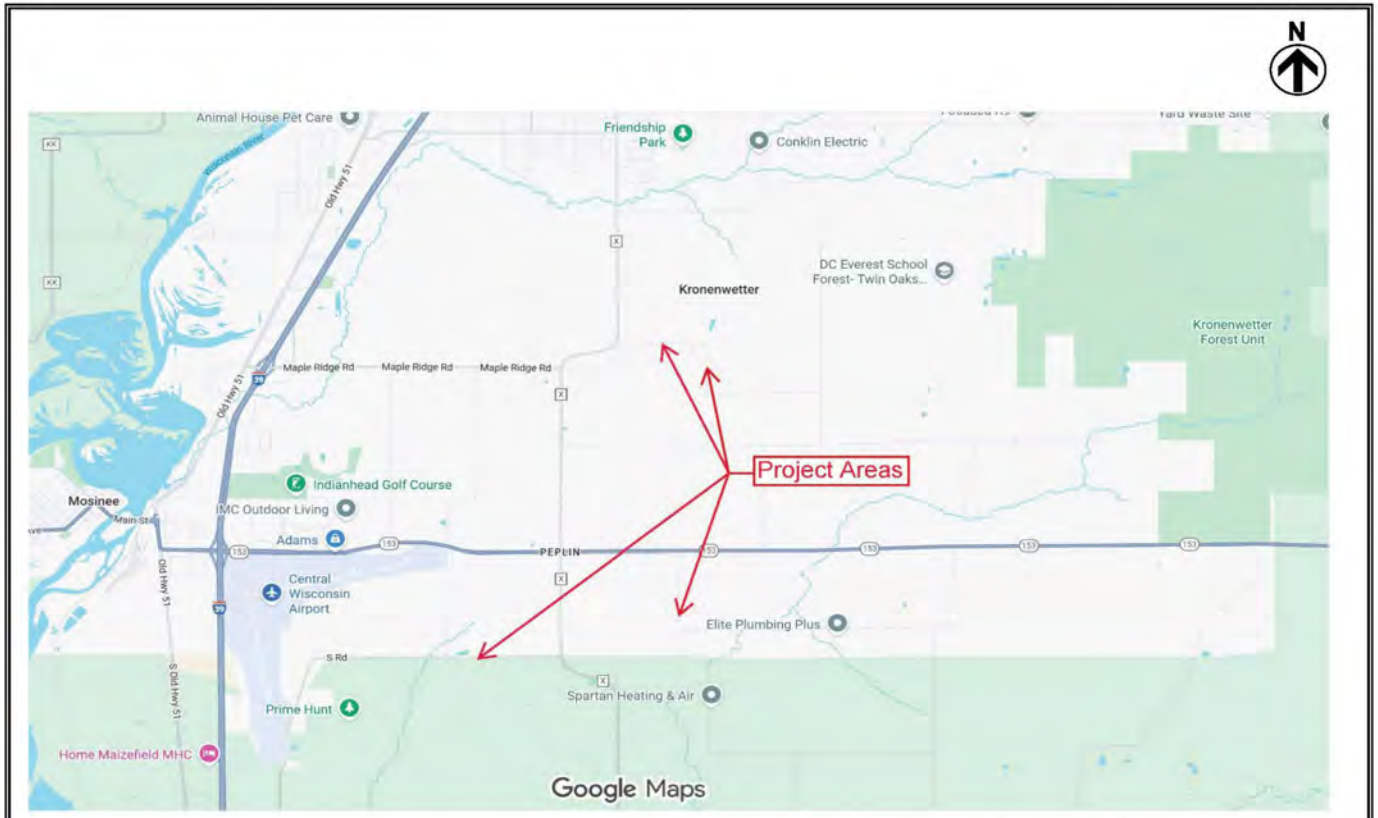
APPENDIX C
Laboratory Reports

APPENDIX D
General Notes & Procedures

APPENDIX E
Additional Documents

APPENDEX A

FIGURE 1 – PROJECT LOCATION DIAGRAM
FIGURE 2 – BORING LOCATION DIAGRAM



Project Name:	Four Street Reconstruction	**Project No.:**	25.2061	**FIGURE 1**
Project Location:	Autumn Road, Forest Road, Peplin Road, and South Road Kronenwetter, Wisconsin Marathon County	**Date:** **Drawn By:** **Scale:**	12/18/25 MDF Not To Scale	**Project Location Diagram**

Project Name:	Four Street Reconstruction	**Project No.:**	25.2061	**FIGURE 2 Boring Location Diagram**
Project Location:	Autumn Road, Forest Road, Peplin Road, and South Road Kronenwetter, Wisconsin Marathon County	**Date:** **Drawn By:** **Scale:**	12/18/25 MDF Not To Scale	

APPENDIX B

BORING LOGS

All Borings (B-1 through B-15)

LEGEND

USCS

CROSS SECTIONS

Figure 3 – Autumn Road
Figure 4 – Forest Road
Figure 5 – Peplin Road
Figure 6 – South Road

Point of Beginning

Client:	**Roth Professional Solutions**	**BORING**	
Project:	**Autumn Road Improvement, (POB #25.2061)**	**Boring No.**	**B-1**
Address:	**Autumn Road, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**10/27/25**	Boring Depth (ft):	**5**
Drilling End Date:	**10/27/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**2**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1251.6**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.80796, -89.59276**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 4 inches of Asphalt Pavement over 8 inches of Crushed Aggregate Base Course									1250
			SS	6 4 3	1.50	7	(1.00') Fill: SILT with sand (ML); trace fine gravel, little fine-medium sand, mostly silt, moist, dark brown									
							(2.00') Fill: Lean CLAY (CL); trace fine gravel, few fine-medium sand, few silt, mostly clay, medium plasticity, very stiff, wet, dark brown	26						2		
			SS	6 9 21	1.10	30	(3.00') Poorly graded SAND with silt and gravel (SP-SM); mostly fine-medium grained sand, little fine-coarse gravel, few silt, dense, moist, gray, (Weathered Granite Bedrock)	4.9								
5							(5.00') Boring terminated									1245
10																1240
15																

NOTES:

Point of Beginning

Client:	**Roth Professional Solutions**	**BORING**	
Project:	**Autumn Road Improvement, (POB #25.2061)**	**Boring No.**	**B-2**
Address:	**Autumn Road, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**10/27/25**	Boring Depth (ft):	**5**
Drilling End Date:	**10/27/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**1**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1242.1**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.81109, -89.59276**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 6.5 inches of Asphalt Pavement over 5 inches of Crushed Aggregate Base Course									1240
			SS	3 3 6	1.50	9	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine gravel, few silt, loose, wet, dark brown, (Few Organics)	17.6								
			SS	3 4 7	1.40	11	(3.00') Poorly graded SAND with silt and gravel (SP-SM); mostly fine grained sand, little fine-coarse gravel, few silt, medium dense, wet, gray, (Weathered Granite Bedrock)	14.6								
5							(5.00') Boring terminated									1235
10																1230
15																

NOTES:

Point of Beginning	**Client:** Roth Professional Solutions **Project:** Autumn Road Improvement, (POB #25.2061) **Address:** Autumn Road, Kronenwetter, WI	**BORING** **Boring No.** B-3 **Page:** 1 of 1

Drilling Start Date:	**10/27/25**	Boring Depth (ft):	**5**
Drilling End Date:	**10/27/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**1**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1227.2**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.81442, -89.59267**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 4.5 inches of Asphalt Pavement over 8 inches of Crushed Aggregate Base Course									1227
			SS	6 5 5	1.40	10	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine gravel, few silt, medium dense, wet, gray	13.8								
			SS	6 7 9	1.40	16	(3.00') Poorly graded SAND with silt and gravel (SP-SM); mostly fine grained sand, little fine-coarse gravel, few silt, medium dense, moist, brown, (Weathered Granite Bedrock)	11.6								
5							(5.00') Boring terminated									1222
																1220
10																1217
																1215
15																1212

NOTES:

Point of Beginning

Client:	**Roth Professional Solutions**	**BORING**	
Project:	**Forest Road Improvement, (POB #25.2061)**	**Boring No.**	**B-4**
Address:	**Forest Road, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**10/27/25**	Boring Depth (ft):	**10**
Drilling End Date:	**10/27/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**3**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**6**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1205.1**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.81486, -89.59432**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 7 inches of Asphalt Pavement over 4 inches of Crushed Aggregate Base Course									1205
			SS	5 6 7	1.50	13	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine gravel, few silt, medium dense, moist, dark brown	7								
		▽	SS	2 1 6	0.80	7	(3.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine gravel, few silt, loose, wet, dark brown	11.8								
5			SS	3 1 4	1.20	5	(6.00') SILT with sand (ML); few fine gravel, little fine sand, mostly silt, saturated, dark brown	25.6								1200
			SS	10 8 11	1.40	19	(8.00') Poorly graded SAND with silt and gravel (SP-SM); mostly fine-medium grained sand, little fine-coarse gravel, few silt, medium dense, wet, gray, (Weathered Granite Bedrock)	11.2								
10							(10.00') Boring terminated									1195
15																

NOTES:

Point of Beginning

Client:	**Roth Professional Solutions**	**BORING**	
Project:	**Forest Road Improvement, (POB #25.2061)**	**Boring No.**	**B-5**
Address:	**Forest Road, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**10/27/25**	Boring Depth (ft):	**5**
Drilling End Date:	**10/27/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**4**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1228.6**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.81489, -89.60002**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 4.5 inches of Asphalt Pavement over 7 inches of Crushed Aggregate Base Course									
			SS	5 6 8	1.50	14	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine gravel, few silt, medium dense, moist, brown	5.6								
							(1.50') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, moist, brown									
		▽	SS	3 3 3	1.50	6										1225
							(4.00') Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, loose, wet, brown	18.3								
5							(5.00') Boring terminated									
																1220
10																
																1215
15																

NOTES:

Point of Beginning

Client:	**Roth Professional Solutions**	**BORING**	
Project:	**Forest Road Improvement, (POB #25.2061)**	**Boring No.**	**B-6**
Address:	**Forest Road, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**10/27/25**	Boring Depth (ft):	**5**
Drilling End Date:	**10/27/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1252**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.81491, -89.60261**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 4 inches of Asphalt Pavement over 8 inches of Crushed Aggregate Base Course									
			SS	4 7 7	0.50	14	(1.00') Lean CLAY (CL); few fine gravel, few fine-medium sand, few silt, mostly clay, medium plasticity, moist, dark brown	6.2								1250
			SS	3 4 6	1.40	10	(3.00') Lean CLAY (CL); few fine-coarse gravel, few fine-medium sand, few silt, mostly clay, medium plasticity, very stiff, moist, brown, (Weathered Granite Bedrock)	5.5						2		
5							(5.00') Boring terminated									1245
10																1240
15																

NOTES:

Point of Beginning

Client:	**Roth Professional Solutions**	**BORING**	
Project:	**Forest Road Improvement, (POB #25.2061)**	**Boring No.**	**B-7**
Address:	**Forest Road, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**10/27/25**	Boring Depth (ft):	**5**
Drilling End Date:	**10/27/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**2**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1277.9**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.81493, -89.60640**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 4.5 inches of Asphalt Pavement over 8 inches of Crushed Aggregate Base Course									1277.9
			SS	7 5 4	1.50	9	(1.00') Fill: Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine gravel, few silt, loose, moist, dark brown	14.3								
							(2.00') Poorly graded SAND with clay (SP-SC); mostly fine-medium grained sand, few fine gravel, few silt, few clay, loose, wet, brown									1275
			SS	4 6 7	1.40	13	(3.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, trace fine gravel, few silt, trace clay, medium dense, moist, brown									
5							(4.00') Lean CLAY (CL); few fine gravel, few fine-medium sand, few silt, mostly clay, medium plasticity, moist, brown	10.4								1270
							(5.00') Boring terminated									
10																1265
15																

NOTES:

Point of Beginning

Client:	**Roth Professional Solutions**	**BORING**	
Project:	**Peplin Road Improvement, (POB #25.2061)**	**Boring No.**	**B-8**
Address:	**Peplin Road, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**10/30/25**	Boring Depth (ft):	**10**
Drilling End Date:	**10/30/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1198.8**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.77235, -89.59772**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 2 inches of Asphalt Pavement over 4 inches of Crushed Aggregate Base Course									
							(0.50') Asphalt: 3.5 inches of Asphalt Pavement									
			SS	12 15 13	0.80	28	(1.00') Fill: Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, medium dense, moist, brown	6.5								
			SS	6 9 13	1.20	22	(3.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, medium dense, moist, gray, (Weathered Granite Bedrock)	9.9								1195
5			SS	13 20 26	0.50	46	(6.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, dense, moist, gray, (Weathered Granite Bedrock)	8.1								
			SS	48 50	0.50	50	(8.00') BEDROCK: Partially Weathered Granite Bedrock	5.5								1190
10							(10.00') Boring terminated									
																1185
15																

NOTES:

Point of Beginning

Client:	**Roth Professional Solutions**	**BORING**	
Project:	**Peplin Road Improvement, (POB #25.2061)**	**Boring No.**	**B-9**
Address:	**Peplin Road, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**10/30/25**	Boring Depth (ft):	**10**
Drilling End Date:	**10/30/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**3**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1188.7**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.77594, -89.59768**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 2.5 inches of Asphalt Pavement over 5 inches of Crushed Aggregate Base Course									
			SS	8 7 5	1.30	12	(0.50') Asphalt: 3 inches of Asphalt Pavement over 8 inches of Crushed Aggregate Base Course (1.50') Poorly graded SAND with clay (SP-SC); mostly fine-medium grained sand, few fine gravel, few silt, few clay, medium dense, moist, brown, (Few Organics)	11.3								
		▽	SS	4 4 4	1.40	8	(3.00') Lean CLAY (CL); trace fine gravel, few fine-medium sand, few silt, mostly clay, medium plasticity, saturated, dark brown, (Organics)									1185
5							(4.50') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine gravel, few silt, loose, saturated, dark gray	14								
			SS	5 6 6	1.20	12	(6.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, medium dense, saturated, dark brown	9.4								
			SS	42 50	0.33	50	(8.00') BEDROCK: Partially Weathered Granite Bedrock	16.5								1180
10							(10.00') Boring terminated									
																1175
15																

NOTES:

Point of Beginning

Client:	**Roth Professional Solutions**	**BORING**	
Project:	**Peplin Road Improvement, (POB #25.2061)**	**Boring No.**	**B-10**
Address:	**Peplin Road, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**10/30/25**	Boring Depth (ft):	**10**
Drilling End Date:	**10/30/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**5.5**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1199.5**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.78031, -89.59768**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 5 inches of Asphalt Pavement over 4 inches of Crushed Aggregate Base Course									
			SS	7 9 8	1.10	17	(0.50') Asphalt: 2.5 inches of Asphalt Pavement over 7 inches of Crushed Aggregate Base Course (1.50') Fill: Poorly graded SAND with silt and gravel (SP-SM); mostly fine-medium grained sand, little fine-coarse gravel, few silt, medium dense, moist, dark brown	4.4								
			SS	2 2 3	1.40	5	(3.00') Lean CLAY (CL); trace fine gravel, few fine-medium sand, few silt, mostly clay, medium plasticity, stiff, moist, dark brown, (Few Organics)	36.9						1.75		1195
5		▼														
			SS	6 10 11	1.20	21	(6.00') Poorly graded SAND with clay (SP-SC); mostly fine-medium grained sand, few fine-coarse gravel, few silt, few clay, medium dense, saturated, gray	10								
			SS	8 8 9	1.00	17	(9.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, medium dense, saturated, gray	17.5								1190
10							(10.00') Boring terminated									
																1185
15																

NOTES:

Point of Beginning

Client:	**Roth Professional Solutions**	**BORING**	
Project:	**Peplin Road Improvement, (POB #25.2061)**	**Boring No.**	**B-11**
Address:	**Peplin Road, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**10/30/25**	Boring Depth (ft):	**10**
Drilling End Date:	**10/30/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**3**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**4.5**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1219**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.78392, -89.59763**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 5 inches of Asphalt Pavement over 5 inches of Crushed Aggregate Base Course									
			SS	4 6 7	1.50	13	(1.00') Asphalt: 3.5 inches of Asphalt Pavement over 5 inches of Crushed Aggregate Base Course (1.50') Fill: SILT with sand (ML); few fine gravel, little fine sand, mostly silt, trace clay, moist, brown	15.3								
			SS	4 4 8	1.40	12	(2.00') Fill: Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine-coarse gravel, few silt, medium dense, moist, brown (3.00') Lean CLAY (CL); few fine gravel, few fine-medium sand, few silt, mostly clay, medium plasticity, wet, dark brown									1215
5							(4.50') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine gravel, few silt, trace clay, medium dense, wet, gray	9.3								
			SS	7 13 19	1.20	32	(6.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, dense, moist, brown, (Weathered Granite Bedrock)	10.2								
			SS	10 11 13	1.00	24	(8.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, medium dense, moist, brown, (Weathered Granite Bedrock)	14.9								1210
10							(10.00') Boring terminated									
																1205
15																

NOTES:

Point of Beginning

Client:	**Roth Professional Solutions**	**BORING**	
Project:	**South Road Improvement, (POB #25.2061)**	**Boring No.**	**B-12**
Address:	**South Road, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**10/30/25**	Boring Depth (ft):	**5**
Drilling End Date:	**10/30/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**3**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1219**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.77159, -89.63778**

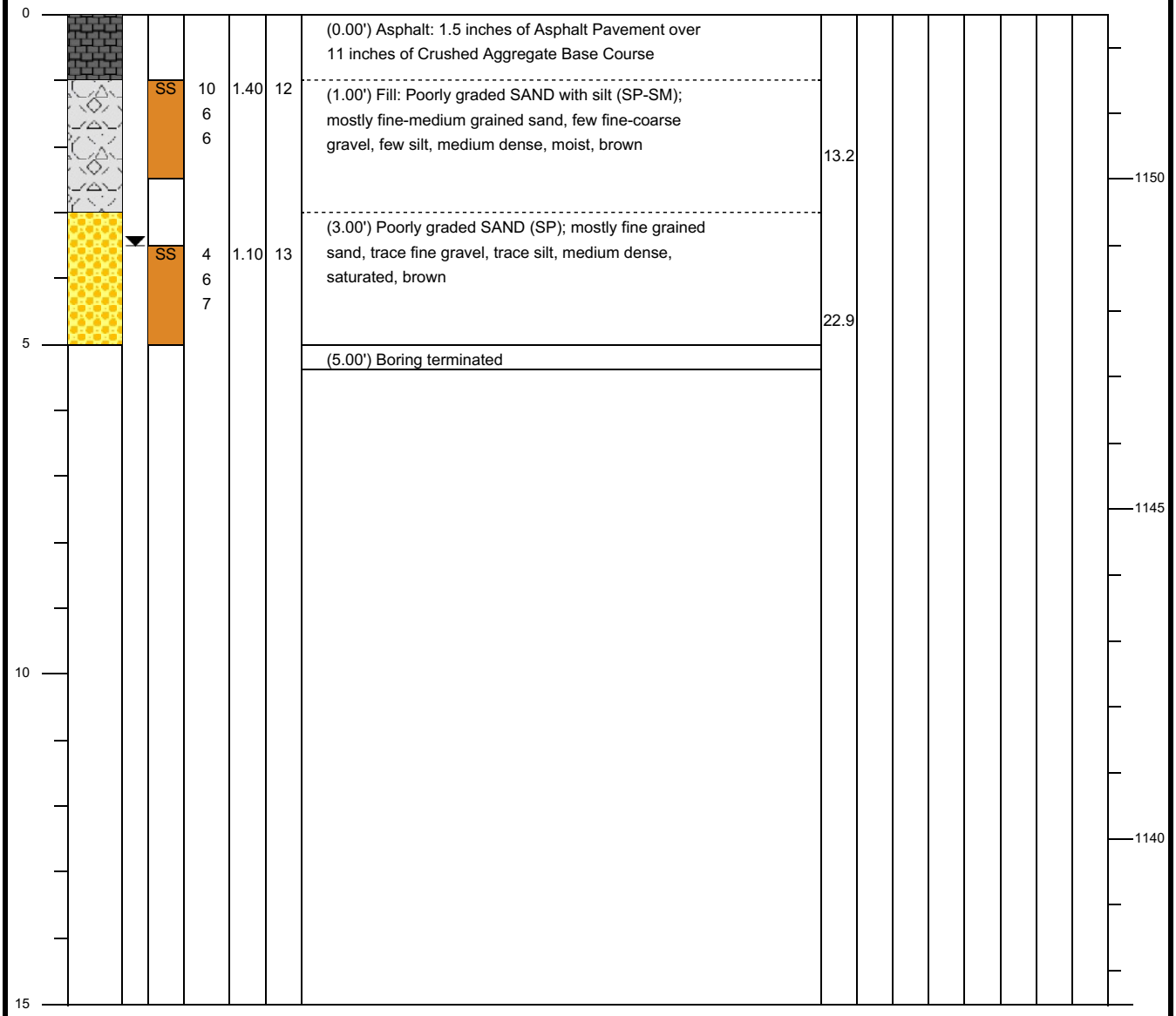
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 1.5 inches of Asphalt Pavement over 10 inches of Crushed Aggregate Base Course									
			SS	8 8 6	1.40	14	(1.00') Fill: Poorly graded SAND with silt and gravel (SP-SM); mostly fine-medium grained sand, little fine-coarse gravel, few silt, medium dense, moist, dark brown	14.9								
		▼					(3.00') Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, medium dense, saturated, brown									
			SS	5 7 9	1.20	16		24								
5							(5.00') Boring terminated									1215
																1210
10																1205
15																

NOTES:

Point of Beginning

Client:	**Roth Professional Solutions**	**BORING**	
Project:	**South Road Improvement, (POB #25.2061)**	**Boring No.**	**B-13**
Address:	**South Road, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**10/30/25**	Boring Depth (ft):	**5**
Drilling End Date:	**10/30/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**3.5**
Driller:	**Dakota Ciriack**	Ground Surface Elev. (ft):	**1152.5**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.77162, -89.63531**



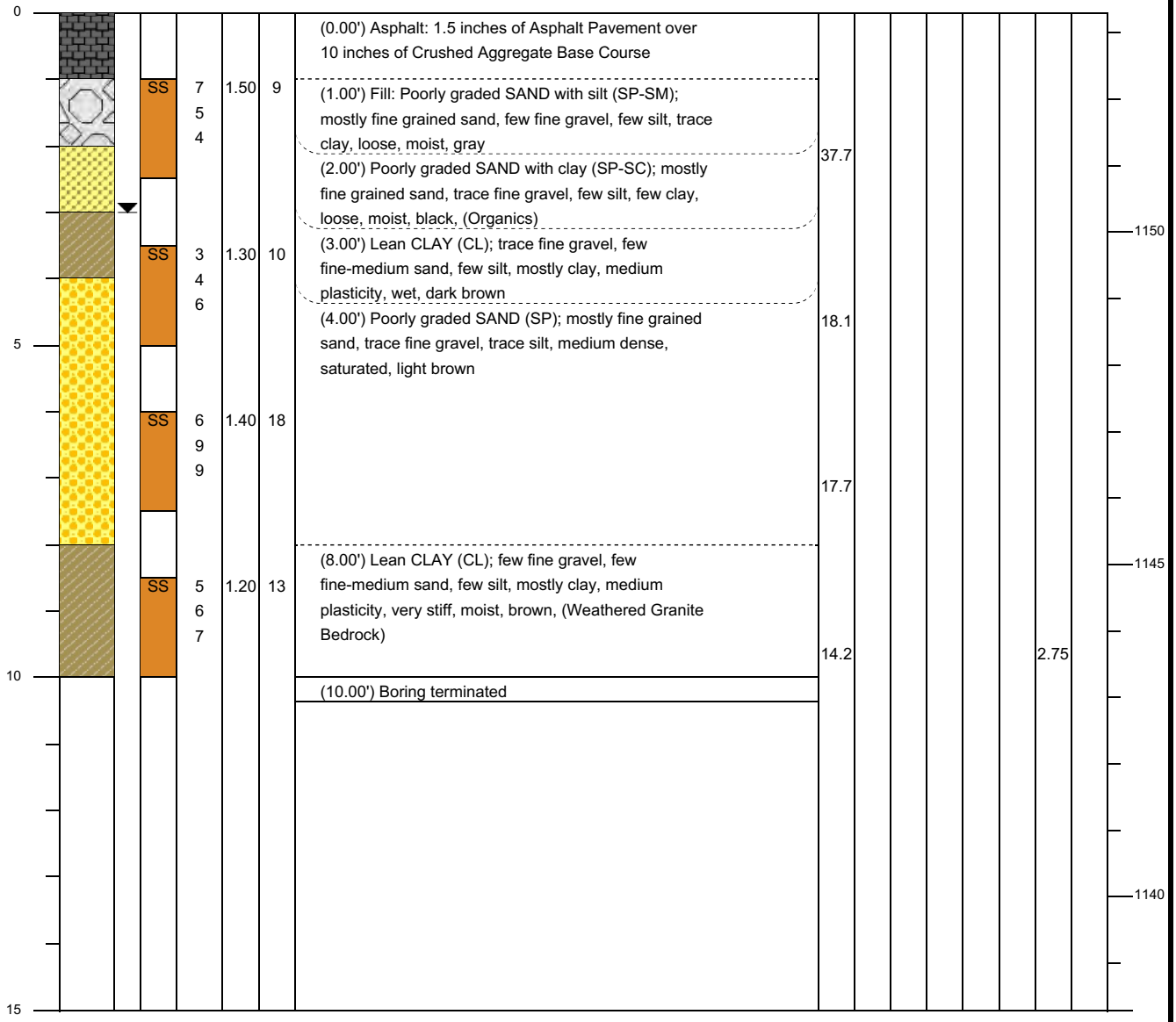
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 1.5 inches of Asphalt Pavement over 11 inches of Crushed Aggregate Base Course									
			SS	10 6 6	1.40	12	(1.00') Fill: Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, medium dense, moist, brown	13.2								1150
		▼	SS	4 6 7	1.10	13	(3.00') Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, medium dense, saturated, brown	22.9								
5							(5.00') Boring terminated									1145
10																1140
15																

NOTES:

Point of Beginning

Client:	**Roth Professional Solutions**	**BORING**	
Project:	**South Road Improvement, (POB #25.2061)**	**Boring No.**	**B-14**
Address:	**South Road, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**10/30/25**	Boring Depth (ft):	**10**
Drilling End Date:	**10/30/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**3**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1153.3**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.77160, -89.63312**



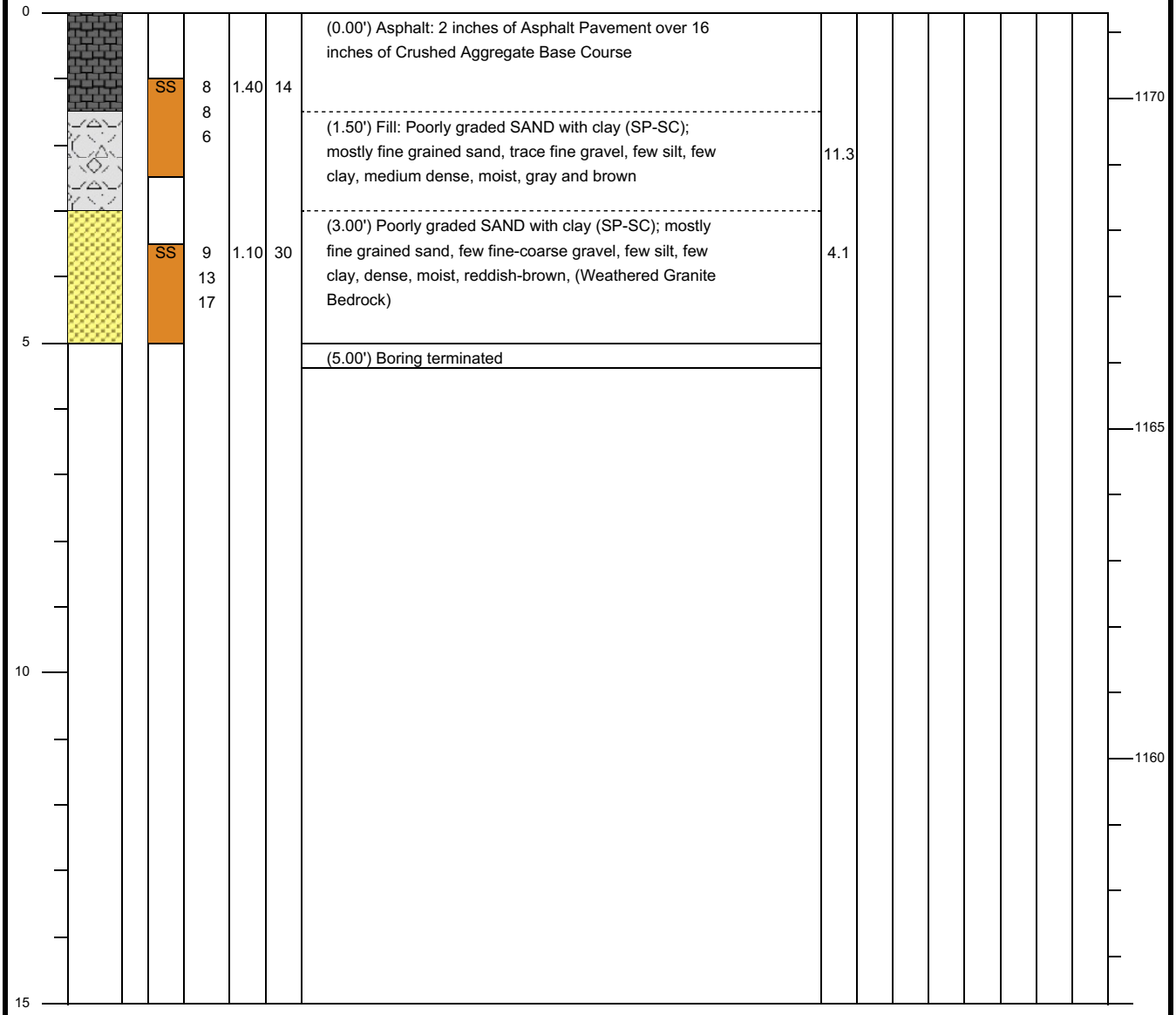
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 1.5 inches of Asphalt Pavement over 10 inches of Crushed Aggregate Base Course									1153.3
			SS	7 5 4	1.50	9	(1.00') Fill: Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine gravel, few silt, trace clay, loose, moist, gray	37.7								
		▼					(2.00') Poorly graded SAND with clay (SP-SC); mostly fine grained sand, trace fine gravel, few silt, few clay, loose, moist, black, (Organics)									
			SS	3 4 6	1.30	10	(3.00') Lean CLAY (CL); trace fine gravel, few fine-medium sand, few silt, mostly clay, medium plasticity, wet, dark brown									1150
5							(4.00') Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, medium dense, saturated, light brown	18.1								
			SS	6 9 9	1.40	18		17.7								
			SS	5 6 7	1.20	13	(8.00') Lean CLAY (CL); few fine gravel, few fine-medium sand, few silt, mostly clay, medium plasticity, very stiff, moist, brown, (Weathered Granite Bedrock)	14.2						2.75		1145
10							(10.00') Boring terminated									
																1140
15																

NOTES:

Point of Beginning

Client:	**Roth Professional Solutions**	**BORING**	
Project:	**South Road Improvement, (POB #25.2061)**	**Boring No.**	**B-15**
Address:	**South Road, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**10/30/25**	Boring Depth (ft):	**5**
Drilling End Date:	**10/30/25**	Boring Diameter (in):	**4.0**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Solid Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1171.3**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.77164, -89.62963**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Asphalt: 2 inches of Asphalt Pavement over 16 inches of Crushed Aggregate Base Course									1171.3
			SS	8 8 6	1.40	14	(1.50') Fill: Poorly graded SAND with clay (SP-SC); mostly fine grained sand, trace fine gravel, few silt, few clay, medium dense, moist, gray and brown	11.3								
			SS	9 13 17	1.10	30	(3.00') Poorly graded SAND with clay (SP-SC); mostly fine grained sand, few fine-coarse gravel, few silt, few clay, dense, moist, reddish-brown, (Weathered Granite Bedrock)	4.1								
5							(5.00') Boring terminated									1165
10																1160
15																

NOTES:

Point of Beginning

BORING AND WELL LOG LEGEND

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

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

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

Soil/Rock Contact Lines
- Inferred
- Abrupt
- Gradational

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

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

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

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

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

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

Consistency of Fine-Grained Soils

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

Relative Density of Coarse-Grained Soils

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

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

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

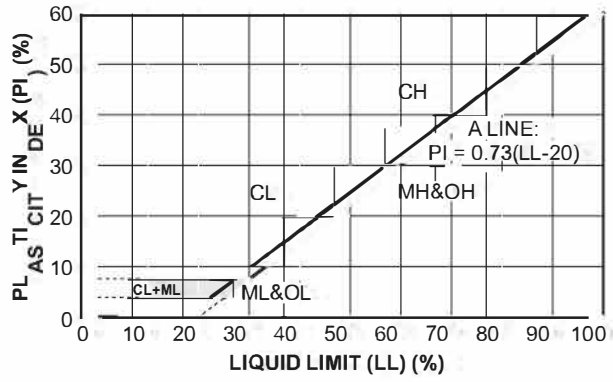
LABORATORY CLASSIFICATION CRITERIA

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

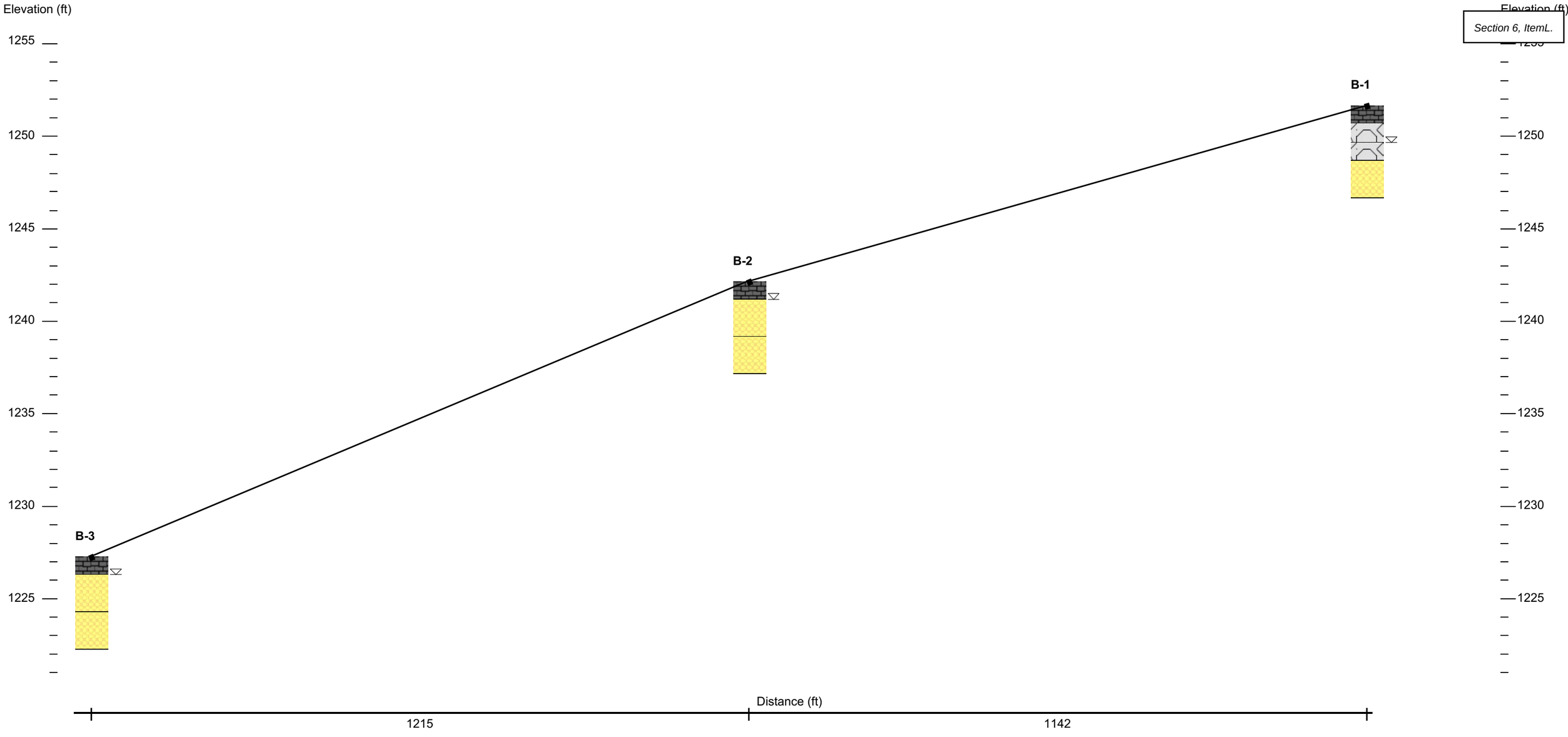
Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

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

PLASTICITY CHART



UNIFIED SOIL CLASSIFICATION SYSTEM



Horizontal scale: 80 feet
Vertical scale: 10 feet

Legend

- ASPHALT
- Poorly graded SAND with silt (SP-SM)
- FILL
- Water Level During Drilling
- Water Level at End of Drilling
- Cap
- Screen
- Annular Seal
- Sanitary Seal
- Filter Pack
- Backfill

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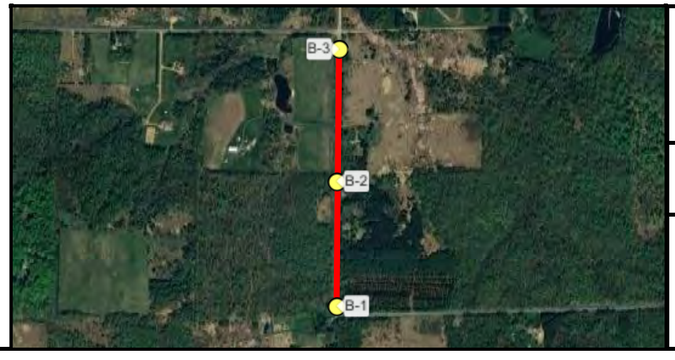
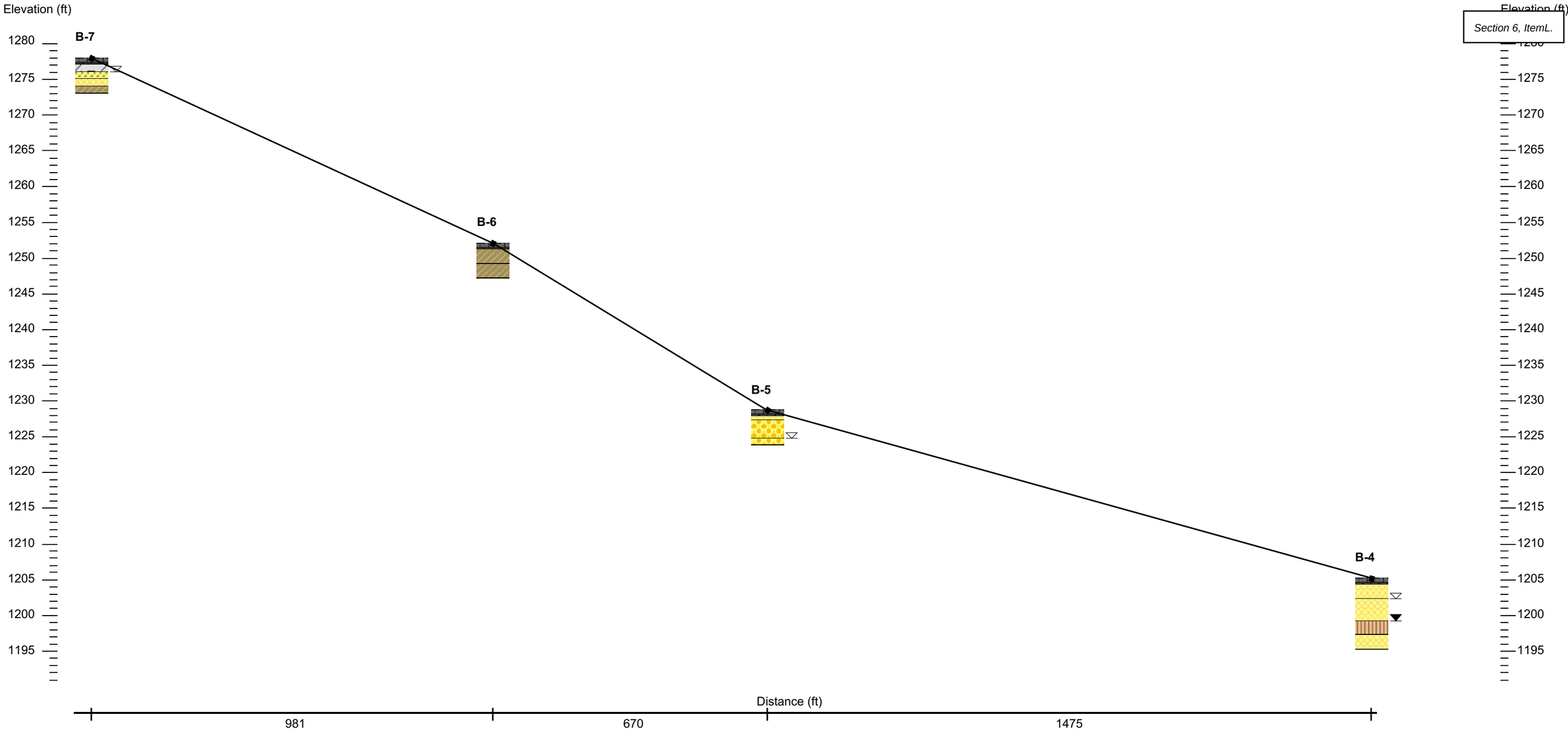


Point of Beginning

FIGURE 3
GEOLOGIC CROSS SECTION

Roth Professional Solutions
Autumn Road Reconstruction
(POB #25.2061)
Autumn Road
Kronenwetter, Wisconsin

Elevation (ft)



Horizontal scale: 80 feet
Vertical scale: 10 feet

Legend

- ASPHALT
- FILL
- Poorly graded SAND with clay (SP-SC)
- Poorly graded SAND with silt (SP-SM)
- Lean CLAY (CL)
- SILT (ML)
- Poorly graded SAND (SP)

- Water Level During Drilling
- Water Level at End of Drilling
- Cap
- Screen
- Annular Seal
- Sanitary Seal
- Filter Pack
- Backfill

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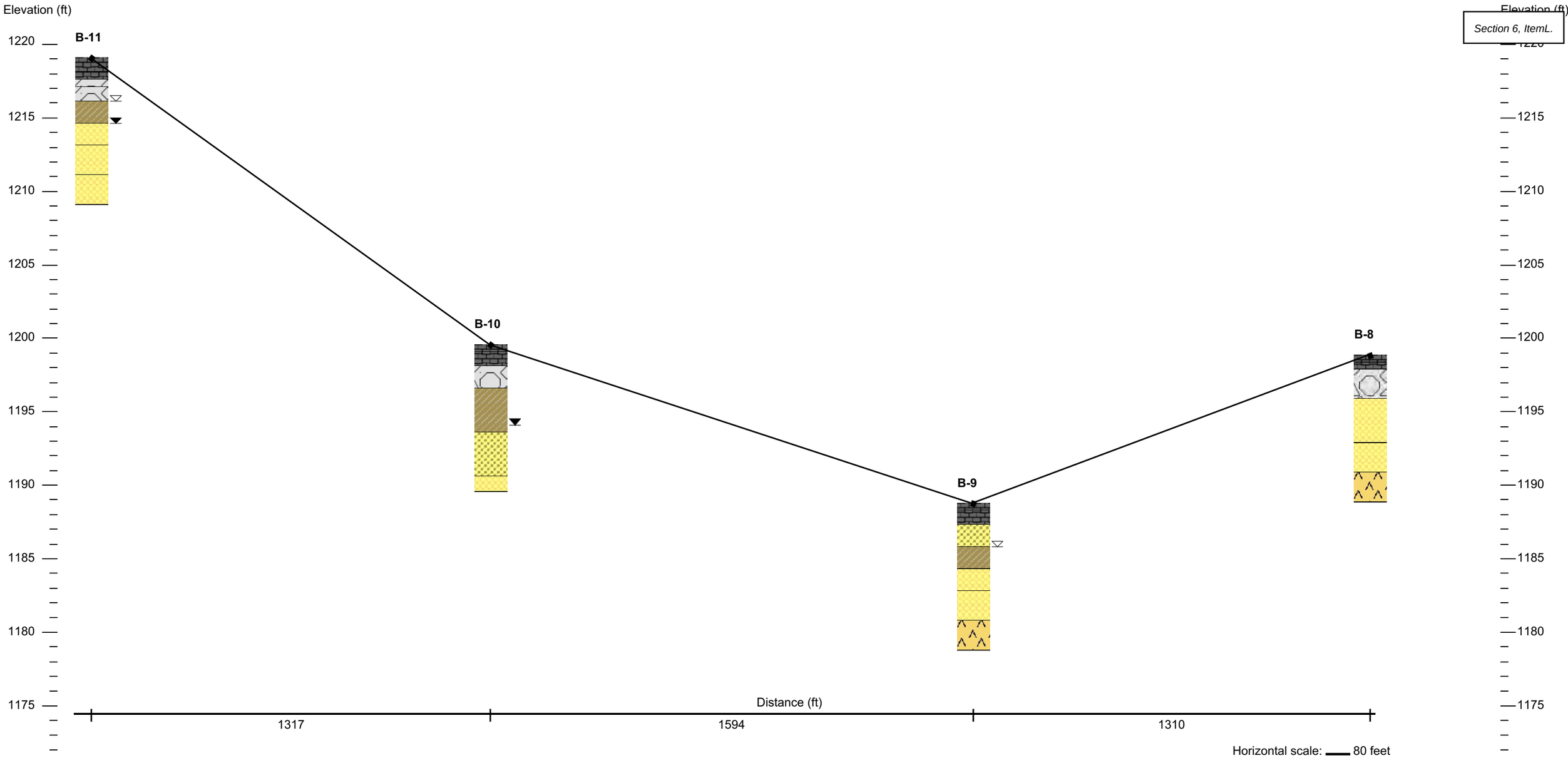
Point of Beginning

FIGURE 4
GEOLOGIC CROSS SECTION

Roth Professional Solutions
Forest Road Reconstruction
(POB #25.2061)
Forest Road
Kronenwetter, Wisconsin



Horizontal scale: 80 feet
Vertical scale: 10 feet

Legend

- ASPHALT
- FILL
- Lean CLAY (CL)
- Poorly graded SAND with silt (SP-SM)
- BEDROCK
- Poorly graded SAND with clay (SP-SC)

- Water Level During Drilling
- Water Level at End of Drilling
- Cap
- Screen
- Annular Seal
- Sanitary Seal
- Filter Pack
- Backfill

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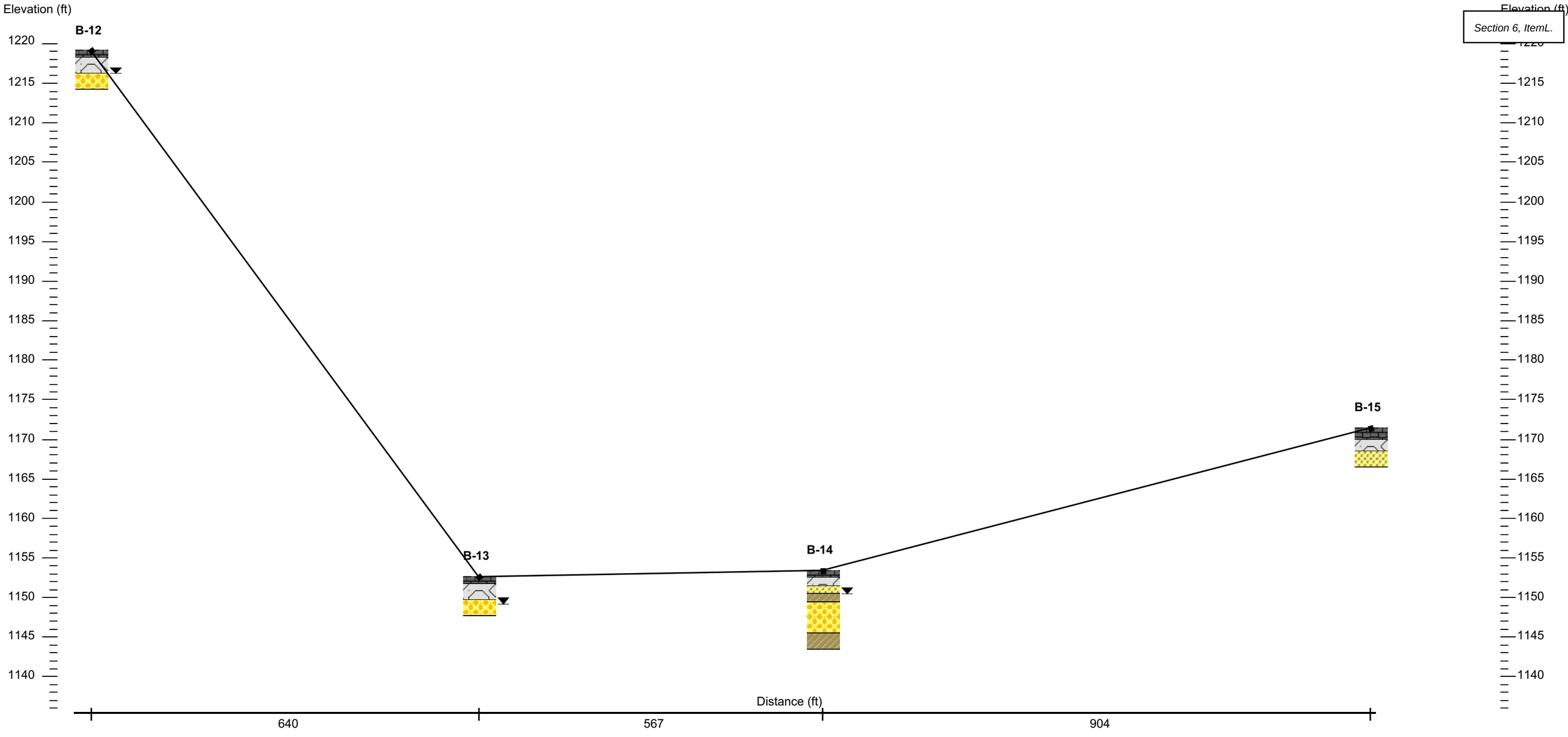
Point of Beginning

FIGURE 5
GEOLOGIC CROSS SECTION

Roth Professional Solutions
Peplin Road Reconstruction
(POB #25.2061)
Peplin Road
Kronenwetter, Wisconsin



Horizontal scale: 60 feet
Vertical scale: 10 feet

Legend

- ASPHALT
- FILL
- Poorly graded SAND (SP)
- Poorly graded SAND with clay (SP-SC)
- Lean CLAY (CL)
- Water Level During Drilling
- Water Level at End of Drilling
- Cap
- Screen
- Annular Seal
- Sanitary Seal
- Filter Pack
- Backfill

Built with Google Maps

Point of Beginning

FIGURE 6
GEOLOGIC CROSS SECTION

Roth Professional Solutions
South Road Reconstruction
(POB #25.2061)
South Road
Kronenwetter, Wisconsin

APPENDIX C

LABORATORY REPORTS

None

APPENDIX D

GENERAL NOTES & PROCEDURES

Drilling Procedures

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

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

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

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

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

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

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

Soil Sampling Procedures

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

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

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

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

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

Miscellaneous Procedures

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

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

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

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

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

Designation: D 1586 – 99

AMERICAN SOCIETY FOR TESTING AND MATERIALS
100 Barr Harbor Dr., West Conshohocken, PA 19428

Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils[1]

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

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

1. Scope *

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

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

1.3 The values stated in inch-pound units are to be regarded as the standard.

NOTE 1—Practice D 6066 can be used when testing loose sands below the water table for liquefaction studies or when a higher level of care is required when drilling these soils. This practice provides information on drilling methods, equipment variables, energy corrections, and blow-count normalization.

2. Referenced Documents

2.1 *ASTM Standards:*

D 2487 Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)[2]

D 2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)[2]

D 4220 Practices for Preserving and Transporting Soil Samples[2]

D 4633 Test Method for Stress Wave Energy Measurement for Dynamic Penetrometer Testing Systems[2]

D 6066 Practice for Determining the Normalized Penetration Resistance Testing of Sands for Evaluation of Liquefaction Potential[3]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *anvil*—that portion of the drive-weight assembly which the hammer strikes and through which the hammer energy passes into the drill rods.

3.1.2 *cathead*—the rotating drum or windlass in the rope-cathead lift system around which the operator wraps a rope to lift and drop the hammer by successively tightening and loosening the rope turns around the drum.

3.1.3 *drill rods*—rods used to transmit downward force and torque to the drill bit while drilling a borehole.

3.1.4 *drive-weight assembly*—a device consisting of the hammer, hammer fall guide, the anvil, and any hammer drop system.

3.1.5 *hammer*—that portion of the drive-weight assembly consisting of the 140 ± 2 lb (63.5 ± 1 kg) impact weight which is successively lifted and dropped to provide the energy that accomplishes the sampling and penetration.

3.1.6 *hammer drop system*—that portion of the drive-weight assembly by which the operator accomplishes the lifting and dropping of the hammer to produce the blow.

3.1.7 *hammer fall guide*—that part of the drive-weight assembly used to guide the fall of the hammer.

3.1.8 *N-value*—the blowcount representation of the penetration resistance of the soil. The *N*-value, reported in blows per foot, equals the sum of the number of blows required to drive the sampler over the depth interval of 6 to 18 in. (150 to 450 mm) (see 7.3).

3.1.9 Δ*N*—the number of blows obtained from each of the 6-in. (150-mm) intervals of sampler penetration (see 7.3).

3.1.10 *number of rope turns*—the total contact angle between the rope and the cathead at the beginning of the operator's rope slackening to drop the hammer, divided by 360° (see Fig. 1).

3.1.11 *sampling rods*—rods that connect the drive-weight assembly to the sampler. Drill rods are often used for this purpose.

3.1.12 *SPT*—abbreviation for standard penetration test, a term by which engineers commonly refer to this method.

4. Significance and Use

4.1 This test method provides a soil sample for identification purposes and for laboratory tests appropriate for soil obtained from a sampler that may produce large shear strain disturbance in the sample.

4.2 This test method is used extensively in a great variety of geotechnical exploration projects. Many local correlations and

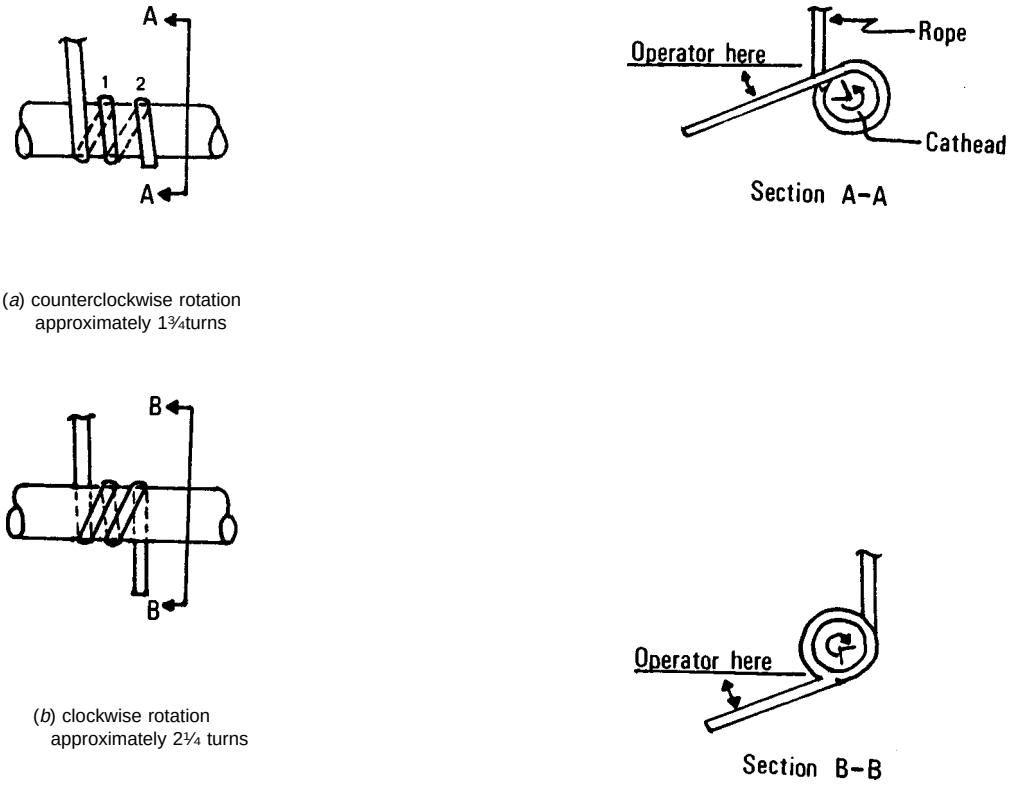
[1] This method is under the jurisdiction of ASTM Committee D-18 on Soil and Rock and is the direct responsibility of Subcommittee D18.02 on Sampling and Related Field Testing for Soil Investigations.

Current edition approved Jan. 10, 1999. Published March 1999. Originally published as D 1586 – 58 T. Last previous edition D 1586 – 98.

[2] *Annual Book of ASTM Standards*, Vol 04.08.

[3] *Annual Book of ASTM Standards*, Vol 04.09.

***A Summary of Changes section appears at the end of this standard.**



(*a*) counterclockwise rotation approximately 1¾turns

(*b*) clockwise rotation approximately 2¼ turns

FIG. 1 Definitions of the Number of Rope Turns and the Angle for (*a*) Counterclockwise Rotation and (*b*) Clockwise Rotation of the Cathead

widely published correlations which relate SPT blowcount, or *N*-value, and the engineering behavior of earthworks and foundations are available.

5. Apparatus

5.1 *Drilling Equipment*—Any drilling equipment that provides at the time of sampling a suitably clean open hole before insertion of the sampler and ensures that the penetration test is performed on undisturbed soil shall be acceptable. The following pieces of equipment have proven to be suitable for advancing a borehole in some subsurface conditions.

5.1.1 *Drag, Chopping, and Fishtail Bits*, less than 6.5 in. (162 mm) and greater than 2.2 in. (56 mm) in diameter may be used in conjuction with open-hole rotary drilling or casing-advancement drilling methods. To avoid disturbance of the underlying soil, bottom discharge bits are not permitted; only side discharge bits are permitted.

5.1.2 *Roller-Cone Bits*, less than 6.5 in. (162 mm) and greater than 2.2 in. (56 mm) in diameter may be used in conjunction with open-hole rotary drilling or casing-advancement drilling methods if the drilling fluid discharge is deflected.

5.1.3 *Hollow-Stem Continuous Flight Augers*, with or without a center bit assembly, may be used to drill the boring. The inside diameter of the hollow-stem augers shall be less than 6.5 in. (162 mm) and greater than 2.2 in. (56 mm).

5.1.4 *Solid, Continuous Flight, Bucket and Hand Augers*, less than 6.5 in. (162 mm) and greater than 2.2 in. (56 mm) in diameter may be used if the soil on the side of the boring does not cave onto the sampler or sampling rods during sampling.

5.2 *Sampling Rods*—Flush-joint steel drill rods shall be used to connect the split-barrel sampler to the drive-weight assembly. The sampling rod shall have a stiffness (moment of inertia) equal to or greater than that of parallel wall "A" rod (a steel rod which has an outside diameter of 1⅝ in. (41.2 mm) and an inside diameter of 1⅛ in. (28.5 mm).

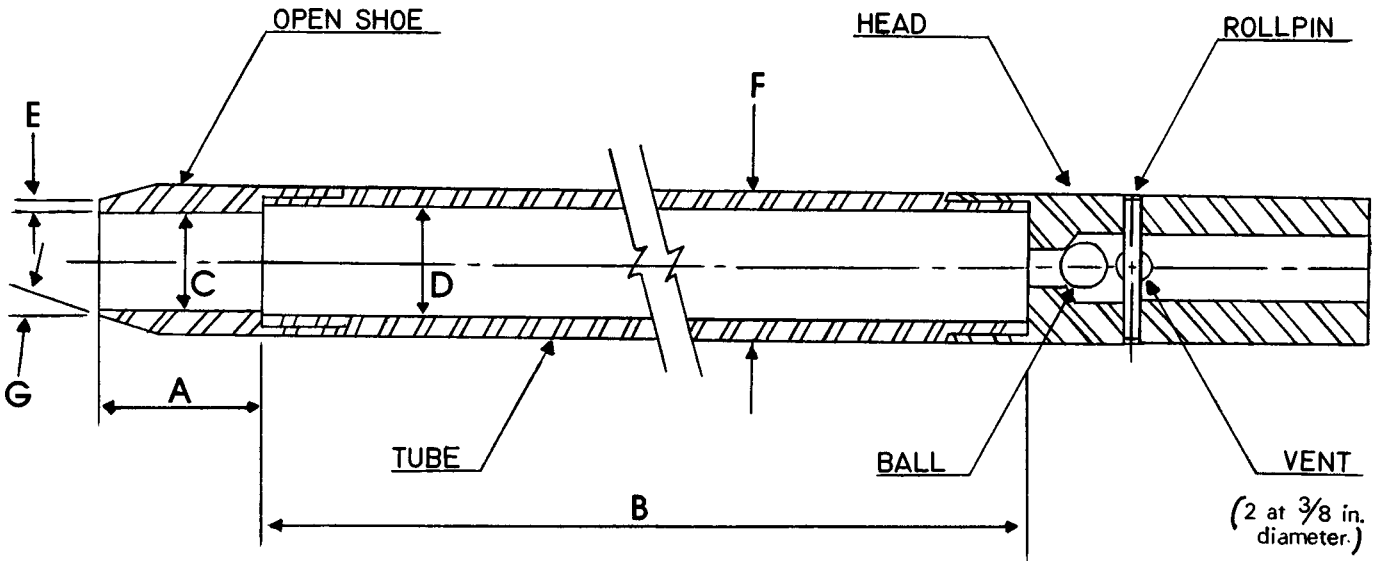
NOTE 2—Recent research and comparative testing indicates the type rod used, with stiffness ranging from "A" size rod to "N" size rod, will usually have a negligible effect on the *N*-values to depths of at least 100 ft (30 m).

5.3 *Split-Barrel Sampler*—The sampler shall be constructed with the dimensions indicated in Fig. 2. The driving shoe shall be of hardened steel and shall be replaced or repaired when it becomes dented or distorted. The use of liners to produce a constant inside diameter of 1⅜ in. (35 mm) is permitted, but shall be noted on the penetration record if used. The use of a sample retainer basket is permitted, and should also be noted on the penetration record if used.

NOTE 3—Both theory and available test data suggest that *N*-values may increase between 10 to 30 % when liners are used.

5.4 *Drive-Weight Assembly*:

5.4.1 *Hammer and Anvil*—The hammer shall weigh 140 ± 2 lb (63.5 ± 1 kg) and shall be a solid rigid metallic mass. The hammer shall strike the anvil and make steel on steel contact when it is dropped. A hammer fall guide permitting a free fall



A = 1.0 to 2.0 in. (25 to 50 mm)
B = 18.0 to 30.0 in. (0.457 to 0.762 m)
C = 1.375± 0.005 in. (34.93 ± 0.13 mm)
D = 1.50 ± 0.05 − 0.00 in. (38.1 ± 1.3 − 0.0 mm)
E = 0.10 ± 0.02 in. (2.54 ± 0.25 mm)
F = 2.00 ± 0.05 − 0.00 in. (50.8 ± 1.3 − 0.0 mm)
G = 16.0° to 23.0°

The 1½ in. (38 mm) inside diameter split barrel may be used with a 16-gage wall thickness split liner. The penetrating end of the drive shoe may be slightly rounded. Metal or plastic retainers may be used to retain soil samples.

FIG. 2 Split-Barrel Sampler

shall be used. Hammers used with the cathead and rope method shall have an unimpeded overlift capacity of at least 4 in. (100 mm). For safety reasons, the use of a hammer assembly with an internal anvil is encouraged.

NOTE 4—It is suggested that the hammer fall guide be permanently marked to enable the operator or inspector to judge the hammer drop height.

5.4.2 *Hammer Drop System*—Rope-cathead, trip, semi-automatic, or automatic hammer drop systems may be used, providing the lifting apparatus will not cause penetration of the sampler while re-engaging and lifting the hammer.

5.5 *Accessory Equipment*—Accessories such as labels, sample containers, data sheets, and groundwater level measuring devices shall be provided in accordance with the requirements of the project and other ASTM standards.

6. Drilling Procedure

6.1 The boring shall be advanced incrementally to permit intermittent or continuous sampling. Test intervals and locations are normally stipulated by the project engineer or geologist. Typically, the intervals selected are 5 ft (1.5 mm) or less in homogeneous strata with test and sampling locations at every change of strata.

6.2 Any drilling procedure that provides a suitably clean and stable hole before insertion of the sampler and assures that the penetration test is performed on essentially undisturbed soil shall be acceptable. Each of the following procedures have proven to be acceptable for some subsurface conditions. The subsurface conditions anticipated should be considered when selecting the drilling method to be used.

6.2.1 Open-hole rotary drilling method.

6.2.2 Continuous flight hollow-stem auger method.

6.2.3 Wash boring method.

6.2.4 Continuous flight solid auger method.

6.3 Several drilling methods produce unacceptable borings. The process of jetting through an open tube sampler and then sampling when the desired depth is reached shall not be permitted. The continuous flight solid auger method shall not be used for advancing the boring below a water table or below the upper confining bed of a confined non-cohesive stratum that is under artesian pressure. Casing may not be advanced below the sampling elevation prior to sampling. Advancing a boring with bottom discharge bits is not permissible. It is not permissible to advance the boring for subsequent insertion of the sampler solely by means of previous sampling with the SPT sampler.

6.4 The drilling fluid level within the boring or hollow-stem augers shall be maintained at or above the in situ groundwater level at all times during drilling, removal of drill rods, and sampling.

7. Sampling and Testing Procedure

7.1 After the boring has been advanced to the desired sampling elevation and excessive cuttings have been removed, prepare for the test with the following sequence of operations.

7.1.1 Attach the split-barrel sampler to the sampling rods and lower into the borehole. Do not allow the sampler to drop onto the soil to be sampled.

7.1.2 Position the hammer above and attach the anvil to the top of the sampling rods. This may be done before the sampling

rods and sampler are lowered into the borehole.

7.1.3 Rest the dead weight of the sampler, rods, anvil, and drive weight on the bottom of the boring and apply a seating blow. If excessive cuttings are encountered at the bottom of the boring, remove the sampler and sampling rods from the boring and remove the cuttings.

7.1.4 Mark the drill rods in three successive 6-in. (0.15-m) increments so that the advance of the sampler under the impact of the hammer can be easily observed for each 6-in. (0.15-m) increment.

7.2 Drive the sampler with blows from the 140-lb (63.5-kg) hammer and count the number of blows applied in each 6-in. (0.15-m) increment until one of the following occurs:

7.2.1 A total of 50 blows have been applied during any one of the three 6-in. (0.15-m) increments described in 7.1.4.

7.2.2 A total of 100 blows have been applied.

7.2.3 There is no observed advance of the sampler during the application of 10 successive blows of the hammer.

7.2.4 The sampler is advanced the complete 18 in. (0.45 m) without the limiting blow counts occurring as described in 7.2.1, 7.2.2, or 7.2.3.

7.3 Record the number of blows required to effect each 6 in. (0.15 m) of penetration or fraction thereof. The first 6 in. is considered to be a seating drive. The sum of the number of blows required for the second and third 6 in. of penetration is termed the "standard penetration resistance," or the "*N*-value." If the sampler is driven less than 18 in. (0.45 m), as permitted in 7.2.1, 7.2.2, or 7.2.3, the number of blows per each complete 6-in. (0.15-m) increment and per each partial increment shall be recorded on the boring log. For partial increments, the depth of penetration shall be reported to the nearest 1 in. (25 mm), in addition to the number of blows. If the sampler advances below the bottom of the boring under the static weight of the drill rods or the weight of the drill rods plus the static weight of the hammer, this information should be noted on the boring log.

7.4 The raising and dropping of the 140-lb (63.5-kg) hammer shall be accomplished using either of the following two methods:

7.4.1 By using a trip, automatic, or semi-automatic hammer drop system which lifts the 140-lb (63.5-kg) hammer and allows it to drop 30 ± 1.0 in. (0.76 m ± 25 mm) unimpeded.

7.4.2 By using a cathead to pull a rope attached to the hammer. When the cathead and rope method is used the system and operation shall conform to the following:

7.4.2.1 The cathead shall be essentially free of rust, oil, or grease and have a diameter in the range of 6 to 10 in. (150 to 250 mm).

7.4.2.2 The cathead should be operated at a minimum speed of rotation of 100 RPM, or the approximate speed of rotation shall be reported on the boring log.

7.4.2.3 No more than 2¼ rope turns on the cathead may be used during the performance of the penetration test, as shown in Fig. 1.

NOTE 5—The operator should generally use either 1¾ or 2¼ rope turns, depending upon whether or not the rope comes off the top (1¾ turns) or the bottom (2¼ turns) of the cathead. It is generally known and accepted that 2¾or more rope turns considerably impedes the fall of the hammer and should not be used to perform the test. The cathead rope should be maintained in a relatively dry, clean, and unfrayed condition.

7.4.2.4 For each hammer blow, a 30-in. (0.76-m) lift and drop shall be employed by the operator. The operation of pulling and throwing the rope shall be performed rhythmically without holding the rope at the top of the stroke.

7.5 Bring the sampler to the surface and open. Record the percent recovery or the length of sample recovered. Describe the soil samples recovered as to composition, color, stratification, and condition, then place one or more representative portions of the sample into sealable moisture-proof containers (jars) without ramming or distorting any apparent stratification. Seal each container to prevent evaporation of soil moisture. Affix labels to the containers bearing job designation, boring number, sample depth, and the blow count per 6-in. (0.15-m) increment. Protect the samples against extreme temperature changes. If there is a soil change within the sampler, make a jar for each stratum and note its location in the sampler barrel.

8. Report

8.1 Drilling information shall be recorded in the field and shall include the following:

8.1.1 Name and location of job,

8.1.2 Names of crew,

8.1.3 Type and make of drilling machine,

8.1.4 Weather conditions,

8.1.5 Date and time of start and finish of boring,

8.1.6 Boring number and location (station and coordinates, if available and applicable),

8.1.7 Surface elevation, if available,

8.1.8 Method of advancing and cleaning the boring,

8.1.9 Method of keeping boring open,

8.1.10 Depth of water surface and drilling depth at the time of a noted loss of drilling fluid, and time and date when reading or notation was made,

8.1.11 Location of strata changes,

8.1.12 Size of casing, depth of cased portion of boring,

8.1.13 Equipment and method of driving sampler,

8.1.14 Type sampler and length and inside diameter of barrel (note use of liners),

8.1.15 Size, type, and section length of the sampling rods, and

8.1.16 Remarks.

8.2 Data obtained for each sample shall be recorded in the field and shall include the following:

8.2.1 Sample depth and, if utilized, the sample number,

8.2.2 Description of soil,

8.2.3 Strata changes within sample,

8.2.4 Sampler penetration and recovery lengths, and

8.2.5 Number of blows per 6-in. (0.15-m) or partial increment.

9. Precision and Bias

9.1 *Precision*—A valid estimate of test precision has not been determined because it is too costly to conduct the necessary inter-laboratory (field) tests. Subcommittee D18.02 welcomes proposals to allow development of a valid precision statement.

9.2 *Bias*—Because there is no reference material for this test method, there can be no bias statement.

9.3 Variations in *N*-values of 100 % or more have been

observed when using different standard penetration test apparatus and drillers for adjacent borings in the same soil formation. Current opinion, based on field experience, indicates that when using the same apparatus and driller, *N*-values in the same soil can be reproduced with a coefficient of variation of about 10 %.

9.4 The use of faulty equipment, such as an extremely massive or damaged anvil, a rusty cathead, a low speed cathead, an old, oily rope, or massive or poorly lubricated rope sheaves can significantly contribute to differences in *N*-values obtained between operator-drill rig systems.

9.5 The variability in *N*-values produced by different drill rigs and operators may be reduced by measuring that part of the hammer energy delivered into the drill rods from the sampler and adjusting *N* on the basis of comparative energies. A method for energy measurement and *N*-value adjustment is given in Test Method D 4633.

10. Keywords

10.1 blow count; in-situ test; penetration resistance; split-barrel sampling; standard penetration test

SUMMARY OF CHANGES

(1) Added note to Section 1, Scope. The note refers to a related standard, Practice D 6066.

(2) Added Practice D 6066 to Section 2 on Referenced Documents.

Designation: D 1587 – 00

Standard Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes[1]

This standard is issued under the fixed designation D 1587; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

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

1. Scope *

1.1 This practice covers a procedure for using a thin-walled metal tube to recover relatively undisturbed soil samples suitable for laboratory tests of engineering properties, such as strength, compressibility, permeability, and density. Thin-walled tubes used in piston, plug, or rotary-type samplers should comply with Section 6.3 of this practice which describes the thin-walled tubes.

NOTE 1—This practice does not apply to liners used within the samplers.

1.2 This Practice is limited to soils that can be penetrated by the thin-walled tube. This sampling method is not recommended for sampling soils containing gravel or larger size soil particles cemented or very hard soils. Other soil samplers may be used for sampling these soil types. Such samplers include driven split barrel samplers and soil coring devices (D 1586, D 3550, and D 6151). For information on appropriate use of other soil samplers refer to D 6169.

1.3 This practice is often used in conjunction with fluid rotary drilling (D 1452D 5783) or hollow-stem augers (D 6151). Subsurface geotechnical explorations should be reported in accordance with practice (D 5434). This practice discusses some aspects of sample preservation after the sampling event. For information on preservation and transportation process of soil samples, consult Practice D 4220. This practice does not address environmental sampling; consult D 6169 and D 6232for information on sampling for environmental investigations.

1.4 The values stated in inch-pound units are to be regarded as the standard. The SI values given in parentheses are provided for information purposes only. The tubing tolerances presented in Table 2 are from sources available in North America. Use of metric equivalent is acceptable as long as thickness and proportions are similar to those required in this standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.6 This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.

2. Referenced Documents

2.1 *ASTM Standards:*

D 653 Standard Terminology Relating to Soil, Rock, and Contained Fluids[2]

D 1452 Practice for Soil Investigation and Sampling by Auger Borings[2]

D 1586 Penetration Resistance and Split Barrel Sampling of Soils[2]

D 2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)[2]

D 3550 Practice for Ring-Lined Barrel Sampling of Soils[2]

D 3740 Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction[2]

D 4220 Practices for Preserving and Transporting Soil Samples[2]

D 5434 Guide for Field Logging of Subsurface Explorations of Soil and Rock[3]

D 5783 Guide for Use of Rotary Drilling with Water-Based Drilling Fluid for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices[3]

D 6151 Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling[3]

D 6169 Guide for Selection of Soil and Rock Sampling

[1] This practice is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.02 on Sampling and Related Field Testing for Soil Investigations.

Current edition approved August 10, 2000. Published December 2000. Originally published as D 1587–58T. Last previous edition D 1587–83.

[2] *Annual Book of ASTM Standards,* Vol 04.08.

[3] *Annual Book of ASTM Standards,* Vol 04.09.

***A Summary of Changes section appears at the end of this standard.**

TABLE 1 Suitable Thin-Walled Steel Sample Tubes[A]

Outside diameter (D_o):			
in.	2	3	5
mm	50.8	76.2	127
Wall thickness:			
Bwg	18	16	11
in.	0.049	0.065	0.120
mm	1.24	1.65	3.05
Tube length:			
in.	36	36	54
m	0.91	0.91	1.45
Inside clearance ratio, %	<1	<1	<1

[A] The three diameters recommended in Table 1 are indicated for purposes of standardization, and are not intended to indicate that sampling tubes of intermediate or larger diameters are not acceptable. Lengths of tubes shown are illustrative. Proper lengths to be determined as suited to field conditions.

TABLE 2 Dimensional Tolerances for Thin-Walled Tubes

Nominal Tube Diameters from Table 1[A] Tolerances						
Size Outside Diameter	2 in.	50.8 mm	3 in.	76.2 mm	5 in.	127 mm
Outside diameter, D_o	+0.007 -0.000	+0.179 -0.000	+0.010 -0.000	+0.254 -0.000	+0.015 -0.000	0.381 -0.000
Inside diameter, D_i	+0.000 -0.007	+0.000 -0.179	+0.000 -0.010	+0.000 -0.254	+0.000 -0.015	+0.000 -0.381
Wall thickness	±0.007	±0.179	±0.010	±0.254	±0.015	±0.381
Ovality	0.015	0.381	0.020	0.508	0.030	0.762
Straightness	0.030/ft	2.50/m	0.030/ft	2.50/m	0.030/ft	2.50/m

[A] Intermediate or larger diameters should be proportional. Specify only two of the first three tolerances; that is, D_o and D_i, or D_o and Wall thickness, or D_i and Wall thickness.

Devices Used With Drill Rigs for Environmental Investigations[3]

D 6232 Guide for Selection of Sampling Equipment for Waste and Contaminated Media Data Collection Activities[4]

3. Terminology

3.1 *Definitions:*

3.1.1 For common definitions of terms in this standard, refer to Terminology D 653.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *inside clearance ratio, %*—the ratio of the difference in the inside diameter of the tube, D_i, minus the inside diameter of the cutting edge, D_e, to the inside diameter of the tube, D_i expressed as a percentage (see Fig. 1).

3.2.2 *ovality*—the cross section of the tube that deviates from a perfect circle.

4. Summary of Practice

4.1 A relatively undisturbed sample is obtained by pressing a thin-walled metal tube into the in-situ soil at the bottom of a boring, removing the soil-filled tube, and applying seals to the soil surfaces to prevent soil movement and moisture gain or loss.

5. Significance and Use

5.1 This practice, or Practice D 3550 with thin wall shoe, is used when it is necessary to obtain a relatively undisturbed specimen suitable for laboratory tests of engineering properties or other tests that might be influenced by soil disturbance.

NOTE 2—The quality of the result produced by this standard is dependent on the competence of the personnel performing it, and the suitability of the equipment and facilities used. Agencies that meet the criteria of Practice D 3740 are generally considered capable of competent and objective sampling. Users of this practice. are cautioned that compliance with Practice D 3740 does not in itself assure reliable results. Reliable results depend on many factors; Practice D 5740 provides a means of evaluating some of those factors.

6. Apparatus

6.1 *Drilling Equipment*—When sampling in a boring, any drilling equipment may be used that provides a reasonably clean hole; that minimizes disturbance of the soil to be sampled; and that does not hinder the penetration of the thin-walled sampler. Open borehole diameter and the inside diameter of driven casing or hollow stem auger shall not exceed 3.5 times the outside diameter of the thin-walled tube.

6.2 *Sampler Insertion Equipment*, shall be adequate to provide a relatively rapid continuous penetration force. For hard formations it may be necessary, although not recommended, to drive the thin-walled tube sampler.

6.3 *Thin-Walled Tubes*, should be manufactured to the dimensions as shown in Fig. 1. They should have an outside diameter of 2 to 5 in. (50 to 130 mm) and be made of metal having adequate strength for the type of soil to be sampled. Tubes shall be clean and free of all surface irregularities including projecting weld seams. Other diameters may be used but the tube dimensions should be proportional to the tube designs presented here.

6.3.1 *Length of Tubes*—See Table 1 and 7.4.1.

6.3.2 *Tolerances*, shall be within the limits shown in Table 2.

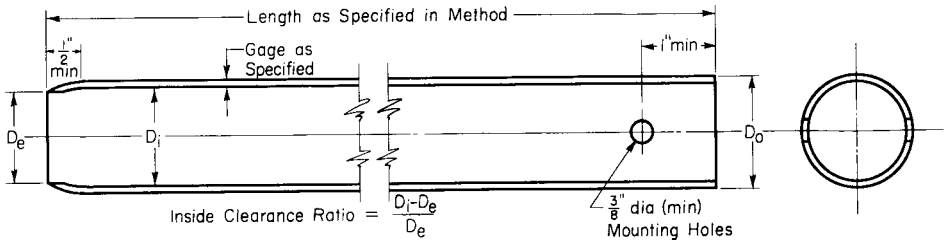
6.3.3 *Inside Clearance Ratio*, should be not greater than 1 % unless specified otherwise for the type of soil to be sampled. Generally, the inside clearance ratio used should increase with the increase in plasticity of the soil being sampled, except for sensitive soils or where local experience indicates otherwise. See 3.2.1 and Fig. 1 for definition of inside clearance ratio.

6.3.4 *Corrosion Protection*—Corrosion, whether from galvanic or chemical reaction, can damage or destroy both the thin-walled tube and the sample. Severity of damage is a function of time as well as interaction between the sample and the tube. Thin-walled tubes should have some form of protective coating, unless the soil is to be extruded less than 3 days. The type of coating to be used may vary depending upon the material to be sampled. Plating of the tubes or alternate base metals may be specified. Galvanized tubes are often used when long term storage is required. Coatings may include a light coat of lubricating oil, lacquer, epoxy, Teflon, zinc oxide, and others.

NOTE 3—Most coating materials are not resistant to scratching by soils that contain sands. Consideration should be given for prompt testing of the sample because chemical reactions between the metal and the soil sample con occur with time.

6.4 *Sampler Head*, serves to couple the thin-walled tube to the insertion equipment and, together with the thin-walled tube,

[4] *Annual Book of ASTM Standards*, Vol 11.04.



NOTE 1—Minimum of two mounting holes on opposite sides for D_o smaller than 4 in. (101.6 mm).
NOTE 2—Minimum of four mounting holes equally spaced for D_o 4 in. (101.6 mm) and larger.
NOTE 3—Tube held with hardened screws or other suitable means.
NOTE 4—2-in (50.8 mm) outside-diameter tubes are specified with an 18-gage wall thickness to comply with area ratio criteria accepted for "undisturbed samples." Users are advised that such tubing is difficult to locate and can be extremely expensive in small quantities. Sixteen-gage tubes are generally readily available.

Metric Equivalent Conversions

in.	mm
⅜	9.53
½	12.7
1	25.4
2	50.8
3	76.2
4	101.6
5	127

FIG. 1 Thin-Walled Tube for Sampling

comprises the thin-walled tube sampler. The sampler head shall contain a venting area and suitable check valve with the venting area to the outside equal to or greater than the area through the check valve. In some special cases, a check valve may not be required but venting is required to avoid sample compression. Attachment of the head to the tube shall be concentric and coaxial to assure uniform application of force to the tube by the sampler insertion equipment.

7. Procedure

7.1 Remove loose material from the center of a casing or hollow stem auger as carefully as possible to avoid disturbance of the material to be sampled. If groundwater is encountered, maintain the liquid level in the borehole at or above ground water level during the drilling and sampling operation.

7.2 Bottom discharge bits are not permitted. Side discharge bits may be used, with caution. Jetting through an open-tube sampler to clean out the borehole to sampling elevation is not permitted.

NOTE 4—Roller bits are available in downward-jetting and diffused-jet configurations. Downward-jetting configuration rock bits are not acceptable. Diffuse-jet configurations are generally acceptable.

7.3 Lower the sampling apparatus so that the sample tube's bottom rests on the bottom of the hole and record depth to the bottom of the sample tube to the nearest 0.1-ft (.03 m)

7.3.1 Keep the sampling apparatus plumb during lowering, thereby preventing the cutting edge of the tube from scraping the wall of the borehole.

7.4 Advance the sampler without rotation by a continuous relatively rapid downward motion and record length of advancement to the nearest 1 in. (25 mm).

7.4.1 Determine the length of advance by the resistance and condition of the soil formation, but the length shall never exceed 5 to 10 diameters of the tube in sands and 10 to 15 diameters of the tube in clays. In no case shall a length of advance be greater than the sample-tube length minus an allowance for the sampler head and a minimum of 3-in. (75 mm) for sludge and end cuttings.

NOTE 5—The mass of sample, laboratory handling capabilities, transportation problems, and commercial availability of tubes will generally limit maximum practical lengths to those shown in Table 1.

7.5 When the soil formation is too hard for push-type insertion, the tube may be driven or Practice D 3550 may be used. If driving methods are used, the data regarding weight and fall of the hammer and penetration achieved must be shown in the report. Additionally, that tube must be prominently labeled a "driven sample."

7.6 Withdraw the sampler from the soil formation as carefully as possible in order to minimize disturbance of the sample. The tube can be slowly rotated to shear the material at the end of the tube, and to relieve water and/or suction pressures and improve recovery. Where the soil formation is soft, a delay before withdraw of the sampler (typically 5 to 30 minutes) may improve sample recovery.

8. Sample Measurement, Sealing and Labeling

8.1 Upon removal of the tube, remove the drill cuttings in the upper end of the tube and measure the length of the soil sample recovered to the nearest 0.25 in. (5 mm) in the tube. Seal the upper end of the tube. Remove at least 1 in. (25 mm) of material from the lower end of the tube. Use this material for soil description in accordance with Practice D 2488. Measure the overall sample length. Seal the lower end of the tube. Alternatively, after measurement, the tube may be sealed without removal of soil from the ends of the tube.

8.1.1 Tubes sealed over the ends, as opposed to those sealed

with expanding packers, should be provided with spacers or appropriate packing materials, or both prior to sealing the tube ends to provide proper confinement. Packing materials must be nonabsorbent and must maintain their properties to provide the same degree of sample support with time.

8.1.2 Depending on the requirements of the investigation, field extrusion and packaging of extruded soil samples can be performed. This allows for physical examination and classification of the sample. Samples are extruded in special hydraulic jacks equipped with properly sized platens to extrude the core in a continuous smooth speed. In some cases, further extrusion may cause sample disturbance reducing suitability for testing of engineering properties. In other cases, if damage is not significant, cores can be extruded and preserved for testing (D 4220). Bent or damaged tubes should be cut off before extruding.

8.2 Prepare and immediately affix labels or apply markings as necessary to identify the sample (see Section 9). Assure that the markings or labels are adequate to survive transportation and storage.

NOTE 6—Top end of the tube should be labeled "top".

9. Field Log

9.1 Record the information that may be required for preparing field logs in general accordance to ASTM D 5434 "Guide for Field Logging of Subsurface Explorations of Soil and Rock". This guide is used for logging explorations by drilling and sampling. Some examples of the information required include;

9.1.1 Name and location of the project,

9.1.2 Boring number,

9.1.3 Log of the soil conditions,

9.1.4 Surface elevation or reference to a datum to the nearest foot (0.5 m) or better,

9.1.5 Location of the boring,

9.1.6 Method of making the borehole,

9.1.7 Name of the drilling foreman and company, and

9.1.8 Name of the drilling inspector(s).

9.1.9 Date and time of boring-start and finish,

9.1.10 Depth to groundwater level: date and time measured,

9.2 Recording the appropriate sampling information is required as follows:

9.2.1 Depth to top of sample to the nearest 0.1 ft. (.03 m) and number of sample,

9.2.2 Description of thin-walled tube sampler: size, type of metal, type of coating,

9.2.3 Method of sampler insertion: push or drive,

9.2.4 Method of drilling, size of hole, casing, and drilling fluid used,

9.2.5 Soil description in accordance with Practice D 2488,

9.2.6 Length of sampler advance (push), and

9.2.7 Recovery: length of sample obtained.

10. Keywords

10.1 geologic investigations; sampling; soil exploration; soil investigations; subsurface investigations; undisturbed

SUMMARY OF CHANGES

In accordance with committee D18 policy, this section identifies the location of changes to this standard since the last edition, 1994, which may impact the use of this standard.

(1) Editorial corrections to various sections based on comments received from Committee Balloting

(2) Added D 6232 to Section 2.

(3) Changed Note 7 to Section 8.1.2.

(4) Renumbered Note 8.

APPENDIX E

ADDITIONAL DOCUMENTS

None

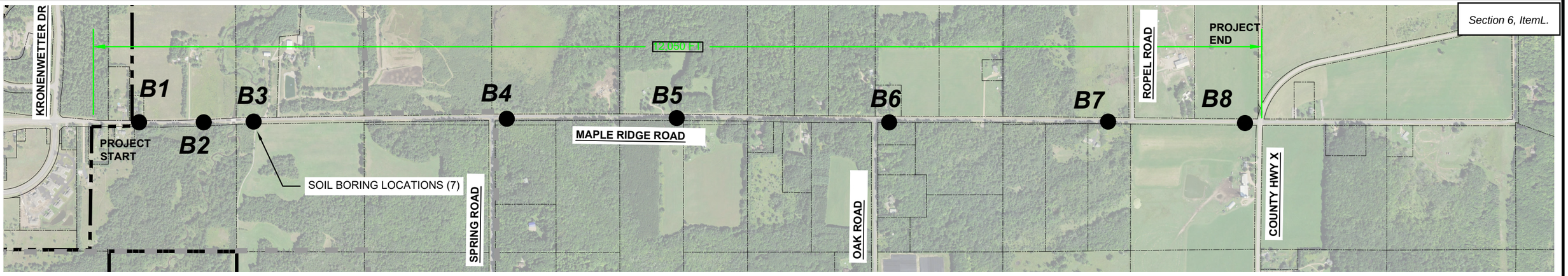
ENGINEER'S PRELIMINARY COST ESTIMATE

MAPLE RIDGE ROAD, VILLAGE OF KRONENWETTER

CONCEPT - Kron. Drive to Oak Road Full Reconstruction; Oak Road to CTH X

13-Nov-25

Item No.	Bid Item	Quanity	Units	Unit Cost	Total Amount
1	Performance & Payment Bonds	1	LS	$40,000.00	$40,000.00
2	Mobilization & Demobilization	1	LS	$40,000.00	$40,000.00
3	Removal Ditch Topsoil, 6", 10' wide	26778	SY	$5.00	$133,888.89
4	Mill & Remove Kronenwetter Drive To Oak Road	19678	SY	$5.00	$98,388.89
5	Pulverize from Oak Road to CTH X	9778	SY	$4.00	$39,111.11
6	Road Base Excavation Kronenwetter Drive to Oak Road	6297	CY	$10.00	$62,968.89
7	3" Breaker Run 8", Kronenwetter Drive to Oak Road	6297	SY	$40.00	$251,875.56
8	6" 1.25" CABC, Kronenwetter Drive to Oak Road	3578	CY	$50.00	$178,888.89
9	HMA 2.5" Surface Asphalt	5623	Ton	$90.00	$506,100.00
10	HMA 2.5" Binder Asphalt	5623	Ton	$85.00	$477,983.33
11	Lift 4" Pre-Pulverize, 1.25" CABC; Oak Road to CTH X	1369	CY	$50.00	$68,444.44
12	3/4" CABC Shoulders	446	CY	$50.00	$22,314.81
13	Repair Top soil ditches 3:1 slope & emat	26778	SY	$7.00	$187,444.44
14	Pave at driveway & cross roads 20'	283	Ton	$90.00	$25,500.00
15	Culvert Allowance - As Needed	1	LS	$100,000.00	$100,000.00
16	Signage Allowance - As Needed	1	LS	$5,000.00	$5,000.00
17	Striping - Centerline	12,050.00	LF	$1.50	$18,075.00
18	**Construction Subtotal (CONCEPT)**				**$2,256,000**
19	Contigencies (20%)				$451,200
20	Surveying, Engineering, Construction Administration (8%)				$180,480
21	**Total Preliminary Planning Cost Estimate**				**$2,890,000**



B1

DEPTH	VISUAL NOTES
0	2.5"± ASPHALT
	4.5"± C.A.B.C. - BROWN SAND/GRAVEL LITTLE SILT
1	
2	BROWN F-M W/LITTLE GRAVEL AND TRACE SILT-FILL USCS-SP
3	
4	
5	DRY HOLE END AT 5 FT.

B2

DEPTH	VISUAL NOTES
0	4.5"± ASPHALT
	3.5"± C.A.B.C. - BROWN SAND/GRAVEL LITTLE SILT
1	
2	BROWN F-M SILTY CLAYEY SAND W/LITTLE GRAVEL
3	
4	3.5' DEPTH, PERCHED WATER
5	DRY HOLE END AT 5 FT.

B3

DEPTH	VISUAL NOTES
0	4"± ASPHALT
	3"± C.A.B.C. - BROWN SAND/GRAVEL LITTLE SILT
1	
2	BROWN F-M SILTY CLAYEY SAND W/TRACE GRAVEL USCS-SP
3	
4	3.5' DEPTH, PERCHED WATER
5	DRY HOLE END AT 5 FT.

B4

DEPTH	VISUAL NOTES
0	4.5"± ASPHALT
	3.5"± C.A.B.C. - BROWN SAND/GRAVEL LITTLE SILT
1	
2	BROWN F-M SAND W/TRACE SILT-SOME GRAVEL AND WOOD USCS-SP
3	
4	3.5' DEPTH, PERCHED WATER
5	DRY HOLE END AT 5 FT.

B5

DEPTH	VISUAL NOTES
0	3.5"± ASPHALT
	3.5"± C.A.B.C. - BROWN SAND/GRAVEL LITTLE SILT
1	
2	BROWN F-M SAND W/TRACE SILT-SOME GRAVEL AND WOOD USCS-SP
3	
4	
5	DRY HOLE END AT 5 FT.

B6

DEPTH	VISUAL NOTES
0	4.5"± ASPHALT
	7.5"± C.A.B.C. - BROWN SAND/GRAVEL LITTLE SILT
1	
2	BROWN F-M SAND W/TRACE SILT-SOME GRAVEL USCS-SP
3	
4	
5	DRY HOLE END AT 5 FT.

B7

DEPTH	VISUAL NOTES
0	5"± ASPHALT
	13"± C.A.B.C. - BROWN SAND/GRAVEL LITTLE SILT
1	
2	BROWN SILTY SAND/GRAVEL LITTLE SILT TRACE BEDROCK USCS-CL
3	
4	
5	DRY HOLE END AT 5 FT.

B8

DEPTH	VISUAL NOTES
0	4.5"± ASPHALT
	13.5"± C.A.B.C. - BROWN SAND/GRAVEL LITTLE SILT
1	
2	BROWN MOSTLY FINE SILTY SAND W/TRACE GRAVEL TRACE OF BEDROCK USCS-SP-SM
3	
4	
5	DRY HOLE END AT 5 FT.

NOTE: THESE ARE ABBREVIATED BORING LOGS, SEE GEOTECH REPORT FOR FULL LOG & DESCRIPTIONS

SECTION FROM 350 FT EAST OF KRONENWETTER DRIVE TO OAK ROAD
FULL RECONSTRUCTION
8"-3" BREAKER RUN OVER GEOTEXTILE FABRIC
6" 1-1/4" C.A.B.C
5" ASPHALT

SECTION FROM OAK ROAD TO C.T.H. X
4" C.A.B.C., PULVERIZE - HMA OVERLAY-PENDING DATA ACQUISITION
5" ASPHALT
3:1 SIDE SLOPING

ROTH PROFESSIONAL SOLUTIONS

MAPLE RIDGE ROAD REHAB

KRONENWETTER STREET PLANNING

ROAD IMPROVEMENT PROJECT

VILLAGE OF KRONENWETTER, WI

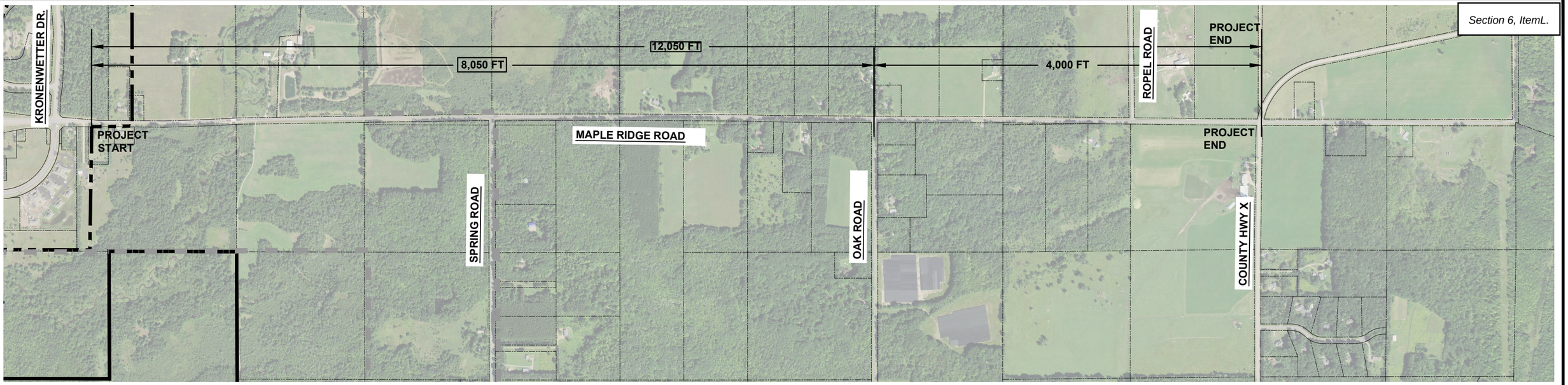
N W E S

0 500 1000

SCALE: 1" = 1000FEET
(PRINTED AT 11"x 17")

DATE:	11/12/2025
DESIGNED BY:	RJR
DRAWN BY:	
PROJECT NO:	2025-020
SHEET:	A 1

170



MAPLE RIDGE ROAD - 350 FT EAST OF KRONENWETTER DRIVE EAST TO OAK ROAD

FULL RECONSTRUCTION
8"-3" BREAKER RUN OVER GEOTEXTILE FABRIC
6" 1-1/4" C.A.B.C
5" ASPHALT

MAPLE RIDGE ROAD - OAK ROAD EAST TO C.T.H X

PULVERIZE & OVERLAY-PENDING DATA ACQUISITION
5" ASPHALT

ROTH PROFESSIONAL SOLUTIONS

MAPLE RIDGE ROAD CONCEPT

KRONENWETTER STREET PLANNING

ROAD IMPROVEMENT PROJECT

VILLAGE OF KRONENWETTER, WI

N W E S

0 500 1000

SCALE: 1" = 1000FEET
(PRINTED AT 11"x 17")

DATE:	11/12/2025
DESIGNED BY:	RJR
DRAWN BY:	
PROJECT NO:	2025-020
SHEET:	A 2

Point of Beginning

GEOTECHNICAL ENGINEERING REPORT

MAPLE RIDGE ROAD IMPROVEMENT

KRONENWETTER, WISCONSIN

OCTOBER 20, 2025 | PROJECT NO. 25.2046

ROTH PROFESSIONAL SOLUTIONS
317 DeWitt Street
Portage, WI 53901

Point of Beginning

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

October 20, 2025

Roth Professional Solutions
Attn: Robert Roth, P.E.
317 DeWitt Street
Portage, WI 53901

RE: Maple Ridge Road Improvement – Kronenwetter, WI

Dear Mr. Roth:

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

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

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

Sincerely,

Michael Frede, P.E.

Michael Frede, P.E.
Director of Geotechnical Engineering

Enclosure

Contents

EXECUTIVE SUMMARY

This report summarizes the findings of our geotechnical engineering services associated with the proposed Maple Ridge Road Reconstruction project for Roth Professional Solutions in the Village of Kronenwetter, Wisconsin.

PROJECT DESCRIPTION

The project consists of the following:

- Reconstructing 2.37 miles of Maple Ridge Road
- Maximum grade changes are estimated to be less than 1 foot.

STRUCTURAL CONSIDERATIONS

- There are no structures planned for the project.
- There are no retaining walls planned for the project.

CIVIL CONSIDERATIONS

- Minimum asphalt pavement section should consist of the following:
    - Traffic Class II = 5 inches of asphalt over 10 inches of base course
- No stormwater management systems are planned for the project.

CONSTRUCTION CONSIDERATIONS

- Undocumented fills exist within the project area that are a concern for pavement support.
- The soils exhibit variable strengths that can produce differential settlements.
- Fills containing organic matter (wood) exist in sporadic locations, which can be unsuitable for the support of pavements.
- Soil improvement should be planned, consisting of removing any unsuitable soils, below pavements.
- Loose, clean sands exist near the ground surface that will be sensitive to construction activity, and actions to minimize disturbance during construction should be planned.

PROJECT DESCRIPTION

Point of Beginning is assisting Roth Professional Solutions with the design of new asphalt pavement for Maple Ridge Road in Kronenwetter, Wisconsin. The location of the project is illustrated in Figure 1 in Appendix A.

The proposed project consists of the following:

- New Asphalt Pavement
  - Maple Ridge Road
    - 2.37 miles in length
    - East of the I-39 Frontage Road to County Road X
  - The total vehicle count over a 20-day period in 2024 was 10,554.
    - The estimated Equivalent Single Axle Load (ESAL) is 80,000.
- Underground utilities
  - Occasional culverts
- The grading plan for the project has not been provided.
  - Maximum grade changes are estimated to be less than 1 foot.
- No retaining walls are planned for the project.
- No stormwater management system is planned for the project.

SITE DESCRIPTION

- The project is located in Marathon County.
- The land is currently owned by the Village of Kronenwetter.
- The ground surface slopes downward from the east to the west with an elevation difference of about 140 feet across the project area.

SCOPE OF SERVICES

SUBSURFACE EXPLORATION

- The drilling program consisted of eight borings (B-1 through B-8).
  - The borings were drilled to depths of 5 feet.
- The boring locations are identified in the Boring Location Diagram (Figure 2) in Appendix A.
- The drilling and sampling procedures are described in Appendix D.

ADDITIONAL FIELD TESTING

No additional field testing was conducted.

LABORATORY TESTING

The laboratory testing program consisted of the following:

- Water content testing on all samples.
- Calibrated hand penetrometer testing on intact fine-grained (clay and silt) samples.

- All samples were visually examined and classified based on their physical characteristics as defined by the Unified Soil Classification System (USCS).

Typical laboratory test results are presented on logs included in Appendix B. The USCS summary is included in Appendix B following the logs. Additional laboratory results, if appropriate, are presented in reports in Appendix C. Typical laboratory procedures are described in Appendix D.

SUBSURFACE CONDITIONS

SOIL CONDITIONS

The subsurface conditions encountered at the borings are summarized below. For detailed descriptions of the geologic conditions encountered at the boring locations, please refer to the attached logs in Appendix B. The size of the project and typical geologic variability between boring locations warrants considering all soil conditions when designing the various civil elements of the development.

General Soil Conditions

The general soil profile consisted of the following:

- Undocumented sand fill materials to depths of about 3.5 to more than 5 feet at all eight borings.
    - The fills were likely placed when the road was originally constructed.
    - The fills are "undocumented" because no reports were provided to indicate they were placed and compacted sufficiently to support structural elements.
    - The sand fills varied in their fines (silt) content, with most having very few.
- Native clay, sand, and weathered bedrock underlaying the fill materials.
    - The native soils vary in their clay, silt, and gravel content.
    - Weathered bedrock was encountered below the fill materials at B-5 and B-8.
        - It exhibited characteristics similar to soil.

Fill Soils

- Eleven coarse-grained fill samples (excluding two weathered bedrock samples).
    - Loose to dense relative density.
        - N-values ranged from 6 to 36.
            - The average N-value was 21.
            - One sample (9%) was less than 10 (loose).
            - Two samples (18%) were 30 or higher (dense).
    - The moisture content ranged from 2.0% to 12.3%.
        - Typically, moisture contents are considered high if they are above 15% in coarse-grained soil.
        - One sample (9%) was described as wet, suggesting the presence of perched water.
- One sample contained organic matter (wood).

Native Fine-Grained Soils

- One native coarse-grained sample.
    - The sample was disturbed and could not be tested for its strength.
        - The N-value was 14, which is consistent with very stiff consistency.
    - The moisture content was 12.3%.
        - Typically, moisture contents are considered high if they are above 20% in fine-grained soil.
        - The sample was described as moist.

Native Coarse-Grained Soils

- Two native coarse-grained samples (excluding two weathered bedrock samples).
    - Loose and medium dense relative density.
        - N-values of 7 and 12.
    - The moisture contents were 11.7% and 13.8%.
        - Typically, moisture contents are considered high if they are above 15% in coarse-grained soil.
        - The two samples (100%) were described as wet, suggesting the presence of perched water.

BEDROCK CONDITIONS

- Two weathered bedrock samples.
- The samples were described silty sand and gravel.
    - Dense and very dense relative density.
        - N-values of 42 and 50 for 4 inches of sampler penetration (sampler refusal).
    - The moisture contents were 6.2% and 7.0%.
        - Typically, moisture contents are considered high if they are above 15% in coarse-grained soil.

GROUNDWATER CONDITIONS

- Free groundwater was not encountered during drilling.
- Perched water was noted at depths of 3.5 feet at three borings (B-2, B-3, and B-4).
- Fluctuations in the groundwater table elevation occur with variations in precipitation, evapotranspiration, surface runoff, etc.
- Shallow perched groundwater conditions should be expected where relatively permeable coarse-grained soils are underlain by relatively impermeable fine-grained soils, especially following precipitation events.

ANALYSIS AND RECOMMENDATIONS

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

- Undocumented fills exist within the project area.
    - Undocumented fills are a concern for pavement support because they could have been placed inconsistently and not sufficiently compacted, potentially causing excessive total and/or differential settlements.
- The soils exhibit variable strengths that can produce differential settlements.
- Fill materials containing organic matter exist in sporadic locations, which can be unsuitable for the support of pavements.
- Soil improvement should be planned, consisting of removing any unsuitable soils, below pavements.
- Clean sand (small quantities of fines) soils exist that could pose excavating and construction challenges.

STRUCTURAL CONSIDERATIONS

Foundation Design

- No foundations are planned for the project.

Seismic Design

- Seismic Site Classification is not required for the project.

Floor Slab Design

- No floor slabs are planned for the project.

Retaining Wall Design

- No retaining walls are planned for the project.

CIVIL CONSIDERATIONS

Pavement Design

- The following design values are appropriate for the subgrade soils:
    - AASHTO Classification = A-3
    - Soil Support Value = 5.1
    - Wisconsin Design Group Index = 6.0
    - CBR Value = 9
    - Subgrade Modulus (k) = 200
    - Soil Resilient Modulus M_R) = 4,700
    - Frost Index = F-2
- The Wisconsin Asphalt Pavement Association (WAPA) Design Guide should be utilized to design the new asphalt surface pavements.

- The minimum pavement section should consist of the following:

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

- Hot Mix Asphalt (HMA) and base course materials should be placed and compacted following the project requirements and guidelines of WisDOT Standard Specifications for Highway and Structure Construction, section 460.3.
- The pavement section above is not intended to support on-going construction traffic.
- These recommendations assume the subgrade is prepared as described in this report.
    - Additional corrective action may be warranted at the time of construction, depending on the site conditions.

Stormwater Management Design

- No stormwater management systems are planned for the project.

CONSTRUCTION CONSIDERATIONS

Subgrade Preparation

- All loose, wet, disturbed, or otherwise unsuitable surface soils should be stripped from structural and engineered fill areas prior to any construction activities.
- All pavement areas should be proof-rolled to identify low-strength or disturbed areas that need to be removed or improved.
- Clean sand soils will be sensitive to disturbances from construction activity.
    - Care should be taken during construction to protect exposed soils from disturbance from equipment.
- Placing a working subbase layer of 3-inch crushed stone or utilizing a cement stabilization program could be beneficial in areas subjected to construction traffic and to reduce the potential need to strip disturbed soils.

Engineered Fill and Backfill

- Engineered (compacted and tested) Fill
    - Inorganic Materials
    - Free of Deleterious Debris
    - Non-Frozen
    - Maximum 3 inches in Size
    - Placed in 8 to 10-inch Loose Lifts
    - Minimum Compaction
        - Structural Areas= 95 percent of the Maximum Dry Density (Modified Proctor)

        - Non-Structural Areas
    - Moisture Content = 3± percent of the Optimum Moisture
    - Placed on Tested and Passing Subgrade Soils
    - Testing Frequency (where not specified by local ordinance)
        - One test per lift for every 2,500 square feet of compacted fill in building areas.
        - One test per lift for every 5,000 square feet of compacted fill in pavement areas.
        - One test per 100 linear feet of compacted utility trench backfill.
- Imported Fill
    - Fine-Grained Soil (Clay, Clayey Silt)
        - Suitable for mass grading only.
        - Silt soil should not be used.
    - Coarse-Grained Soil (Sand, Gravel)
        - Suitable for utility and foundation backfill and mass grading.
    - Processed Aggregate (Crushed Stone)
        - Suitable for foundation and subgrade undercut areas, utility and foundation backfill, and mass grading.
- Bedding of pipes should be performed in accordance with normally accepted procedures for the class of utility being placed.
    - Backfilling of excavations should be done in such a way as to provide relatively uniform lateral support until the backfill extends over the utility, accomplished by alternating fill placement at approximately 1-foot intervals to both sides.
    - Bedding and initial backfill requirements may be specified by the Owner based on planned utility types, bedding conditions, and other factors beyond the scope of this study.
- On-site soil can be reused as engineered fill if they meet the specifications in this report.
    - Due to the moisture sensitive nature of fine-grained soils, their use could pose construction challenges regarding achieving the required compaction requirements. Therefore, their use should be avoided.

Foundation Evaluation

- No foundation construction is planned for the project.

Utility Construction

- No utility construction is planned for the project.

Groundwater Management

- Excavations below 3 feet could encounter perched water.
- If excavations extend into limited perched water conditions, filtered sump pumps or other conventional means should be sufficient.

Surface Water Management

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

Excavation Safety

- Excavation walls may need to be sloped or braced for stability and safety reasons.
- The Owner and Contractor should be aware of, and become familiar with, applicable local, state, and federal safety regulations, including current OSHA Excavation and Trench Safety Standards.
- Construction-site safety generally is the responsibility of the Contractor, who should also be responsible for the means, methods, and sequencing of construction operations.
- The Contractor should be aware that slope height, slope inclination, or excavation depths should in no case exceed those specified in local, state, or federal safety regulations, (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926), or successor regulations.
- The prevalent soils encountered in the borings are Type C when applying the OSHA regulations.
- OSHA regulations are strictly enforced, and if they are not followed, the Owner, Contractor, and/or earthwork Subcontractor(s) could be liable for substantial penalties.

GENERAL QUALIFICATIONS

- Our services for this project are intended for the sole benefit and exclusive use of our client and for the specific application to the project described and are provided in accordance with generally accepted geotechnical engineering practices, with no third-party beneficiaries intended. Any use or reliance of the information by third parties is done solely at their own risk. No warranties, either expressed or implied, are intended or made.
- The findings, analysis, and recommendations presented in this report are based on our understanding of the project, a reasonable geotechnical scope approved by the client, and our engineering judgment.
- Should the details of the project change, Point of Beginning should be notified and provided with the opportunity to review the applicability of the collected information and modify our recommendations, as needed.
- The nature and extent of geologic variations may not become evident during or after construction. If the actual site subsurface conditions differ from the inferred conditions described in this report, the recommendations in this report may need to be revised.
- The recommendations in this report are only valid for the exact and specific locations at which field investigation or laboratory testing was completed. All other areas and regions of the site that are not evaluated will be at the risk of the individual or entity using this Report.
- Site characteristics as provided are for design purposes and not to estimate construction costs. Any party charged with estimating construction costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing.

- Site safety, excavation support, and dewatering requirements/design are the responsibility of others.
- Construction and site development activities have the potential to affect adjacent properties. Such impacts can include damage due to vibration, modification of groundwater/surface water flow during construction, foundation movement due to undermining or subsidence from excavation, and noise or air-quality concerns. Evaluation of these items on nearby properties are commonly associated with contractor means and methods and are not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of surrounding developments.

APPENDICES

APPENDIX A
Diagrams

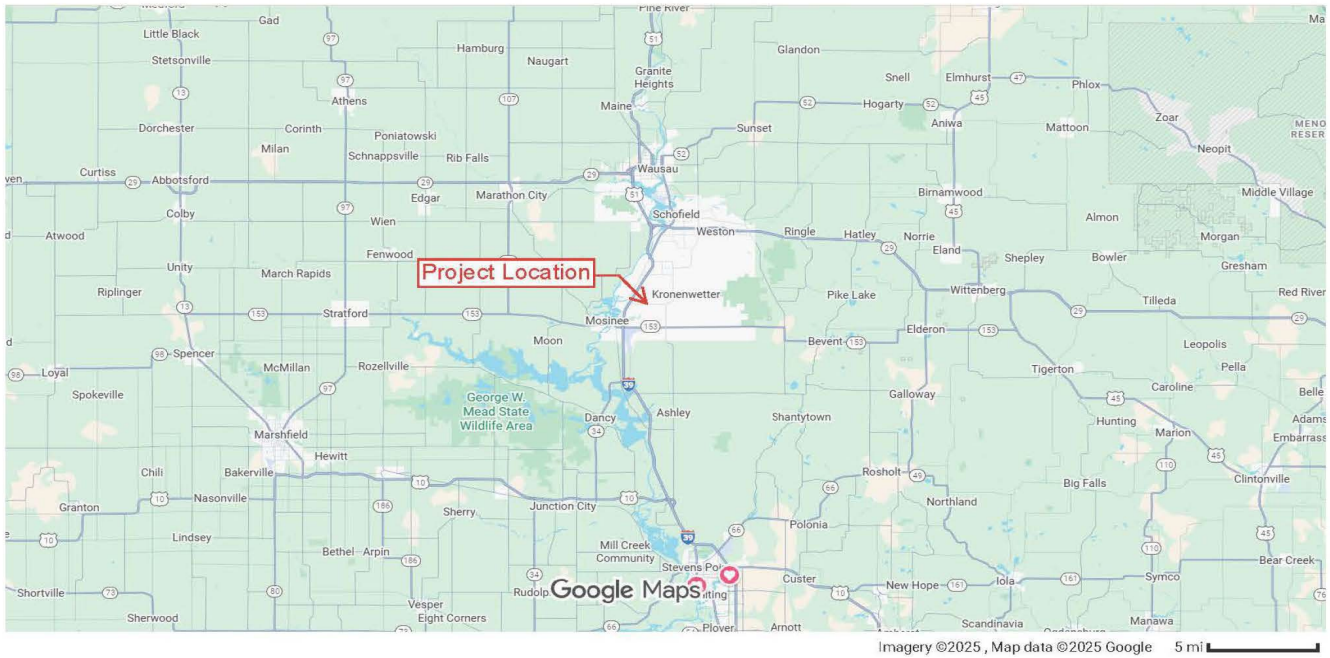
APPENDIX B
Logs

APPENDIX C
Laboratory Reports

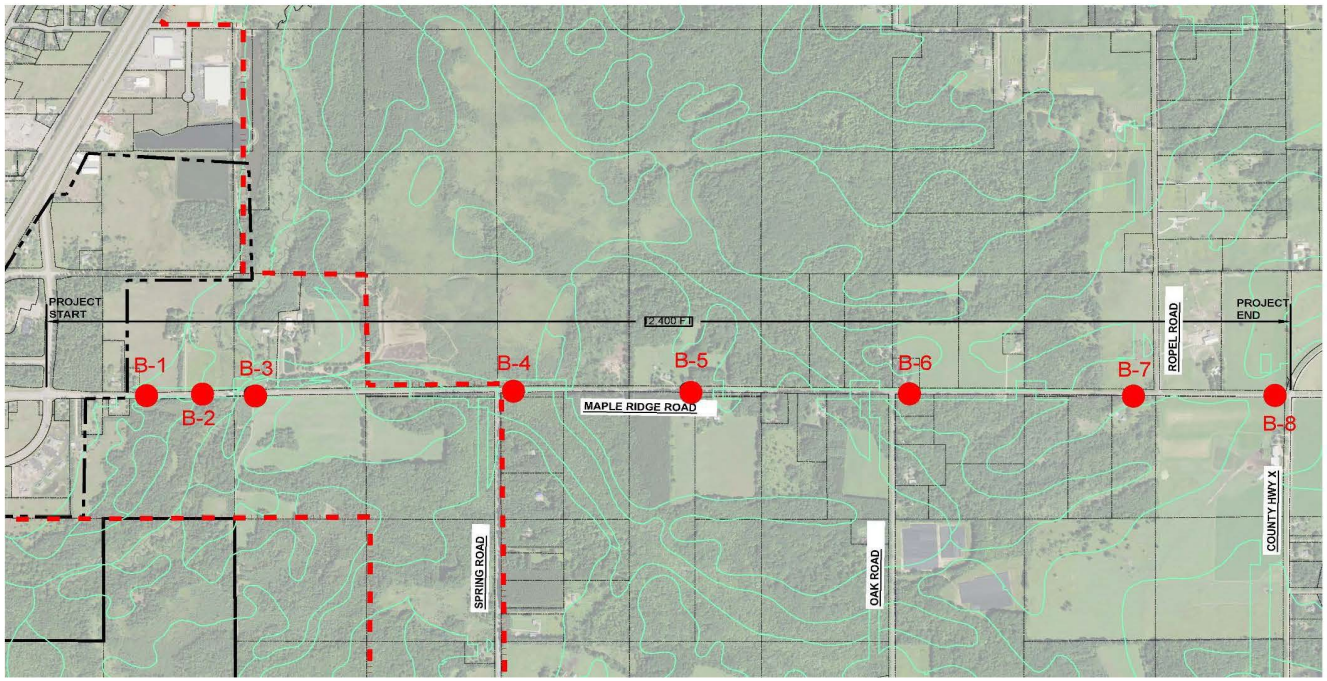
APPENDIX D
General Notes & Procedures

APPENDIX E
Additional Documents

APPENDEX A



Project Name:	Maple Ridge Road Improvement	**Project No.:**	25.2046	**FIGURE 1**
Project Location:	East of I-39 Frontage Road to County Road X Kronenwetter, Wisconsin Marathon County	**Date:** **Drawn By:** **Scale:**	10/20/25 MDF Not To Scale	**Project Location Diagram**



Project Name:	Maple Ridge Road Improvement	**Project No.:**	25.2046	**FIGURE 2**
Project Location:	East of I-39 Frontage Road to County Road X Kronenwetter, Wisconsin Marathon County	**Date:** **Drawn By:** **Scale:**	10/20/25 MDF Not To Scale	**Boring Location Diagram**

APPENDIX B

BORING LOGS

All Borings (B-1 through B-8)

USCS

SOIL BORING LOG

Boring By: Point of Beginning Inc.

Project: Maple Ridge Rd. Reconstruction
Location: See Map
Rig: Mobile B57 ATV

Boring: 4 SSA
Auger:
Page: 1 of 1
Drillers: DC/TH
Date: 7/30/25
Elevation: 1162.77

Depth (ft.)		Classification/Description	#	Sample Depth (ft.)	N	Rec (in.)	M	Qp (tsf)	Notes
		Asphalt							
1		-----2.5"-----	1	1 - 2.5	27	15"	M		MC 2.2%
		Brown F-M Sand and Gravel w/ Little Silt (CABC)							
		-----7.0"-----							
2		Brown F-M w/ Little Gravel and Trace Silt (Fill)	2	3.5 - 5	6	14"	M		MC 2.9%
		USCS - SP							
3									
4									
5		-----E.O.B. 5'-----							
		-----Dry @ Cpompletion							
		-----Backfilled w/ Bentonite Chips-----							
6									
7									
8									
9									
10									

Point of Beginning Inc. **POB# 25.2046**

SOIL BORING LOG

Boring By: Point of Beginning Inc.

Project: Maple Ridge Rd. Reconstruction
Location: See Map
Rig: Mobile B57 ATV

Boring: 4 SSA
Auger:
Page: 1 of 1
Drillers: DC/TH
Date: 7/30/25
Elevation: 1162.61

Depth (ft.)		Classification/Description	#	Sample Depth (ft.)	N	Rec (in.)	M	Qp (tsf)	Notes
		Asphalt							
1		-----4.5"-----	1	1 - 2.5	20	14"	M		MC 2.3%
		Brown F-M Sand and Gravel w/ Little Silt (CABC)							
		-----8.0"-----							
2		Brown F-M Sand w/ Little Silt and Some Gravel (Fill) USCS - SP	2	3.5 - 5	12	16"	W		MC 13.8%
3		-----3.5'----- Brown F-M Silty Clayey Sand w/ Little Gravel							
4									
5		-----E.O.B. 5'----- -----Dry @ Completion -----Backfilled w/ Bentonite Chips-----							
6									
7									
8									
9									
10									

Point of Beginning Inc. **POB# 25.2046**

SOIL BORING LOG

Boring By: Point of Beginning Inc.

Project: Maple Ridge Rd. Reconstruction
Location: See Map
Rig: Mobile B57 ATV

Boring: 4 SSA
Auger:
Page: 1 of 1
Drillers: DC/TH
Date: 7/30/25
Elevation: 1169.55

Depth (ft.)		Classification/Description	#	Sample Depth (ft.)	N	Rec (in.)	M	Qp (tsf)	Notes
	-	Asphalt							
1	-	-----4.0"-----	1	1 - 2.5	30	16"	M		MC 5.5%
	-	Brown F-M Sand and Gravel w/ Little Silt							
	-	(CABC)							
	-	-----7.0"-----							
2	-	Brown F-M Sand and Gravel w/ Trace Silt							
	-	(Fill)	2	3.5 - 5	7	17"	W		MC 11.7%
	-	USCS - SP							
	-								
3	-								
	-	-----3.5'-----							
	-	Dark Brown F-M Silty Clayey Sand w/ Trace Gravel							
	-	USCS - SC							
4	-								
	-								
	-								
	-								
5	-	-----E.O.B. 5'-----							
	-	-----Dry @ Completion							
	-	-----Backfilled w/ Bentonite Chips-----							
	-								
6	-								
	-								
	-								
	-								
7	-								
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Point of Beginning Inc. **POB# 25.2046**

SOIL BORING LOG

Boring By: Point of Beginning Inc.

Project: Maple Ridge Rd. Reconstruction
Location: See Map
Rig: Mobile B57 ATV

Boring: 4 SSA
Auger:
Page: 1 of 1
Drillers: DC/TH
Date: 7/30/25
Elevation: 1172.35

Depth (ft.)		Classification/Description	#	Sample Depth (ft.)	N	Rec (in.)	M	Qp (tsf)	Notes
		Asphalt							
1		-----4.5"-----	1	1 - 2.5	26	15"	M		MC 2.0%
		Brown F-M Sand and Gravel w/ Little Silt							
		(CABC)							
		-----8.0"-----							
2		Brown F-M Sand w/ Trace Silt Some Gravel							
		and Wood	2	3.5 - 5	11	7"	W		MC 12.3%
		(Fill)							
		USCS - SP							
3									
4									
5		-----E.O.B. 5'-----							
		-----Dry @ Completion							
		-----Backfilled w/ Bentonite Chips-----							
6									
7									
8									
9									
10									

Point of Beginning Inc. **POB# 25.2046**

SOIL BORING LOG

Boring By: Point of Beginning Inc.

Project: Maple Ridge Rd. Reconstruction
Location: See Map
Rig: Mobile B57 ATV

Boring: 4 SSA
Auger:
Page: 1 of 1
Drillers: DC/TH
Date: 7/30/25
Elevation: 1242.56

Depth (ft.)		Classification/Description	#	Sample Depth (ft.)	N	Rec (in.)	M	Qp (tsf)	Notes
	-	Asphalt							
1	-	-----3.5"-----	1	1 - 2.5	36	15"	M		MC 7.5%
	-	Brown F-M Sand and Gravel w/ Little Silt							
	-	(CABC)							
	-	-----7.0"-----							
2	-	Brown F-M Sand w/ Trace Silt Some Gravel							
	-	(Fill)	2	3.5 - 5	50/4"	12"	M		MC 6.2%
	-	USCS - SP							
	-								
3	-								
	-	-----3.5'-----							
	-	Brown/Red F-M Silty Sand and Gravel							
	-	(Weathered Bedrock)							
4	-	USCS - SP-SM							
	-								
	-								
	-								
5	-	-----E.O.B. 5'-----							
	-	-----Dry @ Completion							
	-	-----Backfilled w/ Bentonite Chips-----							
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Point of Beginning Inc. **POB# 25.2046**

SOIL BORING LOG

Boring By: Point of Beginning Inc.

Project: Maple Ridge Rd. Reconstruction
Location: See Map
Rig: Mobile B57 ATV

Boring: 4 SSA
Auger:
Page: 1 of 1
Drillers: DC/TH
Date: 7/30/25
Elevation: 1256.09

Depth (ft.)		Classification/Description	#	Sample Depth (ft.)	N	Rec (in.)	M	Qp (tsf)	Notes
	-	Asphalt							
1	-	-----4.5"-----	1	1 - 2.5	17	16"	M		MC 8.7
	-	Brown F-M Sand and Gravel w/ Little Silt							
	-	(CABC)							
	-	-----1.0'-----							
2	-	Brown F-M Sand w/ Trace Silt Some Gravel							
	-	(Fill)	2	3.5 - 5	15	17"	M		MC 7.8%
	-	USCS - SP							
	-								
3	-								
	-								
	-								
	-								
4	-	-----4.5'-----							
	-	Brown/Gray F-M Silty Sand w/ Little Gravel							
	-	(Fill)							
	-	USCS - SP-SM							
5	-	-----E.O.B. 5'-----							
	-	-----Dry @ Completion							
	-	-----Backfilled w/ Bentonite Chips-----							
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Point of Beginning Inc. **POB# 25.2046**

SOIL BORING LOG

Boring By: Point of Beginning Inc.

Project: Maple Ridge Rd. Reconstruction
Location: See Map
Rig: Mobile B57 ATV

Boring: 4 SSA
Auger:
Page: 1 of 1
Drillers: DC/TH
Date: 7/30/25
Elevation: 1284.41

Depth (ft.)		Classification/Description	#	Sample Depth (ft.)	N	Rec (in.)	M	Qp (tsf)	Notes
		Asphalt							
1		-----5.0"-----	1	1 - 2.5	16	13"	M		MC 4.9%
		Brown F-M Sand and Gravel w/ Little Silt (CABC)							
		-----1.5'-----							
2		Brown F-M Sand w/ Trace Silt Some Gravel (Fill) USCS - SP	2	3.5 - 5	14	10"	M		MC 12.3%
3		-----3.5'-----							
		Brown Silty Sandy Clay w/ Little Gravel USCS - CL							
4									
5		-----E.O.B. 5'-----							
		-----Dry @ Completion							
		-----Backfilled w/ Bentonite Chips-----							
6									
7									
8									
9									
10									

Point of Beginning Inc. **POB# 25.2046**

SOIL BORING LOG

Boring By: Point of Beginning Inc.

Project: Maple Ridge Rd. Reconstruction
Location: See Map
Rig: Mobile B57 ATV

Boring: 4 SSA
Auger:
Page: 1 of 1
Drillers: DC/TH
Date: 7/30/25
Elevation: 1318.74

Depth (ft.)		Classification/Description	#	Sample Depth (ft.)	N	Rec (in.)	M	Qp (tsf)	Notes
		Asphalt							
1		-----4.5"-----	1	1 - 2.5	29	16"	M		MC 9.5%
		Brown F-M Sand and Gravel w/ Little Silt							
		(CABC)							
		-----1.5'-----							
2		Brown Mostly Fine Silty Sand w/ Trace Gravel							
		(Fill)	2	3.5 - 5	42	15"	M		MC 7.0%
		USCS - SP-SM							
3									
		-----3.5'-----							
		Brown F-M Silty Sand and Gravel							
		(Weathered Granite Bedrock)							
4		USCS - SP-SM							
5		-----E.O.B. 5'-----							
		-----Dry @ Completion							
		-----Backfilled w/ Bentonite Chips-----							
6									
7									
8									
9									
10									

Point of Beginning Inc. **POB# 25.2046**

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

Consistency of Fine-Grained Soils

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

Relative Density of Coarse-Grained Soils

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

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

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

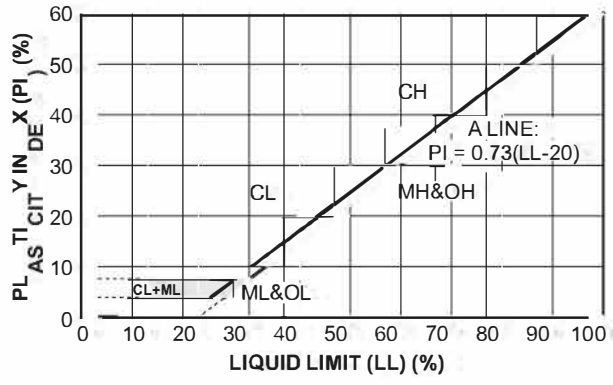
LABORATORY CLASSIFICATION CRITERIA

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

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

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

PLASTICITY CHART



UNIFIED SOIL CLASSIFICATION SYSTEM

APPENDIX C

LABORATORY REPORTS

None

APPENDIX D

GENERAL NOTES & PROCEDURES

Drilling Procedures

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

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

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

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

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

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

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

Soil Sampling Procedures

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

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

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

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

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

Miscellaneous Procedures

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

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

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

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

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

Designation: D 1586 – 99

AMERICAN SOCIETY FOR TESTING AND MATERIALS
100 Barr Harbor Dr., West Conshohocken, PA 19428

Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils[1]

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

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

1. Scope *

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

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

1.3 The values stated in inch-pound units are to be regarded as the standard.

NOTE 1—Practice D 6066 can be used when testing loose sands below the water table for liquefaction studies or when a higher level of care is required when drilling these soils. This practice provides information on drilling methods, equipment variables, energy corrections, and blow-count normalization.

2. Referenced Documents

2.1 *ASTM Standards:*

D 2487 Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)[2]

D 2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)[2]

D 4220 Practices for Preserving and Transporting Soil Samples[2]

D 4633 Test Method for Stress Wave Energy Measurement for Dynamic Penetrometer Testing Systems[2]

D 6066 Practice for Determining the Normalized Penetration Resistance Testing of Sands for Evaluation of Liquefaction Potential[3]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *anvil*—that portion of the drive-weight assembly which the hammer strikes and through which the hammer energy passes into the drill rods.

3.1.2 *cathead*—the rotating drum or windlass in the rope-cathead lift system around which the operator wraps a rope to lift and drop the hammer by successively tightening and loosening the rope turns around the drum.

3.1.3 *drill rods*—rods used to transmit downward force and torque to the drill bit while drilling a borehole.

3.1.4 *drive-weight assembly*—a device consisting of the hammer, hammer fall guide, the anvil, and any hammer drop system.

3.1.5 *hammer*—that portion of the drive-weight assembly consisting of the 140 ± 2 lb (63.5 ± 1 kg) impact weight which is successively lifted and dropped to provide the energy that accomplishes the sampling and penetration.

3.1.6 *hammer drop system*—that portion of the drive-weight assembly by which the operator accomplishes the lifting and dropping of the hammer to produce the blow.

3.1.7 *hammer fall guide*—that part of the drive-weight assembly used to guide the fall of the hammer.

3.1.8 *N-value*—the blowcount representation of the penetration resistance of the soil. The *N*-value, reported in blows per foot, equals the sum of the number of blows required to drive the sampler over the depth interval of 6 to 18 in. (150 to 450 mm) (see 7.3).

3.1.9 Δ*N*—the number of blows obtained from each of the 6-in. (150-mm) intervals of sampler penetration (see 7.3).

3.1.10 *number of rope turns*—the total contact angle between the rope and the cathead at the beginning of the operator's rope slackening to drop the hammer, divided by 360° (see Fig. 1).

3.1.11 *sampling rods*—rods that connect the drive-weight assembly to the sampler. Drill rods are often used for this purpose.

3.1.12 *SPT*—abbreviation for standard penetration test, a term by which engineers commonly refer to this method.

4. Significance and Use

4.1 This test method provides a soil sample for identification purposes and for laboratory tests appropriate for soil obtained from a sampler that may produce large shear strain disturbance in the sample.

4.2 This test method is used extensively in a great variety of geotechnical exploration projects. Many local correlations and

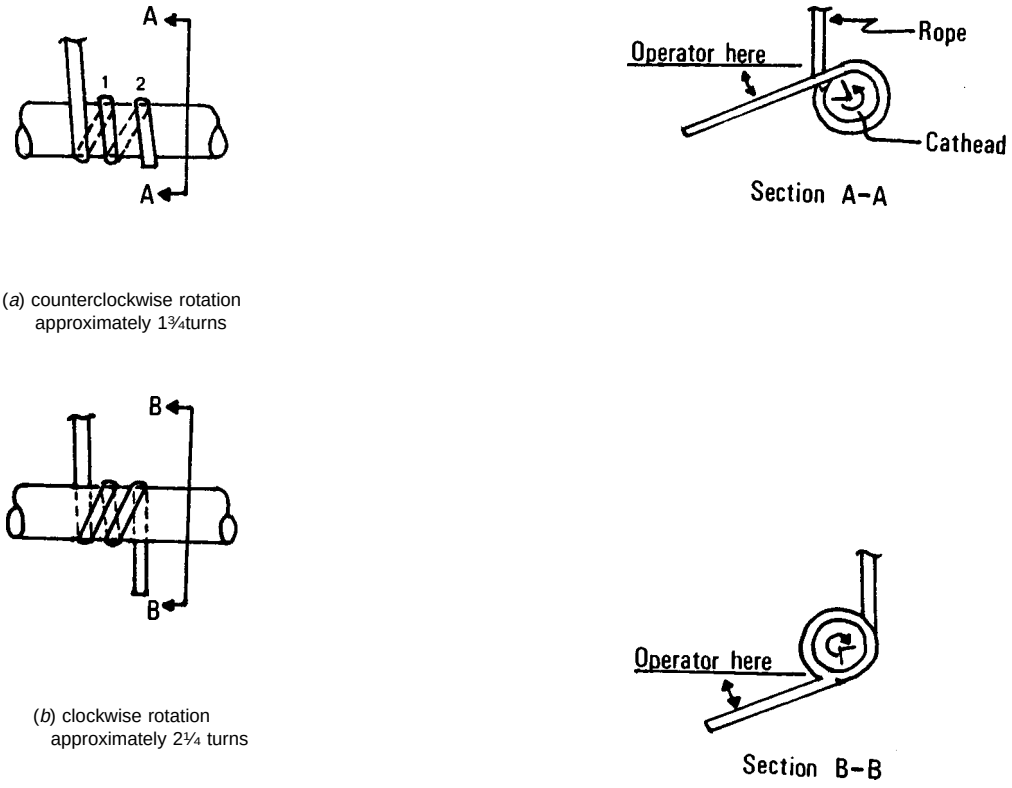
[1] This method is under the jurisdiction of ASTM Committee D-18 on Soil and Rock and is the direct responsibility of Subcommittee D18.02 on Sampling and Related Field Testing for Soil Investigations.

Current edition approved Jan. 10, 1999. Published March 1999. Originally published as D 1586 – 58 T. Last previous edition D 1586 – 98.

[2] *Annual Book of ASTM Standards*, Vol 04.08.

[3] *Annual Book of ASTM Standards*, Vol 04.09.

***A Summary of Changes section appears at the end of this standard.**



(*a*) counterclockwise rotation approximately 1¾turns

(*b*) clockwise rotation approximately 2¼ turns

FIG. 1 Definitions of the Number of Rope Turns and the Angle for (*a*) Counterclockwise Rotation and (*b*) Clockwise Rotation of the Cathead

widely published correlations which relate SPT blowcount, or *N*-value, and the engineering behavior of earthworks and foundations are available.

5. Apparatus

5.1 *Drilling Equipment*—Any drilling equipment that provides at the time of sampling a suitably clean open hole before insertion of the sampler and ensures that the penetration test is performed on undisturbed soil shall be acceptable. The following pieces of equipment have proven to be suitable for advancing a borehole in some subsurface conditions.

5.1.1 *Drag, Chopping, and Fishtail Bits*, less than 6.5 in. (162 mm) and greater than 2.2 in. (56 mm) in diameter may be used in conjuction with open-hole rotary drilling or casing-advancement drilling methods. To avoid disturbance of the underlying soil, bottom discharge bits are not permitted; only side discharge bits are permitted.

5.1.2 *Roller-Cone Bits*, less than 6.5 in. (162 mm) and greater than 2.2 in. (56 mm) in diameter may be used in conjunction with open-hole rotary drilling or casing-advancement drilling methods if the drilling fluid discharge is deflected.

5.1.3 *Hollow-Stem Continuous Flight Augers*, with or without a center bit assembly, may be used to drill the boring. The inside diameter of the hollow-stem augers shall be less than 6.5 in. (162 mm) and greater than 2.2 in. (56 mm).

5.1.4 *Solid, Continuous Flight, Bucket and Hand Augers*, less than 6.5 in. (162 mm) and greater than 2.2 in. (56 mm) in diameter may be used if the soil on the side of the boring does not cave onto the sampler or sampling rods during sampling.

5.2 *Sampling Rods*—Flush-joint steel drill rods shall be used to connect the split-barrel sampler to the drive-weight assembly. The sampling rod shall have a stiffness (moment of inertia) equal to or greater than that of parallel wall "A" rod (a steel rod which has an outside diameter of 1⅝ in. (41.2 mm) and an inside diameter of 1⅛ in. (28.5 mm).

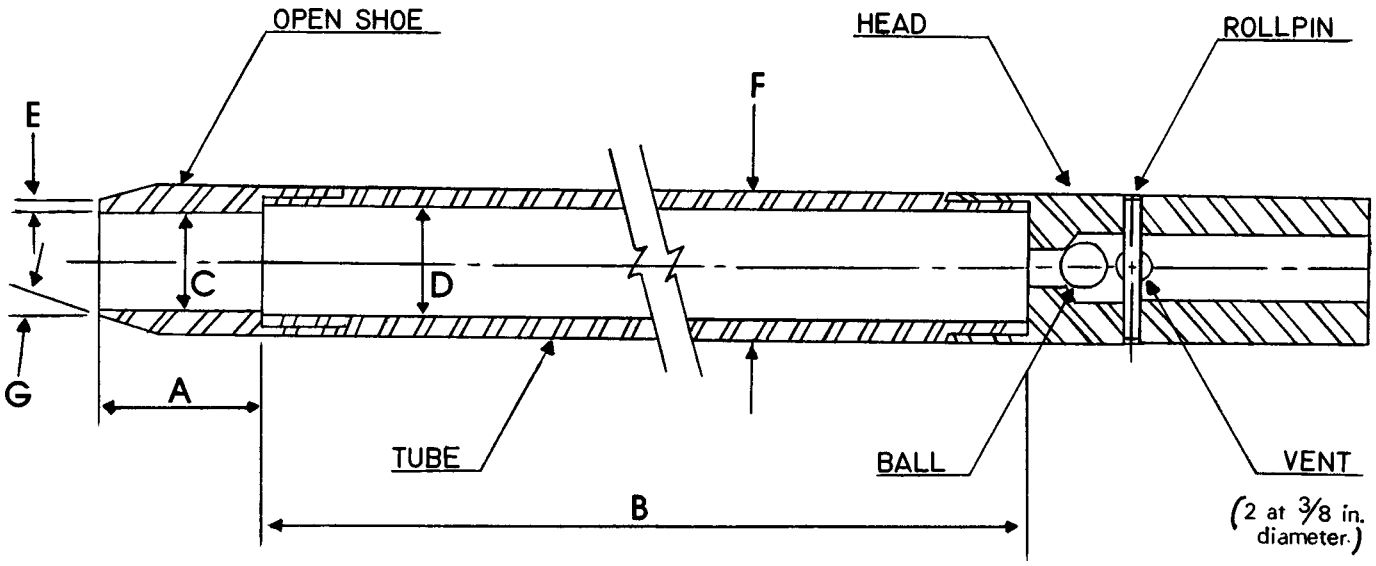
NOTE 2—Recent research and comparative testing indicates the type rod used, with stiffness ranging from "A" size rod to "N" size rod, will usually have a negligible effect on the *N*-values to depths of at least 100 ft (30 m).

5.3 *Split-Barrel Sampler*—The sampler shall be constructed with the dimensions indicated in Fig. 2. The driving shoe shall be of hardened steel and shall be replaced or repaired when it becomes dented or distorted. The use of liners to produce a constant inside diameter of 1⅜ in. (35 mm) is permitted, but shall be noted on the penetration record if used. The use of a sample retainer basket is permitted, and should also be noted on the penetration record if used.

NOTE 3—Both theory and available test data suggest that *N*-values may increase between 10 to 30 % when liners are used.

5.4 *Drive-Weight Assembly*:

5.4.1 *Hammer and Anvil*—The hammer shall weigh 140 ± 2 lb (63.5 ± 1 kg) and shall be a solid rigid metallic mass. The hammer shall strike the anvil and make steel on steel contact when it is dropped. A hammer fall guide permitting a free fall



A = 1.0 to 2.0 in. (25 to 50 mm)
B = 18.0 to 30.0 in. (0.457 to 0.762 m)
C = 1.375± 0.005 in. (34.93 ± 0.13 mm)
D = 1.50 ± 0.05 − 0.00 in. (38.1 ± 1.3 − 0.0 mm)
E = 0.10 ± 0.02 in. (2.54 ± 0.25 mm)
F = 2.00 ± 0.05 − 0.00 in. (50.8 ± 1.3 − 0.0 mm)
G = 16.0° to 23.0°

The 1½ in. (38 mm) inside diameter split barrel may be used with a 16-gage wall thickness split liner. The penetrating end of the drive shoe may be slightly rounded. Metal or plastic retainers may be used to retain soil samples.

FIG. 2 Split-Barrel Sampler

shall be used. Hammers used with the cathead and rope method shall have an unimpeded overlift capacity of at least 4 in. (100 mm). For safety reasons, the use of a hammer assembly with an internal anvil is encouraged.

NOTE 4—It is suggested that the hammer fall guide be permanently marked to enable the operator or inspector to judge the hammer drop height.

5.4.2 *Hammer Drop System*—Rope-cathead, trip, semi-automatic, or automatic hammer drop systems may be used, providing the lifting apparatus will not cause penetration of the sampler while re-engaging and lifting the hammer.

5.5 *Accessory Equipment*—Accessories such as labels, sample containers, data sheets, and groundwater level measuring devices shall be provided in accordance with the requirements of the project and other ASTM standards.

6. Drilling Procedure

6.1 The boring shall be advanced incrementally to permit intermittent or continuous sampling. Test intervals and locations are normally stipulated by the project engineer or geologist. Typically, the intervals selected are 5 ft (1.5 mm) or less in homogeneous strata with test and sampling locations at every change of strata.

6.2 Any drilling procedure that provides a suitably clean and stable hole before insertion of the sampler and assures that the penetration test is performed on essentially undisturbed soil shall be acceptable. Each of the following procedures have proven to be acceptable for some subsurface conditions. The subsurface conditions anticipated should be considered when selecting the drilling method to be used.

6.2.1 Open-hole rotary drilling method.

6.2.2 Continuous flight hollow-stem auger method.

6.2.3 Wash boring method.

6.2.4 Continuous flight solid auger method.

6.3 Several drilling methods produce unacceptable borings. The process of jetting through an open tube sampler and then sampling when the desired depth is reached shall not be permitted. The continuous flight solid auger method shall not be used for advancing the boring below a water table or below the upper confining bed of a confined non-cohesive stratum that is under artesian pressure. Casing may not be advanced below the sampling elevation prior to sampling. Advancing a boring with bottom discharge bits is not permissible. It is not permissible to advance the boring for subsequent insertion of the sampler solely by means of previous sampling with the SPT sampler.

6.4 The drilling fluid level within the boring or hollow-stem augers shall be maintained at or above the in situ groundwater level at all times during drilling, removal of drill rods, and sampling.

7. Sampling and Testing Procedure

7.1 After the boring has been advanced to the desired sampling elevation and excessive cuttings have been removed, prepare for the test with the following sequence of operations.

7.1.1 Attach the split-barrel sampler to the sampling rods and lower into the borehole. Do not allow the sampler to drop onto the soil to be sampled.

7.1.2 Position the hammer above and attach the anvil to the top of the sampling rods. This may be done before the sampling

rods and sampler are lowered into the borehole.

7.1.3 Rest the dead weight of the sampler, rods, anvil, and drive weight on the bottom of the boring and apply a seating blow. If excessive cuttings are encountered at the bottom of the boring, remove the sampler and sampling rods from the boring and remove the cuttings.

7.1.4 Mark the drill rods in three successive 6-in. (0.15-m) increments so that the advance of the sampler under the impact of the hammer can be easily observed for each 6-in. (0.15-m) increment.

7.2 Drive the sampler with blows from the 140-lb (63.5-kg) hammer and count the number of blows applied in each 6-in. (0.15-m) increment until one of the following occurs:

7.2.1 A total of 50 blows have been applied during any one of the three 6-in. (0.15-m) increments described in 7.1.4.

7.2.2 A total of 100 blows have been applied.

7.2.3 There is no observed advance of the sampler during the application of 10 successive blows of the hammer.

7.2.4 The sampler is advanced the complete 18 in. (0.45 m) without the limiting blow counts occurring as described in 7.2.1, 7.2.2, or 7.2.3.

7.3 Record the number of blows required to effect each 6 in. (0.15 m) of penetration or fraction thereof. The first 6 in. is considered to be a seating drive. The sum of the number of blows required for the second and third 6 in. of penetration is termed the "standard penetration resistance," or the "*N*-value." If the sampler is driven less than 18 in. (0.45 m), as permitted in 7.2.1, 7.2.2, or 7.2.3, the number of blows per each complete 6-in. (0.15-m) increment and per each partial increment shall be recorded on the boring log. For partial increments, the depth of penetration shall be reported to the nearest 1 in. (25 mm), in addition to the number of blows. If the sampler advances below the bottom of the boring under the static weight of the drill rods or the weight of the drill rods plus the static weight of the hammer, this information should be noted on the boring log.

7.4 The raising and dropping of the 140-lb (63.5-kg) hammer shall be accomplished using either of the following two methods:

7.4.1 By using a trip, automatic, or semi-automatic hammer drop system which lifts the 140-lb (63.5-kg) hammer and allows it to drop 30 ± 1.0 in. (0.76 m ± 25 mm) unimpeded.

7.4.2 By using a cathead to pull a rope attached to the hammer. When the cathead and rope method is used the system and operation shall conform to the following:

7.4.2.1 The cathead shall be essentially free of rust, oil, or grease and have a diameter in the range of 6 to 10 in. (150 to 250 mm).

7.4.2.2 The cathead should be operated at a minimum speed of rotation of 100 RPM, or the approximate speed of rotation shall be reported on the boring log.

7.4.2.3 No more than 2¼ rope turns on the cathead may be used during the performance of the penetration test, as shown in Fig. 1.

NOTE 5—The operator should generally use either 1¾ or 2¼ rope turns, depending upon whether or not the rope comes off the top (1¾ turns) or the bottom (2¼ turns) of the cathead. It is generally known and accepted that 2¾or more rope turns considerably impedes the fall of the hammer and should not be used to perform the test. The cathead rope should be maintained in a relatively dry, clean, and unfrayed condition.

7.4.2.4 For each hammer blow, a 30-in. (0.76-m) lift and drop shall be employed by the operator. The operation of pulling and throwing the rope shall be performed rhythmically without holding the rope at the top of the stroke.

7.5 Bring the sampler to the surface and open. Record the percent recovery or the length of sample recovered. Describe the soil samples recovered as to composition, color, stratification, and condition, then place one or more representative portions of the sample into sealable moisture-proof containers (jars) without ramming or distorting any apparent stratification. Seal each container to prevent evaporation of soil moisture. Affix labels to the containers bearing job designation, boring number, sample depth, and the blow count per 6-in. (0.15-m) increment. Protect the samples against extreme temperature changes. If there is a soil change within the sampler, make a jar for each stratum and note its location in the sampler barrel.

8. Report

8.1 Drilling information shall be recorded in the field and shall include the following:

8.1.1 Name and location of job,

8.1.2 Names of crew,

8.1.3 Type and make of drilling machine,

8.1.4 Weather conditions,

8.1.5 Date and time of start and finish of boring,

8.1.6 Boring number and location (station and coordinates, if available and applicable),

8.1.7 Surface elevation, if available,

8.1.8 Method of advancing and cleaning the boring,

8.1.9 Method of keeping boring open,

8.1.10 Depth of water surface and drilling depth at the time of a noted loss of drilling fluid, and time and date when reading or notation was made,

8.1.11 Location of strata changes,

8.1.12 Size of casing, depth of cased portion of boring,

8.1.13 Equipment and method of driving sampler,

8.1.14 Type sampler and length and inside diameter of barrel (note use of liners),

8.1.15 Size, type, and section length of the sampling rods, and

8.1.16 Remarks.

8.2 Data obtained for each sample shall be recorded in the field and shall include the following:

8.2.1 Sample depth and, if utilized, the sample number,

8.2.2 Description of soil,

8.2.3 Strata changes within sample,

8.2.4 Sampler penetration and recovery lengths, and

8.2.5 Number of blows per 6-in. (0.15-m) or partial increment.

9. Precision and Bias

9.1 *Precision*—A valid estimate of test precision has not been determined because it is too costly to conduct the necessary inter-laboratory (field) tests. Subcommittee D18.02 welcomes proposals to allow development of a valid precision statement.

9.2 *Bias*—Because there is no reference material for this test method, there can be no bias statement.

9.3 Variations in *N*-values of 100 % or more have been

observed when using different standard penetration test apparatus and drillers for adjacent borings in the same soil formation. Current opinion, based on field experience, indicates that when using the same apparatus and driller, *N*-values in the same soil can be reproduced with a coefficient of variation of about 10 %.

9.4 The use of faulty equipment, such as an extremely massive or damaged anvil, a rusty cathead, a low speed cathead, an old, oily rope, or massive or poorly lubricated rope sheaves can significantly contribute to differences in *N*-values obtained between operator-drill rig systems.

9.5 The variability in *N*-values produced by different drill rigs and operators may be reduced by measuring that part of the hammer energy delivered into the drill rods from the sampler and adjusting *N* on the basis of comparative energies. A method for energy measurement and *N*-value adjustment is given in Test Method D 4633.

10. Keywords

10.1 blow count; in-situ test; penetration resistance; split-barrel sampling; standard penetration test

SUMMARY OF CHANGES

(1) Added note to Section 1, Scope. The note refers to a related standard, Practice D 6066.

(2) Added Practice D 6066 to Section 2 on Referenced Documents.

Designation: D 1587 – 00

Standard Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes[1]

This standard is issued under the fixed designation D 1587; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

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

1. Scope *

1.1 This practice covers a procedure for using a thin-walled metal tube to recover relatively undisturbed soil samples suitable for laboratory tests of engineering properties, such as strength, compressibility, permeability, and density. Thin-walled tubes used in piston, plug, or rotary-type samplers should comply with Section 6.3 of this practice which describes the thin-walled tubes.

NOTE 1—This practice does not apply to liners used within the samplers.

1.2 This Practice is limited to soils that can be penetrated by the thin-walled tube. This sampling method is not recommended for sampling soils containing gravel or larger size soil particles cemented or very hard soils. Other soil samplers may be used for sampling these soil types. Such samplers include driven split barrel samplers and soil coring devices (D 1586, D 3550, and D 6151). For information on appropriate use of other soil samplers refer to D 6169.

1.3 This practice is often used in conjunction with fluid rotary drilling (D 1452D 5783) or hollow-stem augers (D 6151). Subsurface geotechnical explorations should be reported in accordance with practice (D 5434). This practice discusses some aspects of sample preservation after the sampling event. For information on preservation and transportation process of soil samples, consult Practice D 4220. This practice does not address environmental sampling; consult D 6169 and D 6232for information on sampling for environmental investigations.

1.4 The values stated in inch-pound units are to be regarded as the standard. The SI values given in parentheses are provided for information purposes only. The tubing tolerances presented in Table 2 are from sources available in North America. Use of metric equivalent is acceptable as long as thickness and proportions are similar to those required in this standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.6 This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.

2. Referenced Documents

2.1 *ASTM Standards:*

D 653 Standard Terminology Relating to Soil, Rock, and Contained Fluids[2]

D 1452 Practice for Soil Investigation and Sampling by Auger Borings[2]

D 1586 Penetration Resistance and Split Barrel Sampling of Soils[2]

D 2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)[2]

D 3550 Practice for Ring-Lined Barrel Sampling of Soils[2]

D 3740 Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction[2]

D 4220 Practices for Preserving and Transporting Soil Samples[2]

D 5434 Guide for Field Logging of Subsurface Explorations of Soil and Rock[3]

D 5783 Guide for Use of Rotary Drilling with Water-Based Drilling Fluid for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices[3]

D 6151 Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling[3]

D 6169 Guide for Selection of Soil and Rock Sampling

[1] This practice is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.02 on Sampling and Related Field Testing for Soil Investigations.

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[2] *Annual Book of ASTM Standards,* Vol 04.08.

[3] *Annual Book of ASTM Standards,* Vol 04.09.

***A Summary of Changes section appears at the end of this standard.**

TABLE 1 Suitable Thin-Walled Steel Sample Tubes[A]

Outside diameter (D_o):			
in.	2	3	5
mm	50.8	76.2	127
Wall thickness:			
Bwg	18	16	11
in.	0.049	0.065	0.120
mm	1.24	1.65	3.05
Tube length:			
in.	36	36	54
m	0.91	0.91	1.45
Inside clearance ratio, %	<1	<1	<1

[A] The three diameters recommended in Table 1 are indicated for purposes of standardization, and are not intended to indicate that sampling tubes of intermediate or larger diameters are not acceptable. Lengths of tubes shown are illustrative. Proper lengths to be determined as suited to field conditions.

TABLE 2 Dimensional Tolerances for Thin-Walled Tubes

Nominal Tube Diameters from Table 1[A] Tolerances						
Size Outside Diameter	2 in.	50.8 mm	3 in.	76.2 mm	5 in.	127 mm
Outside diameter, D_o	+0.007 -0.000	+0.179 -0.000	+0.010 -0.000	+0.254 -0.000	+0.015 -0.000	0.381 -0.000
Inside diameter, D_i	+0.000 -0.007	+0.000 -0.179	+0.000 -0.010	+0.000 -0.254	+0.000 -0.015	+0.000 -0.381
Wall thickness	±0.007	±0.179	±0.010	±0.254	±0.015	±0.381
Ovality	0.015	0.381	0.020	0.508	0.030	0.762
Straightness	0.030/ft	2.50/m	0.030/ft	2.50/m	0.030/ft	2.50/m

[A] Intermediate or larger diameters should be proportional. Specify only two of the first three tolerances; that is, D_o and D_i, or D_o and Wall thickness, or D_i and Wall thickness.

Devices Used With Drill Rigs for Environmental Investigations[3]

D 6232 Guide for Selection of Sampling Equipment for Waste and Contaminated Media Data Collection Activities[4]

3. Terminology

3.1 *Definitions:*

3.1.1 For common definitions of terms in this standard, refer to Terminology D 653.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *inside clearance ratio, %*—the ratio of the difference in the inside diameter of the tube, D_i, minus the inside diameter of the cutting edge, D_e, to the inside diameter of the tube, D_i expressed as a percentage (see Fig. 1).

3.2.2 *ovality*—the cross section of the tube that deviates from a perfect circle.

4. Summary of Practice

4.1 A relatively undisturbed sample is obtained by pressing a thin-walled metal tube into the in-situ soil at the bottom of a boring, removing the soil-filled tube, and applying seals to the soil surfaces to prevent soil movement and moisture gain or loss.

5. Significance and Use

5.1 This practice, or Practice D 3550 with thin wall shoe, is used when it is necessary to obtain a relatively undisturbed specimen suitable for laboratory tests of engineering properties or other tests that might be influenced by soil disturbance.

NOTE 2—The quality of the result produced by this standard is dependent on the competence of the personnel performing it, and the suitability of the equipment and facilities used. Agencies that meet the criteria of Practice D 3740 are generally considered capable of competent and objective sampling. Users of this practice. are cautioned that compliance with Practice D 3740 does not in itself assure reliable results. Reliable results depend on many factors; Practice D 5740 provides a means of evaluating some of those factors.

6. Apparatus

6.1 *Drilling Equipment*—When sampling in a boring, any drilling equipment may be used that provides a reasonably clean hole; that minimizes disturbance of the soil to be sampled; and that does not hinder the penetration of the thin-walled sampler. Open borehole diameter and the inside diameter of driven casing or hollow stem auger shall not exceed 3.5 times the outside diameter of the thin-walled tube.

6.2 *Sampler Insertion Equipment*, shall be adequate to provide a relatively rapid continuous penetration force. For hard formations it may be necessary, although not recommended, to drive the thin-walled tube sampler.

6.3 *Thin-Walled Tubes*, should be manufactured to the dimensions as shown in Fig. 1. They should have an outside diameter of 2 to 5 in. (50 to 130 mm) and be made of metal having adequate strength for the type of soil to be sampled. Tubes shall be clean and free of all surface irregularities including projecting weld seams. Other diameters may be used but the tube dimensions should be proportional to the tube designs presented here.

6.3.1 *Length of Tubes*—See Table 1 and 7.4.1.

6.3.2 *Tolerances*, shall be within the limits shown in Table 2.

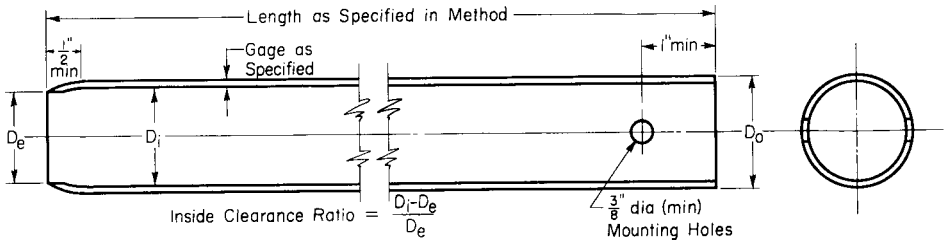
6.3.3 *Inside Clearance Ratio*, should be not greater than 1 % unless specified otherwise for the type of soil to be sampled. Generally, the inside clearance ratio used should increase with the increase in plasticity of the soil being sampled, except for sensitive soils or where local experience indicates otherwise. See 3.2.1 and Fig. 1 for definition of inside clearance ratio.

6.3.4 *Corrosion Protection*—Corrosion, whether from galvanic or chemical reaction, can damage or destroy both the thin-walled tube and the sample. Severity of damage is a function of time as well as interaction between the sample and the tube. Thin-walled tubes should have some form of protective coating, unless the soil is to be extruded less than 3 days. The type of coating to be used may vary depending upon the material to be sampled. Plating of the tubes or alternate base metals may be specified. Galvanized tubes are often used when long term storage is required. Coatings may include a light coat of lubricating oil, lacquer, epoxy, Teflon, zinc oxide, and others.

NOTE 3—Most coating materials are not resistant to scratching by soils that contain sands. Consideration should be given for prompt testing of the sample because chemical reactions between the metal and the soil sample con occur with time.

6.4 *Sampler Head*, serves to couple the thin-walled tube to the insertion equipment and, together with the thin-walled tube,

[4] *Annual Book of ASTM Standards*, Vol 11.04.



NOTE 1—Minimum of two mounting holes on opposite sides for D_o smaller than 4 in. (101.6 mm).

NOTE 2—Minimum of four mounting holes equally spaced for D_o 4 in. (101.6 mm) and larger.

NOTE 3—Tube held with hardened screws or other suitable means.

NOTE 4—2-in (50.8 mm) outside-diameter tubes are specified with an 18-gage wall thickness to comply with area ratio criteria accepted for "undisturbed samples." Users are advised that such tubing is difficult to locate and can be extremely expensive in small quantities. Sixteen-gage tubes are generally readily available.

Metric Equivalent Conversions

in.	mm
⅜	9.53
½	12.7
1	25.4
2	50.8
3	76.2
4	101.6
5	127

FIG. 1 Thin-Walled Tube for Sampling

comprises the thin-walled tube sampler. The sampler head shall contain a venting area and suitable check valve with the venting area to the outside equal to or greater than the area through the check valve. In some special cases, a check valve may not be required but venting is required to avoid sample compression. Attachment of the head to the tube shall be concentric and coaxial to assure uniform application of force to the tube by the sampler insertion equipment.

7. Procedure

7.1 Remove loose material from the center of a casing or hollow stem auger as carefully as possible to avoid disturbance of the material to be sampled. If groundwater is encountered, maintain the liquid level in the borehole at or above ground water level during the drilling and sampling operation.

7.2 Bottom discharge bits are not permitted. Side discharge bits may be used, with caution. Jetting through an open-tube sampler to clean out the borehole to sampling elevation is not permitted.

NOTE 4—Roller bits are available in downward-jetting and diffused-jet configurations. Downward-jetting configuration rock bits are not acceptable. Diffuse-jet configurations are generally acceptable.

7.3 Lower the sampling apparatus so that the sample tube's bottom rests on the bottom of the hole and record depth to the bottom of the sample tube to the nearest 0.1-ft (.03 m)

7.3.1 Keep the sampling apparatus plumb during lowering, thereby preventing the cutting edge of the tube from scraping the wall of the borehole.

7.4 Advance the sampler without rotation by a continuous relatively rapid downward motion and record length of advancement to the nearest 1 in. (25 mm).

7.4.1 Determine the length of advance by the resistance and condition of the soil formation, but the length shall never exceed 5 to 10 diameters of the tube in sands and 10 to 15 diameters of the tube in clays. In no case shall a length of advance be greater than the sample-tube length minus an allowance for the sampler head and a minimum of 3-in. (75 mm) for sludge and end cuttings.

NOTE 5—The mass of sample, laboratory handling capabilities, transportation problems, and commercial availability of tubes will generally limit maximum practical lengths to those shown in Table 1.

7.5 When the soil formation is too hard for push-type insertion, the tube may be driven or Practice D 3550 may be used. If driving methods are used, the data regarding weight and fall of the hammer and penetration achieved must be shown in the report. Additionally, that tube must be prominently labeled a "driven sample."

7.6 Withdraw the sampler from the soil formation as carefully as possible in order to minimize disturbance of the sample. The tube can be slowly rotated to shear the material at the end of the tube, and to relieve water and/or suction pressures and improve recovery. Where the soil formation is soft, a delay before withdraw of the sampler (typically 5 to 30 minutes) may improve sample recovery.

8. Sample Measurement, Sealing and Labeling

8.1 Upon removal of the tube, remove the drill cuttings in the upper end of the tube and measure the length of the soil sample recovered to the nearest 0.25 in. (5 mm) in the tube. Seal the upper end of the tube. Remove at least 1 in. (25 mm) of material from the lower end of the tube. Use this material for soil description in accordance with Practice D 2488. Measure the overall sample length. Seal the lower end of the tube. Alternatively, after measurement, the tube may be sealed without removal of soil from the ends of the tube.

8.1.1 Tubes sealed over the ends, as opposed to those sealed

with expanding packers, should be provided with spacers or appropriate packing materials, or both prior to sealing the tube ends to provide proper confinement. Packing materials must be nonabsorbent and must maintain their properties to provide the same degree of sample support with time.

8.1.2 Depending on the requirements of the investigation, field extrusion and packaging of extruded soil samples can be performed. This allows for physical examination and classification of the sample. Samples are extruded in special hydraulic jacks equipped with properly sized platens to extrude the core in a continuous smooth speed. In some cases, further extrusion may cause sample disturbance reducing suitability for testing of engineering properties. In other cases, if damage is not significant, cores can be extruded and preserved for testing (D 4220). Bent or damaged tubes should be cut off before extruding.

8.2 Prepare and immediately affix labels or apply markings as necessary to identify the sample (see Section 9). Assure that the markings or labels are adequate to survive transportation and storage.

NOTE 6—Top end of the tube should be labeled "top".

9. Field Log

9.1 Record the information that may be required for preparing field logs in general accordance to ASTM D 5434 "Guide for Field Logging of Subsurface Explorations of Soil and Rock". This guide is used for logging explorations by drilling and sampling. Some examples of the information required include;

9.1.1 Name and location of the project,

9.1.2 Boring number,

9.1.3 Log of the soil conditions,

9.1.4 Surface elevation or reference to a datum to the nearest foot (0.5 m) or better,

9.1.5 Location of the boring,

9.1.6 Method of making the borehole,

9.1.7 Name of the drilling foreman and company, and

9.1.8 Name of the drilling inspector(s).

9.1.9 Date and time of boring-start and finish,

9.1.10 Depth to groundwater level: date and time measured,

9.2 Recording the appropriate sampling information is required as follows:

9.2.1 Depth to top of sample to the nearest 0.1 ft. (.03 m) and number of sample,

9.2.2 Description of thin-walled tube sampler: size, type of metal, type of coating,

9.2.3 Method of sampler insertion: push or drive,

9.2.4 Method of drilling, size of hole, casing, and drilling fluid used,

9.2.5 Soil description in accordance with Practice D 2488,

9.2.6 Length of sampler advance (push), and

9.2.7 Recovery: length of sample obtained.

10. Keywords

10.1 geologic investigations; sampling; soil exploration; soil investigations; subsurface investigations; undisturbed

SUMMARY OF CHANGES

In accordance with committee D18 policy, this section identifies the location of changes to this standard since the last edition, 1994, which may impact the use of this standard.

(1) Editorial corrections to various sections based on comments received from Committee Balloting

(2) Added D 6232 to Section 2.

(3) Changed Note 7 to Section 8.1.2.

(4) Renumbered Note 8.

APPENDIX E

ADDITIONAL DOCUMENTS

None

VILLAGE OF KRONENWETTER
Capital Improvements Program: 2026-2032
Estimates as of 1/26/2026

	YEAR						
	2026	2027	2028	2029	2030	2031	2032
Sewer Revenue Bonds:							
Lift Station 3 removal	$ 600,000						
Lift Station 1 generator	$ 250,000						
Village Garage (2 Sewer bays)	$ 266,666						
Lift Station 5 Panel Upgrade & Generator		$ 300,000					
Hoist Truck (if garage exists)		$ 100,000					
Sewer Vacuum Truck (if garage exists)		$ 550,000					
Replace Plow Truck		$ 80,000					
Lift Station 7 Panel Upgrade & Generator			$ 500,000				
Lift Station 9 Panel Upgrade				$ 300,000			
Lift Station 10 removal					$ 400,000		
TOTAL - Sewer Revenue Bonds	$ 1,116,666	$ 1,030,000	$ 500,000	$ 300,000	$ 400,000	$ -	$ -
Water Revenue Bonds:							
Well #3 and New Tower Study	$ 75,000						
New Well, piping and filtration		$ 6,000,000					
New Water Tower		$ 5,000,000					
Repaint Water Tower on Tower Rd			$ 500,000				
Upgrade all lift stations to SCADA/Cellular Systems					$ 550,000		
TOTAL - Water Revenue Bonds	$ 75,000	##########	$ 500,000	$ -	$ 550,000	$ -	$ -
General Obligation Debt or General Tax Levy:							
Village-wide:							
Village Garage (2 parks bays, 2 police bays)	$ 533,334						
Public Works:							
Crew Cab Pickup Truck - DPW		$ 65,000					
Front End Loader - DPW			$ 275,000				
Tandem Axle Dump Truck - DPW					$ 400,000		
Wheeled Excavator - DPW						$ 320,000	
Front End Loader - DPW							$ 300,000
Parks:							
1-Ton Dump Truck - Parks	$ 80,000						
Toro Groundsmaster Lawnmower - Parks			$ 25,000				
Roads:							
Maple Ridge Road - CTH X to Kronen Dr	$ 2,890,000						
Peplin Road - pulverize & chip (1 mile)		$ 522,000					
Martin Road - reconstruction (3 miles)		$ 5,000,000					
South Road - Village limits to Wisz Rd			$ 234,000				
Forrest Road				$ 587,000			
Autumn Road				$ 436,000			
TOTAL - General Obligation Debt or General Tax Levy	$ 3,503,334	$ 5,587,000	$ 534,000	$ 1,023,000	$ 400,000	$ 320,000	$ 300,000
Equipment Replacement Fund Balance:							
Tandem Axle Dump Truck - DPW (2025 = $160,000 Chassis; and 2026 = $155,000 Box/Plow)	$ 155,000						
TOTAL - Equipment Replacement Fund Balance	$ 155,000	$ -	$ -	$ -	$ -	$ -	$ -
GRAND TOTAL	**$ 4,850,000**	**##########**	**$ 1,534,000**	**$ 1,323,000**	**$ 1,350,000**	**$ 320,000**	**$ 300,000**