

**ROADWAY GEOTECHNICAL REPORT
FAP 336A (IL 31)
FROM AMES ROAD TO CHARLES J MILLER ROAD (BULL VALLEY ROAD)
CONTRACT 80C85
SECTION 2025-2127-R,C,TS,SW
MCHENRY COUNTY, ILLINOIS**

01/30/2026

Prepared for:

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1.0 INTRODUCTION

Interra, Inc. (INTERRA) was tasked by Patrick Engineering, Inc. based in Lisle, Illinois to conduct subsurface soil investigation and prepare the Roadway Geotechnical Report (RGR) for improvements at IL 31 between Ames Road and Charles J Miller Road (Bull Valley Road) in McHenry County, Illinois.

This roadway geotechnical report presents the results of INTERRA's subsurface investigation, laboratory testing, groundwater conditions and geotechnical evaluations performed, recommendations and construction considerations.

Project Description

The proposed project site is on IL 31 between Ames Road and Charles J Miller Road (Bull Valley Road) in McHenry County, Illinois. The project site is within the Village of Prairie Grove. Village of Prairie Grove is a community of about 2,000 people. The project area is located to the north-west side of Chicago.

The proposed improvements include widening and reconstruction of the roadway to provide two lanes in each direction separated by a median, intersection and drainage improvements, and pedestrian and bicyclist accommodation. The project area station limits extend approximately between Station 239+50 and 392+00 on IL 31. The project location map is presented in Appendix A.

2.0 PROJECT SCOPE

INTERRA's scope of work included drilling soil borings for the proposed roadway widening, reconstruction, traffic signal improvements and detention ponds. The spacing



and depth of borings was planned to be in general accordance with the IDOT geotechnical manual guidelines. 86 borings were performed for roadway widening and reconstruction. These include traffic signal borings, retaining wall borings, detention pond borings and culvert borings. The roadway borings were drilled on:

- IL 31 between Ames Road and Charles Miller Road
- Edgewood Road

3.0 SITE DESCRIPTION

The project site is located between Ames Road and Charles Miller Road in McHenry County, IL. The site is within Nunda Township, defined as T44N R8E of the Third Principal Meridian. The approximate coordinates at the north end of the project are 42.3210N and 88.2745W and the south end are 42.2812N and 88.2868W. The ground surface elevation varies approximately from 813 feet to 863 feet at borehole locations. Approximate elevation at the north end of the project (IL 31 & Charles Miller Road) is 830 feet and at the south end of the project (IL 31 Ames Road) is 864 feet.

4.0 FIELD INVESTIGATION

The locations of the borings are presented in the Borehole Location Plan in Appendix A. The boreholes are marked in the field by INTERRA and surveying subcontractor ORION Engineers, Inc. The location of the borings was adjusted as needed due to utility conflicts or accessibility issues. Any offset from marked location is given in parenthesis of location in the boring logs.

Prior to drilling, the drilling sub-contractor Geocon Professional Services (GEOCON) contacted the local one-call utility clearance service (JULIE) to clear underground utilities. The borings were drilled with a truck mounted and ATV mounted drill rigs. In addition to drilling, soils samples were also collected using hand sampling equipment. INTERRA's personnel were present during the drilling to collect and log the soil samples. The borings were drilled, and samples were collected in general accordance with the guidelines in the IDOT Geotechnical Manual. Soil sampling was performed per



AASHTO T-206, "Penetration Test and Split Barrel Sampling of Soils". Soil sampling was performed at 2.5-foot intervals up to a depth of 30 feet, followed by 5-foot intervals. The soil samples were taken in conjunction with the Standard Penetration Test where a driving resistance to a standard 2" split-spoon samples indicate relative density of granular materials and consistency of cohesive soils. Soil specimens from the borings were visually identified in accordance with the AASHTO and IDOT textural classification systems. Also, unconfined compressive strength tests were performed on cohesive samples using an Illinois modified RIMAC tester. Cohesive samples that could not be tested with a RIMAC tester were tested with a pocket penetrometer to estimate the unconfined compressive strength. Shelby tube samples and bulk samples were also collected at selected boring locations for performing laboratory tests. Water level readings were taken during drilling and immediately after completion of drilling. Delayed term water level readings were also taken in selected borings when feasible.

Field borehole logs as required are edited and presented in Appendix C. All split-spoon soil samples were placed in glass jars, labelled, and transported to INTERRA's laboratory for further testing.

5.0 LABORATORY TESTING

Laboratory testing included Moisture Content tests (AASHTO T 265) on all recovered split-spoon soil samples. Organic content tests (AASHTO T 267) were performed on selected soil samples based on moisture content and visual observations. Atterberg Limits (AASHTO T 89, 90), Grainsize Analysis (AASHTO T 88), Moisture Content (AASHTO T 265) and Standard Proctor (AASHTO T 99) tests were performed on the bulk soil samples. Selected Shelby Tube samples were tested for Unconfined Compressive Strength (ASTM D 2166), Grainsize Analysis (AASHTO T 88) and Atterberg Limits (AASHTO T 89, 90). Summary of laboratory testing and laboratory test reports are presented in Appendix D.

6.0 SUMMARY OF CLIMATIC CONDITIONS

Table 1 indicates the total precipitation in the preceding months of drilling along with historical average (normal) for the month for last 25 years. The observations were obtained from the National Weather Service website for Chicago O’Hare International Airport, IL.

Table 1: Precipitation Data

Month	Actual Precipitation (in.)	Normal Precipitation (in.)	Departure from Normal (+/-in.)
August, 2021	4.51	4.23	0.28
September, 2021	1.23	3.19	-1.96
October, 2021	5.77	3.39	2.38
November, 2021	0.71	2.05	-1.34
December, 2021	2.30	2.29	0.01
January, 2022	0.84	1.99	-1.15
February, 2022	2.59	2.17	0.42
March, 2022	3.69	2.56	1.13
April, 2022	5.31	3.67	1.64
May, 2022	3.47	4.50	-1.03
June, 2022	2.66	4.10	-1.44
July, 2022	4.50	3.97	0.53
January, 2024	3.50	1.99	1.51
February, 2024	0.65	2.17	-1.52
March, 2024	3.59	2.56	1.03
April, 2024	3.47	3.67	-0.20

Actual monthly precipitation is observed to be close to the historical average during the preceding months of drilling. This shows that the moisture of the surface soils and the ground water levels noted during drilling are similar to the normal levels.



7.0 SUBSURFACE CONDITIONS

The boring depth, groundwater depth and information of the type of soil encountered while drilling are summarized in a table and are provided as Appendix B. Detailed description of soil stratification is provided in the boring logs (Appendix C).

Groundwater levels were recorded during drilling, and immediately after completion of drilling. Delayed ground water levels were also recorded at selected locations. These details are presented in the boring logs.

It should be noted that fluctuations in groundwater levels may occur due to seasonal variations, rainfall, or other climatic conditions. Hence, the water levels reported may not represent the long-term groundwater levels. Typical long term groundwater levels are identified by the changes in the color of the soils from brown to gray.

8.0 CONCLUSIONS AND RECOMMENDATIONS

8.1 Roadway

8.1.1 Subgrade Preparation - General

Subgrade preparation should be performed in accordance with Article 301 of the IDOT Standard Specifications for Road and Bridge Construction (SSRBC). All new pavements should be supported on 12 inches of improved subgrade, per the IDOT Bureau of Design and Environment (BDE) Aggregate Subgrade Improvement Special Provision (April 1, 2022).

Topsoil

Topsoil thicknesses were measured for the boreholes drilled outside of the pavement areas. We recommend topsoil removal thickness of six (6) inches for estimating purposes. Topsoil should be completely stripped and removed from the proposed pavement areas. The actual need for topsoil removal should be determined in the field. We recommend that all the topsoil that is stripped be stockpiled, sorted, and reused for the proposed landscaping improvements. We recommend that a plan note containing



the stockpiling information be included in the contract documents.

8.1.2 Removal and Replacement/ Remedial Measures for Unstable/Unsuitable Soils

The proposed improvements at the project site involve widening and reconstructing the existing roadway. This widening entails expanding the embankment up to approximately 60 feet in certain areas. Within the project vicinity, some sections necessitate excavation while others require fill heights of up to 8 feet. The project has very soft clayey soils and peat in numerous locations, posing potential issues with bearing resistance and settlement. Factors influencing the recommended remedial actions include high moisture levels, stability concerns, frost susceptibility at the subgrade level, and considerations for settlement where high embankments are planned. Table 2 outlines the recommended remedial measures, taking into account the aforementioned considerations and the soil conditions observed at the borehole locations. Actual extents of treatment should be determined during construction by embankment/subgrade inspection and testing. Prior to placing embankment materials, any unsuitable or unstable areas at the ground surface shall be removed or treated.

Table 2: Treatment Recommendations

Boring Location	Station	Offset	Recommended Treatment
SGB-32	245+50 to 247+90	50'L to 60' R	12 inches undercut below subgrade.
SGB-39	269+50 to 272+50	60'L to 60'R	Undercut to elevation 831 <ul style="list-style-type: none"> • approx. 3.5 feet below the existing ground surface.
SGB-43 SGB-44	281+00 to 292+00	60'L to 60'R	Contractor Designed Ground Improvement (see note 1)
SGB-49	300+00 To 302+00	60'L to 60'R	Undercut to elevation 821 <ul style="list-style-type: none"> • approx. 36 inches below the existing ground surface
SGB-50	302+00 to 304+50	50'L to 60'R	36 inches undercut below subgrade with geogrid.



SGB-53 SGB-54	311+00 to 318+00	50'L to 50'R	24 inches undercut below subgrade.
SGB-55	318+00 to 321+00	60'L to 60'R	Undercut to elevation 815 <ul style="list-style-type: none"> • approx. 8 feet below proposed agg. sub. on existing embankment. • approx. 5 feet below existing ground surface in widening areas.
CUL-12-01	349+50 to 350+50	30'L to 70'R	Undercut to elevation 807.5 <ul style="list-style-type: none"> • approx. 7.5 feet below the existing ground surface.
SGB-64	350+50 to 353+50	50'L to 50'R	24 inch undercut below subgrade
SGB-66	356+50 to 359+50	50'L to 50'R	24 inch undercut below subgrade

Note 1: The boring did not encounter suitable material prior to termination at a depth of 10 feet. A ground improvement system is recommended at this location based on the depth of the required undercut to reach suitable soil.

The recommended remediation areas should be further evaluated in the field during construction to determine the exact limits and depths of the undercuts. All undercuts should be backfilled in accordance with the IDOT Bureau of Design and Environment (BDE) Aggregate Subgrade Improvement Special Provision (April 1, 2022). We also recommend placing geotextile fabric at the base of all undercuts.

In addition to the undercuts recommended in Table 2, it is recommended that a plan quantity of Aggregate Subgrade Improvement (CU YD) equal to 25% of the planned full depth pavement area assuming a thickness of 12 inches should be added for estimating purposes. This material should be used to replace any unsuitable soils below the bottom of the improved subgrade layer that are encountered in the field during construction. The actual need for removal and replacement with Aggregate Subgrade Improvement should be determined in the field at the time of construction by the Geotechnical Engineer or soils inspector. Proof rolling should be performed in accordance with section 3.3 of IDOT Subgrade Stability Manual to identify



unstable/unsuitable subgrade soils. All potentially unstable soils should be tested with a cone penetrometer and treated in accordance with Article 301.04 of the SSRBC and the undercut guidelines in the IDOT Subgrade Stability Manual. Any material not needed for undercut replacement at the time of construction should be deleted from the contract with no extra compensation to the contractor.

Based on the above recommendation, there will be a need for two separate Aggregate Subgrade Improvement line items in the Schedule of Quantities (SOQ) included in the design plans:

- AGGREGATE SUBGRADE IMPROVEMENT 12" (SQ YD) – This will be used for the 12 inch aggregate subgrade improvement below new pavement sections and widening pavement sections.
- AGGREGATE SUBGRADE IMPROVEMENT (CU YD) – This will be used in locations where there are undercuts (below the 12 inch improved subgrade layer) where poor soils were removed.

Both of these pay items reference the IDOT Bureau of Design and Environment (BDE) Aggregate Subgrade Improvement Special Provision (April 1, 2022).

The top eight (8) inches of the subgrade should be disked, air dried, and recompact to achieve the required density and stability. After compaction, the subgrade should have a minimum dry density of 95 percent of standard laboratory dry density and a minimum IBV 3.0 as it is assumed that plans include 12 inches of improved subgrade. A minimum IBV of 8.0 should be achieved if the plans do not include 12 inches of improved subgrade.

It is also recommended to include a plan quantity of Geotechnical Fabric for Ground Stabilization (SQ YD) equal to at least 25% of the planned pavement area, in addition to the area listed in the undercut table. It is recommended to place geotextile fabric at the base of undercut areas where low strength subgrade soils are encountered. The 12 inches of improved subgrade is not considered an undercut, and we do not recommend



placing the fabric at the base of the proposed 12 inch improved subgrade layer unless it is determined to be necessary to achieve stability by the Geotechnical Engineer or soils inspector at the time of construction. Fabric should meet the requirements of Article 210, Fabric for Ground Stabilization, of the SSRBC. Any material not needed at time of construction should be deleted from the contract with no extra compensation to the contractor.

8.1.3 Pavement Design

In the Pavement design, both Illinois Bearing Ratio (IBR) and Subgrade Support Rating (SSR) values should be taken into consideration. Based on the soil classifications, and IDOT Geotechnical Manual guidelines, we recommend using an IBR of 3.0 or an SSR of POOR.

Underdrains

To provide drainage for the proposed pavement in areas where the roadway will be completely reconstructed, it is recommended to install both longitudinal and transverse pipe underdrains below the pavement. It is recommended to install the transverse drains using a spacing of 300 feet as well as in low areas and at the base of any undercuts. The underdrains should tie into the storm water drainage system and should be installed per Article 601 in the IDOT Standard Specifications (Adopted January 1, 2022) and consist of Type 2 underdrains. For interstate routes, it is recommended that 6 inch ID underdrains be used.

8.1.4 Stability Analysis

No embankments greater than 15 feet are proposed to be constructed. Hence, slope stability analyses were not performed.

8.1.5 Earthwork Quantity Calculations

A shrinkage factor of 15% should be used in calculating borrowed and furnished quantities.



8.1.6 Recommended Ground Improvement Methods

Boring SGB-44 did not encounter suitable material prior to termination of the boring at 10.0 feet. It is anticipated that ground improvement will be needed between station 281+00 and 292+00 for the proposed embankment width. The considered ground improvement methods were Aggregate Columns (AC) and Controlled Stiffness Columns (CSC). Ground improvement using aggregate columns is not considered viable in the very soft or organic soils with high moisture contents encountered at the project site. Under these conditions, the aggregate columns are susceptible to excessive bulging and lateral displacement, resulting in the loss of stone into the surrounding soils. As a result, the columns would be unable to develop the stiffness necessary to perform as intended. Controlled Stiffness Columns (CSCs), also referred to as Controlled Modulus Columns or Rigid Inclusions, are considered suitable for these conditions and are expected to perform effectively in such soils. CSCs consists of stiff vertical columns that are designed to transfer the load of the embankment through the soft compressible soil layer to a firm foundation. Cement based columns use Portland cement binder with aggregate for column construction and are more rigid than an aggregate column. CSC is a category of cement-based columns that are traditionally used for ground improvement in transportation projects. CSCs require a Load Transfer Platform (LTP) to distribute embankment loads to the columns. The embankment loads are transferred through the LTP, which consists of select granular structural fill and may be constructed with one or more layers of geosynthetic reinforcement or without reinforcement. This prevents unacceptable differential deformations between columns that may appear at the embankment surface. LTPs are typically on the order of two feet thick; however, the required thickness depends on factors such as the applied load, column spacing, and underlying soil strength, and is optimized by the contractor during the design phase. When time constraints are critical to the success of the project, CSCs present an innovative solution. In the last 30 years, this technology has been used successfully by over a dozen state DOTs including IDOT.

CSCs provide a technical and potentially economical alternative to more conventional construction techniques (i.e., surcharge loading and PVDs, staged construction with or



without geosynthetic reinforcement). The key advantage to CSCs is that construction may proceed rapidly in one stage. There is no waiting time for dissipation of pore water pressure in the soft foundation soil. CSCs are also more economical than the removal and replacement of deep deposits of soft soils, particularly on larger sites where the groundwater is close to the surface.

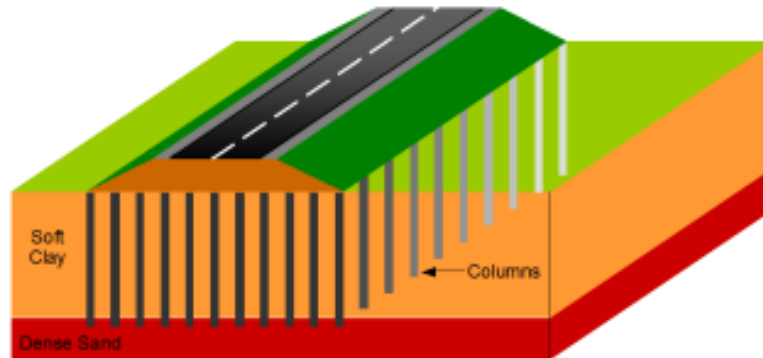


Figure: Typical Layout of a Column Supported Embankment (FHWA)

8.2 Traffic Signal Foundations

The proposed project will include new traffic signals where IL 31 crosses Edgewood Road, Prime Parkway and Shamrock Lane. The boreholes performed at the intersection of IL 31 and Edgewood Road are TSB-EW-01 & TSB-EW-02, the borings performed at the intersection of IL-31 and Prime Parkway are TSB-PP-01 and TSB-PP-02, and the borings performed at the intersection of IL-31 and Shamrock Lane are TSB-SL-01 and TSB-SL-02.

Typically, the foundations for traffic signals may be designed based on the District One Standard Traffic Signal Design Details (TS-05) or Standard 878001-10, provided the soil requirements listed in the detail are met. These requirements state that the soils along the foundation shaft must be cohesive in nature, with an unconfined compressive strength of at least 1 ton per square foot. Low strength cohesive soils and granular

deposits do not meet the requirements to use the design tables. If the soils encountered do not meet these requirements, then a custom foundation design must be completed.

Several of the borings encountered granular soils within the foundation shaft depth and do not meet the requirements. The IDOT District One Geotechnical Unit completed an analysis based on the soil information provided in the report and the traffic signal design information provided in the plans. Based on the results of the analysis, the foundation shaft dimensions given in the IDOT standard are adequate to support the proposed mast arm lengths.

8.3 Retention Basins

Soil boring DPB-IL31-01-01 was performed for the retention basin to the east of IL-31, at Station 271+00. The bottom of the retention basin is expected to be at an elevation of 832.60 feet. The borehole encountered stiff clay loam at that elevation. Since the soil type found at the proposed bottom of the detention pond is clay loam, an estimated design infiltration rate of 0.03 inch per hour can be used for design purposes based on the City of Chicago Storm Water Ordinance Manual.

Soil boring DPB-IL31-02-01 was performed for the retention basin to the east of IL-31, at Station 285+00. The bottom of the retention basin is expected to be at an elevation of 824.20 feet. The borehole encountered stiff clay at that elevation. Since the soil type found at the proposed bottom of the detention pond is clay, an estimated design infiltration rate of 0.07 inch per hour can be used for design purposes based on the City of Chicago Storm Water Ordinance Manual.

Soil boring DPB-IL31-03-01 was performed for the retention basin to the east of IL-31, at Station 300+00. The bottom of the retention basin is expected to be at an elevation of 820.63 feet. The borehole encountered sand at that elevation, underlain by sandy clay loam. An estimated design infiltration rate of 0.11 inch per hour can be used for design purposes based on the City of Chicago Storm Water Ordinance Manual.

9.0 CONSTRUCTION CONSIDERATIONS

- Temporary excavations should be sloped no greater than 1V:2H. Excavations steeper or deeper than 4 feet should be analyzed individually. Potential for ground movements due to excavation on open roadways and utilities should be considered. All excavations should be performed in accordance with local, state and federal regulations.
- Excavated materials free from debris can be reused upon approval by Engineer.
- If any water is accumulated during construction, it can be removed using sump pump method. To facilitate dewatering, surface runoff and ditches should be directed away from excavations.
- Ground improvement contractor equipment and operations need sufficient width for working bench. Any overhead power lines in the work zone need to be relocated.
- If the project will need to apply for a NPDES storm water permit for construction site activities, Soil erosion factors (K factors) and erosion hazard ratings for each of the soil types within the project limits were obtained from NRCS website and presented in Appendix E.
- For traffic signal foundations, the drilled shaft construction should be completed in accordance with Section 516, Drilled Shafts, in the IDOT Standard Specifications for Road and Bridge Construction (adopted January 1, 2022). It should be noted the layers of soft cohesive soils, or granular soils have the potential to squeeze or slough into the shaft excavation. Wet method (516.06b), temporary casing method (516.060c), or a combination of the two may need to be used to maintain the sidewalls of the drilled shaft while excavating to the design depth and placing concrete for the foundation. The contractor should review the geotechnical report and associated boring logs, evaluate the soil conditions and depths, and determine the means and methods necessary for construction.



10.0 CONSTRUCTION MONITORING

Construction monitoring shall be in accordance with IDOT Standard Specifications, Special Provisions and Contract Plans. Construction monitoring shall be performed by an experienced geotechnical engineer or soils technician to monitor earthwork operations, soils compaction, and suitability of subgrade soils, location and depths of undercuts and to advise Engineer of actual soil conditions that differ from those in the geotechnical investigation report. The analysis and recommendations submitted in this report are based upon the data for soil boreholes performed at the locations indicated on the location plan. This report does not reflect any variations that may occur between these boreholes.

11.0 CLOSURE

The analysis and recommendations submitted in this report are based upon the data obtained from the boreholes performed at the locations indicated on the location plan. This report does not reflect any variations that may occur between these boreholes. In performing subsurface explorations, specific information is obtained at specific locations at specific times. It is a well-known fact that variations in soil and rock conditions exist on most sites between borehole locations. Also, groundwater levels vary from time to time. The nature and extent of variations may not become evident until the course of construction. If variations then appear evident, it will be necessary for a re-evaluation of the recommendations of this report after performing on-site observations during construction period and noting the characteristics of any variations.



We appreciate the opportunity to be of service to you. Should you need additional information or clarifications, please call us at (630) 754-8700.

Yours truly,
INTERRA, INC.



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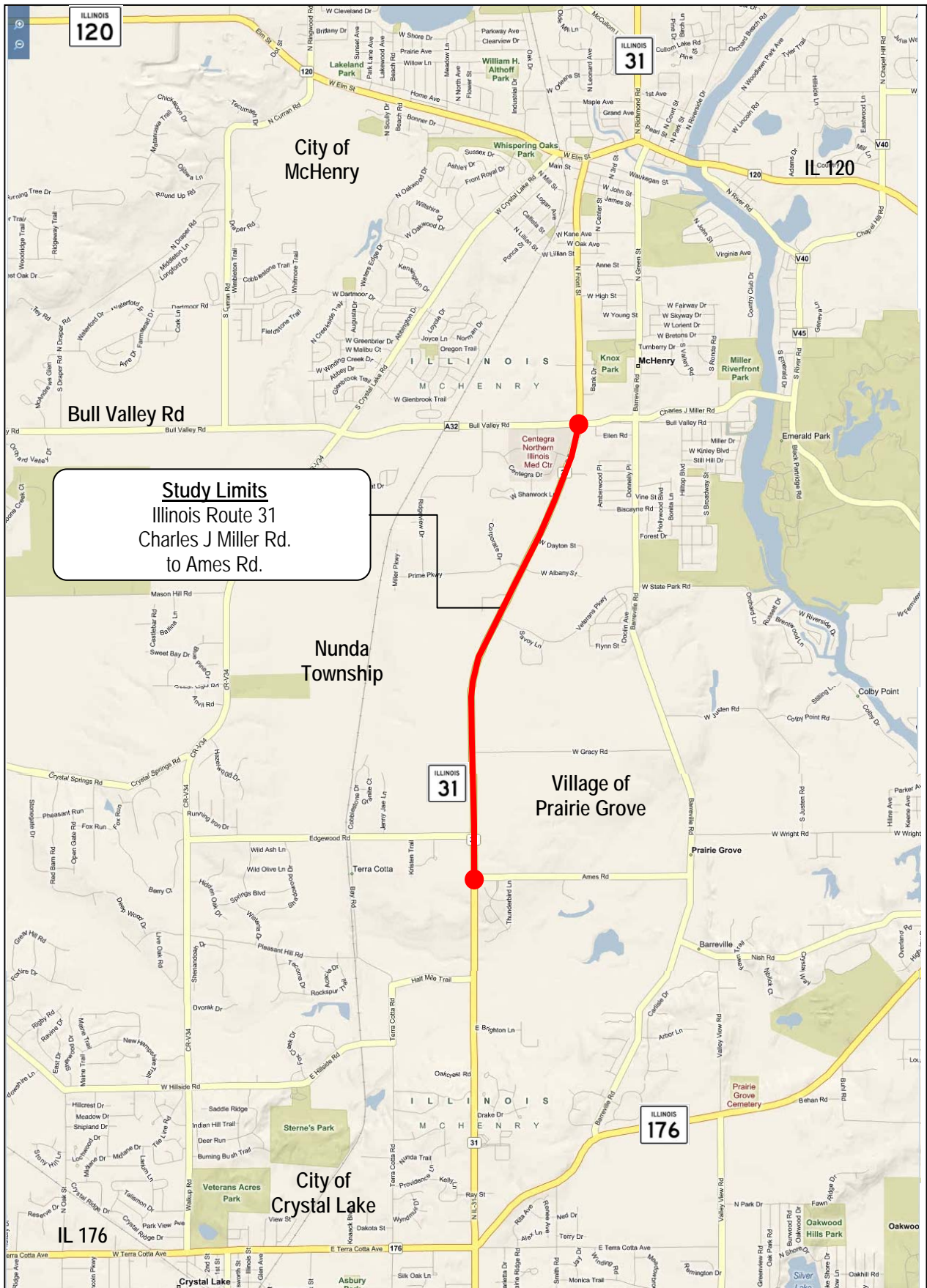
REFERENCES

- IDOT 2020. Geotechnical Manual, Illinois Department of Transportation.
- IDOT 2022. Standard Specifications for Road and Bridge Construction. Illinois Department of Transportation.
- City of Chicago Storm Water Ordinance Manual, January 2016.

Appendix A

Site Location Map

Borehole Location Plan & Profiles



Study Limits
 Illinois Route 31
 Charles J Miller Rd.
 to Ames Rd.

Legend

 Study Limits

SITE LOCATION MAP

Illinois Route 31 Phase II Study
 Illinois Route 176 to Illinois Route 120
 McHenry County



BORING LOCATION PLANS AND SOIL PROFILES

IL 31
FROM IL 176 TO IL 120
MCHENRY COUNTY, ILLINOIS

PREPARED FOR:
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4970 VARSITY DRIVE
LISLE, IL 60532

PREPARED BY:
INTERRA, INC.
600 TERRITORIAL DRIVE, SUITE G
BOLINGBROOK, IL 60440

MAY 10, 2024
INTERRA PROJECT 9012

LEGEND:



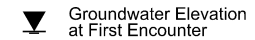
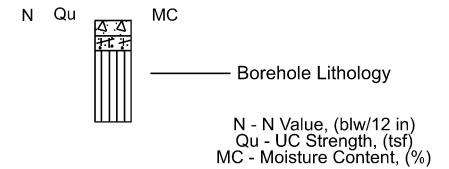
Soil Boring



Approximate Area
of Ground Improvement

Borehole Data

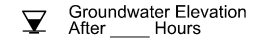
SGB-01 Borehole Number
886.95 ft Elevation
124+58, 43ft RT Station, Offset



Groundwater Elevation
at First Encounter



Groundwater Elevation
Upon Completion



Groundwater Elevation
After ___ Hours

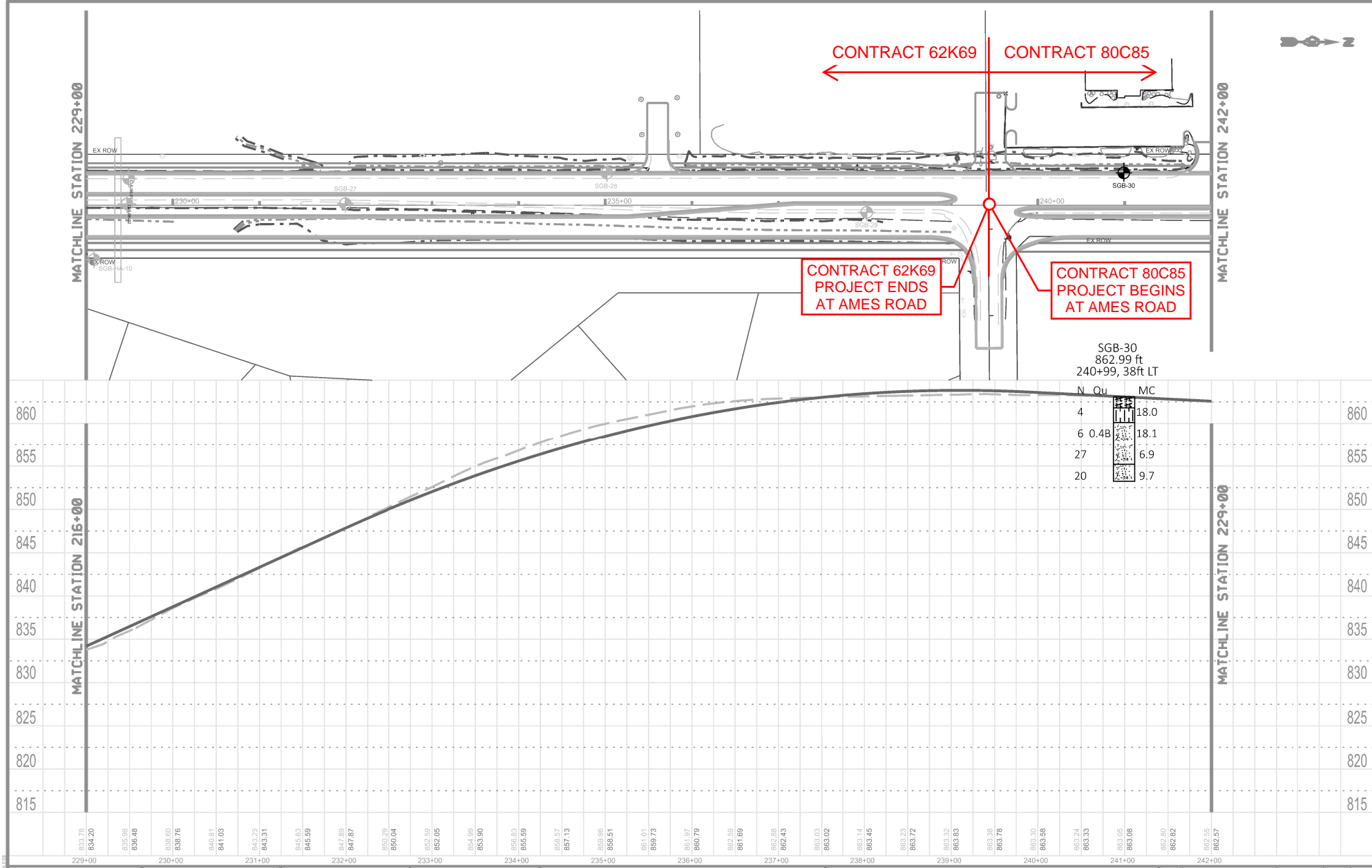
Lithology Graphics

Topsoil	Organic silt or clay
Pavement	Clay
Concrete	Silty Clay, Silty Clay Loam
Fill (made ground)	Clay Loam
Crushed stone	Loam
Sand, Sandy Loam	Silt, Silty Loam
Coarse Sand	Peat
Gravelly Sand, Sandy Gravel	No Recovery
Gravel, Rock Aggregate	Rock Core



PLAN	PROJECT NO.	DATE
NOTED BOOK	NO.	
DATE		
NO.		
DATE		
NO.		

PROFILE	PROJECT NO.	DATE
NOTED BOOK	NO.	
DATE		
NO.		
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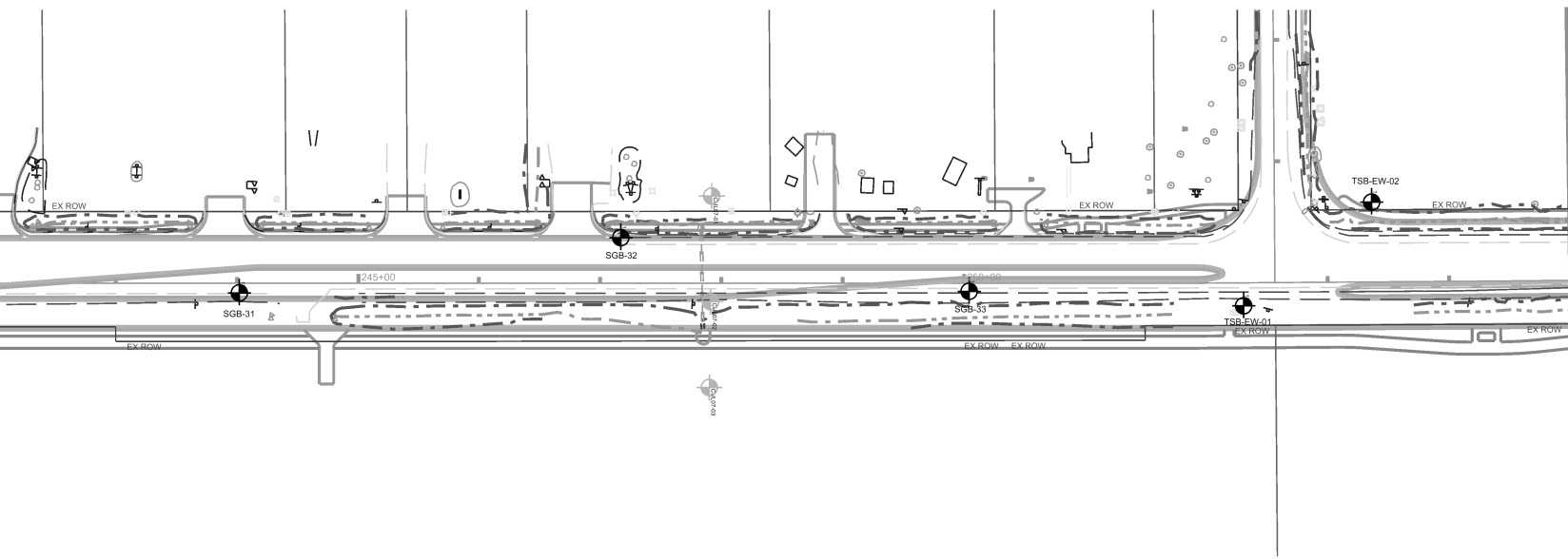
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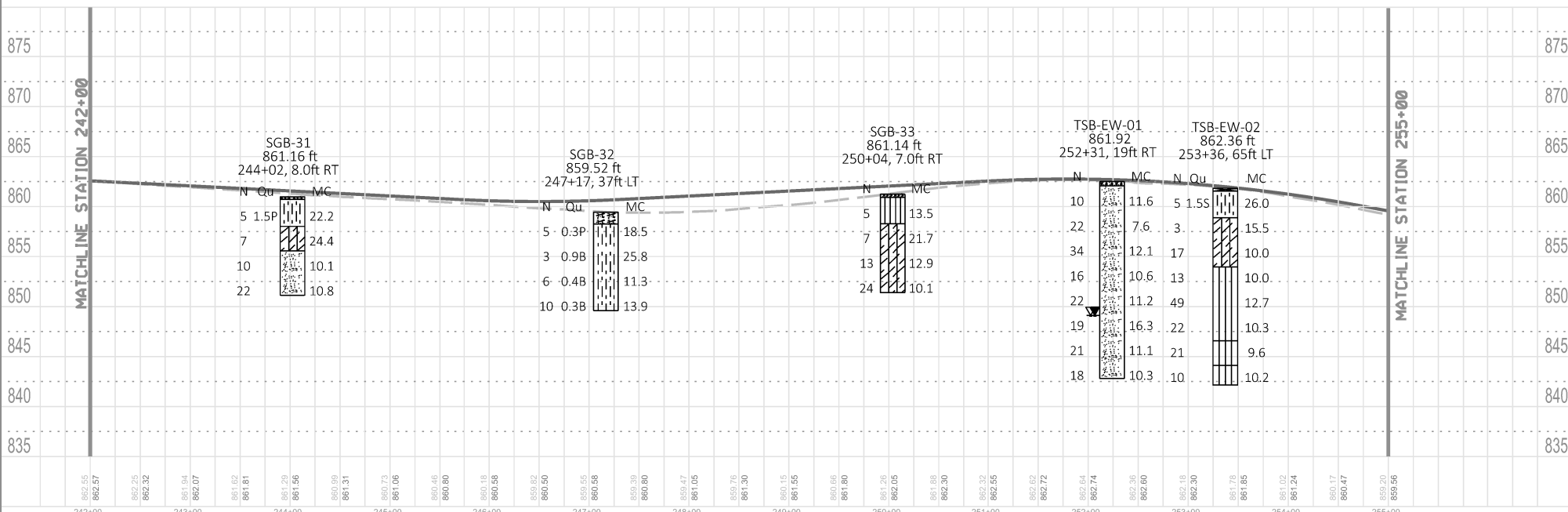
MATCHLINE STATION 242+00

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MATCHLINE STATION 242+00

MATCHLINE STATION 255+00



862.55	862.57	862.25	862.32	861.94	862.07	861.62	861.81	861.29	861.56	860.99	861.31	860.73	861.06	860.46	860.80	860.18	860.58	859.82	860.50	859.55	860.58	859.39	860.80	859.47	861.05	859.76	861.30	860.15	861.55	860.66	861.80	861.26	862.05	861.88	862.30	862.32	862.55	862.62	862.72	862.64	862.74	862.36	862.60	862.16	862.30	861.76	861.85	861.02	861.24	860.17	860.47	859.20	859.56
242+00	243+00	244+00	245+00	246+00	247+00	248+00	249+00	250+00	251+00	252+00	253+00	254+00	255+00																																								

USER NAME : EUBERS DESIGNED : DRAWN : CHECKED : PLOT SCALE : \$ SCALES PLOT DATE : \$ DATES	DESIGNED : DRAWN : CHECKED : DATE : CHKDATE	REVISED : REVISED : REVISED : REVISED :	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	ILLINOIS ROUTE 31 BORING PLAN AND PROFILE	SCALE : SHEET OF SHEETS STA. TO STA.	SECTION COUNTY TOTAL SHEETS SHEET NO. CONTRACT NO. ILLINOIS FED AID PROJECT
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DATE	
BY	
PROJECT NO.	
PROJECT NAME	
DATE OF CHECK	
NOTE BOOK NO.	
DRAWING NAME	
NO.	

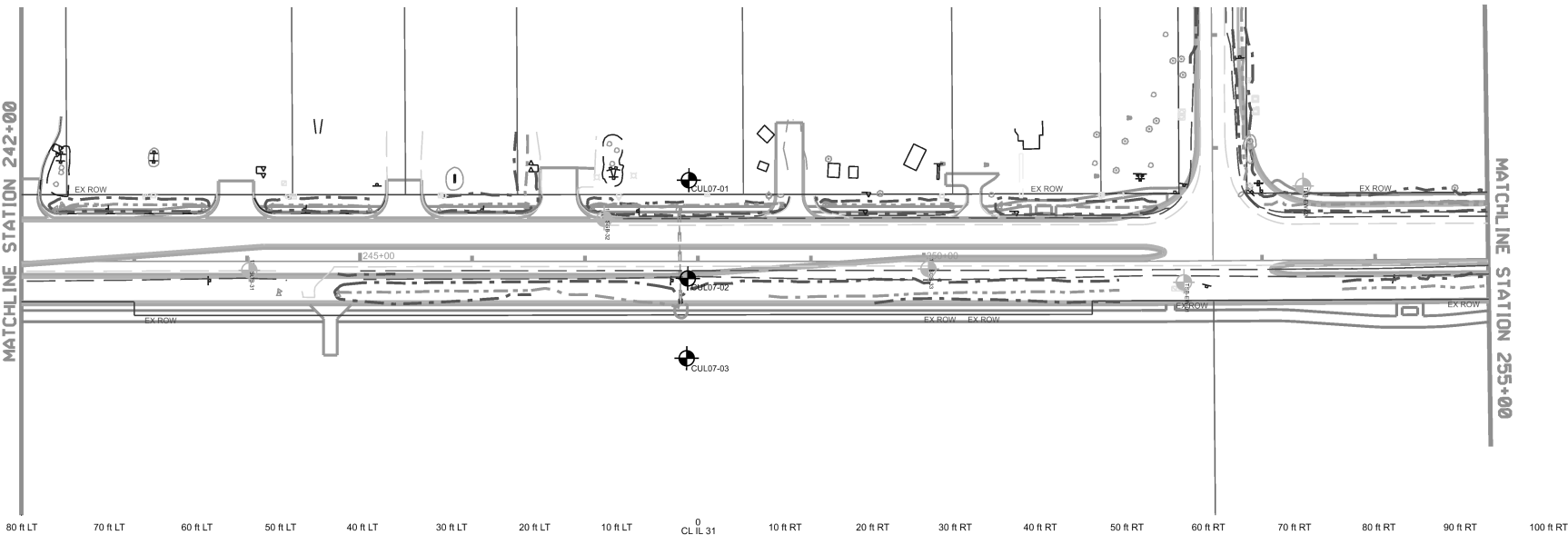
DATE	
BY	
PROJECT NO.	
PROJECT NAME	
DATE OF CHECK	
NOTE BOOK NO.	
DRAWING NAME	
NO.	

MODEL: PROJECT NAME
FILE NAME: RELEASE

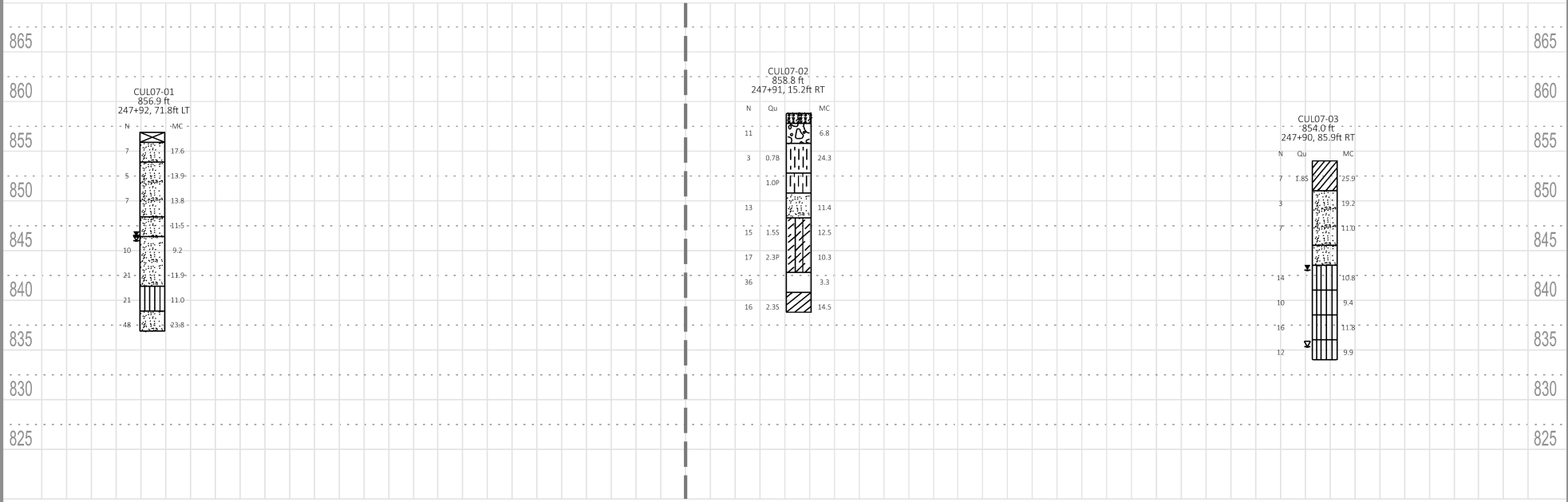


MATCHLINE STATION 242+00

MATCHLINE STATION 255+00



80 ft LT 70 ft LT 60 ft LT 50 ft LT 40 ft LT 30 ft LT 20 ft LT 10 ft LT 0 CL LIL 31 10 ft RT 20 ft RT 30 ft RT 40 ft RT 50 ft RT 60 ft RT 70 ft RT 80 ft RT 90 ft RT 100 ft RT



DATE	
BY	
PROJECT	
NO. OF SHEETS	
NO. OF THIS SHEET	
NO.	

DATE	
BY	
PROJECT	
NO. OF SHEETS	
NO. OF THIS SHEET	
NO.	

USER NAME	+ SUSERS	DESIGNED	-	REVISED	-
DRAWN	-	CHECKED	-	REVISED	-
DATE	-	CHKDATE	-	REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ILLINOIS ROUTE 31 BORING PLAN AND PROFILE

SCALE:	SHEET	OF	SHEETS	STA.	TO STA.
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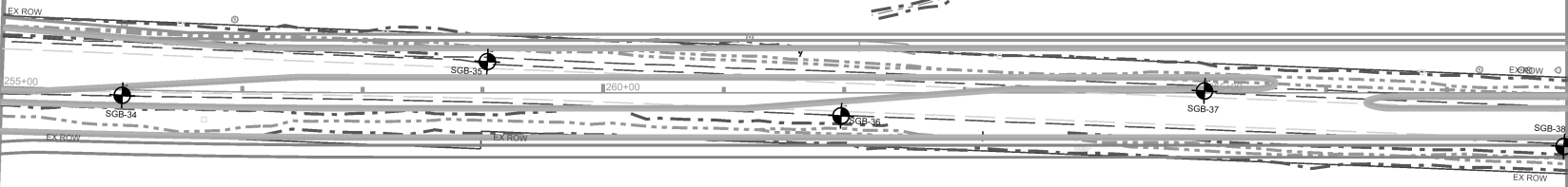
F.A. RITE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
ILLINOIS FED. AID PROJECT				

MOD. 11/2004/MLM/MS



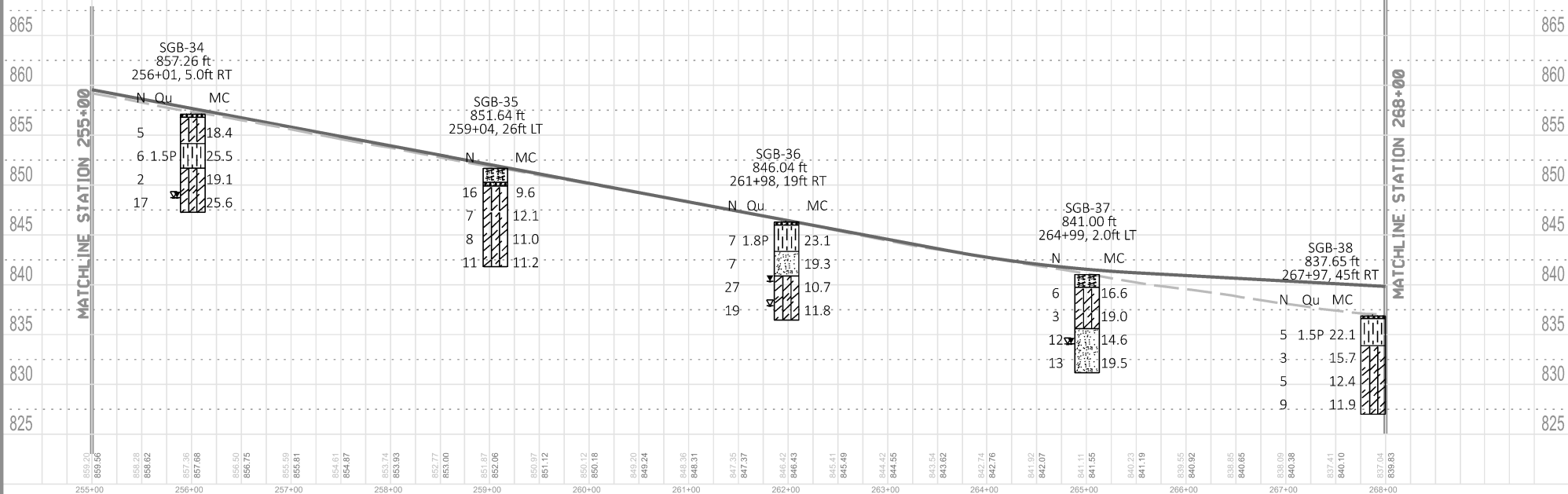
MATCHLINE STATION 255+00

MATCHLINE STATION 268+00



MATCHLINE STATION 255+00

MATCHLINE STATION 268+00



DATE	
BY	
REVISIONS	
NO. DATE	
DESCRIPTION	
DATE	
BY	

DATE	
BY	
REVISIONS	
NO. DATE	
DESCRIPTION	
DATE	
BY	

MODEL: BPO001A.MXD
DATE PLOTTED: 11/14/2013 10:58:41 AM
PLOT SCALE: 1"=40'

USER NAME: - SUSERS	DESIGNED: -	REVISED: -
DRAWN: -	CHECKED: -	REVISED: -
DATE: -	CHKDATE: -	REVISED: -

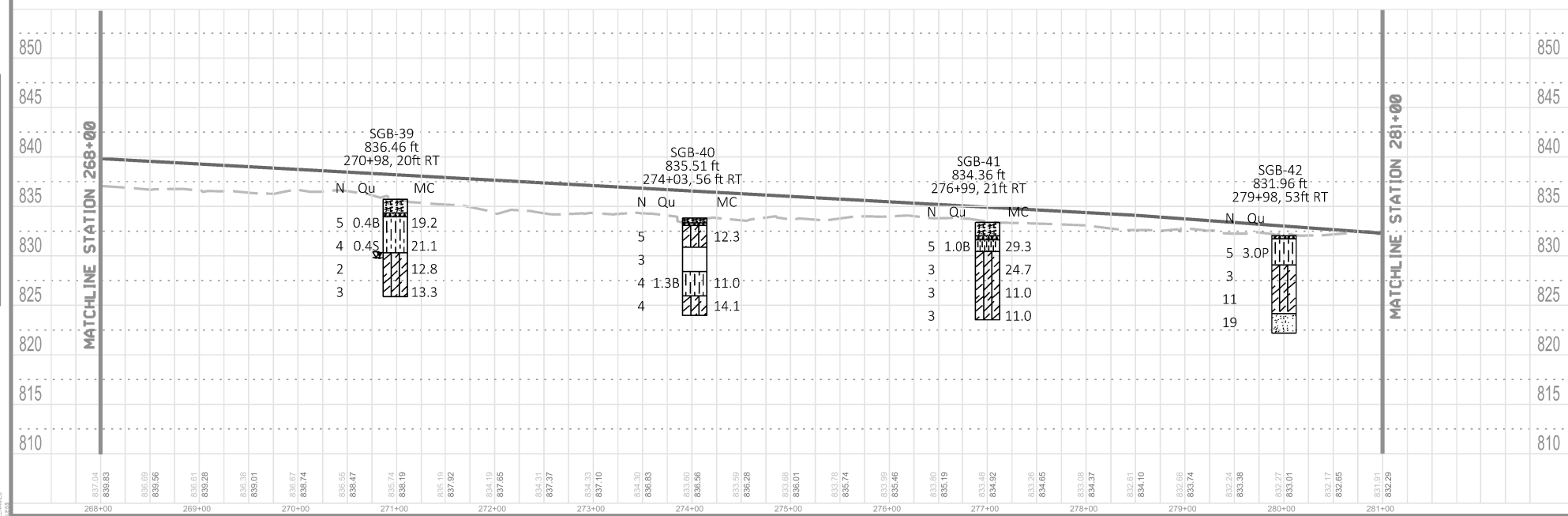
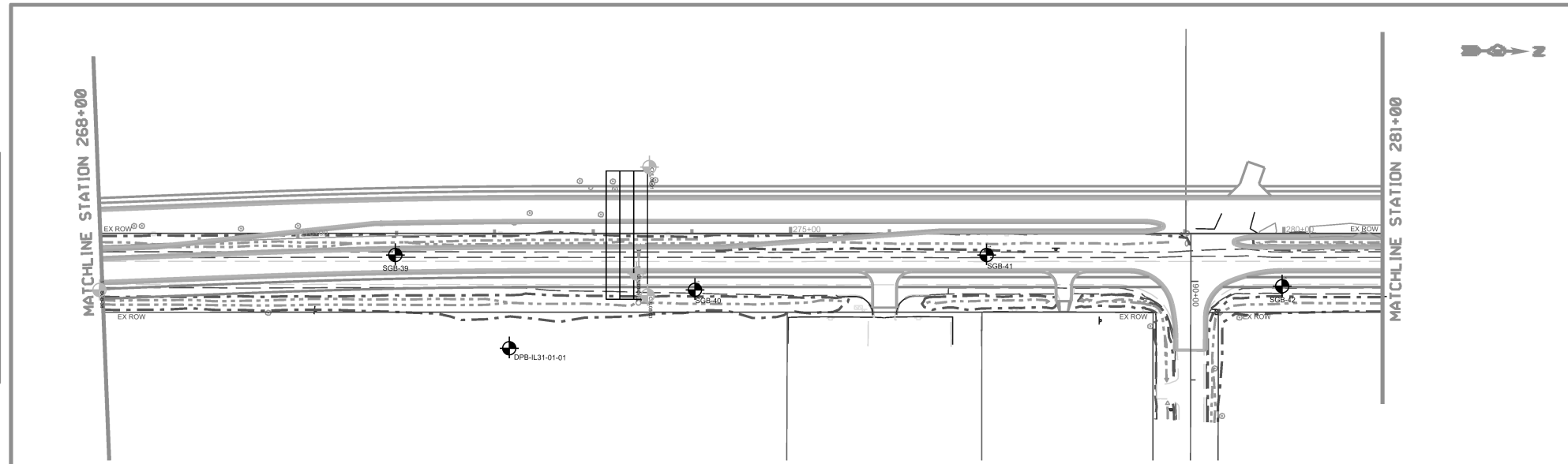
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ILLINOIS ROUTE 31 BORING PLAN AND PROFILE
SCALE: SHEET OF SHEETS STA TO STA

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO. _____				

PLAN	PROJECT NO.	DATE
	NO. _____	_____
	ALTERNATIVE NO.	
	NO. _____	
	NO. _____	
	NO. _____	

PROFILE	PROJECT NO.	DATE
	NO. _____	_____
	ALTERNATIVE NO.	
	NO. _____	
	NO. _____	
	NO. _____	



837.04	839.83	836.09	839.56	835.61	839.26	835.36	839.01	836.67	838.74	836.55	838.47	835.74	838.19	835.19	837.92	834.19	837.65	834.31	837.37	834.33	837.10	834.30	836.83	833.60	836.56	833.59	836.26	833.59	836.01	833.78	835.74	833.99	835.46	833.80	835.19	833.48	834.92	833.26	834.65	833.08	834.37	832.61	834.10	832.69	833.14	832.24	833.36	832.27	833.01	832.17	832.65	831.91	832.29
268+00	269+00	270+00	271+00	272+00	273+00	274+00	275+00	276+00	277+00	278+00	279+00	280+00	281+00																																								

USER NAME	+ SUSERS	DESIGNED	-	REVISED	-
PLOT SCALE	+ SCALES	DRAWN	-	REVISED	-
PLOT DATE	+ SDATES	CHECKED	-	REVISED	-
		DATE	-	CHKDATE	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ILLINOIS ROUTE 31 BORING PLAN AND PROFILE

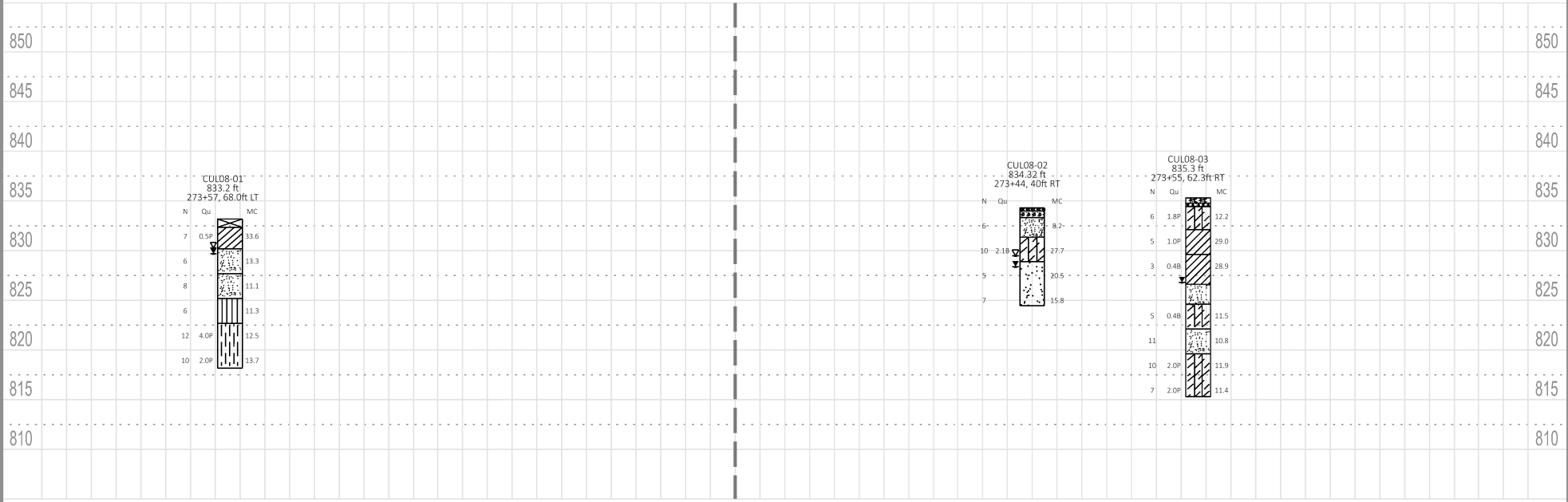
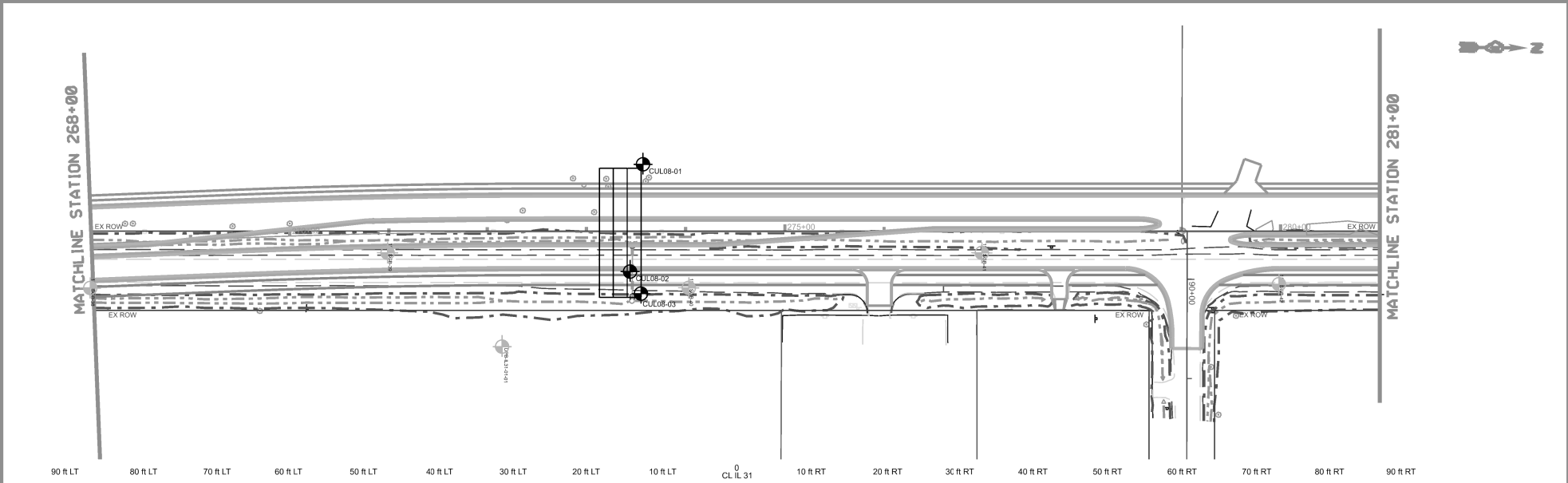
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
ILLINOIS FED. AID PROJECT				

MODEL: BOROPLAN.DWG
FILE NAME: 814183



DATE	
BY	
PROJECT NO.	
DATE	
BY	
PROJECT NO.	
DATE	
BY	
PROJECT NO.	

DATE	
BY	
PROJECT NO.	
DATE	
BY	
PROJECT NO.	
DATE	
BY	
PROJECT NO.	



MODULE: ILLINOISROUTE
 SHEET: 1111

USER NAME	+ SUSERS	DESIGNED	-	REVISED	-
DRAWN	-	REVISOR	-	REVISOR	-
CHECKED	-	REVISOR	-	REVISOR	-
DATE	-	CHKDATE	-	REVISOR	-

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

ILLINOIS ROUTE 31 PLAN AND PROFILE

SCALE:	SHEET	OF	SHEETS	STA.	TO STA.
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F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
ILLINOIS FED. AID PROJECT				

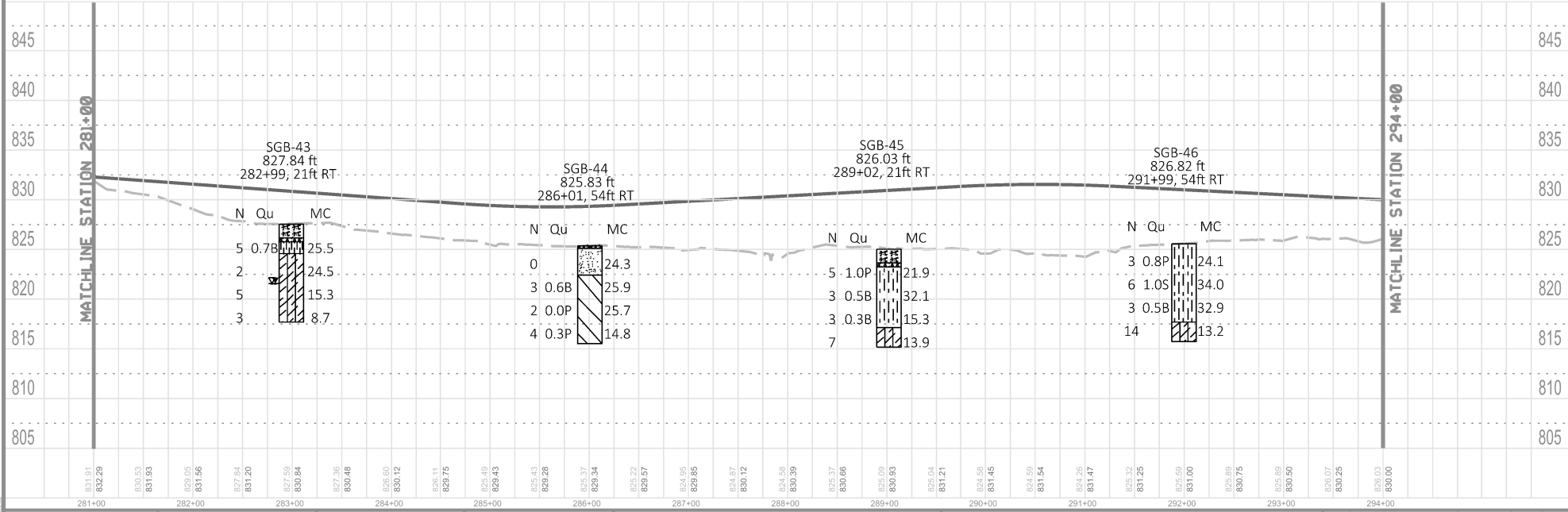
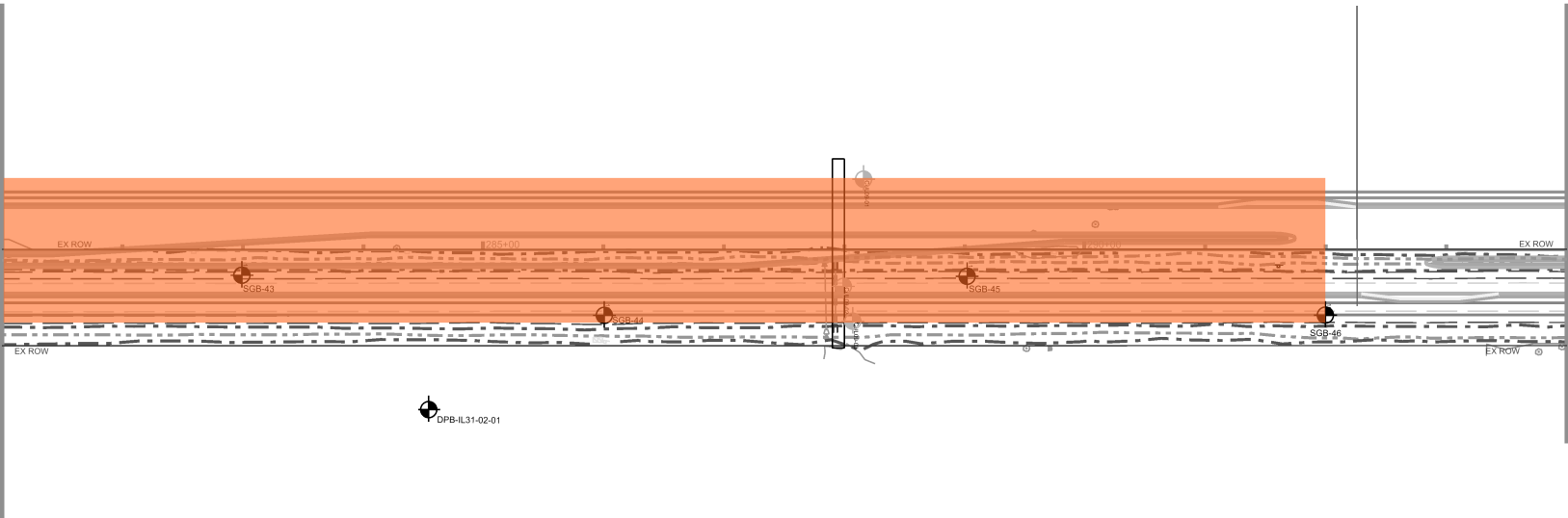


PLAN	PROJECT:	DATE:
	NO.:	BY:
	DATE:	
	NO.:	
	DATE:	
	NO.:	
	DATE:	

PROFILE	PROJECT:	DATE:
	NO.:	BY:
	DATE:	
	NO.:	
	DATE:	
	NO.:	
	DATE:	

MATCHLINE STATION 281+00

MATCHLINE STATION 294+00



831.91	832.29	830.53	831.93	829.05	831.56	827.84	831.20	829.59	830.84	827.26	830.48	828.60	830.12	828.11	829.75	828.49	829.43	828.43	829.28	828.37	829.34	828.22	829.57	824.95	829.85	824.67	830.12	824.58	830.39	824.37	830.66	825.09	830.93	825.04	831.21	824.58	831.45	824.59	831.54	824.26	831.47	825.32	831.25	825.59	831.00	825.59	830.75	825.59	830.50	826.07	830.25	826.03	830.00
281+00	282+00	283+00	284+00	285+00	286+00	287+00	288+00	289+00	290+00	291+00	292+00	293+00	294+00																																								

USER NAME = SUBERS	DESIGNED -	REVISED -
DRAWN -	REVISIONS -	
CHECKED -	REVISIONS -	
DATE -	CHKDATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ILLINOIS ROUTE 31 BORING PLAN AND PROFILE

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
ILLINOIS FED AID PROJECT				

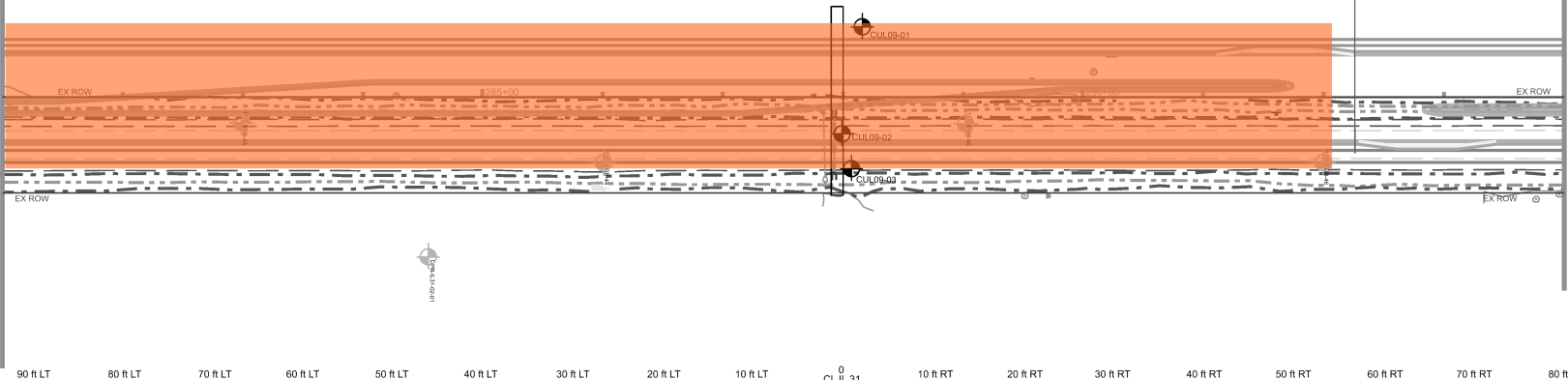
MODEL INCHES = 1/8" HORIZONTAL

PROFILE INCHES = 1/4" VERTICAL

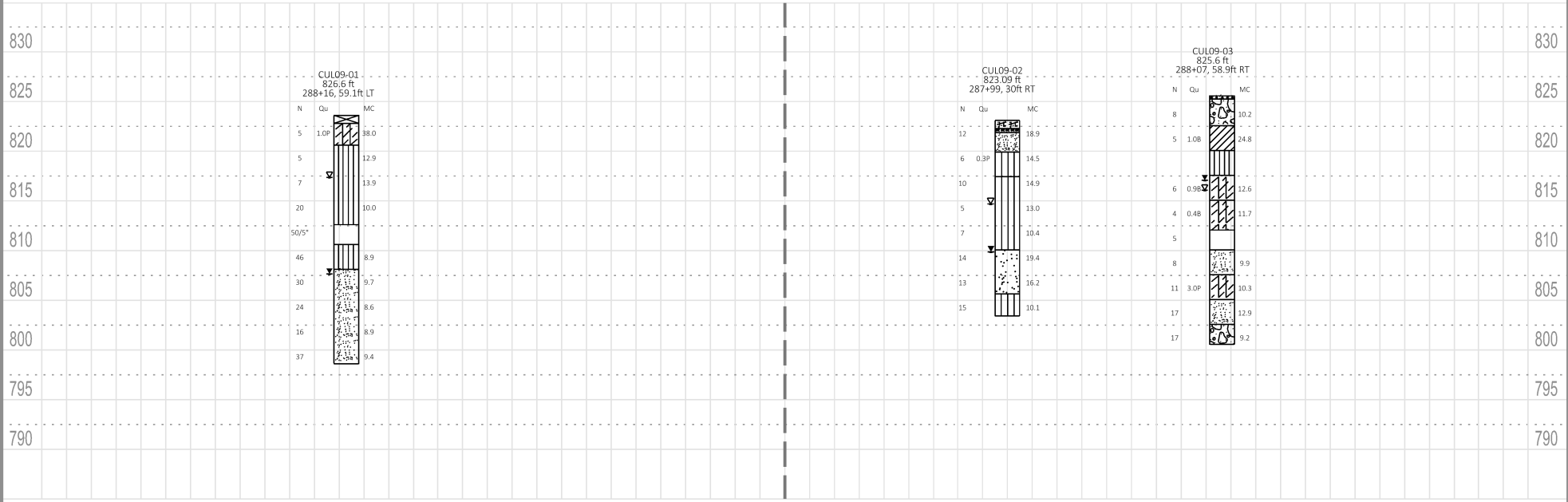


MATCHLINE STATION 281+00

MATCHLINE STATION 294+00



90 ft RT 80 ft RT 70 ft RT 60 ft RT 50 ft RT 40 ft RT 30 ft RT 20 ft RT 10 ft RT 0 CL IL 31 10 ft RT 20 ft RT 30 ft RT 40 ft RT 50 ft RT 60 ft RT 70 ft RT 80 ft RT



DATE	
BY	
PROJECT NO.	
DATE	
BY	
PROJECT NO.	
DATE	
BY	
PROJECT NO.	

DATE	
BY	
PROJECT NO.	
DATE	
BY	
PROJECT NO.	
DATE	
BY	
PROJECT NO.	

MOD. 11/20/2011

USER NAME	SUSERS	DESIGNED	-	REVISOR	-
PLotted SCALE	1"=40'	DRAWN	-	REVISOR	-
PLOT DATE	11/20/2011	CHECKED	-	REVISOR	-
		DATE	11/20/2011	REVISOR	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

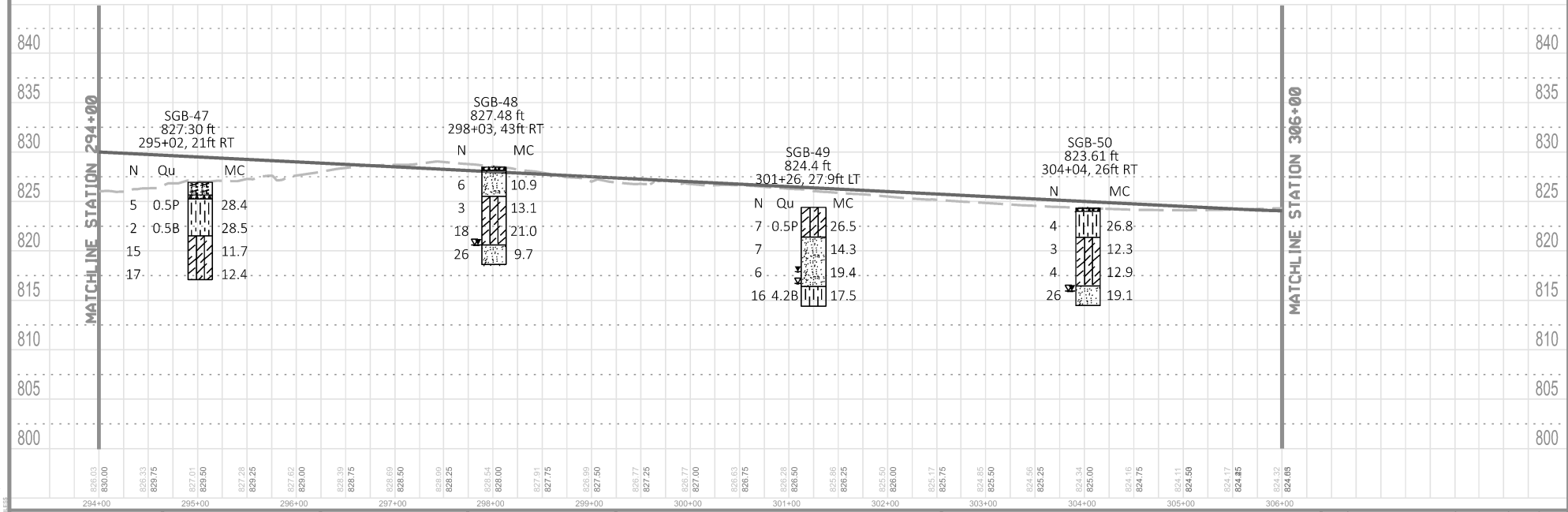
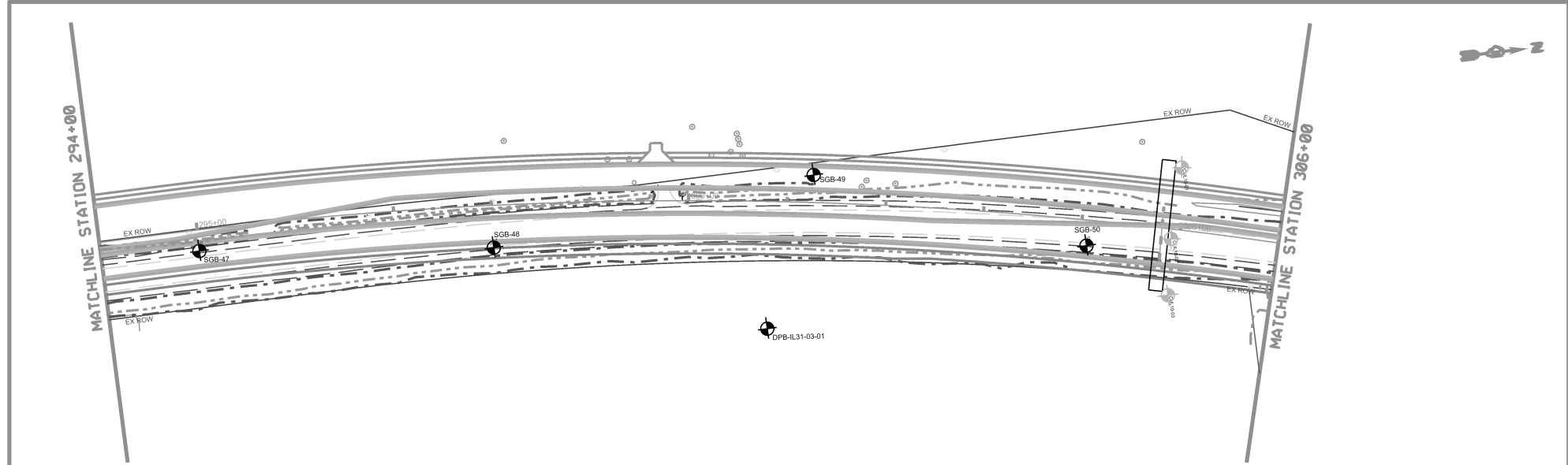
ILLINOIS ROUTE 31 PLAN AND PROFILE

SCALE:	SHEET	OF	SHEETS	STA.	TO STA.
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F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
ILLINOIS FED. AID PROJECT				

PLAN	DATE
CONTRACT NO.	REV.
AS SHOWN DATE	
NOTE BOOK NO.	
DRAWN BY	
CHECKED BY	
DATE	
FILE NAME	

PROFILE	DATE
CONTRACT NO.	REV.
AS SHOWN DATE	
NOTE BOOK NO.	
DRAWN BY	
CHECKED BY	
DATE	
FILE NAME	



MODEL INCHES/MILES
FILE NAME: 81825

USER NAME = SUBERS	DESIGNED -	REVISED -
DRAWN	REVISED	REVISED
CHECKED	REVISED	REVISED
DATE	CHKDATE	REVISED

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

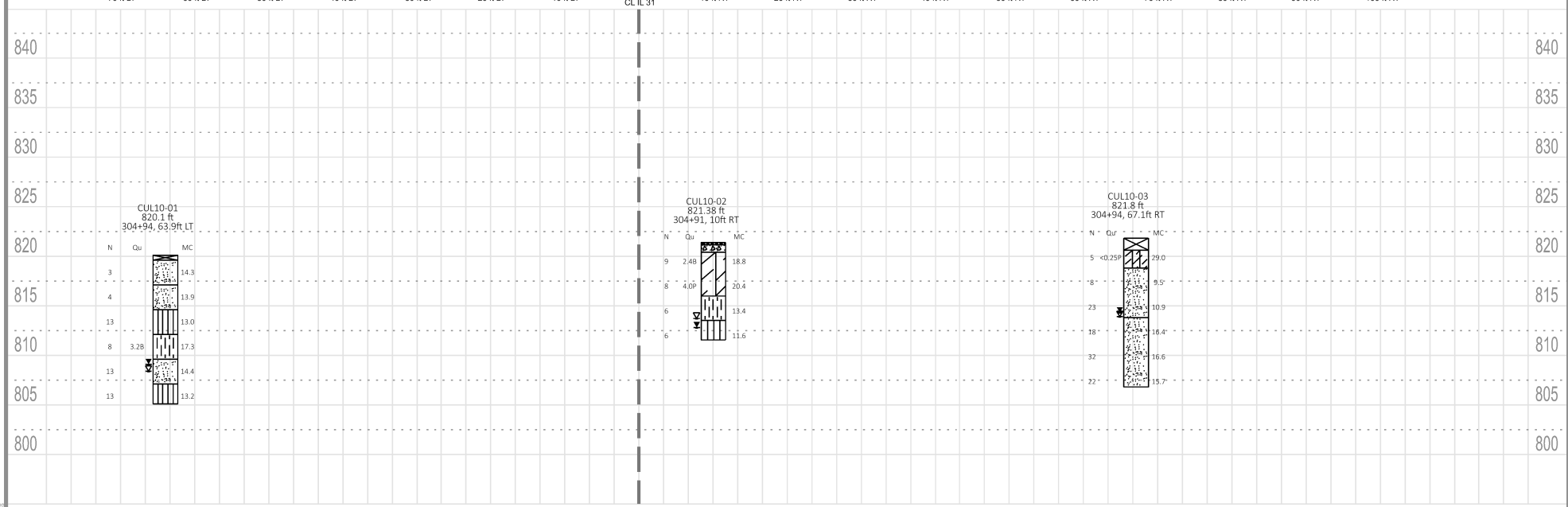
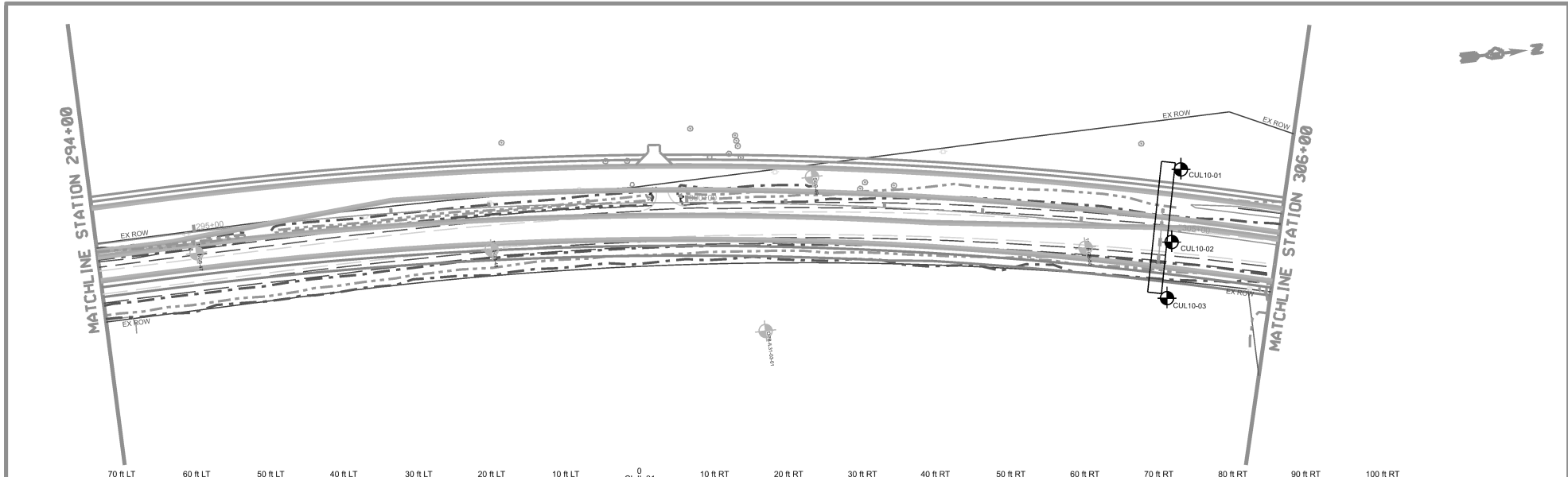
ILLINOIS ROUTE 31 BORING PLAN AND PROFILE

SCALE: SHEET OF SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
ILLINOIS FED-AID PROJECT				

DATE	
BY	
PROJECT NO.	
PLAN NO.	
DATE	
BY	
PROJECT NO.	
PLAN NO.	

DATE	
BY	
PROJECT NO.	
PROFILE NO.	
DATE	
BY	
PROJECT NO.	
PROFILE NO.	



STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ILLINOIS ROUTE 31 PLAN AND PROFILE

USER NAME	SUSERS	DESIGNED	-	REVISED	-
DRAWN	-	CHECKED	-	REVISED	-
DATE	CHKDATE	DATE	CHKDATE	DATE	CHKDATE

SCALE:	SHEET	OF	SHEETS	STA.	TO STA.
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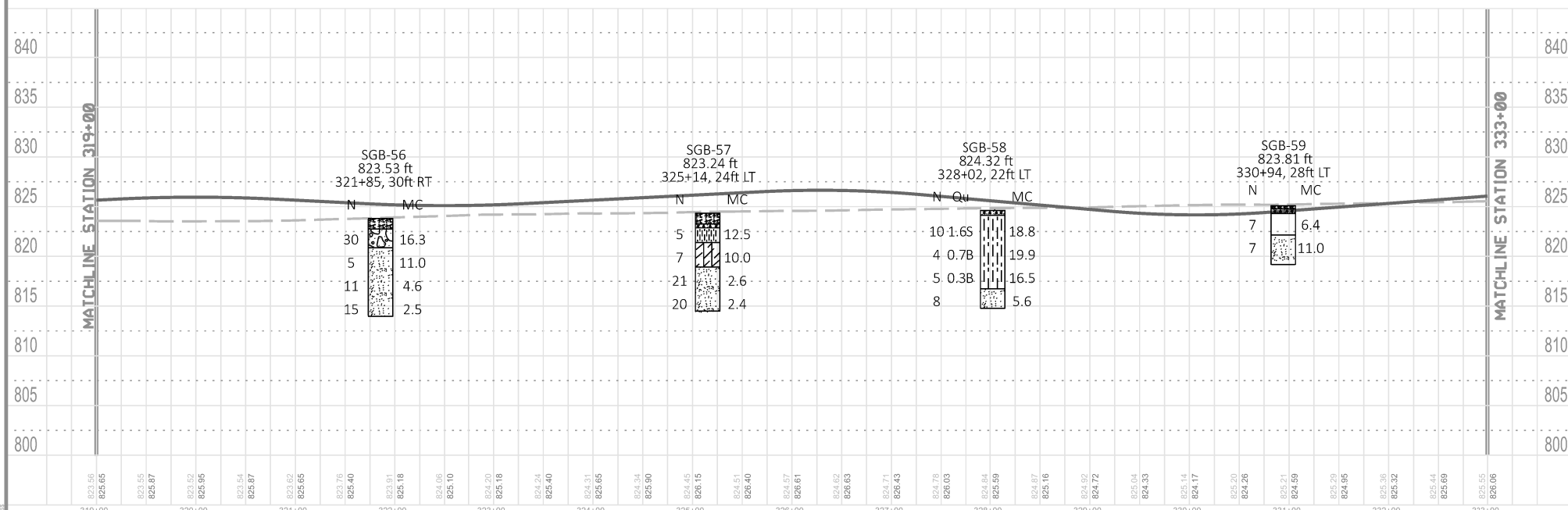
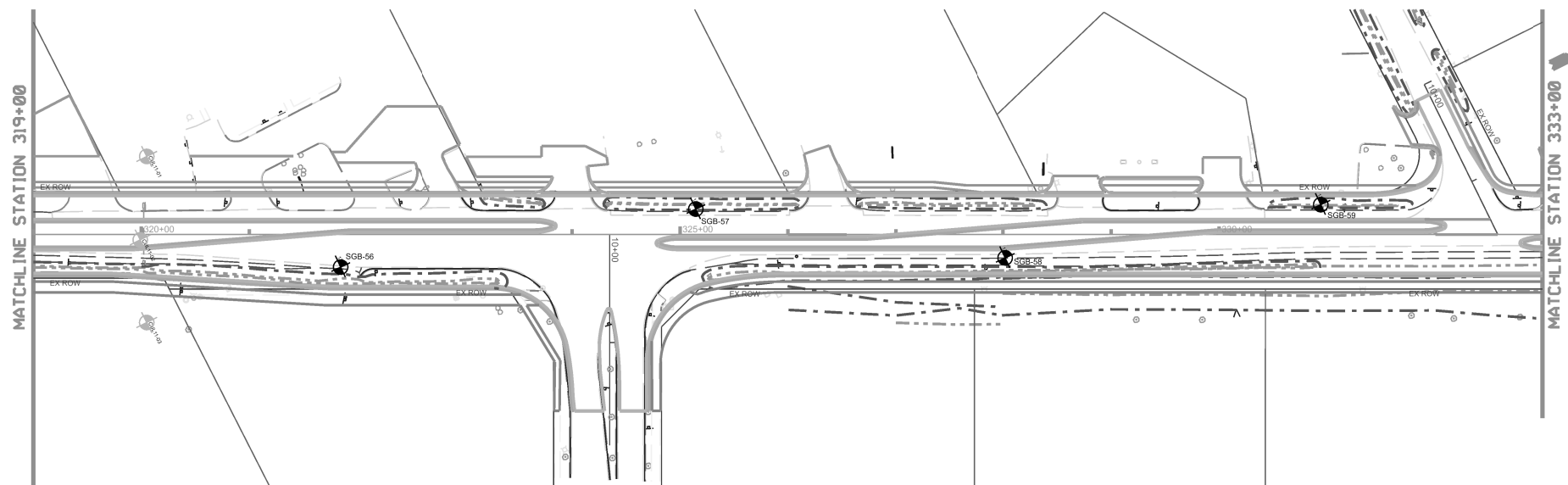
F.A. RTEL	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
			CONTRACT NO.	
ILLINOIS FED. AID PROJECT				

MODEL: SPOORLUMMES
SCALE: 1"=40'

DATE	
BY	
DESIGNED	
DRAWN	
CHECKED	
DATE	
PROJECT	
NO.	

DATE	
BY	
DESIGNED	
DRAWN	
CHECKED	
DATE	
PROJECT	
NO.	

NOTED: PLS CHECK NOTES
 FILE NAME: PLS

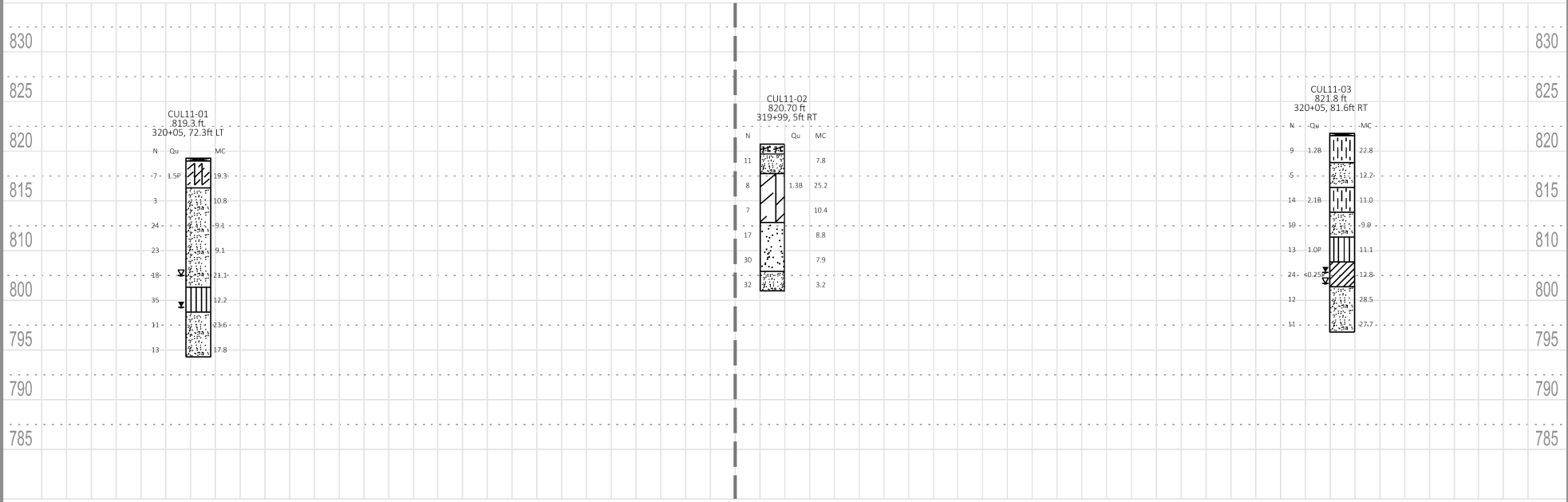
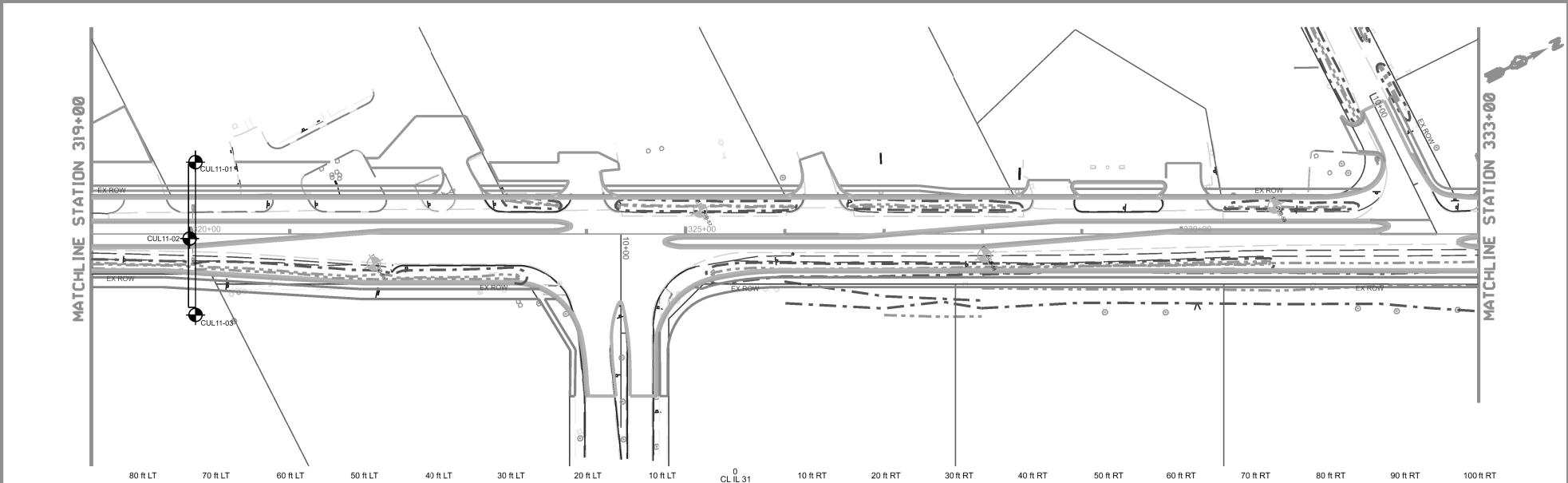


823.56 825.65	823.55 825.87	823.52 825.95	823.54 825.87	823.62 825.65	823.76 825.40	823.91 825.18	824.05 825.10	824.20 825.18	824.24 825.40	824.31 825.65	824.34 825.90	824.45 826.15	824.51 826.40	824.57 826.61	824.62 826.63	824.71 826.43	824.78 826.03	824.84 825.99	824.87 825.16	824.92 824.72	825.04 824.33	825.14 824.17	825.20 824.26	825.21 824.99	825.29 824.95	825.36 825.32	825.44 825.69	825.55 826.06	
319+00	320+00	321+00	322+00	323+00	324+00	325+00	326+00	327+00	328+00	329+00	330+00	331+00	332+00	333+00															

USER NAME = SUSERS	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	ILLINOIS ROUTE 31 BORING PLAN AND PROFILE	F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
PLOT SCALE = SSCALES	DRAWN -	REVISED -							
PLOT DATE = SDATES	CHECKED -	REVISED -			SCALE:	SHEET	OF	SHEETS	STA.
	DATE -	CHKDATE							ILLINOIS FED.AID PROJECT

DATE	BY
PLAN	REVISIONS
DATE	NO.

DATE	BY
PROFILE	REVISIONS
DATE	NO.



MODULE: SHEET/PROFILE
 DATE: 10/20/2017

USER NAME	+ SUSERS	DESIGNED	-	REVISIONS	-
PLT SCALE	+ 1:250	DRAWN	-	REVISIONS	-
PLOT DATE	+ 04/28/2017	CHECKED	-	REVISIONS	-
		DATE	-	CHKDATE	-

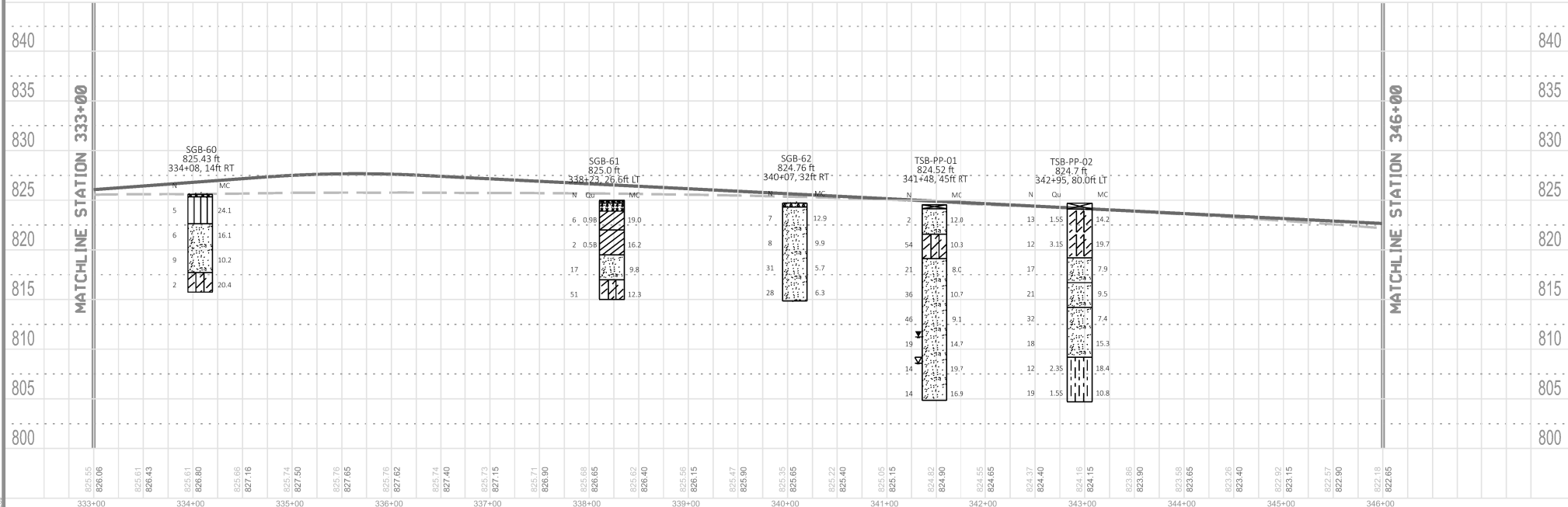
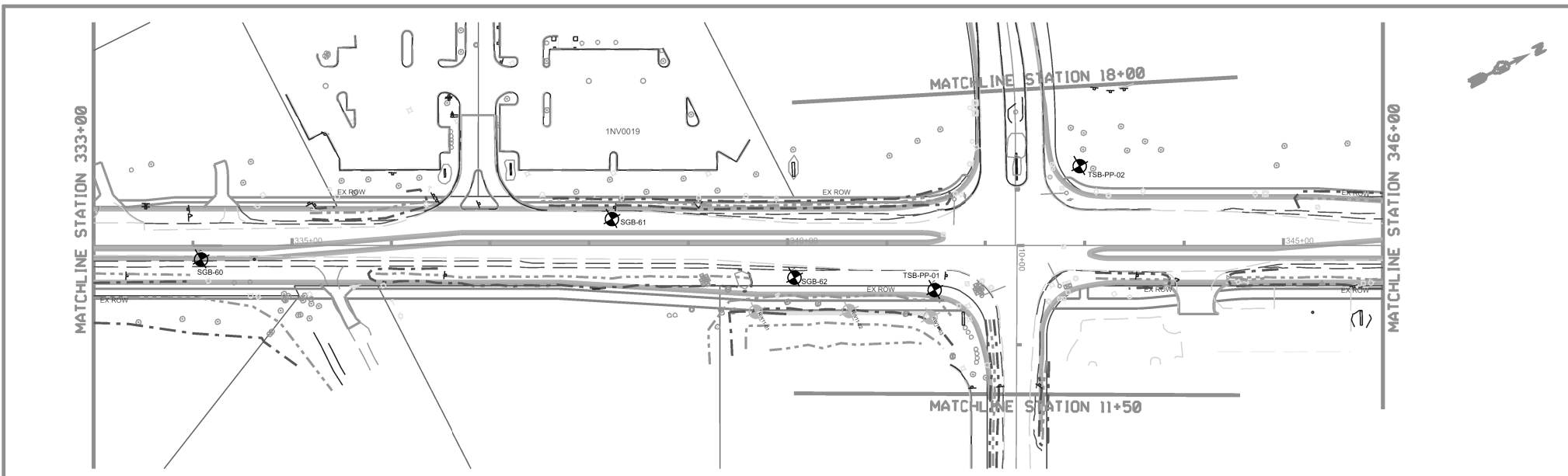
STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

ILLINOIS ROUTE 31 PLAN AND PROFILE
 SCALE: SHEET OF SHEETS STA. TO STA.

F.A. SITE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
ILLINOIS FED. AID PROJECT				

PLAN	DATE
REVISIONS	
NO.	DATE
BY	
DATE	
BY	
DATE	
BY	
DATE	
BY	
DATE	

PROFILE	DATE
REVISIONS	
NO.	DATE
BY	
DATE	
BY	
DATE	
BY	
DATE	
BY	
DATE	



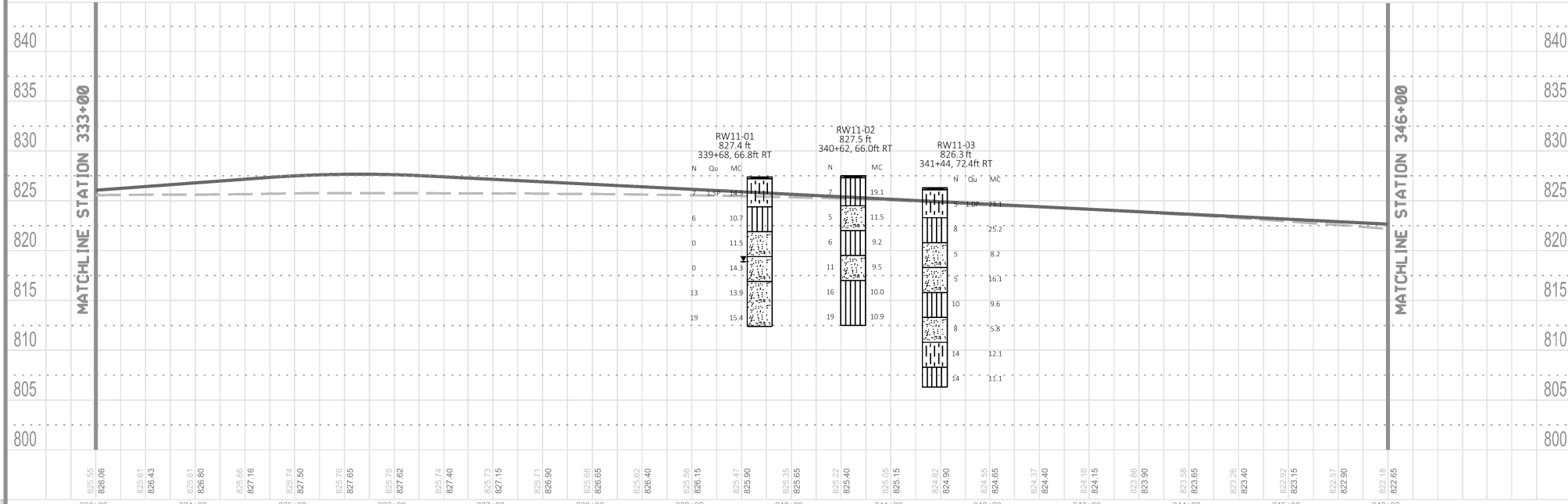
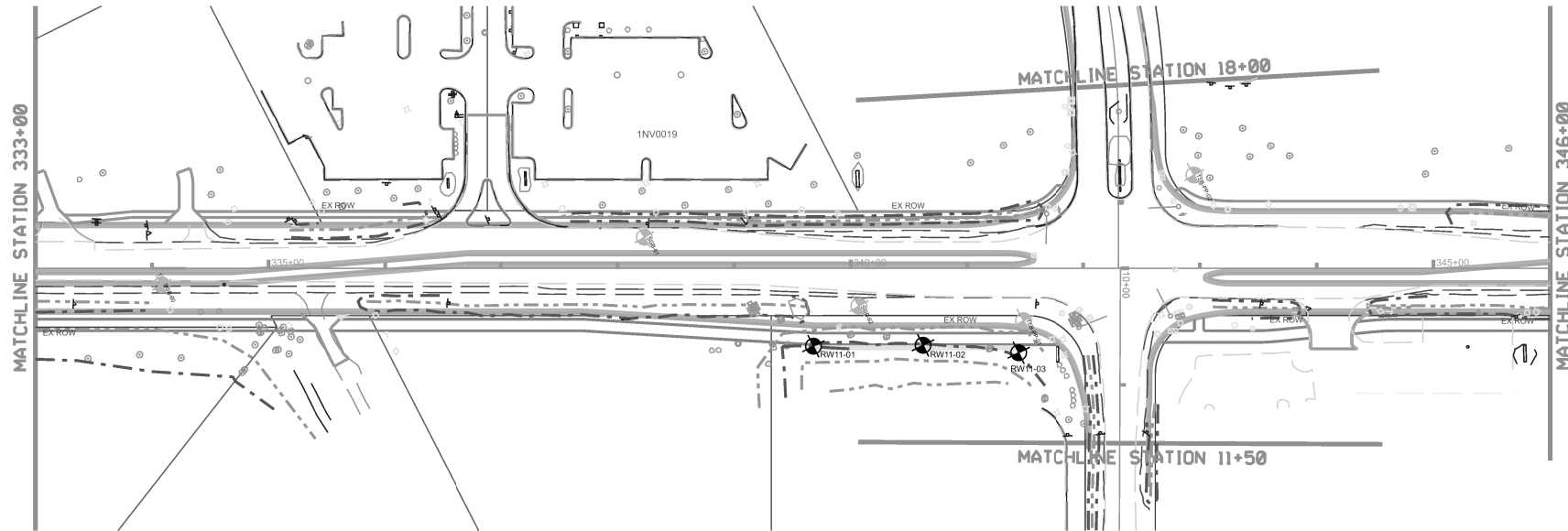
825.55 826.06	825.61 826.43	825.61 826.80	825.66 827.16	825.74 827.50	825.76 827.65	825.76 827.62	825.74 827.40	825.73 827.15	825.71 826.90	825.68 826.65	825.62 826.40	825.56 826.15	825.47 825.90	825.35 825.65	825.22 825.40	825.05 825.15	824.82 824.90	824.55 824.65	824.37 824.40	824.16 824.15	823.85 823.90	823.58 823.65	823.26 823.40	822.92 823.15	822.57 822.90	822.18 822.65	
333+00	334+00	335+00	336+00	337+00	338+00	339+00	340+00	341+00	342+00	343+00	344+00	345+00	346+00														

USER NAME = SUSERS	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLLOT SCALE = \$SCALES	CHECKED -	REVISED -
PLLOT DATE = \$DATES	DATE -	CHKDATE -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ILLINOIS ROUTE 31 BORING PLAN AND PROFILE

SCALE	SHEET	OF	SHEETS	STA.	TO	STA.
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	CONTRACT NO.	ILLINOIS FED. AID PROJECT



PLAN	DESIGNED	DATE
	CHECKED	
	DATE	
	NO.	

PROFILE	DESIGNED	DATE
	CHECKED	
	DATE	
	NO.	

825.65 826.06	825.61 826.43	825.61 826.80	825.66 827.16	825.74 827.50	825.76 827.65	825.76 827.62	825.74 827.40	825.73 827.15	825.71 826.90	825.68 826.65	825.62 826.40	825.56 826.15	825.47 825.90	825.35 825.65	825.22 825.40	825.05 825.15	824.82 824.90	824.55 824.65	824.37 824.40	824.16 824.15	823.86 823.90	823.69 823.65	823.26 823.40	822.92 823.15	822.57 822.90	822.18 822.65
333+00	334+00	335+00	336+00	337+00	338+00	339+00	340+00	341+00	342+00	343+00	344+00	345+00	346+00													

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ILLINOIS ROUTE 31 BORING PLAN AND PROFILE

USER NAME	DESIGNED
	DRAWN
PLOT SCALE	CHECKED
PLOT DATE	DATE

DESIGNED	REVISED
DRAWN	REVISED
CHECKED	REVISED
DATE	REVISED

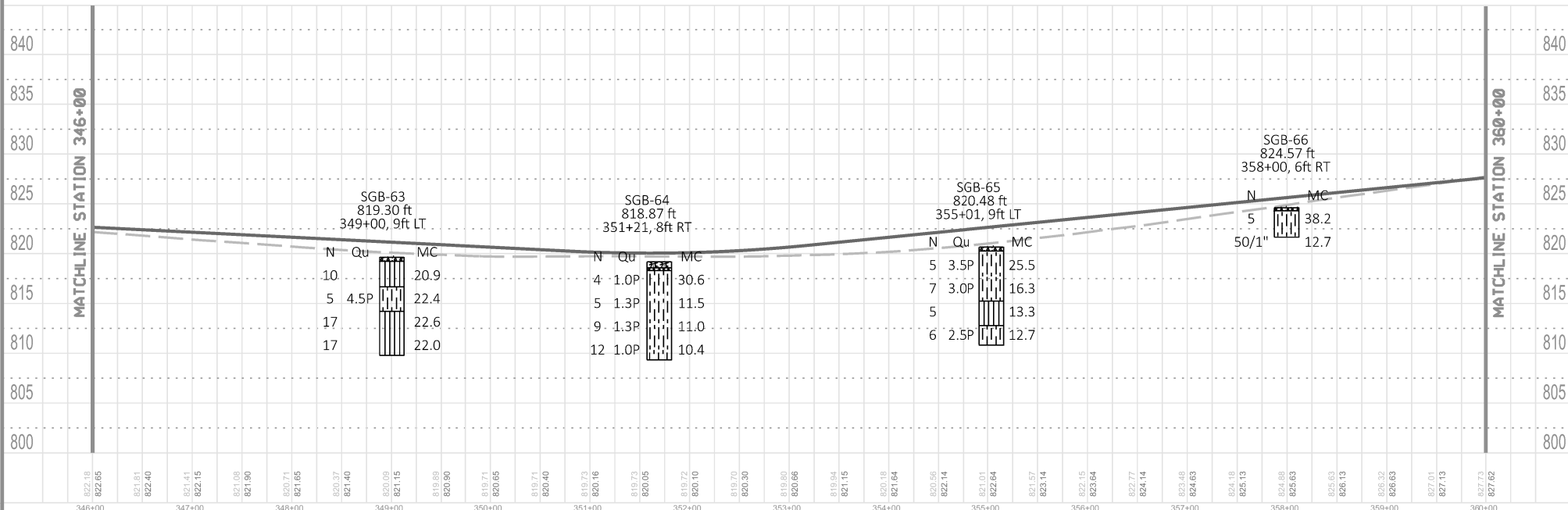
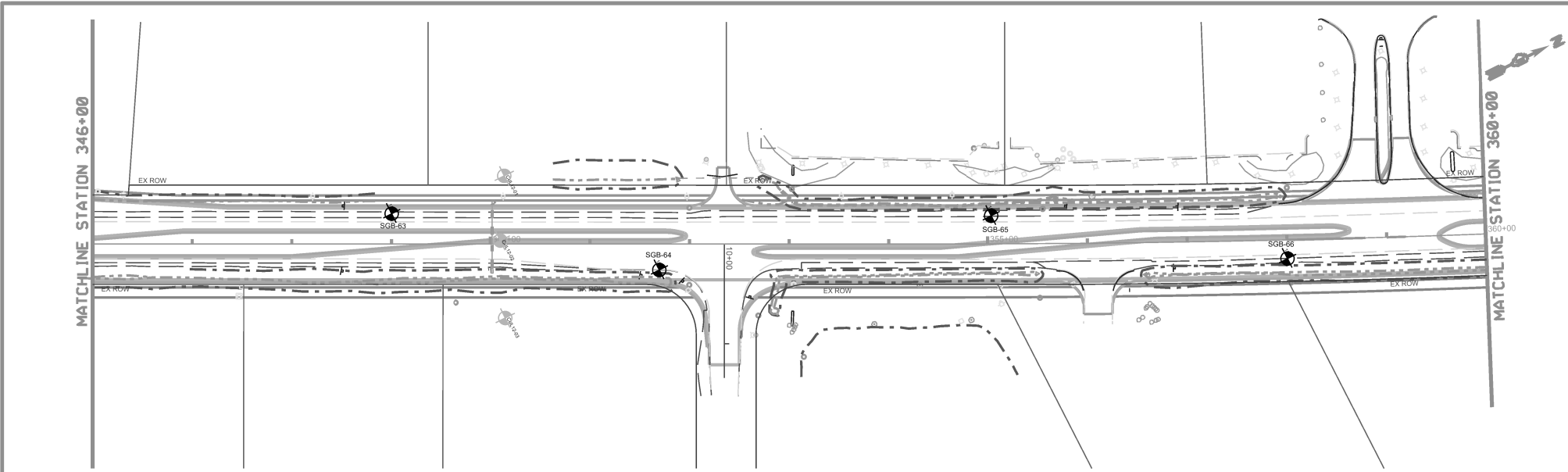
SCALE	SHEET	OF	SHEETS	STA	TO	STA
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F.A. RT#	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
ILLINOIS FED. AID PROJECT				

NORTH PLAN NAME
 FILE NAME: PLS

DATE	
BY	
PROJECT	
NO.	
DATE	
NO.	
DATE	
NO.	

DATE	
BY	
PROJECT	
NO.	
DATE	
NO.	
DATE	
NO.	



MODEL: ILLINOIS ROUTE 31
 SHEET: 31-100

346+00	822.18	822.65	821.81	822.40	821.41	822.15	821.08	821.90	820.71	821.65	820.37	821.40	820.09	821.15	819.89	820.90	819.71	820.65	819.71	820.40	819.73	820.16	819.73	820.05	819.72	820.10	819.70	820.30	819.80	820.66	819.84	821.15	820.18	821.64	820.96	822.14	821.01	822.64	821.57	823.14	822.15	823.04	823.77	824.14	823.48	824.63	824.18	825.13	824.08	825.63	825.63	826.13	826.13	826.63	826.63	827.01	827.13	827.73	827.62	360+00	840	835	830	825	820	815	810	805	800
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

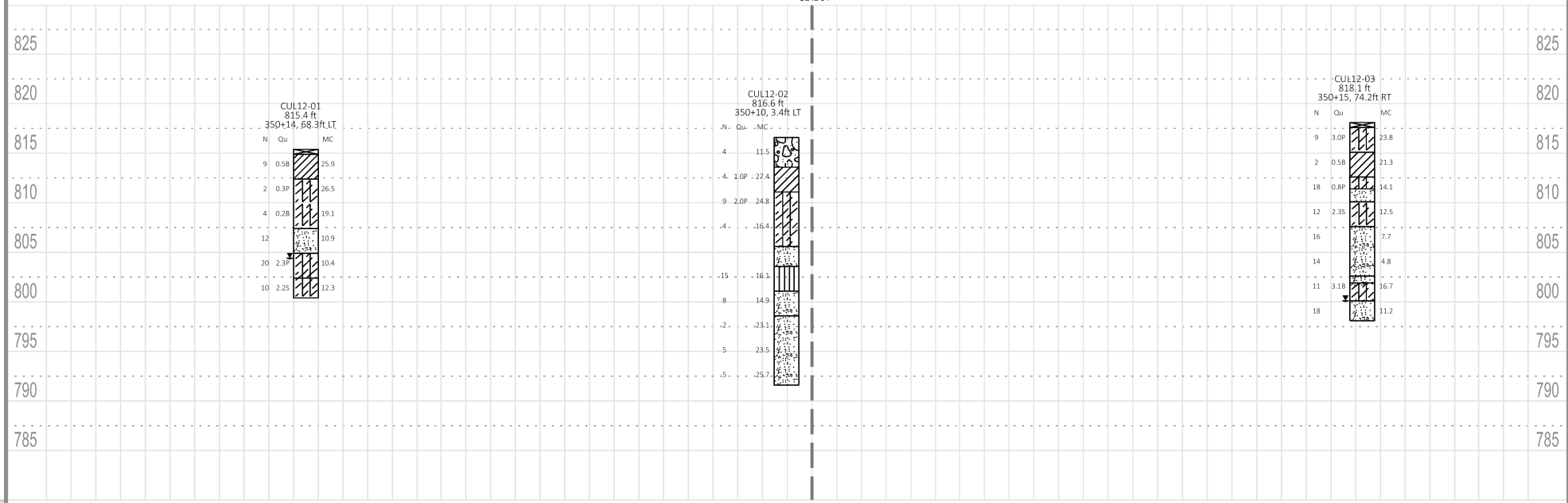
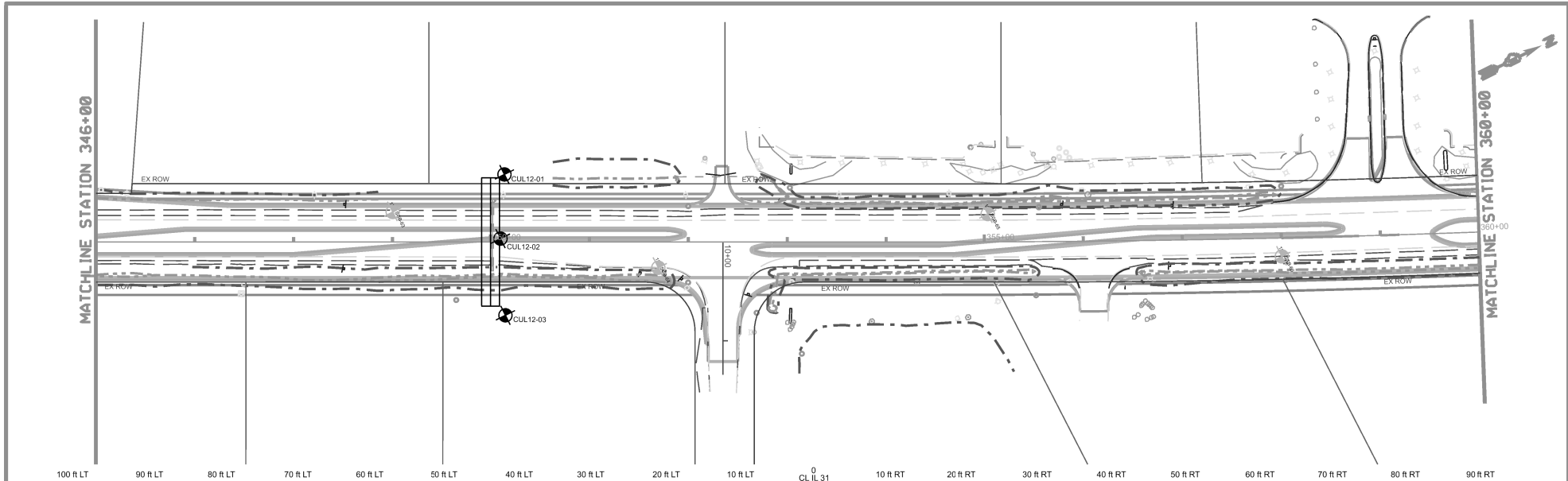
ILLINOIS ROUTE 31 BORING PLAN AND PROFILE

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ILLINOIS FED. AID PROJECT

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

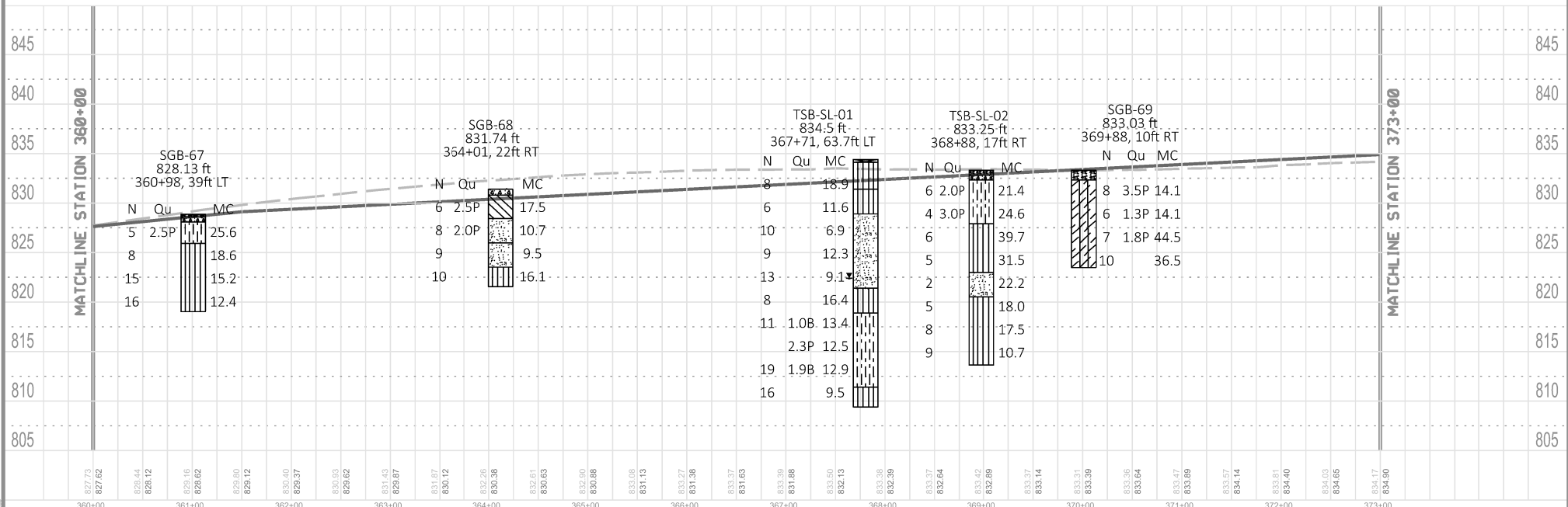
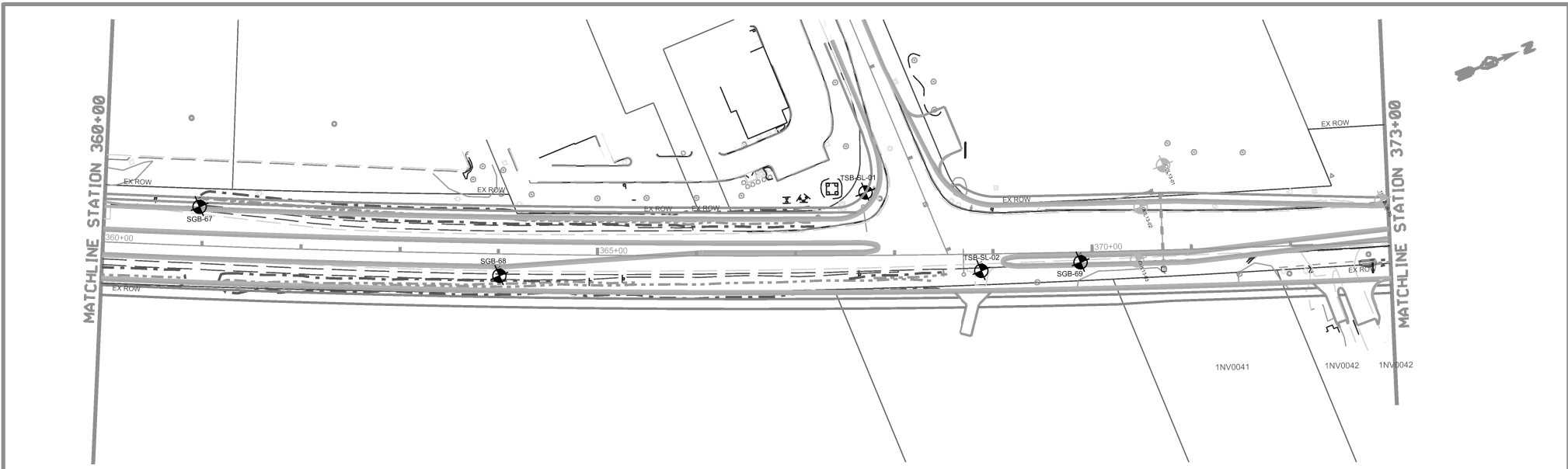
ILLINOIS ROUTE 31 BORING PLAN AND PROFILE

SCALE:	SHEET	OF	SHEETS	STA.	TO STA.
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F.A. RTEL	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
ILLINOIS FED. AID PROJECT				

PLAN
 PROJECT NO. 107
 SHEET NO. 10
 PROJECT NAME: ILLINOIS ROUTE 31 BORING PLAN AND PROFILE
 DRAWN BY: [blank]
 CHECKED BY: [blank]
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PROFILE
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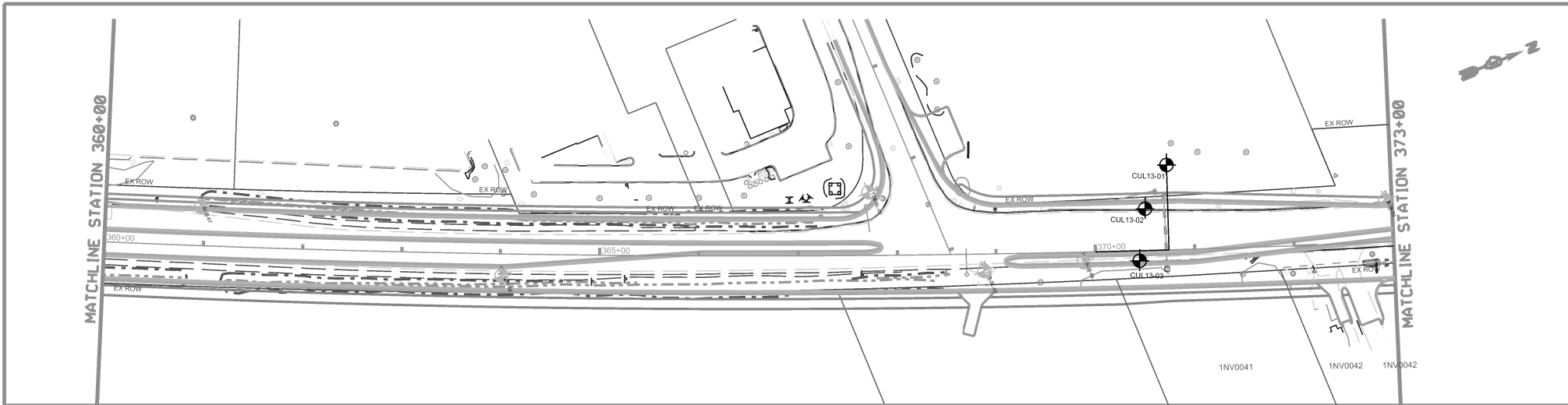


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360+00				361+00				362+00				363+00				364+00				365+00			366+00				367+00				368+00				369+00				370+00				371+00				372+00				373+00		

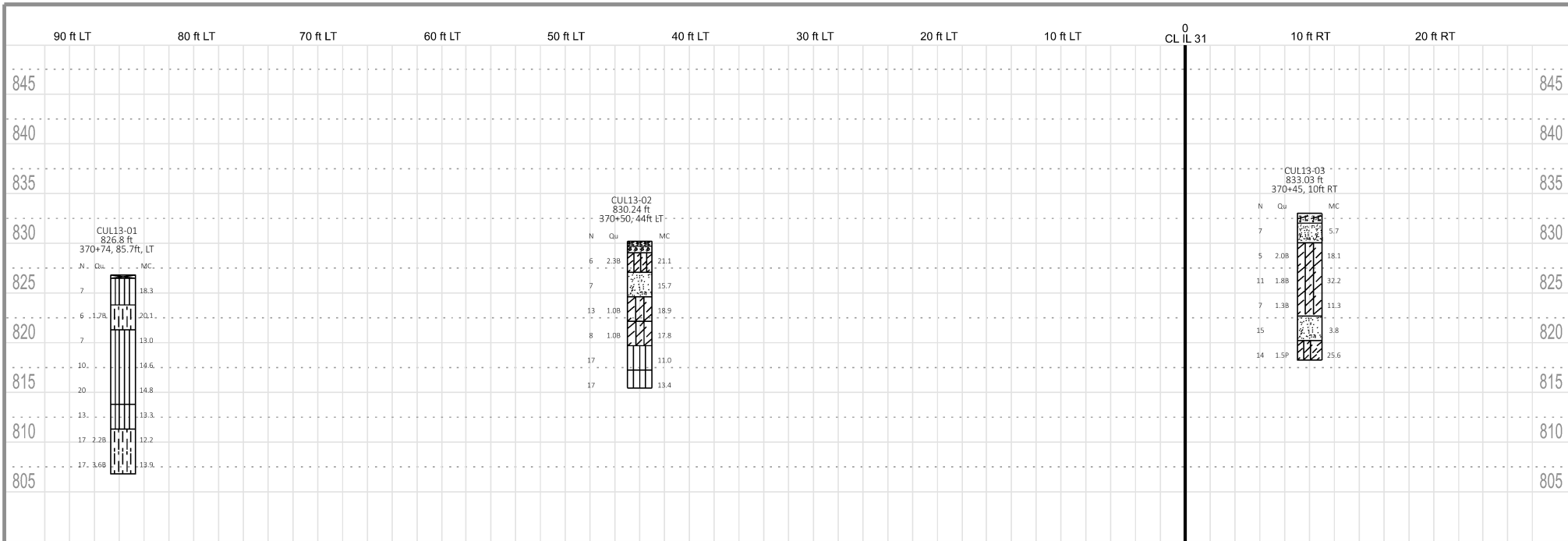
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ILLINOIS FED AID PROJECT

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NOTE BOOK	NO.	
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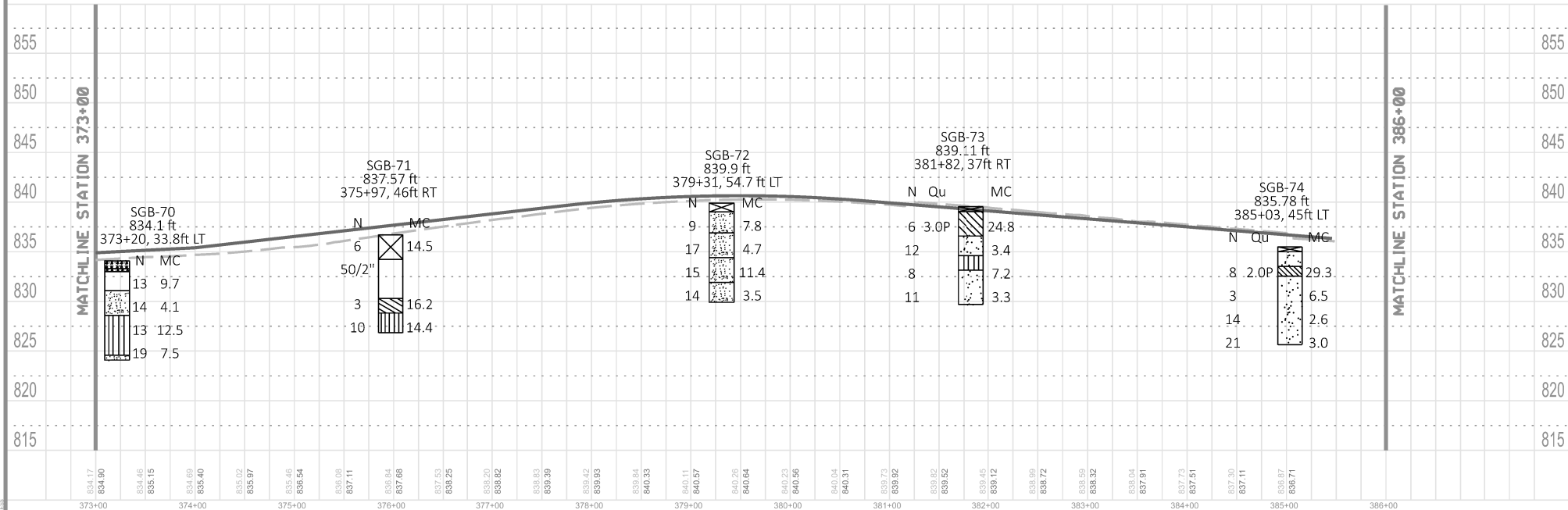
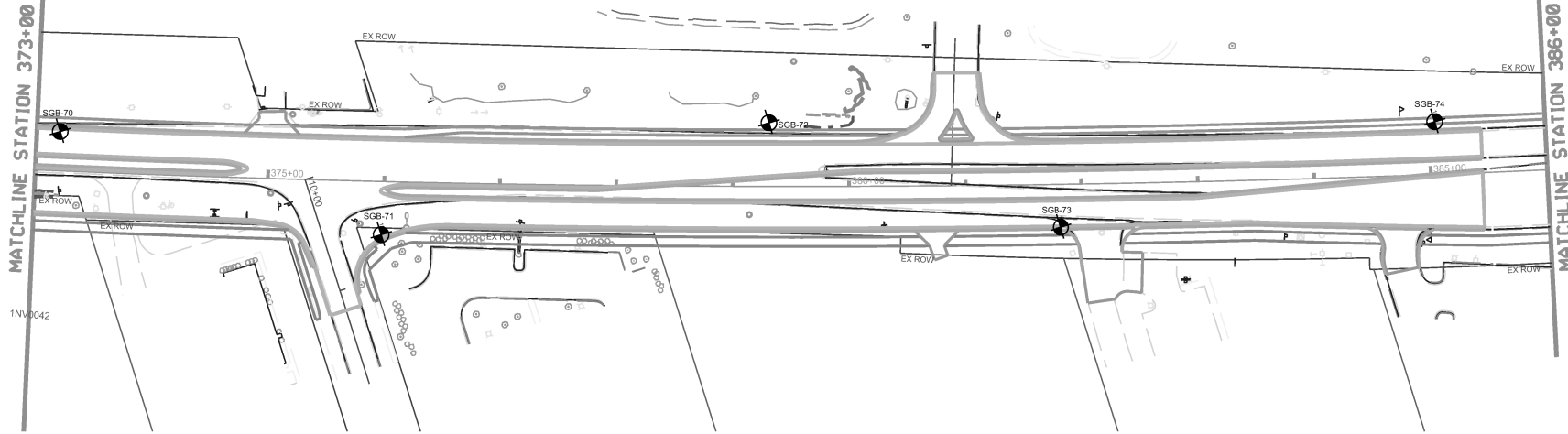


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PLOT DATE = SDATES	DATE -	CHKDATE									SCALE	SHEET	OF	SHEETS	STA. TO STA.
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DATE	
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APPROVED FOR THE PROJECT

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PLOT SCALE = SCALES	DRAWN -	REVISED -
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

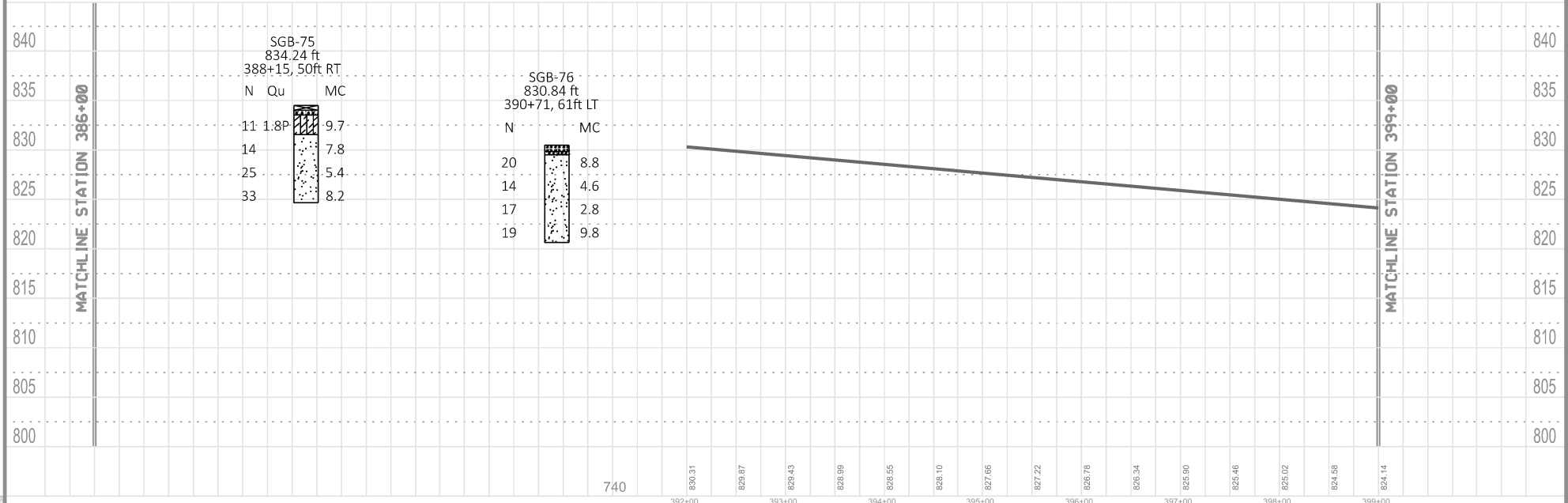
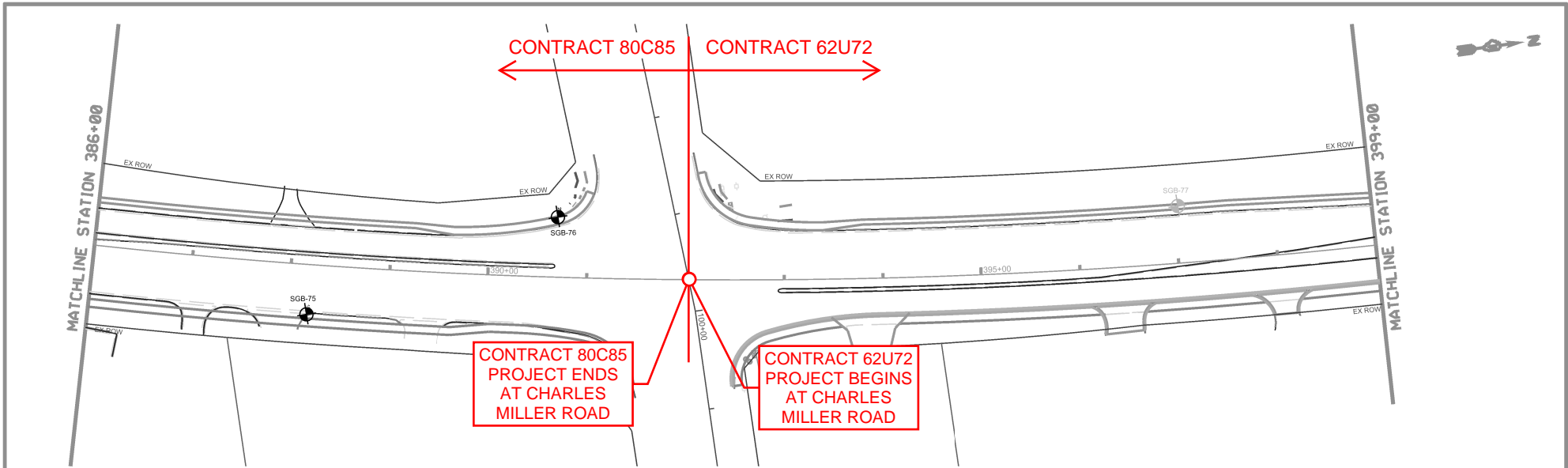
ILLINOIS ROUTE 31 BORING PLAN AND PROFILE

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
ILLINOIS FED. AID PROJECT				

SCALE SHEET OF SHEETS STA TO STA

DATE	BY

DATE	BY



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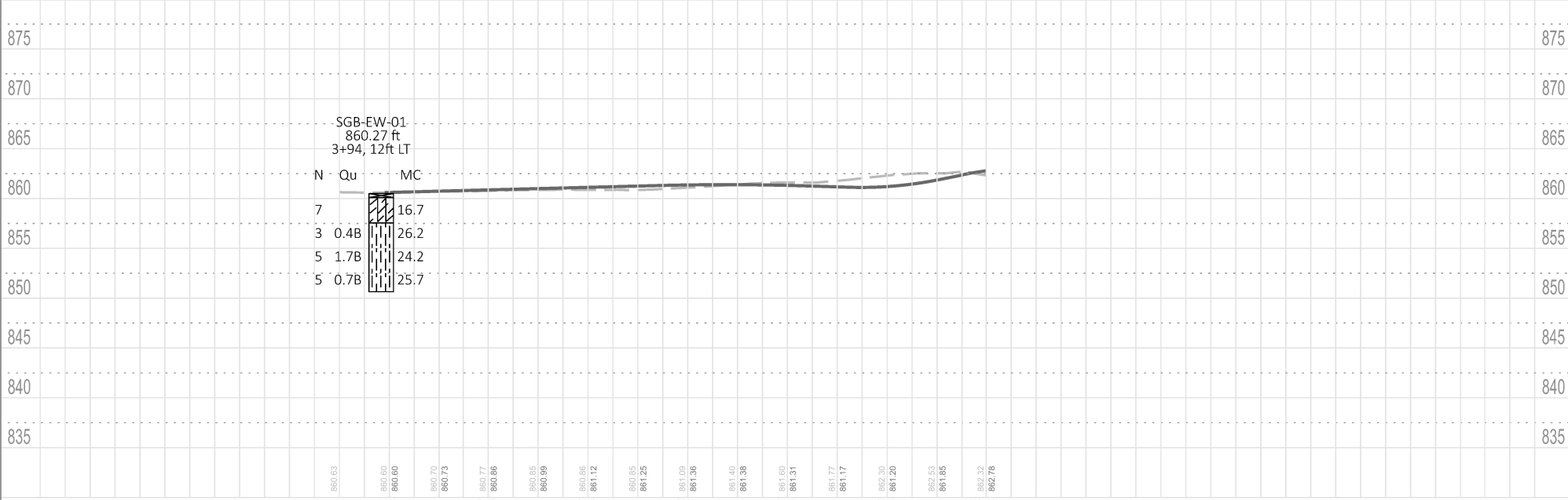
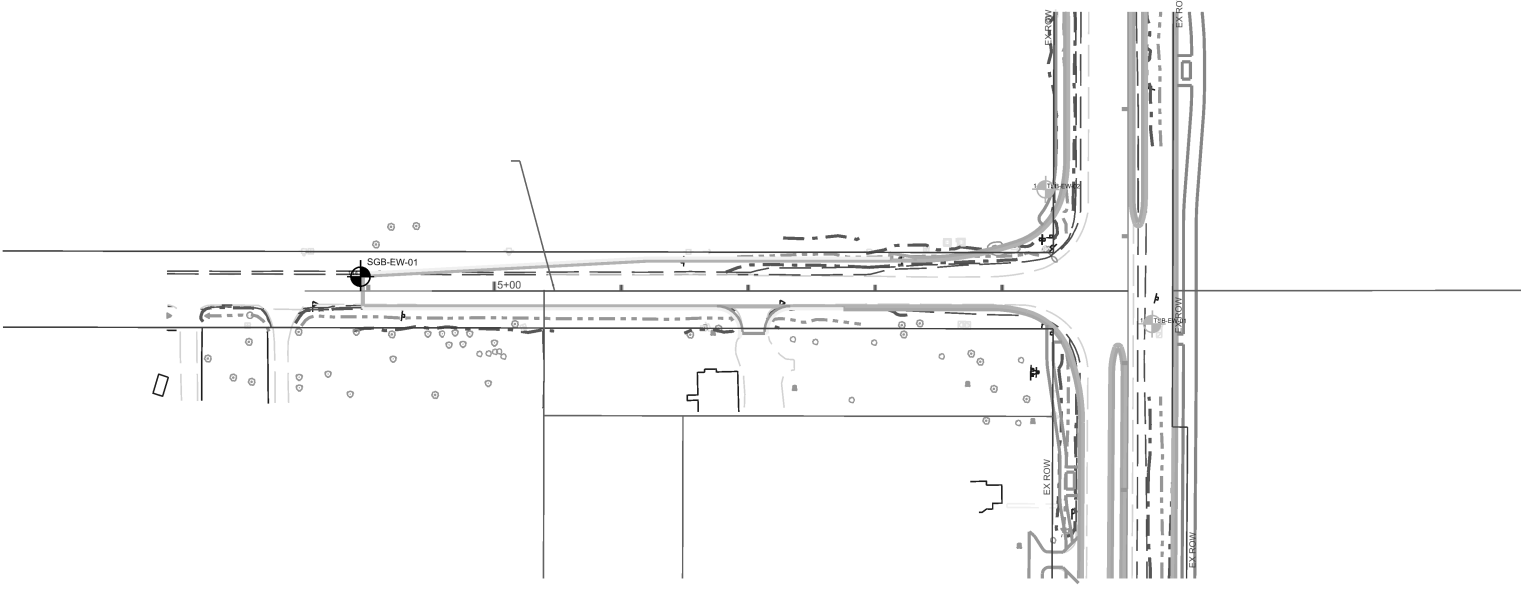
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ILLINOIS ROUTE 31 BORING PLAN AND PROFILE

SCALE: SHEET OF SHEETS STA TO STA

F.A. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
ILLINOIS FED. AID PROJECT				



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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

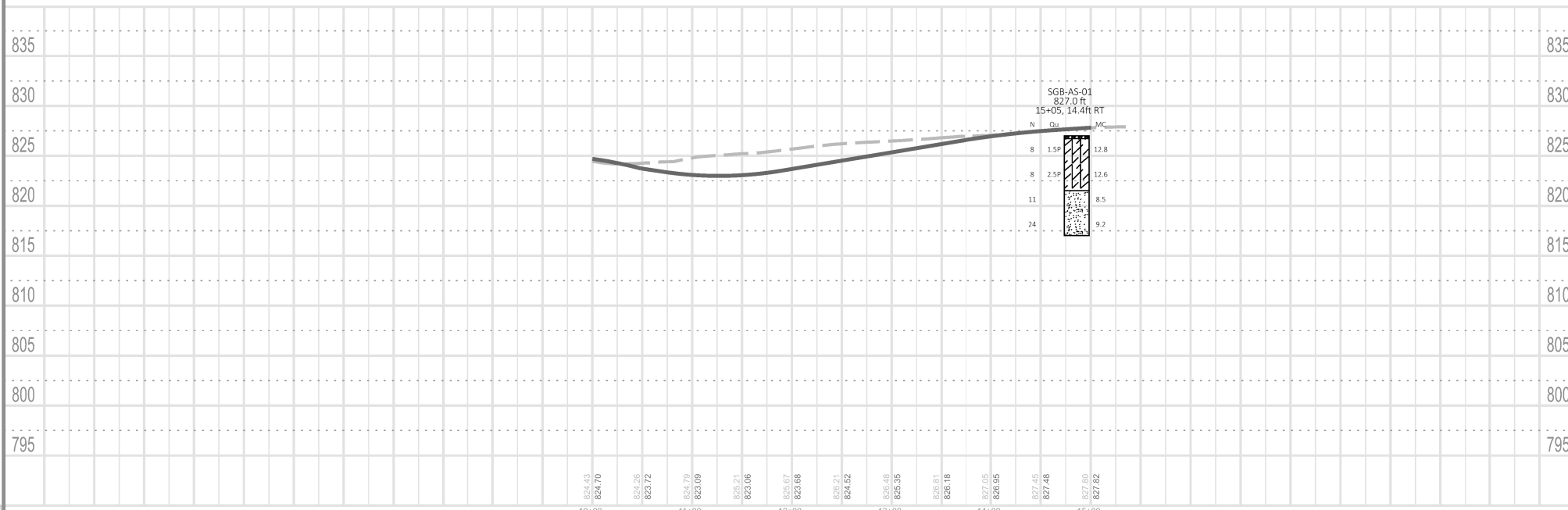
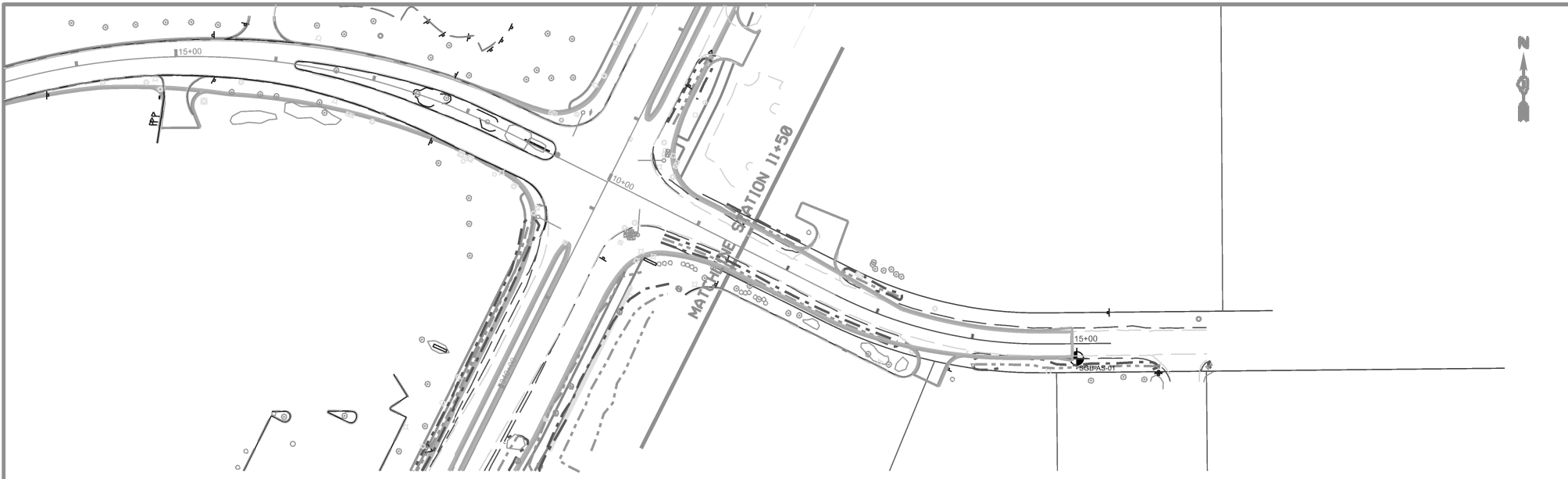
ILLINOIS ROUTE 31 BORING PLAN AND PROFILE

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		CONTRACT NO.		

SCALE: SHEET OF SHEETS STA TO STA

ILLINOIS FED AID PROJECT

MODEL: ILLINOIS.DWG



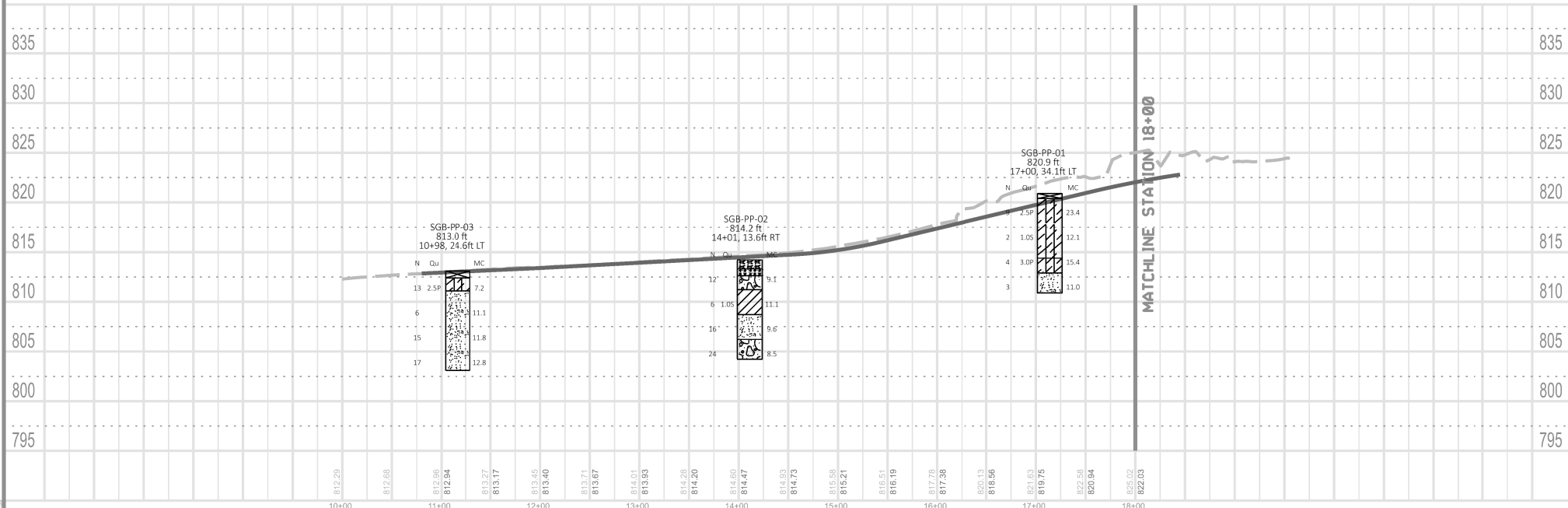
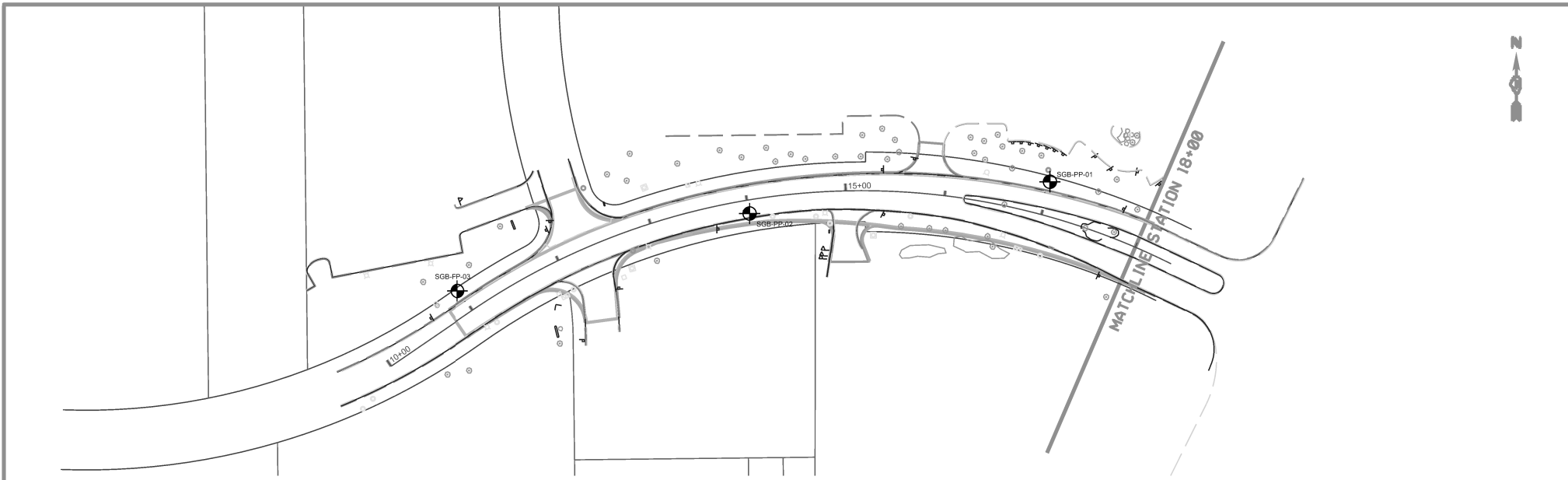
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USER NAME * \$USERS	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION				ILLINOIS ROUTE 31 BORING PLAN AND PROFILE	F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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PLOT DATE * \$DATES	CHECKED -	REVISED -										
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PLAN	DATE	SCALE
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PROFILE	DATE	SCALE
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MODEL, SYMBOL NAMES
FILE NAME: \$FILES



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NOTE BOOK	BY	
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

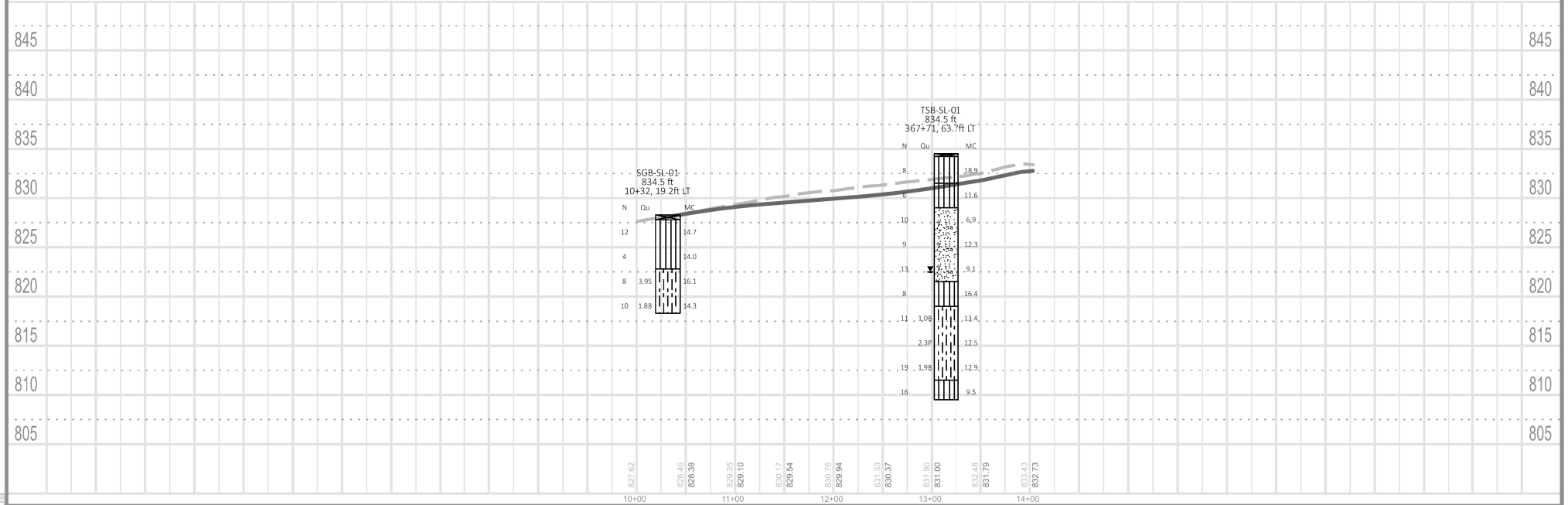
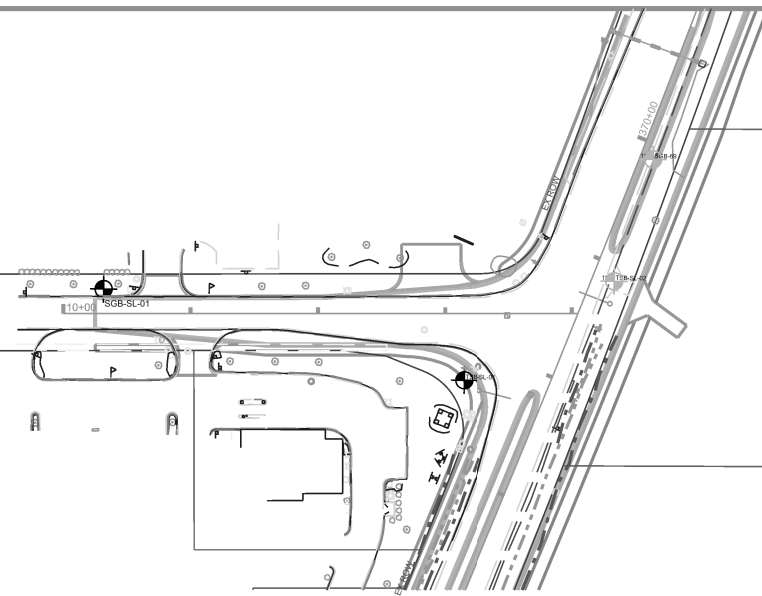
ILLINOIS ROUTE 31 BORING PLAN AND PROFILE

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CONTRACT NO.				
ILLINOIS FED. AID PROJECT				

SCALE: SHEET OF SHEETS STA. TO STA.



11/10/04



10+00 11+00 12+00 13+00 14+00

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ILLINOIS ROUTE 31 BORING PLAN AND PROFILE

SCALE: SHEET OF SHEETS STA TO STA

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
				CONTRACT NO.
				ILLINOIS FED. AID PROJECT

PLAN	REVISIONS	DATE
	NO. 1	
	NO. 2	
	NO. 3	
	NO. 4	
	NO. 5	
	NO. 6	
	NO. 7	
	NO. 8	
	NO. 9	
	NO. 10	

PROFILE	REVISIONS	DATE
	NO. 1	
	NO. 2	
	NO. 3	
	NO. 4	
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	NO. 6	
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	NO. 8	
	NO. 9	
	NO. 10	

SUSERS, SUSERS/AVES, FULL NAME, SURNAME

Appendix B

Summary of Subsurface Conditions

Boring No.	Purpose	Station	Offset	Surface Elevation (feet)	Depth (feet)	Groundwater During Drilling (feet)	Major Stratum Encountered from Top to Bottom
SGB-30	Subgrade	IL 31 240+99	38' LT	862.993	10	Dry	Asphalt, gravel base course, loose sandy clay loam, soft silty clay, medium dense sand to sandy loam.
SGB-31	Subgrade	IL 31 244+02	8' RT	861.159	10	Dry	Stones, stiff silty clay fill, loose sandy clay loam, medium dense sand.
SGB-32	Subgrade	IL 31 247+17	37' LT	859.516	10	Dry	Asphalt, gravel base course, soft to medium stiff silty clay, soft silty clay.
CUL07-01	Culvert	IL 31 247+92	71' LT	856.9	20	10.5	Topsoil, loose fine sand, loose to medium dense sandy loam, medium dense silty loam, dense sand
CUL07-02	Culvert	IL 31 247+91	15.2' RT	858.8	20	Dry	Crushed aggregate, medium dense asphalt grindings and gravel, medium stiff silty clay, stiff silty clay, medium dense sandy loam, medium stiff sandy clay loam, very stiff clay
CUL07-03	Culvert	IL 31 247+90	85.9' RT	854.0	20	11.0	Stiff clay, very loose to loose sandy loam, medium dense silty loam
SGB-33	Subgrade	IL 31 250+04	7' RT	861.137	10	Dry	Stones, loose silt, loose to medium dense sandy clay loam.
TSB-EW-01	Traffic Signal	IL 31 252+31	19' RT	861.921	20	Dry	Stones, medium dense sand.
SGB-EW-01	Subgrade	Edgewood Road 3+94	12' LT	860.268	10	Dry	Topsoil, loose sandy clay loam, soft to stiff to medium stiff silty clay
TSB-EW-02	Traffic Signal	IL 31 253+36	65' LT	862.363	20	Dry	Topsoil, stiff silty clay, very loose to medium dense sandy clay loam, medium dense to dense silty loam, medium dense silty loam, medium dense silt, medium dense silty loam
SGB-34	Subgrade	IL 31 256+01	5' RT	857.256	10	8.5	Stones, loose sandy clay loam fill, stiff silty clay, very loose to medium dense sandy clay loam.
SGB-35	Subgrade	IL 31 259+04	26' LT	851.641	10	Dry	Asphalt, gravel base course, loose to medium dense sandy clay loam.
SGB-36	Subgrade	IL 31 261+98	19' RT	846.041	10	6.0	Stones, stiff silty clay fill, loose sand, medium dense sandy clay loam.
SGB-37	Subgrade	IL 31 264+99	2' LT	841.004	10	7.0	Asphalt, gravel base course, loose to very loose sandy clay loam, medium dense sandy loam.
SGB-38	Subgrade	IL 31	45' RT	837.646	10	Dry	Stones, loose silty clay, very loose to loose sandy clay

		267+97					loam.
SGB-39	Subgrade	IL 31 270+98	20' RT	836.455	10	6.0	Asphalt, gravel base course, soft silty clay, very loose sandy clay loam
DPB-IL31-01-01	Detention Pond	IL 31 272+14	115.6' RT	835.4	12.5	10.0	Topsoil, stiff to very soft clay loam, loose sandy loam, medium dense silty loam
CUL08-01	Culvert	IL 31 273+57	68' LT	833.2	15	3.5	Topsoil, medium stiff clay, loose sand, loose sandy loam, loose silty loam, hard to very stiff silty clay loam
CUL08-02	Culvert	IL 31 273+44	40' RT	834.3	10	6.0	Asphalt, concrete, loose sandy loam fill, very stiff clay loam, loose sand
CUL08-03	Culvert	IL 31 273+55	62.3' RT	835.3	20	8.5	Asphalt, crushed aggregate, stiff sandy clay loam, stiff to soft clay, fine sand, soft sandy clay loam, medium dense sandy loam, stiff sandy clay loam
SGB-40	Subgrade	IL 31 274+03	56' RT	835.511	10	Dry	Asphalt, stones, loose sandy clay loam, stiff silty clay, very loose sandy clay loam.
SGB-41	Subgrade	IL 31 276+99	21' RT	834.362	10	Dry	Asphalt, gravel base course, stiff silty clay, very loose sandy clay loam
SGB-42	Subgrade	IL 31 279+98	53' RT	831.956	10	Dry	Stones, very stiff silty clay, very loose sandy clay loam, medium dense sandy clay loam, medium dense sandy loam
SGB-43	Subgrade	IL 31 282+99	21' RT	827.838	10	6.0	Asphalt, gravel base course, medium stiff silty clay, very loose to loose sandy clay loam, very loose sandy clay loam.
DPB-IL31-02-01	Detention Pond	IL 31 284+55	132.3' RT	825.10	15	12.0	Topsoil, stiff clay, Very loose to loose sandy loam, stiff silty clay loam, medium dense silty loam, medium dense silt.
SGB-44	Subgrade	IL 31 286+01	54' RT	825.826	10	Dry	Stones, very loose sandy loam fill, medium stiff to very soft to soft clay
CUL09-01	Culvert	IL 31 288+16	59' LT	823.6	25	25.0	Topsoil, stiff clay loam, loose to medium dense silty loam, dense silt, medium dense to dense sandy loam
CUL09-02	Culvert	IL 31 287+99	30' RT	823.1	20	13.0	Asphalt, asphalt grindings, medium dense sandy loam fill, loose silty loam, medium dense to loose silt, medium dense sandy loam, medium dense silty loam
CUL09-03	Culvert	IL 31 288+07	58.9' RT	825.6	25	8.5	Crushed aggregate, loose sandy loam and gravel, stiff clay, silty loam, medium stiff to soft sandy clay loam, loose sandy loam, very stiff sandy clay loam, medium dense sand, medium dense sand and gravel
SGB-45	Subgrade	IL 31 289+02	21' RT	826.027	10	Dry	Asphalt, gravel base course, stiff to medium stiff silty clay, soft silty clay, loose sandy clay loam.
SGB-46	Subgrade	IL 31 291+99	54' RT	826.822	10	Dry	Medium stiff to stiff silty clay, soft silty clay, medium dense sandy clay loam.

SGB-47	Subgrade	IL 31 295+02	21' RT	827.303	10	Dry	Asphalt, gravel base course, medium stiff silty clay, medium dense sandy clay loam.
SGB-48	Subgrade	IL 31 298+03	43' RT	827.480	10	8.0	Stones, loose sand, very loose to medium dense sandy clay loam, medium dense sand.
DPB-IL31-03-01	Detention Pond	IL 31 300+81	129.1' RT	825.4	15	9.0	Topsoil, stiff clay loam, loose sand, stiff sandy clay loam, medium dense sandy loam, dense silty loam, hard silty clay.
SGB-49	Subgrade	IL 31 301+26	27.9' LT	824.4	10	6.5	Medium stiff clay loam, loose sand, hard silty clay
SGB-50	Subgrade	IL 31 304+04	26' RT	823.610	10	8.5	Stones, very soft silty clay, very loose to loose sandy clay loam, medium dense sandy loam.
CUL10-01	Culvert	IL 31 304+94	63.9' LT	820.1	15	11.0	Topsoil, very loose fine sandy loam, loose sandy loam, medium dense silty loam, very stiff clay, medium dense sand, medium dense silty loam
CUL10-02	Culvert	IL 31 304+91	10' RT	821.4	10	8.5	Asphalt, concrete, very stiff clay loam fill, hard clay loam fill, loose silty clay loam, loose silt
CUL10-03	Culvert	IL 31 304+94	67.1' RT	821.8	15	7.5	Topsoil, very soft clay loam, loose to medium dense sandy loam, medium dense to dense sand
SGB-51	Subgrade	IL 31 307+00	11' LT	824.509	10	Dry	Topsoil, medium stiff silty clay, very loose to loose sandy clay loam, medium dense sandy clay loam.
SGB-52	Subgrade	IL 31 310+05	15' RT	824.627	10	Dry	Stones, stiff clayey topsoil, loose to medium dense sand.
SGB-53	Subgrade	IL 31 313+05	16' LT	825.879	10	Dry	Topsoil, soft clay, loose to medium dense sandy clay loam, very dense sandy clay loam.
SGB-54	Subgrade	IL 31 316+07	16' RT	824.124	10	Dry	Stones, very soft to stiff silty clay, very loose clay loam, stiff silty clay
SGB-55	Subgrade	IL 31 318+88	20' LT	822.965	10	Dry	Topsoil, medium stiff to soft silty clay, very soft silty clay, medium dense sand
CUL11-01	Culvert	IL 31 320+05	72.3' LT	819.3	20	15.0	Topsoil, stiff clay loam, very loose to medium dense sandy loam, dense silty loam, medium dense sand
CUL11-02	Culvert	IL 31 319+99	5' RT	820.7	15	Dry	Asphalt, medium dense sand, loose sandy clay loam, medium dense to dense sandy loam, dense sand
CUL11-03	Culvert	IL 31 320+05	81.6' RT	821.8	20	14.0	Topsoil, stiff silty clay, loose sandy loam, very stiff silty clay loam, medium dense sandy loam, medium dense silty loam, very soft sandy clay and gravel
SGB-56	Subgrade	IL 31 321+85	30' RT	823.528	10	Dry	Asphalt, dense sandy gravel, loose to medium dense sand
SGB-57	Subgrade	IL 31	24' LT	823.239	10	Dry	Asphalt, gravel base course, loose silty clay loam to sandy

		325+14					clay loam, medium dense sand
SGB-58	Subgrade	IL 31 328+02	22' RT	824.322	10	Dry	Stones, stiff to medium stiff silty clay, soft silty clay, loose sand
SGB-59	Subgrade	IL 31 330+94	28' LT	823.814	6	Dry	Asphalt, gravel base course, loose sand.
SGB-60	Subgrade	IL 31 334+08	14' RT	825.434	10	Dry	Stones, loose silt, loose sand, very loose sandy clay loam
SGB-61	Subgrade	IL 31 338+23	26.6' LT	825.0	10	Dry	Asphalt, concrete, medium stiff to soft sandy clay, medium dense sandy loam, very dense sandy clay loam
RW11-01	Retaining Wall	IL 31 339+68	66.8' RT	827.4	15	8.5	Topsoil, stiff silty clay loam, loose silty loam, very loose sandy loam, very soft silty clay loam, medium dense sand
SGB-62	Subgrade	IL 31 340+07	32' RT	824.760	10	Dry	Gravel base course, loose to dense sand, medium dense sand
RW11-02	Retaining Wall	IL 31 340+62	66' RT	827.5	15	Dry	Topsoil, loose silty loam, loose sandy loam, loose silty loam, medium dense sandy loam, medium dense silty loam
RW11-03	Retaining Wall	IL 31 314+44	72.4' RT	826.3	20	Dry	Topsoil, stiff silty clay loam, loose silty loam, loose sand, medium dense silty loam, loose sand, hard silty clay loam, medium dense silty loam
SGB-AS-01	Subgrade	Albany St. 15+05	14.4' RT	827.0	10	Dry	Asphalt, stiff to very stiff clay loam, medium dense sandy loam
TSB-PP-01	Traffic Signal	IL 31 341+48	45' RT	824.524	20	13.5	Topsoil, very loose sand, loose sandy clay loam, layers of medium dense and dense sand
SGB-PP-03	Subgrade	Prime Parkway 10+98	24.6' LT	813.1	10	Dry	Topsoil, very stiff sandy clay loam, loose to medium dense sandy loam
TSB-PP-02	Traffic Signal	IL 31 342+-95	80' LT	824.7	20	Dry	Topsoil, stiff to very stiff clay loam, medium dense sand, medium dense sandy loam, dense to medium dense sand, very stiff to stiff silty clay loam
SGB-PP-02	Subgrade	Prime Parkway 14+01	13.6' RT	814.2	10	Dry	Asphalt, crushed aggregate, medium dense sand and gravel, medium stiff sandy clay, medium dense sandy loam, medium dense sandy loam and gravel
SGB-PP-01	Subgrade	Prime Parkway 17+00	34' LT	820.9	10	Dry	Topsoil, very stiff to stiff clay loam, Very stiff clay loam, very stiff sandy loam
SGB-63	Subgrade	IL 31 349+00	9' LT	819.303	10	Dry	Gravel base course, medium dense silt, hard silty clay, medium dense silty loam.
CUL12-01	Culvert	IL 31 350+14	68.3' LT	815.4	15	11.0	Topsoil, medium stiff clay, soft to very soft sandy clay loam, medium dense sandy loam, very stiff sandy clay loam, very stiff clay loam

CUL12-02	Culvert	IL 31 350+10	3.4' LT	816.6	25	Dry	Loose sand and gravel, stiff clay, very stiff clay loam, fine sand, medium dense silty loam, loose sandy loam, very loose to loose sand
CUL12-03	Culvert	IL 31 350+15	74.2' RT	818.1	20	18.0	Topsoil, very stiff clay loam, soft sandy clay, medium stiff sandy clay loam, medium dense fine sand, very stiff sandy clay loam, medium dense sand, medium dense sandy loam, very stiff clay loam, medium dense sandy loam
SGB-64	Subgrade	IL 31 351+21	8' RT	818.874	10	Dry	Asphalt, gravel base course, stiff silty clay
SGB-65	Subgrade	IL 31 355+01	9' LT	820.477	10	Dry	Gravel base course, very stiff silty clay, loose silt, very stiff silty clay
SGB-66	Subgrade	IL 31 358+00	6' RT	824.569	3.5	Dry	Gravel base course, very stiff silty clay.
SGB-67	Subgrade	IL 31 360+98	39' LT	828.126	10	Dry	Asphalt, gravel base course, very stiff silty clay, loose to medium dense silty loam.
SGB-68	Subgrade	IL 31 364+01	22' RT	831.741	10	Dry	Gravel base course, very stiff sandy clay, loose sand, loose sandy loam, medium dense silt.
TSB-SL-01	Traffic Signal	IL 31 367+71	63.7' LT	834.5	25	12.0	Topsoil, loose silty loam, medium dense to loose sand, loose silty loam, medium stiff to very stiff silty clay, medium dense silty loam
SGB-SL-01	Subgrade	Shamrock Lane 10+32	19.2' LT	834.5	10	Dry	Topsoil, medium dense to loose silty loam, very stiff to stiff silty clay loam
TSB-SL-02	Traffic Signal	IL 31 368+88	17'R	833.251	20	Dry	Asphalt, gravel base course, very stiff silty clay, loose silt, very loose sandy loam, loose silt
SGB-69	Subgrade	IL 31 369+88	10' RT	833.029	10	Dry	Asphalt, very stiff to stiff clay loam
CUL13-01	Culvert	IL 31 370+74	85.7' LT	370+74	20	Dry	Topsoil, loose silty loam, stiff silty clay loam, loose to medium dense silty loam, very stiff silty clay
CUL13-02	Culvert	IL 31 370+50	44' LT	830.2	15	Dry	Asphalt, concrete, loose sandy clay loam, loose sandy loam, stiff clay loam, loose sandy clay loam, medium dense silty loam, medium dense silt
CUL13-03	Culvert	IL 31 370+45	10' RT	833.0	15	Dry	Asphalt, loose sandy loam, very stiff clay loam, stiff clay loam, medium dense sand, medium dense sandy clay loam
SGB-70	Subgrade	IL 31 373+20	33.8' LT	834.1	10	Dry	Concrete, crushed aggregate, medium dense sand, medium dense silty loam, medium dense sand
SGB-71	Subgrade	IL 31 375+97	46' RT	837.570	10	Dry	Topsoil, soft clay, medium dense silty loam
SGB-72	Subgrade	IL 31	54.7'	839.9	10	Dry	Topsoil, loose sandy loam, medium dense sand, medium

		379+31	LT				dense sandy loam, medium dense sand
SGB-73	Subgrade	IL 31 381+82	37' RT	839.106	10	Dry	Topsoil, very stiff clay, medium dense sand, loose silt, loose to medium dense sand
SGB-74	Subgrade	IL 31 385+03	45' LT	835.778	10	Dry	Topsoil, loose sand, very stiff clay, loose to medium dense sand
SGB-75	Subgrade	IL 31 388+15	50' RT	834.244	10	Dry	Topsoil, rockfill, stiff sandy clay loam, medium dense to dense sand
SGB-76	Subgrade	IL 31 390+71	61' LT	830.844	10	Dry	Concrete, stones, dense to medium dense sandy loam

Appendix C
Soil Boring Logs



SOIL BORING LOG

Date 4/10/24

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 996878.4; N: 2049574.9

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED 50 Auto (95.6% efficiency)

STRUCT. NO. NA
 Station NA

BORING NO. DPB-IL31-02-01
 Station 284+55
 Offset 132.30ft RT
 Ground Surface Elev. 825.10 ft

DEPTH (ft)	B L O W S (/6")	U C S Qu	M O I S T (%)
824.40			
	4		
	3		22.5
	4	1.5 B	
821.60			
	1		
	2		10.5
	-5	1	
819.60			
	2		
	4		10.7
	5		
817.10			
	4		
	9		12.3
	-10	8	1.8 S
814.60			
	6		
	8		17.9
	11		
812.10			
	4		
	9		12.6
810.10	-15	12	
-20			

Surface Water Elev. NA ft
 Stream Bed Elev. NA ft
 Groundwater Elev.:
 First Encounter 813.1 ft ▼
 Upon Completion 812.0 ft ∇
 After _____ Hrs. Filled ft

TOPSOIL (8")			
Stiff, greenish Gray (5GB 6/1) CLAY, high plasticity, moist			
Very loose, light yellowish Brown (10YR 6/4) SANDY LOAM, moist			
Loose, light yellowish Brown (10YR 6/4) with gray mottling SANDY LOAM, low plasticity, moist			
Stiff, yellowish Brown (10YR 5/4) SILTY CLAY LOAM, low plasticity, moist			
Medium dense, pale Brown (10YR 6/3) SILTY LOAM, low plasticity, moist			
Free water at 12'			
Medium dense, Gray (10YR 6/1) SILT, trace gravel, moist			
End of boring at 15" Borehole backfilled with cuttings and bentonite.			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 6/8/22

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle
 SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2045836.7688,996806.1183
 COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	B L O W S	U C S Qu	M O I S T T	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. Station Offset Ground Surface Elev.	(ft)	(/6")	(tsf)	(%)
ASPHALT (14") 858.32				
GRAVEL BASE COURSE (4") 858.02	5			
Soft, brown, SILTY CLAY, moist 856.52	2	0.3 P	18.5	
	3			
	1			
Medium stiff, brown, SILTY CLAY, moist 854.02	1	0.9 B	25.8	
	2			
	-5			
Soft, brown, SILTY CLAY, moist 849.52	2	0.4 B	11.3	
	1			
	5			
End of boring at 10'. -20	3	0.3 B	13.9	
	4			
	6			



SOIL BORING LOG

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2046720.607,996839.926

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. _____ Station _____	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. <u>SGB-34</u> Station <u>256+01</u> Offset <u>5.00ft RT</u> Ground Surface Elev. <u>857.26</u> ft					Groundwater Elev.: First Encounter <u>848.8 ft</u> ▼ Upon Completion <u>848.8 ft</u> ▽ After _____ Hrs. <u>Filled ft</u>
STONES (4") _____ 856.93 Loose, greenish black SANDY CLAY LOAM FILL, trace fine gravel. Moist.	3 3 2			18.4	
854.26 Stiff, brown SILTY CLAY, trace fine gravel. Moist.	2 3 -5		1.5 P	25.5	
851.76 Very loose, brown, fine SANDY CLAY LOAM, trace gravel. Moist.	2 1 1			19.1	
849.26 Medium dense, brown, fine SANDY CLAY LOAM, trace gravel. Wet.	5 7 10			25.6	
847.26 End of Boring @10.0'	-10 -15 -20				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2047617.9691,996790.7862

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	B L O W S (ft)	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. <u>SGB-37</u> Station <u>264+99</u> Offset <u>2.00ft LT</u> Ground Surface Elev. <u>841.00</u> ft				Groundwater Elev.: First Encounter <u>834.0 ft</u> ▼ Upon Completion <u>834.0 ft</u> ▽ After _____ Hrs. <u>Filled ft</u>
ASPHALT (16")				
839.70				
GRAVEL BASE COURSE (4")	3			
839.40				
Loose, brown, fine SANDY CLAY LOAM, moist	3		16.6	
838.00				
Very loose, brown, fine SANDY CLAY LOAM, moist	2			
	1		19.0	
	-5			
835.50				
Medium dense, brown, medium to fine SANDY LOAM, moist	3			
▼	3		14.6	
Wet at 7'	9			
	3			
	5		19.5	
831.00	-10			
End of boring at 10'				
	-15			
	-20			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



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SOIL BORING LOG

Date 6/7/22

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2048817.626,996775.964 (offset 8' E)

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. _____ Station _____	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. <u>SGB-41</u> Station <u>276+99</u> Offset <u>21.00ft RT</u> Ground Surface Elev. <u>834.36</u> ft					Groundwater Elev.: First Encounter _____ Dry ft Upon Completion _____ Dry ft After _____ Hrs. _____ Filled ft
ASPHALT (16")					
832.96		3			
GRAVEL BASE COURSE (5")	832.56	2		29.3	
Stiff, greenish black, SILTY CLAY, moist		3	1.0		
831.36			B		
Very loose, brown, fine SANDY CLAY LOAM, trace fine gravel, moist		2			
		1		24.7	
	-5	2			
		2			
		1		11.0	
		2			
		1			
		1		11.0	
824.36	-10	2			
End of boring at 10'.					
	-15				
	-20				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



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SOIL BORING LOG

Date 5/6/22

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2050318.359,996791.384

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	DEPTH (ft)	BLOW COUNT (/6")	UCS Qu (tsf)	MOIST CONTENT (%)	Surface Water Elev.
					ft
		3			Stream Bed Elev.
		2		24.1	ft
		1	0.8 P		
823.82 Stiff, black SILTY CLAY. Moist.		3			Groundwater Elev.:
		2		34.0	First Encounter
		4	1.0 S		Upon Completion
821.32 Soft, blackish green SILTY CLAY. Moist.		2			After
		1		32.9	Hrs.
		2	0.5 B		Filled
818.82 Medium dense, gray SANDY CLAY LOAM, Trace gravel. Wet.		3			ft
		5		13.2	
		9			
816.82 End of boring @ 10.0'					
	-15				
	-20				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2051512.575,996855.648

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	B L O W S	U C S Qu	M O I S T	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. <u>SGB-50</u> Station <u>304+04</u> Offset <u>26.00ft RT</u> Ground Surface Elev. <u>823.61</u> ft	(ft)	(/6")	(tsf)	(%)
STONES (4") <u>823.28</u> Very soft greenish black SILTY CLAY, low recovery	3 2 2			26.8
<u>820.61</u> Vey loose, brown, fine SANDY CLAY LOAM, trace gravel. Moist.	2 1 -5 2			12.3
<u>818.11</u> Loose, brown, fine SANDY CLAY LOAM, trace gravel. Wet.	2 2 2			12.9
<u>815.61</u> Medium dense, brown SANDY LOAM, little fine gravel. Wet.	13 12 14			19.1
<u>813.61</u> -10 End of boring @ 10.0'	-10 -15 -20			
				Groundwater Elev.: First Encounter <u>815.1 ft</u> ▼ Upon Completion <u>815.1 ft</u> ▼ After _____ Hrs. <u>Filled ft</u>

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 5/6/22

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2052085.187,997013.001

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	DEPTH (ft)	B L O W S (/6")	U C S (tsf)	M O I S T (%)	Surface Water Elev. _____ ft
					Stream Bed Elev. _____ ft
BORING NO. <u>SGB-52</u> Station <u>310+05</u> Offset <u>15.00ft RT</u> Ground Surface Elev. <u>824.63</u> ft					Groundwater Elev.:
					First Encounter _____ Dry ft
					Upon Completion _____ Dry ft
					After _____ Hrs. _____ Filled ft
STONES (4") _____ 824.30 Stiff, black, clayey TOPSOIL, Moist.	2 2 2	1.0 P			
821.63 Loose, brown, fine SAND, trace gravel. Moist.	2 3 4 -5				
816.63 Medium dense, brown, fine SAND. Dry.	3 4 4				
814.63 -10 End of Boring @10.0'	10 10 11				
	-15 -20				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2052374.8392,997098.4303

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	DEPTH (ft)	B L O W S Qu	U C S Qu	M O I S T T	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. SGB-53 Station 313+05 Offset 16.00ft LT Ground Surface Elev. 825.88 ft					Groundwater Elev.: First Encounter _____ Dry ft Upon Completion _____ Dry ft After _____ Hrs. _____ Filled ft
TOPSOIL (8") Soft, brown, CLAY, trace gravel, moist	825.18 --- --- --- 822.88	4 2 2	0.3 B	14.3	
Loose, brown, fine SANDY CLAY LOAM, trace gravel, moist	--- --- -5	2 2 4		9.9	
Medium dense, brown, fine SANDY CLAY LOAM, trace gravel, moist	--- --- 816.88	6 9 11		12.6	
Very dense, brown, fine SANDY CLAY LOAM, trace gravel, dry	816.88 815.88	8 22		9.3	
End of boring at 10'.	-10 --- --- --- -15 --- --- --- -20	50/3"			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 5/6/22

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2052633.528,997261.166

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	DEPTH (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. <u>SGB-54</u> Station <u>316+07</u> Offset <u>16.00ft RT</u> Ground Surface Elev. <u>824.12</u> ft					Groundwater Elev.: First Encounter _____ Dry ft Upon Completion _____ Dry ft After _____ Hrs. _____ Filled ft
STONES (3") Very soft, black SILTY CLAY. Moist.	<u>823.87</u>	2 2 2	<0.25 P	29.7	
Stiff, brown SILTY CLAY, trace gravel. Moist.	<u>821.12</u>	2 3 -5	1.1 P	22.7	
Very loose, brown CLAY LOAM. Moist.	<u>818.62</u>	1 2 1		17.6	
Stiff, brown SILTY CLAY, trace sand. Moist.	<u>816.12</u>	2 3 3	1.7	17.1	
End of Boring @ 10.0'	<u>814.12</u> -10				
	-15				
	-20				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 6/7/22

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2053462.5352,997629.805 (offset 4' W)

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	DEPTH (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. <u>SGB-57</u> Station <u>325+14</u> Offset <u>24.00ft LT</u> Ground Surface Elev. <u>823.24</u> ft					Groundwater Elev.: First Encounter _____ Dry ft Upon Completion _____ Dry ft After _____ Hrs. _____ Filled ft
ASPHALT (12.5") 822.14					
GRAVEL BASE COURSE (5") 821.74		3			
Loose, black, SILTY CLAY LOAM, moist 820.24		3 2		12.5	
Loose, brown, SANDY CLAY LOAM, trace gravel, moist 817.74		3 2 -5 5		10.0	
Medium dense, brown, fine SAND, trace gravel, dry 815.24		8 9 12		2.6	
Medium dense, brown, medium to fine SAND, trace gravel, moist 813.24		6 8 12		2.4	
End of boring at 10'. -15 -20					

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 7/13/22

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2054773.552,998345.5062

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	BORING NO. Station Offset Ground Surface Elev.	DEPTH (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft Groundwater Elev.: First Encounter _____ Dry ft Upon Completion _____ Dry ft After _____ Hrs. _____ Filled ft
	824.36					
GRAVEL BASE COURSE (5")						
Loose, brown fine SAND, dry						
		2				
		3			12.9	
		4				
		2				
Loose, trace fine gravel, moist						
		3			9.9	
		-5	5			
		10				
Dense, fractured gravel in recovery						
		14			5.7	
		17				
		8				
Medium dense						
	814.76	14			6.3	
		-10	14			
End of boring 10'						
		-15				
		-20				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 7/11/22

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2055600.575,998687.965

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	DEPTH (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft Groundwater Elev.: First Encounter _____ Dry ft Upon Completion _____ Caved @ 5' ft After _____ Hrs. _____ Filled ft
GRAVEL BASE COURSE (5") Medium dense, dark brown SILT, moist	818.90	3 4 6		20.9	
Hard, brown SILTY CLAY, low plasticity, moist	816.30	3 2 -5 3	4.5 P	22.4	
Medium dense, brown SILTY LOAM, trace fine gravel, moist	813.80	8 10 7		22.6	
Medium dense	809.30	8 10 7		22.0	
End of boring 10'	-10 -15 -20				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 7/13/22

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2056386.347,999129.725

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	DEPTH (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft Groundwater Elev.: First Encounter _____ Dry ft Upon Completion _____ Dry ft After _____ Hrs. _____ Filled ft
GRAVEL BASE COURSE (4") Very stiff, dark brown SILTY CLAY, moist	824.27	2 3 2		38.2	
Auger refusal at 3.5' on suspected concrete - end of boring at 3.5'	821.07	50/1"		12.7	
	-5				
	-10				
	-15				
	-20				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



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SOIL BORING LOG

Date 7/11/22

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2056935.125,999377.729

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	DEPTH (ft)	BLOW COUNT (/6")	UCS Qu (tsf)	MOIST CONTENT (%)	Surface Water Elev. _____ ft
					Stream Bed Elev. _____ ft
BORING NO. Station Offset Ground Surface Elev.					Groundwater Elev.: First Encounter _____ Dry ft Upon Completion _____ Dry ft After _____ Hrs. _____ Filled ft
GRAVEL BASE COURSE (7") 831.14					
Very stiff, brown SANDY CLAY, low plasticity, moist		2			
		3		17.5	
		3	2.5		
----- 828.74			P		
Loose, brown SAND, moist		3			
		4		10.7	
	-5	4	2.0		
----- 826.24			P		
Loose, brown SANDY LOAM, moist		3			
		4		9.5	
		5			
----- 823.74					
Medium dense, brown SILT, moist		4			
		5		16.1	
		5			
821.74 -10					
End of boring 10'					
	-15				
	-20				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



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SOIL BORING LOG

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2058050.142,999819.935 (offset 18' N)

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	B L O W S	U C S Qu	M O I S T	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. <u>SGB-71</u> Station <u>375+97</u> Offset <u>46.00ft RT</u> Ground Surface Elev. <u>837.57</u> ft	(ft)	(/6")	(tsf)	Groundwater Elev.: First Encounter _____ Dry ft Upon Completion _____ Dry ft After _____ Hrs. _____ Filled ft
TOPSOIL (14") _____ 836.37				
Loose, black TOPSOIL, moist _____ 835.07	4 3 3		14.5	
fractured concrete/gravel in spoon - no recovery _____ 50/2" _____ -5				
Soft, brown CLAY, low plasticity, moist _____ 831.07	3 2 1		16.2	
Medium dense, brown SILTY LOAM, moist _____ 829.57	3 3 7		14.4	
End of boring 10' _____ -10 _____ -15 _____ -20				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



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SOIL BORING LOG

Date 1/17/22

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Atul Kumar

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2058945.3066,999989.4014 (offset 22' E)

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. _____ Station _____	D E P T H (ft)	B L O W S (/6")	U C S Qu	M O I S T P	Surface Water Elev. _____ ft
					Stream Bed Elev. _____ ft
BORING NO. _____ SGB-74 Station _____ 385+03 Offset _____ 45.00ft LT Ground Surface Elev. _____ 835.78 ft					Groundwater Elev.:
					First Encounter _____ Dry ft
					Upon Completion _____ Dry ft
					After _____ Hrs. _____ Filled ft
TOPSOIL (6") _____ 835.28 Loose, brown fine SAND. Moist.		5			
_____ 833.78		4		29.3	
Very stiff, black CLAY. Moist.		4	2.0		
_____ 832.78					
Loose, brown fine SAND. Moist.		2			
_____		2		6.5	
_____ -5		1			
_____ 830.28 Medium dense, brown fine SAND. Moist.		5			
_____		6		2.6	
_____		8			
_____		8			
_____		9		3.0	
_____ 825.78 -10 End of boring at 10'.		12			

_____ -15					

_____ -20					

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



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SOIL BORING LOG

Date 4/9/24

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Boland

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 998189.4; N: 2055122.3

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED 50 Auto (95.6% efficiency)

STRUCT. NO. <u>NA</u> Station <u>NA</u> BORING NO. <u>SGB-PP-01</u> Station <u>17+00</u> Offset <u>34.10ft LT</u> Ground Surface Elev. <u>820.90</u> ft	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. <u>NA</u> ft Stream Bed Elev. <u>NA</u> ft Groundwater Elev.: First Encounter <u>Dry</u> ft Upon Completion <u>Dry</u> ft After <u> </u> Hrs. <u>Filled</u> ft
--	---	--	--	--	--

TOPSOIL (6")	820.40				
Very stiff, very dark Brown (10YR 2/2) CLAY LOAM, trace gravel, medium plasticity, moist		4		23.4	
		4			
		5	2.5 P		
		2			
Stiff		1		12.1	
		-5	1.0 S		
		1			
	814.40				
Very stiff, dark Brown (10YR 3/3) CLAY LOAM, trace gravel, medium plasticity, moist		2		15.4	
		2	3.0 P		
	812.90				
Very stiff, dark yellowish Brown (10YR 4/6) medium to fine SANDY LOAM, trace gravel, moist		2		11.0	
		2			
	810.90	-10	1		
End of boring at 10' Borehole backfilled with cuttings & bentonite.					
		-15			
		-20			



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SOIL BORING LOG

Date 4/9/24

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Boland

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 997591.6; N: 2055012.6

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED 50 Auto (95.6% efficiency)

STRUCT. NO.	Station	BORING NO.	Station	Offset	Ground Surface Elev.	DEPTH (ft)	BLOW COUNTS (/6")	UCS (tsf)	MOISTURE (%)	Surface Water Elev.	Stream Bed Elev.	Groundwater Elev.:	First Encounter	Upon Completion	After	Hrs.	Filled
NA	NA	SGB-PP-03	10+98	24.60ft LT	813.10					NA	NA		Dry	Dry			
TOPSOIL (8")					812.40												
Very stiff, dark yellowish Brown (10YR 3/4) SANDY CLAY LOAM, little gravel, medium plasticity, moist					811.10	4			7.2								
Loose, dark yellowish Brown (10YR 3/4) SANDY LOAM, little gravel, medium plasticity, moist						6	2.5	P									
						2											
						3			11.1								
						-5	3										
Medium dense						3											
						9			11.8								
						6											
Medium dense						5											
						8			12.8								
					803.10	9											
End of boring at 10' Borehole backfilled with cuttings & bentonite.						-10											
						-15											
						-20											

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 5/5/22

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2046350.934,996859.984

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. _____ Station _____	D E P T H (ft)	B L O W S (/6")	U C S (tsf)	M O I S T (%)	Surface Water Elev. _____ ft
					Stream Bed Elev. _____ ft
BORING NO. <u>TSB-EW-01</u> Station <u>252+31</u> Offset <u>19.00ft RT</u> Ground Surface Elev. <u>861.92</u> ft					Groundwater Elev.: First Encounter _____ Dry ft Upon Completion _____ Dry ft After _____ Hrs. _____ Filled ft

STONES (5")	861.50				
Medium dense, brown fine SAND, trace fine gravel, moist		4			
		4		11.6	
		6			
		6			
		11		7.6	
		-5	11		
		7			
		14		12.1	
		20			
		4			
		7		10.6	
		-10	9		
		7			
		11		11.2	
		11			
848.92					
Medium dense, brown fine SAND, trace fine gravel, moist		8			
		8		16.3	
		-15	11		
		5			
		8		11.1	
		13			
843.92					
Medium dense, olive gray fine SAND, trace fine gravel, moist		13			
		11		10.3	
End of Boring @20.0'	841.92	-20	7		

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2046455.9613,996774.0805

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	BORING NO. Station Offset Ground Surface Elev.	DEPTH (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft Groundwater Elev.: First Encounter _____ Dry ft Upon Completion _____ Dry ft After _____ Hrs. _____ Filled ft
TOPSOIL (4") Stiff, brown, SILTY CLAY, moist	862.06		2			
			2		26.0	
			3	1.5		
	859.36			S		
Very loose, brown, medium to fine SANDY CLAY LOAM, trace gravel, moist			2			
			1		15.5	
		-5	2			
	856.86					
Medium dense, brown, medium to fine SANDY CLAY LOAM, trace gravel, moist			4			
			8		10.0	
			9			
	854.36					
Medium dense, brown, SILTY LOAM, trace fine gravel, moist			4			
			6		10.0	
		-10	7			
	851.86					
Dense, brown, SILTY LOAM, trace fine gravel, moist			13			
Fractured gravel/cobble in spoon @11.5'			32		12.7	
			17			
	849.36					
Medium dense, brown, SILTY LOAM, trace fine gravel, moist			4			
			10		10.3	
		-15	12			
	846.86					
Medium dense, gray, SILT, trace fine gravel, moist			8			
			11		9.6	
			10			
	844.36					
Medium dense, gray, SILTY LOAM, trace fine gravel, moist			3			
			4		10.2	
End of boring at 20'.	842.36	-20	6			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 7/13/22

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2054894.085,998419.832

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	BORING NO. Station Offset Ground Surface Elev.	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft Groundwater Elev.: First Encounter <u>811.0 ft</u> ▼ Upon Completion <u>808.3 ft</u> ▽ After _____ Hrs. _____ Filled ft
	824.12					
TOPSOIL (5")						
Very loose, brown fine SAND, moist			2			
			1		12.0	
			1			
	821.52					
Loose, brown fine SANDY CLAY LOAM, trace fine gravel, moist			2			
			2		10.3	
			3			
		-5				
	819.02					
Medium dense, brown fine SAND, moist			6			
			10		8.0	
			11			
			8			
Dense			16		10.7	
			20			
		-10				
			20			
Dense, limited recovery due to gravel stuck in shoe			25		9.1	
			21			
			6			
Medium dense, wet			8		14.7	
			11			
		-15				
			4			
Medium dense			6		19.7	
			8			
			3			
Medium dense			6		16.9	
End of boring 20'			8			
	804.52	-20				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 4/9/24

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Boland

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 998373.5; N: 2055081.2

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED50 Auto (95.6% efficiency)

STRUCT. NO.	Station	DEPTH (ft)	BLOW (ft)	UCS (tsf)	MOIST (%)	Surface Water Elev.	Stream Bed Elev.	Groundwater Elev.:	First Encounter	Upon Completion	After	DEPTH (ft)	BLOW (ft)	UCS (tsf)	MOIST (%)
NA	NA					NA ft	NA ft								
TSB-PP-02	342.95								Dry ft	Dry ft	Filled ft				
	80.00ft LT														
	824.70														
TOPSOIL (7")	824.10														S
Stiff, very dark Brown (10YR 2/2) CLAY LOAM, trace organics, medium plasticity, moist			4		14.2										
			5	1.5											
			8	S											
Very stiff			4		19.7										
			4												
			8	3.1											
			-5	S											
	819.20														
Medium dense, dark yellowish Brown (10YR 4/6) medium to fine SAND, moist			5												
			8		7.9										
			9												
	816.70														
Medium dense, dark yellowish Brown (10YR 4/6) medium to fine SANDY LOAM, little gravel, moist			7												
			10		9.5										
			11												
			-10												
	814.20														
Dense, dark yellowish Brown (10YR 4/6) medium to fine SAND, moist			5		7.4										
			12												
			20												
			7												
Medium dense			8		15.3										
			10												
			-15												
	809.20														
Very stiff, yellowish Brown (10YR 5/4) SILTY CLAY LOAM, low plasticity, moist			7												
			5		18.4										
			7	2.3											
				S											
			5												
Stiff			8		10.8										
			11	1.5											
			-20												
	804.70														

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 4/12/24

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 999437.3; N: 2057309.7

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED50 Auto (95.6% efficiency)

STRUCT. NO.	Station	DEPTH (ft)	BLOW COUNT (blows/6")	UCS (tsf)	MOISTURE (%)	Surface Water Elev. (ft)	Stream Bed Elev. (ft)	Groundwater Elev.:	First Encounter	Upon Completion	After Hrs.	DEPTH (ft)	BLOW COUNT (blows/6")	UCS (tsf)	MOISTURE (%)
NA	NA					NA	NA								
TSB-SL-01	367+71								822.5 ft	Dry ft					
	63.70ft LT														
	834.50														
TOPSOIL (3")	834.20														
Loose, dark grayish Brown (10YR 4/2) SILTY LOAM, trace organics, low plasticity, moist			3												
			4		18.9										
			4												
	831.50														
Loose, brownish Yellow (10YR 6/6) SILTY LOAM, low plasticity, moist			2												
			2		11.6										
			4												
	829.00														
Medium dense, brownish Yellow (10YR 6/6) fine SAND, moist			3												
			5		6.9										
			5												
Loose			3												
			5		12.3										
			4												
			6												
Medium dense, trace gravel			7		9.1										
Free water at 12'			6												
	821.50														
Loose, brownish Yellow (10YR 6/6) SILTY LOAM, moist			3												
			3		16.4										
			5												
	819.00														
Medium stiff, Gray (10YR 6/1) SILTY CLAY, trace gravel, medium plasticity, moist			4												
			4		13.4										
			7	1.0											
Very stiff, dark Gray (10YR 4/1) SILTY CLAY			P												
Shelby tube 18.5'-20.5'			U		12.5										
			S	2.3											

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 7/11/22

ROUTE IL 31 DESCRIPTION IL 31, from IL 176 to IL 120 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2057388.999,999554.460

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

STRUCT. NO. Station	DEPTH (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. <u>TSB-SL-02</u> Station <u>368+88</u> Offset <u>17.00ft RT</u> Ground Surface Elev. <u>833.25</u> ft					Groundwater Elev.: First Encounter _____ Dry ft Upon Completion _____ Dry ft After _____ Hrs. _____ Filled ft
ASPHALT (6")	832.75				
GRAVEL BASE COURSE (6")	832.25				
Very stiff, black SILTY CLAY, low plasticity, moist	7				
	4			21.4	
	2	2.0	P		
Very stiff, brown	2				
	2			24.6	
	-5	2	3.0	P	
827.75					
Loose, dark brown SILT, moist	2				
	2			39.7	
	4				
Loose	2				
	2			31.5	
	-10	3			
822.75					
Very loose, brown SANDY LOAM, moist	2				
	1			22.2	
	1				
820.25					
Loose, brown SILT, trace gravel, moist	2				
	2			18.0	
	-15	3			
Loose	4				
	4			17.5	
	4				
Loose End of boring at 20'	4				
	5			10.7	
813.25	-20	4			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 4/8/24

ROUTE IL 31 DESCRIPTION Box Culvert No. 7 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 996771.4; N: 2045911.6

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED 50 Auto (95.6% efficiency)

STRUCT. NO. <u>Box Culvert No. 7</u>	D E P T H H	B L O W S	U C S Qu	M O I S T	Surface Water Elev. <u>NA</u> ft	D E P T H	B L O W S	U C S Qu	M O I S T
Station _____					Stream Bed Elev. <u>NA</u> ft				
BORING NO. <u>CUL07-01</u>	(ft)	(/6")	(tsf)	(%)	Groundwater Elev.:	(ft)	(/6")	(tsf)	(%)
Station <u>247+92</u>					First Encounter <u>846.4</u> ft ▼				
Offset <u>71.80ft LT</u>					Upon Completion <u>846.0</u> ft ▼				
Ground Surface Elev. <u>856.90</u> ft					After _____ Hrs. <u>Filled</u> ft				

Soil Description	Depth (ft)	Blow Count (/6")	UCS (tsf)	Moisture (%)	Notes
TOPSOIL (12")	855.90				End of boring at 20' Borehole backfilled with cuttings and bentonite.
Loose, light Gray (N7) fine SAND, moist	3				
	3		17.6		
	4				
Loose, light yellowish Brown (10YR 6/4) SANDY LOAM, low plasticity, moist	853.90				
	1				
	2		13.9		
	-5	3			
	-25				
Dark yellowish Brown (10YR 4/4) fine SANDY LOAM, moist Shelby tube 8.5'-10.5'	848.40				
	P				
	U		11.5		
	-10	S			
Medium dense, light yellowish Brown (10YR 6/4) fine SANDY LOAM, trace gravel, wet Free water at 10.5'	846.40 ▼				
	4				
	4		9.2		
	6				
	10				
	-15	12		11.9	
Medium dense, light yellowish Brown (10YR 6/4) SILTY LOAM, trace gravel, moist	841.40				
	4				
	6		11.0		
Dense, reddish Yellow (5YR 6/6) fine SAND, wet	838.90				
	15				
	25		23.8		
	836.90 -20	23			
					-35
					-40

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

ROUTE IL 31 DESCRIPTION Box Culvert No. 7 LOGGED BY Boland

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 996858.5; N: 2045910.6

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED 50 Auto (98.2% efficiency)

STRUCT. NO.	Station	DEPTH (ft)	BLOW COUNT (blows/6")	UCS (tsf)	MOISTURE (%)	Surface Water Elev. (ft)	Stream Bed Elev. (ft)	Groundwater Elev.:	First Encounter	Upon Completion	After	DEPTH (ft)	BLOW COUNT (blows/6")	UCS (tsf)	MOISTURE (%)
Box Culvert No. 7						NA	NA								
BORING NO.	Station	Offset	Ground Surface Elev.												
CUL07-02	247+91	15.20ft RT	858.80												
CRUSHED AGGREGATE (12")			857.80												
Medium dense, black (10YR 2/1) ASPHALT GRINDINGS and GRAVEL (fill), moist				9											
				8	6.8										
				3											
			855.80												
Medium stiff, dark Gray (10YR 4/1) SILTY CLAY, trace gravel, medium plasticity, moist				3											
				1	24.3										
				2	0.7										
					B										
			852.80												
Stiff, Brown (10YR 5/3) SILTY CLAY, trace gravel, moist Shelby tube 6-8'				P											
				U	33.4										
				S	1.4										
				H	B										
			850.80												
Medium dense, dark yellowish Brown (10YR 4/6) SANDY LOAM, trace gravel, low plasticity, moist				5											
				6	11.4										
				7											
			848.30												
Medium stiff, dark yellowish Brown (10YR 4/6) SANDY CLAY LOAM, trace gravel, low plasticity, moist				7											
				7	12.5										
				8	1.5										
					S										
				4											
Very stiff, some gravel				7	10.3										
				10	2.3										
					P										
			842.80												
No Recovery				10											
				15	3.3										
				21											
			840.80												
Very stiff, dark Gray (10YR 4/1) CLAY, trace gravel, medium plasticity, moist				5											
				8	14.5										
				8	2.3										
			838.80												

End of boring at 20'
Borehole backfilled with cuttings and bentonite.

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

ROUTE IL 31 DESCRIPTION Box Culvert No. 7 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 996929.1; N: 2045910.3

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED 50 Auto (95.6% efficiency)

STRUCT. NO. Station	DEPTH (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. Stream Bed Elev.	DEPTH (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)
Box Culvert No. 7 Station					NA ft NA ft				
BORING NO. <u>CUL07-03</u> Station <u>247+90</u> Offset <u>85.90ft RT</u> Ground Surface Elev. <u>854.00</u> ft					Groundwater Elev.: First Encounter <u>843.0</u> ft ▽ Upon Completion <u>835.3</u> ft ▽ After _____ Hrs. <u>Filled</u> ft				
Stiff, Brown (10YR 5/3) CLAY, high plasticity, moist	2 3 4		1.8 S	25.9	End of boring at 20' Borehole backfilled with cuttings and bentonite.				
851.00									
Very loose, pale Yellow (10YR 5/4) SANDY LOAM, little gravel, moist	1 -5			19.2					
Loose	2 3 4			11.0					
845.50									
Dark yellowish Brown (10YR 4/6) fine SANDY LOAM, trace gravel Shelby Tube 8.5-10.5'	-10	P U S H		11.3					
843.50									
Medium dense, pale Brown (10YR 6/3) SILTY LOAM, low plasticity, moist	6 5 9			10.8					
841.00									
Medium dense, light Gray (5GB 7/1) SILTY LOAM, little gravel, low plasticity, moist	8 5 -15			9.4					
838.50									
Medium dense, pale Brown (10YR 6/3) with gray mottling SILTY LOAM, trace gravel, low plasticity, moist	6 8 8			11.8					
836.00									
Medium dense, light Gray (5GB 7/1) SILTY LOAM, little gravel, low plasticity, moist	6 5 7 -20			9.9					
834.00									

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



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SOIL BORING LOG

Date 4/8/24

ROUTE IL 31 DESCRIPTION Box Culvert No. 8 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 996690.7; N: 2048474.7

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED50 Auto (95.6% efficiency)

STRUCT. NO. Box Culvert No. 8
Station

BORING NO. CUL08-01
Station 273+57
Offset 68.00ft LT
Ground Surface Elev. 833.20 ft

DEPTH (ft)	BLOWS (/6")	UCS (tsf)	MOIST (%)
------------	-------------	-----------	-----------

Surface Water Elev. NA ft
Stream Bed Elev. NA ft
Groundwater Elev.:
First Encounter 829.7 ft ▼
Upon Completion 830.3 ft ▼
After Hrs. Filled ft

TOPSOIL (10")		832.37					
Medium stiff, grayish Brown (10YR 5/2) CLAY, high plasticity, moist	1	3		33.6			
	4		0.5				
			P				
		830.20					
Loose, grayish Brown (10YR 5/2) medium to fine grained SAND, trace gravel, wet Free water at 3.5'	3	4		13.3			
	2	-5					
		827.70					
Loose, light yellowish Brown (10YR 6/4) coarse to fine SANDY LOAM, little gravel, wet	4	4		11.1			
	4						
		825.20					
Loose, light yellowish Brown (10YR 6/4) SILTY LOAM, trace gravel, low plasticity, moist	3	3		11.3			
	3	-10					
		822.70					
Hard, Brown (10YR 5/3) SILTY CLAY LOAM, trace gravel, low plasticity, moist	4	5		12.5			
	7		4.0				
			P				
Very stiff, with gray mottling	8	4		13.7			
	6	818.20	2.0				
		-15	P				
End of boring at 15' Borehole backfilled with cuttings and bentonite.							
		-20					

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



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SOIL BORING LOG

Date 4/8/24

ROUTE IL 31 DESCRIPTION Box Culvert No. 8 LOGGED BY Boland

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 996821.0; N: 2048474.2

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED50 Auto (98.2% efficiency)

STRUCT. NO.	Station	DEPTH (ft)	BLOW (ft)	UCS (tsf)	MOIST (%)	Surface Water Elev. (ft)	Stream Bed Elev. (ft)	Groundwater Elev. (ft)	First Encounter Upon Completion After Hrs.	DEPTH (ft)	BLOW (ft)	UCS (tsf)	MOIST (%)
Box Culvert No. 8						NA	NA						
CUL08-03	273+55												
	62.30ft RT												
	835.30												
ASPHALT (4")	834.97												
CRUSHED AGGREGATE (4")	834.63												
Stiff, Black (10YR 2/1) SANDY CLAY LOAM, little gravel, medium plasticity, moist			3		12.2								
			2	1.8									
	832.30												
Stiff, very dark Gray (10YR 3/1) CLAY, little gravel, medium plasticity, moist			3		29.0								
			2										
		-5	3	1.0						-25			
	829.80												
Soft, Brown (10YR 4/3) CLAY, medium plasticity, moist			2		28.9								
			1										
			2	0.4									
Free water at 8.5'	826.80												
Yellowish Brown (10YR 5/4) fine SAND, dry					6.2								
Shelby tube 8.5-10.5'													
	824.80												
Soft, dark yellowish Brown (10YR 4/6) SANDY CLAY LOAM, little gravel, medium plasticity, moist			2		11.5								
			3	0.4									
	822.30												
Medium dense, dark yellowish Brown (10YR 4/6) SANDY LOAM, little gravel, moist			4		10.8								
			5										
		-15	6							-35			
	819.80												
Stiff, dark Gray (10YR 4/1) SANDY CLAY LOAM, little gravel, medium plasticity, moist			3		11.9								
			5	2.0									
			2										
			3		11.4								
	815.30												
		-20	4	2.0						-40			

End of boring at 20'
Borehole backfilled with cuttings, bentonite, and concrete.

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 4/10/24

ROUTE IL 31 DESCRIPTION Box Culvert No. 9 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 996682.8; N: 2049932.9

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED 50 Auto (95.6% efficiency)

STRUCT. NO.	Station	DEPTH (ft)	BLOW S (ft/6")	UCS (tsf)	MOIST (%)	Surface Water Elev. NA ft	Stream Bed Elev. NA ft	Groundwater Elev.:	First Encounter 807.6 ft	Upon Completion 817.3 ft	After Hrs. Filled ft	DEPTH (ft)	BLOW S (ft/6")	UCS (tsf)	MOIST (%)
Box Culvert No. 9															
BORING NO.	CUL09-01														
Station	288+16														
Offset	59.10ft LT														
Ground Surface Elev.	823.60	ft													
TOPSOIL (9")	822.80														
Stiff, Black (10YR 2/1) CLAY LOAM, medium plasticity, moist			3										12		
			2		38.0								8		8.9
			3	1.0 P									8		
	820.60														
Loose, light brownish Gray (10YR 6/2) SILTY LOAM, low plasticity, moist			2										11		
			3		12.9								20		9.4
		-5	2										17		
			2												
			3		13.9										
			4												
Medium dense			6												
			8		10.0										
		-10	12										-30		
No recovery	812.60		50/5"												
Dense, light Gray (10YR 7/1) SILT, trace gravel, moist	810.60		16												
			30		8.9										
		-15	16										-35		
Medium dense, light Gray (10YR 7/1) coarse to fine SANDY LOAM, trace gravel, wet	808.10		10												
Free water at 16'			14		9.7										
			16												
			11												
			11		8.6										
		-20	13										-40		

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



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SOIL BORING LOG

Date 12/7/21

ROUTE IL 31 DESCRIPTION Box Culvert No. 9 SN 056-0322 LOGGED BY Abde Sellah

SECTION IL 120 to IL 176 PTB 195-015 LOCATION 2049917.466,996765.498

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPE D50 Auto (93% efficiency)

Box Culvert No. 9 STRUCT. NO. SN 056-0322 Station IL 31 Stn. 287+89	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. CUL09-02 Station 287+99 Offset 30.00ft RT Ground Surface Elev. 823.09 ft					Groundwater Elev.: First Encounter 810.1 ft ▼ Upon Completion 814.6 ft ▽ After _____ Hrs. Filled ft

ASPHALT (10")	822.26				
ASPHALT GRINDINGS (5")	821.84	7			
Medium dense, brown SANDY LOAM FILL. Moist		5		18.9	
		7			
	820.09				
Loose, brown SILTY LOAM. Moist		4			
		3		14.5	
		-5	3		
	817.59				
Medium dense, brown and gray SILT, little gravel. Moist		9			
		7		14.9	
		3			
	815.09				
Loose, redish brown and gray SILT, little gravel. Moist	▽	2			
		2		13.0	
		-10	3		
	812.59				
Loose, gray and yellowish brown SILT, little gravel. Moist		3			
		3		10.4	
		4			
	810.09 ▼				
Medium dense, yellowish brown SANDY LOAM, trace of gravel. Wet.		15			
		8		19.4	
		-15	6		
		13			
		8		16.2	
		5			
	805.09				
Medium dense, gray SILTY LOAM, little gravel and cobbles. Moist		3			
		7		10.1	
End of boring at 20'.	803.09 -20	8			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 4/8/24

ROUTE IL 31 DESCRIPTION Box Culvert No. 9 LOGGED BY Boland

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 996800.9; N: 2049925.4

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED50 Auto (98.2% efficiency)

STRUCT. NO.	Station	DEPTH (ft)	BLOW (ft)	UCS (tsf)	MOIST (%)	Surface Water Elev. (ft)	Stream Bed Elev. (ft)	Groundwater Elev.:	First Encounter (ft)	Upon Completion (ft)	After (Hrs.)	DEPTH (ft)	BLOW (ft)	UCS (tsf)	MOIST (%)
Box Culvert No. 9						NA	NA								
BORING NO.	CUL09-03														
Station	288+07														
Offset	58.90ft RT														
Ground Surface Elev.	825.60														
CRUSHED AGGREGATE (4")	825.27														
Loose, very dark Brown (10YR 2/2) SANDY LOAM and GRAVEL, moist			5		10.2										
			5												
			3												
	822.60														
Stiff, olive Gray (5Y 5/2) CLAY, trace gravel, medium plasticity, moist			2		24.8										
			2												
			3	1.0											
	820.10														
Gray (10YR 6/1) SILTY LOAM, dry, low recovery Shelby Tube 6-8'			P												
			U												
			S												
			H												
	817.60														
Medium stiff, dark yellowish Brown (10YR 4/6) SANDY CLAY LOAM, trace gravel, low plasticity, wet			3		12.6										
			3												
Free water at 8.5'			3	0.9											
	815.10														
Soft, dark grayish Brown (10YR 4/2) SANDY CLAY LOAM, trace gravel, low plasticity, wet			2		11.7										
			2												
			2	0.4											
	812.10														
No Recovery			5												
			3												
			2												
	810.10														
Loose, dark grayish Brown (10YR 4/2) SANDY LOAM, trace gravel, moist			2		9.9										
			4												
			4												
	807.60														
Very stiff, dark grayish Brown (10YR 4/2) SANDY CLAY LOAM, little gravel, low plasticity, moist			5		10.3										
			5												
			6	3.0											
	-20														

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 4/10/24

ROUTE IL 31 DESCRIPTION Box Culvert No. 11 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 997359.0; N: 2053028.5

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED 50 Auto (95.6% efficiency)

STRUCT. NO. Box Culvert No. 11
Station _____

BORING NO. CUL11-01
Station 320+05
Offset 72.30ft LT
Ground Surface Elev. 819.30 ft

DEPTH (ft)	BLOWS (/6")	UCS (tsf)	MOIST (%)
------------	-------------	-----------	-----------

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 804.3 ft ▼
Upon Completion 807.5 ft ▼
After _____ Hrs. Filled ft

TOPSOIL (4")	819.00			
Stiff, very dark Gray (10YR 3/1) CLAY LOAM, trace organics, medium plasticity, moist		2		
		3		19.3
		4	1.5 P	
	816.30			
Very loose, brownish Yellow (10YR 6/8) fine SANDY LOAM, moist		1		
		1		10.8
		-5		
		4		
Medium dense, trace gravel		9		9.1
		15		
		5		
		10		9.1
		-10		
		6		
		7		21.1
		11		
	806.30			
Dense, light yellowish Brown (10YR 6/4) SILTY LOAM, trace gravel, moist		12		
		15		12.2
		20		
Free water at 15'	803.80			
Medium dense, brownish Yellow (10YR 6/8) fine SAND, wet		5		
		5		23.6
		6		
		4		
End of boring at 20'		5		17.8
Borehole backfilled with cuttings and bentonite.		8		
	799.30	-20		

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 4/10/24

ROUTE IL 31 DESCRIPTION Box Culvert No. 11 LOGGED BY Sponaugle
SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 997496.7; N: 2052959.6
COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED 50 Auto (95.6% efficiency)

STRUCT. NO.	Station	DEPTH (ft)	BLOW COUNT (blows/6")	UCS (tsf)	MOISTURE (%)	Surface Water Elev.	Stream Bed Elev.	Groundwater Elev.:	First Encounter	Upon Completion	After
Box Culvert No. 11						NA	NA		807.8 ft	806.7 ft	Filled ft
BORING NO.	CUL11-03										
Station	320+05										
Offset	81.60ft RT										
Ground Surface Elev.	821.80	ft									
TOPSOIL (3")	821.50										
Stiff, very dark grayish Brown (10YR 3/2) SILTY CLAY, medium plasticity, moist			3								
			4		22.8						
			5	1.2							
	818.80			B							
Loose, brownish Yellow (10YR 6/6) SANDY LOAM, trace gravel, moist			2								
			2		12.2						
			-5	3							
	816.30										
Very stiff, brownish Yellow (10YR 6/6) SILTY CLAY LOAM, trace gravel, medium plasticity, moist			4								
			6		11.0						
			8	2.1							
	813.80			B							
Medium dense, light yellowish Brown (10YR 6/4) fine SANDY LOAM, trace gravel, moist			10								
			11		9.9						
			-10	8							
	811.30										
Medium dense, brownish Yellow (10YR 6/6) SILTY LOAM, low plasticity, moist			4								
			4		11.1						
			9	1.0							
	808.80			P							
Very soft, brownish Yellow (10YR 6/6) SANDY CLAY and GRAVEL, low plasticity, wet			9								
Free water at 14'			10		12.8						
			14	<0.25							
	806.30			P							
Medium dense, yellowish Brown (10YR 5/6) fine SAND, wet			3								
			5		28.5						
			7								
End of boring at 20'			4								
Borehole backfilled with cuttings and bentonite.			6		27.7						
	801.80	-20	5								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

ROUTE IL 31 DESCRIPTION Box Culvert No. 12 LOGGED BY Geocon

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 998761.1; N: 2055687.2

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED50 Auto (95.6% efficiency)

STRUCT. NO.	Station	DEPTH (ft)	BLOW COUNT (/6")	UCS (tsf)	MOISTURE (%)	Surface Water Elev. (ft)	Stream Bed Elev. (ft)	Groundwater Elev.:	DEPTH (ft)	BLOW COUNT (/6")	UCS (tsf)	MOISTURE (%)
Box Culvert No. 12						NA	NA					
BORING NO.	CUL12-02											
Station	350+10											
Offset	3.40ft LT											
Ground Surface Elev.	816.60											
Loose, dark Brown (10YR 3/3) SAND and GRAVEL (fill), dry		4								3		
		2			11.5					2		23.5
		2								3		
	813.60											
Stiff, Black (10YR 2/1) CLAY (fill), medium plasticity, moist		2								3		
		2			27.4					2		25.7
		-5		1.0						3		
	811.10			P				791.60	-25			
Very stiff, dark yellowish brown (10YR 3/4) CLAY LOAM, trace gravel, medium plasticity, moist		2										
		4			24.8							
		5		2.0								
				P								
		2										
		2			16.4							
		-10							-30			
	805.60											
Advanced Shelby tube 11-13' Dark yellowish Brown (10YR 4/4) fine SAND, moist			P									
			U		12.2							
			S									
			H									
	803.60											
Medium dense, dark yellowish Brown (10YR 4/6) SILTY LOAM, moist		3										
		6			16.1							
		-15							-35			
	801.10											
Loose, dark yellowish Brown (10YR 4/4) SANDY LOAM, some gravel, moist		4										
		5			14.9							
		3										
	798.60											
Very loose, dark yellowish Brown (10YR 4/6) fine SAND, moist		2										
		1			23.1							
		-20							-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

Date 4/9/24

ROUTE IL 31 DESCRIPTION Box Culvert No. 12 LOGGED BY Boland

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 998832.7; N: 2055656.9

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED 50 Auto (95.6% efficiency)

STRUCT. NO.	Station	DEPTH (ft)	BLOW (ft)	UCS (tsf)	MOIST (%)	Surface Water Elev.	Stream Bed Elev.	Groundwater Elev.:	First Encounter	Upon Completion	After	DEPTH (ft)	BLOW (ft)	UCS (tsf)	MOIST (%)
Box Culvert No. 12						NA	NA								
CUL12-03	350+15								800.1 ft	Not taken	Filled				
	74.20ft RT														
	818.10														
TOPSOIL (6")	817.60														
Very stiff, very dark Brown (10YR 2/2) CLAY LOAM, medium plasticity, moist			4		23.8										
			4												
			5	3.0											
	815.10														
Soft, dark Brown (10YR 3/3) SANDY CLAY, medium plasticity, moist			1		21.3										
			1												
			-5	0.5											
	812.60														
Medium stiff, dark yellowish Brown (10YR 4/4) SANDY CLAY LOAM, trace gravel, medium plasticity, moist	811.40		5		14.1										
			7												
			11	0.8											
Medium dense, dark yellowish Brown (10YR 4/4) fine SAND, trace gravel, moist	810.10														
Very stiff, dark yellowish Brown (10YR 4/4) SANDY CLAY LOAM, moist			6		12.5										
			5												
			-10	2.3											
	807.60														
Medium dense, medium to fine SAND, moist			6		7.7										
			8												
			8												
			5												
Some gravel			7		4.8										
			-15												
	802.60														
Medium dense, dark yellowish Brown (10YR 4/4) medium to fine SANDY LOAM, moist	801.90		7		16.7										
			6												
Very stiff, dark yellowish Brown (10YR 4/3) CLAY LOAM, medium plasticity, moist	800.10		5	3.1											
Medium dense, dark yellowish Brown (10YR 4/6) medium to fine SANDY LOAM, moist			5		11.2										
			8												
			10												
	798.10		-20												

End of boring at 20'
Borehole backfilled with cuttings and bentonite.

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



SOIL BORING LOG

ROUTE IL 31 DESCRIPTION Box Culvert No. 13 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 999524.6; N: 2057601.5

COUNTY McHenry DRILLING METHOD Hollow Stem Auger HAMMER TYPED 50 Auto (95.6% efficiency)

STRUCT. NO. Box Culvert No. 13
Station _____

BORING NO. CUL13-01
Station 370+74
Offset 85.70ft LT
Ground Surface Elev. 826.80 ft

DEPTH H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ NA ft	DE P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Stream Bed Elev. _____ NA ft	Groundwater Elev.:
										First Encounter _____ Dry ft
										Upon Completion _____ Dry ft
										After _____ Hrs. _____ Filled ft
TOPSOIL (4")										
826.47										
Loose, dark Gray (10YR 4/1)										
SILTY LOAM, trace organics,	3		18.3							
moist	3									
	4									
823.80										
Stiff, Brown (10YR 5/3) SILTY										
CLAY LOAM, medium plasticity,	2		20.1							
moist	3									
	-5	1.7								-25
		B								
821.30										
Loose, Brown (10YR 5/3) with										
gray mottling, SILTY LOAM, trace	2									
gravel, moist	3		13.0							
	4									
	4									
Medium dense	4		14.6							
	6									-30
	-10									
	7									
	9		14.8							
	11									
813.80										
Medium dense, yellowish Brown										
(10YR 5/4) medium to fine SILTY	5									
LOAM, little gravel, moist	6		13.3							
	7									-35
	-15									
811.30										
Very stiff, Gray (10YR 6/1) SILTY										
CLAY, trace gravel, medium	5									
plasticity, moist	7		12.2							
	10	2.2								
		B								
End of boring at 20'	5									
Borehole backfilled with cuttings	7		13.9							
and bentonite.	10	3.6								-40
806.80	-20									

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)



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SOIL BORING LOG

Date 4/15/24

ROUTE IL 31 DESCRIPTION Retaining Wall No. 11 LOGGED BY Sponaugle

SECTION IL 120 to IL 176 PTB 195-015 LOCATION E: 998442.5; N: 2054878.2

COUNTY Mc Henry DRILLING METHOD Hollow Stem Auger HAMMER TYPED 50 Auto (95.6% efficiency)

STRUCT. NO. <u>11</u> Station <u>NA</u>		DEPTH H (ft)	BLOW S (/6")	UCS Qu (tsf)	MOIST T (%)	Surface Water Elev. <u>NA</u> ft	DEPTH H (ft)	BLOW S (/6")	UCS Qu (tsf)	MOIST T (%)
BORING NO. <u>RW11-03</u> Station <u>341+44</u> Offset <u>72.40ft RT</u> Ground Surface Elev. <u>826.30</u> ft						Stream Bed Elev. <u>NA</u> ft				
TOPSOIL (3")		826.10				End of boring at 20' Borehole backfilled with cuttings and bentonite.				
Stiff, dark grayish Brown (10YR 4/2) SILTY CLAY LOAM, trace organics, trace roots, low plasticity, dry			3		23.1					
			2	1.0						
		823.30		P						
Loose, Black (10YR 2/1) SILTY LOAM, low plasticity, moist			2		25.2					
			4							
			4							-25
		820.80								
Loose, Brown (10YR 4/3) FINE SAND, trace organics, moist			2		8.2					
			2							
			3							
		818.30								
Loose, yellowish Brown (10YR 5/4) fine SAND, moist			2		16.1					
			2							
			3							-30
		815.80								
Medium dense, yellowish Brown (10YR 5/4) SILTY LOAM, trace gravel, moist			4		9.6					
			5							
			5							
		813.30								
Loose, yellowish Brown (10YR 5/4) fine SAND, moist			4		5.8					
			4							
			4							-35
		810.80								
Hard, yellowish Brown (10YR 5/4) SILTY CLAY LOAM, low plasticity, moist			5		12.1					
			6							
			8							
		808.30								
Medium dense, light yellowish Brown (10YR 6/4) SILTY LOAM, low plasticity, moist			6		11.1					
			6							
			8							
		806.30	-20							-40

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)

Appendix D
Laboratory Test Reports



Interra File No.: 9012

SOIL TEST RESULTS

PROJECT: Geotechnical Investigation, IL 31 from Ames Road to Charles Miller Road

Route: IL 31 from Ames Road to Charles Miller Road

County: McHenry, Illinois

SAMPLE	SGB-32-BS-01	SGB-39-BS-01	SGB-47-BS-01
BORING LOCATION	SGB-32	SGB-39	SGB-47
DEPTH	1'-4'	1'-4'	1'-4'
AASHTO CLASSIFICATION (AASHTO M 145)	A-6(4)	A-6(6)	A-6(10)
ILLINOIS TEXTURAL CLASSIFICATION	Sandy Loam	Sandy Loam	Sandy Loam
GRADATION-PASSING 1" SIEVE %	100	100	100
" 3/4" " %	100	100	100
" 1/2" " %	98.9	99.6	99.2
" NO. 4 " %	94	95.6	95.4
" NO. 10 " %	88.1	90.1	91
" NO. 40 " %	72.8	75.9	75.6
" NO. 100 " %	61.8	57.5	62.4
" NO. 200 " %	58.6	52.2	59.7
GRAVEL (AASHTO T88) %	11.9	9.9	9
SAND (COARSE+FINE) (AASHTO T88) %	29.5	37.9	31.3
SAND (FINE) (AASHTO T88) %	14.2	23.7	15.9
SILT (AASHTO T88) %	44.2	38	41.9
CLAY (AASHTO T88) %	14.4	14.2	17.8
LIQUID LIMIT (AASHTO T89) %	28	33	38
PLASTICITY INDEX (AASHTO T90) %	11	17	21
STD. DRY DENSITY (IL MOD AASHTO T 99) PCF	117.6	114.9	110.5
OPTIMUM MOISTURE (IL MOD AASHTO T 99)%	11.4	12.7	14
SUBGRADE SUPPORT RATING	Poor	Poor	Poor
IN SITU MOISTURE (AASHTO T 265)%	19	16.9	23.1
REMARKS			



Interra File No.: 9012

SOIL TEST RESULTS

PROJECT: Geotechnical Investigation, IL 31 from Ames Road to Charles Miller Road

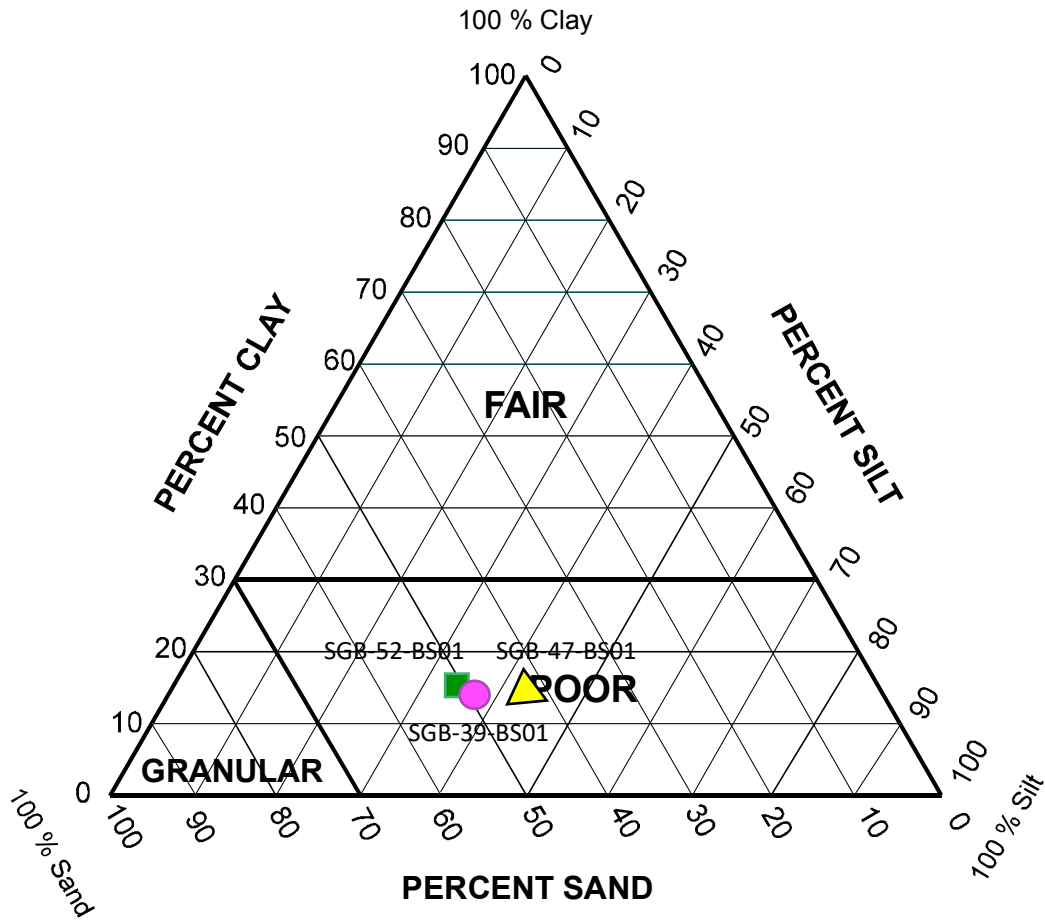
Route: IL 31 from IL 31 from Ames Road to Charles Miller Road

County: McHenry, Illinois

SAMPLE	SGB-52-BS-01	SGB-57-BS-01	SGB-62-BS-01
BORING LOCATION	SGB-52	SGB-57	SGB-62
DEPTH	1'-4'	1'-4'	1'-4'
AASHTO CLASSIFICATION (AASHTO M 145)	A-6(5)	A-6(2)	A-4(0)
ILLINOIS TEXTURAL CLASSIFICATION	Sandy Loam	Sandy Loam	Sandy Loam
GRADATION-PASSING 1" SIEVE %	100	100	100
" 3/4" " %	97.7	100	100
" 1/2" " %	93.3	97.7	99.2
" NO. 4 " %	88.8	88.8	93.6
" NO. 10 " %	85.2	82.6	87.7
" NO. 40 " %	77.0	67.7	75.4
" NO. 100 " %	59.6	47.9	51.5
" NO. 200 " %	51.7	41.3	43
GRAVEL (AASHTO T88) %	14.8	17.4	12.3
SAND (COARSE+FINE) (AASHTO T88) %	33.5	41.3	44.7
SAND (FINE) (AASHTO T88) %	25.2	26.3	32.4
SILT (AASHTO T88) %	35.2	28.3	32.3
CLAY (AASHTO T88) %	16.5	13.0	10.7
LIQUID LIMIT (AASHTO T89) %	31	24	18
PLASTICITY INDEX (AASHTO T90) %	16	11	5
STD. DRY DENSITY (IL MOD AASHTO T 99) PCF	119.3	127.1	129.1
OPTIMUM MOISTURE (IL MOD AASHTO T 99)%	11.5	9.9	8.2
SUBGRADE SUPPORT RATING	Poor	Poor	Poor
IN SITU MOISTURE (AASHTO T 265)%	15.6	12.3	11.5
REMARKS			

IL 31 FROM AMES TOAD TO CHARLES MILLER ROAD
MCHENRY COUNTY, IL

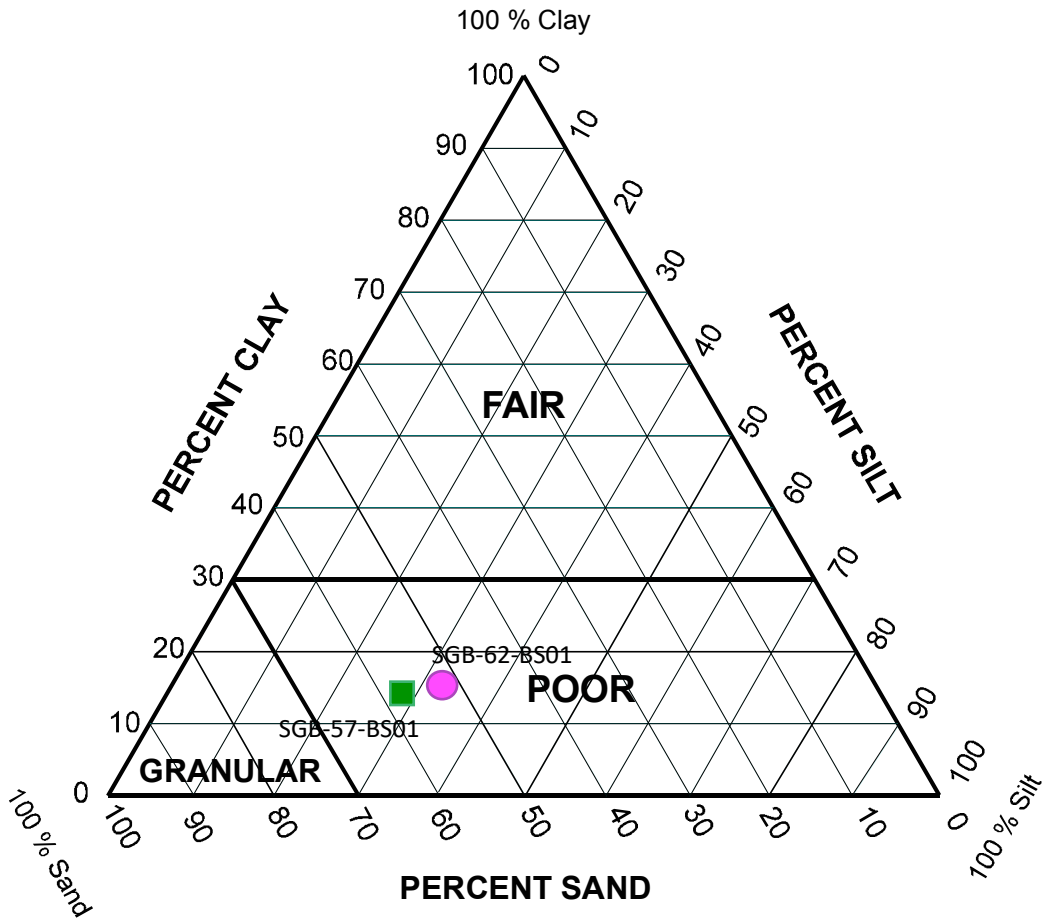
INTERRA PROJ. NO. 9012



Subgrade Support Rating (SSR Chart)

IL 31 FROM AMES TOAD TO CHARLES MILLER ROAD
MCHENRY COUNTY, IL

INTERRA PROJ. NO. 9012

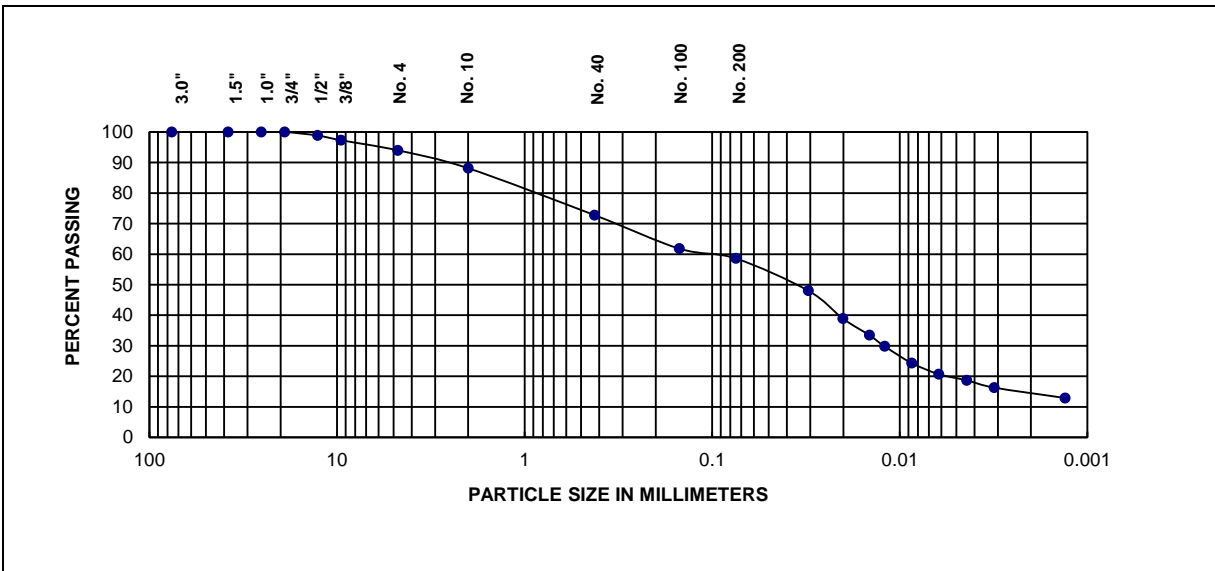


Subgrade Support Rating (SSR Chart)



**GRAIN SIZE ANALYSIS
AASHTO T 88**

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-32-BS-01	Date Tested	6/18/2022	Tested by	BKP
						Qc by	AB
Date Sample Received:	6/13/2022						
Sample Location	1'-4'						
Sample Description	Brown sandy loam with little gravel						



% + 3"	% Gravel	% Sand	Fines	
			% Silt	% Clay
0.0	11.9	29.5	44.2	14.4

For coarse-grained soils with <12% Fines	D60(mm)	D30(mm)	D10(mm)	Cu	Cc

Sieve Size	Percent Passing	Liquid Limit, L _L	Plastic Limit, PL	Plasticity Index, PI
3.0"	100.0	28	17	11
1.5"	100.0			
1.0"	100.0			
3/4"	100.0	AASHTO Classification:		A-6(4)
1/2"	98.9	IDH Classification:		Sandy Loam
3/8"	97.3			
No. 4	94.0			
No. 10	88.1			
No. 40	72.8			
No. 100	61.8			
No. 200	58.6			

Remarks:	

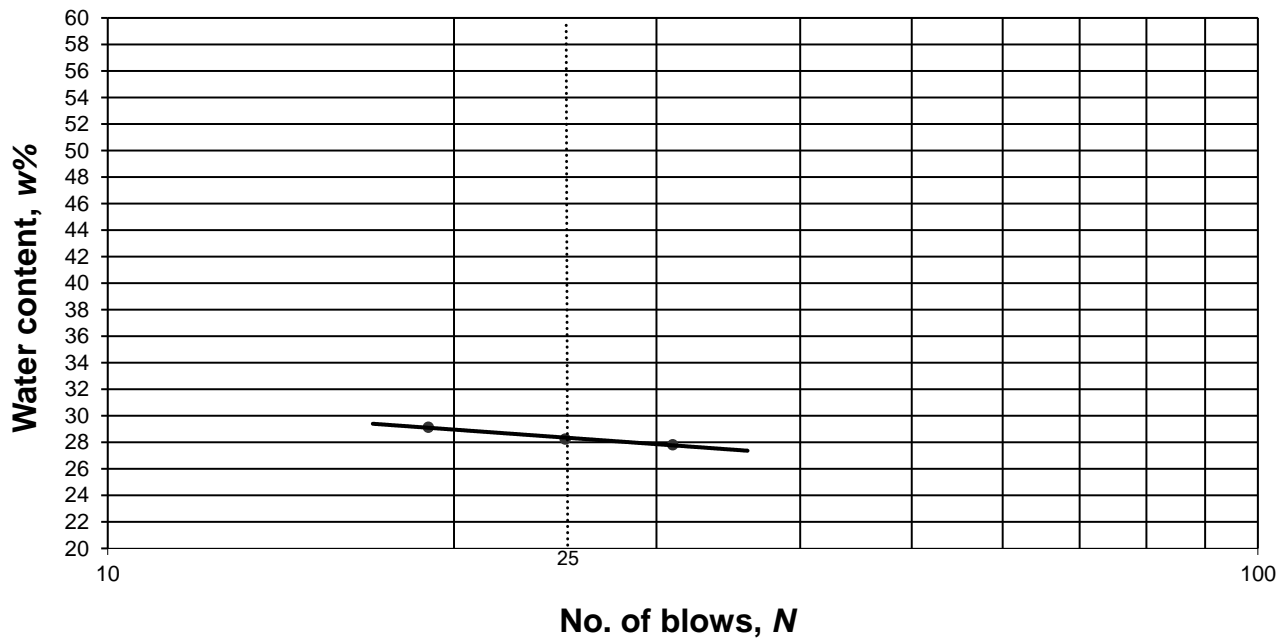


Atterberg Limits
AAASHTO T 89,90

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-32-BS-01	Date Tested	6/18/2022	Tested By	DG
						Qc By	AB

Date Sample Recd.	6/13/2022
Sample Location	1'-4'
Sample Description	Brown sandy loam with little gravel

LIQUID LIMIT DETERMINATION



Results					
Liquid Limit, LL	28	Plastic Limit, PL	17	Plasticity Index, PI	11

Remarks	
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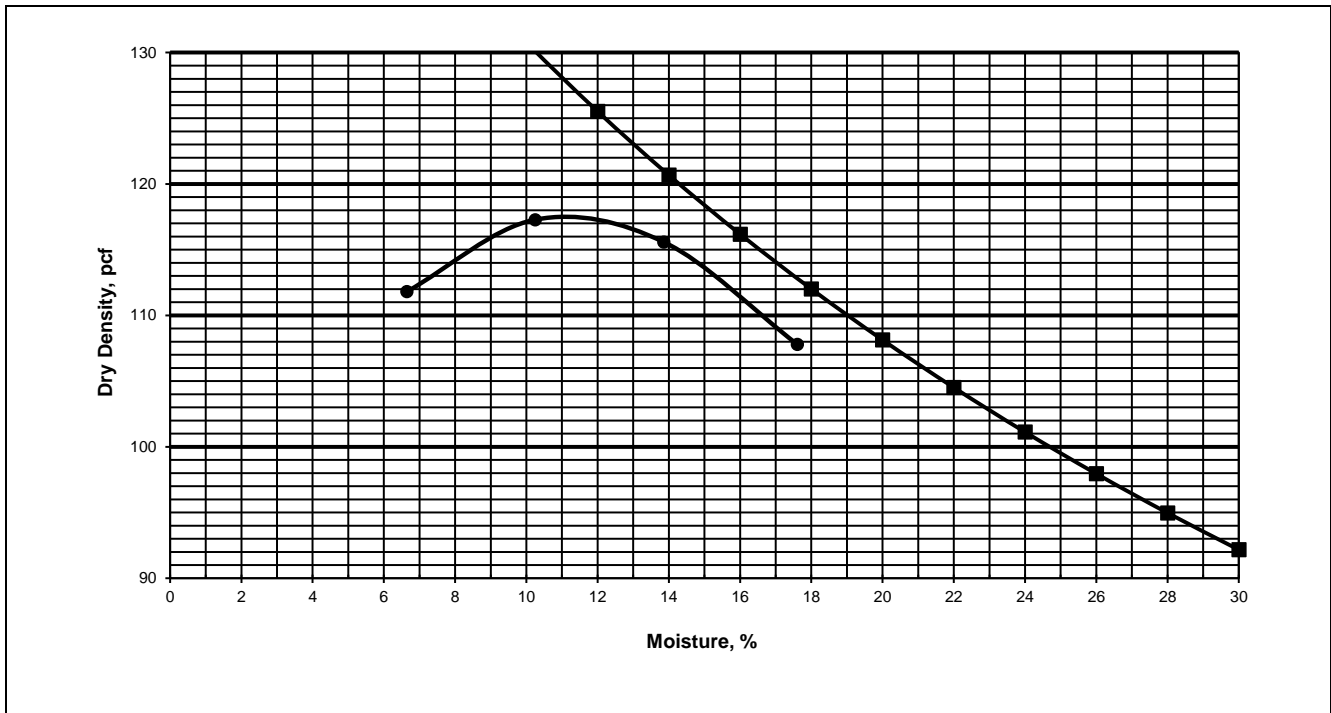


**MOISTURE - DENSITY
RELATIONSHIP CURVE**

AASHTO T99

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation							
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532							
File No.	9012	Sample #	SGB-32-BS-01	Date Tested	6/17/2022	Tested By	BKP	
							Qc By	AB

Date Sample Recd.	6/13/22				
Sample Location	1'-4'				
Sample Description	Brown sandy loam with little gravel				
Type of Proctor	Standard	Method: C	Mold Size, in. 4	Hammer Weight, lb. 5.5	Drop, in. 12
No. of Layers	3	No. of Blows per Layer	25		



Zero Air Void Curve Specific Gravity: 2.65

Results				
Maximum Dry Density, pcf	117.6	Optimum Moisture Content, %	11.4	Natural Moisture Content, % 19.0
Corrected Max. Dry Density, pcf		Corrected Optimum Moisture Content, %		

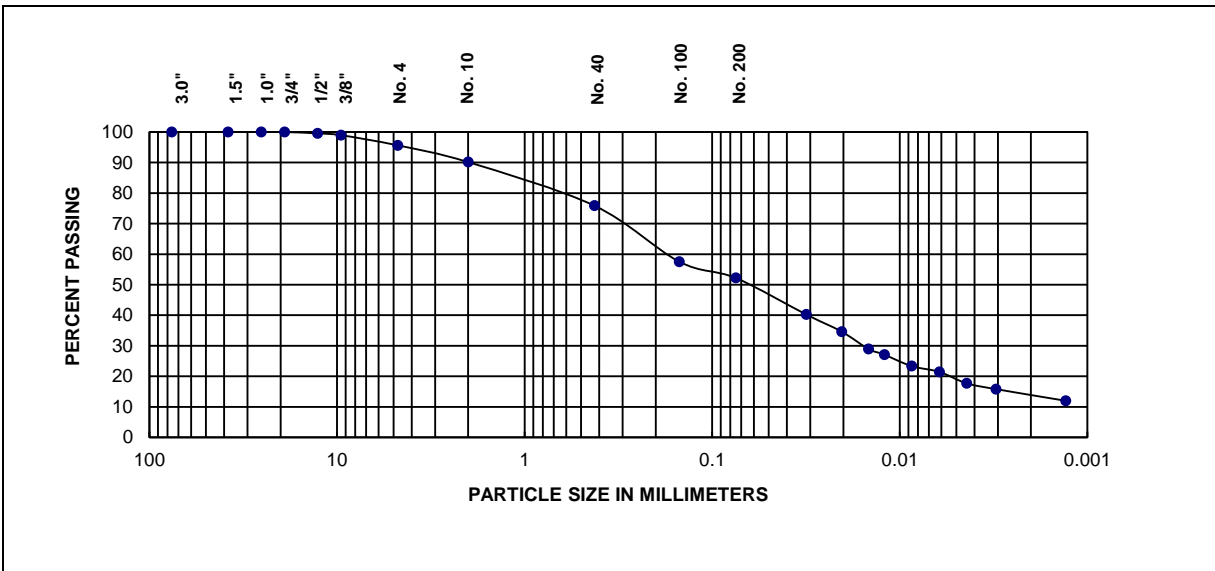
Remarks



**GRAIN SIZE ANALYSIS
AASHTO T 88**

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-39-BS-01	Date Tested	6/17/2022	Tested by	BKP
						Qc by	AB

Date Sample Received:	6/13/2022
Sample Location	1'-4'
Sample Description	Black and blackish green sandy loam with little gravel



% + 3"	% Gravel	% Sand	Fines	
			% Silt	% Clay
0.0	9.9	37.9	38.0	14.2

For coarse-grained soils with <12% Fines	D60(mm)	D30(mm)	D10(mm)	Cu	Cc

Sieve Size	Percent Passing	Liquid Limit, L _L	Plastic Limit, PL	Plasticity Index, PI
3.0"	100.0	33	16	17
1.5"	100.0			
1.0"	100.0			
3/4"	100.0	AASHTO Classification:		A-6(6)
1/2"	99.6	IDH Classification:		Sandy Loam
3/8"	99.0			
No. 4	95.6			
No. 10	90.1			
No. 40	75.9			
No. 100	57.5			
No. 200	52.2			

Remarks:	

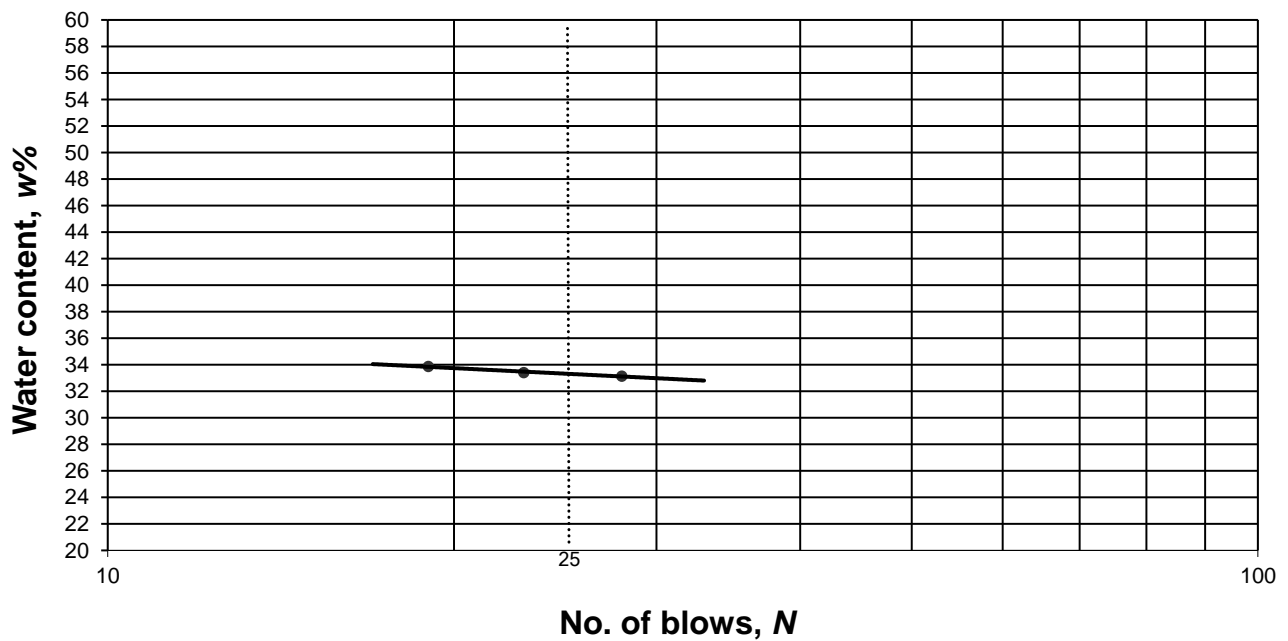


Atterberg Limits
AAASHTO T 89,90

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-39-BS-01	Date Tested	6/18/2022	Tested By	DG
						Qc By	AB

Date Sample Recd.	6/13/2022
Sample Location	1'-4'
Sample Description	Black and blackish green sandy loam with little gravel

LIQUID LIMIT DETERMINATION



Results					
Liquid Limit, LL	33	Plastic Limit, PL	16	Plasticity Index, PI	17

Remarks	
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Moisture Content
AASHTO T265

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation							
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532							
File No.	9012	Sample #	SGB-39-BS-01	Date Tested	6/16/2022	Tested By	BKP	
							Qc By	AB

Date Sample Received	6/13/2022
Sample Location	1'-4'
Sample Description	Black and blackish green sandy loam with little gravel
Can Number : D	
Can Weight : 262.14 gm	
Can + Wet Sample Weight : 816.33 gm	
Can + Dry Sample Weight : 736.11 gm	
Moisture Content : 16.93 %	

Remarks	
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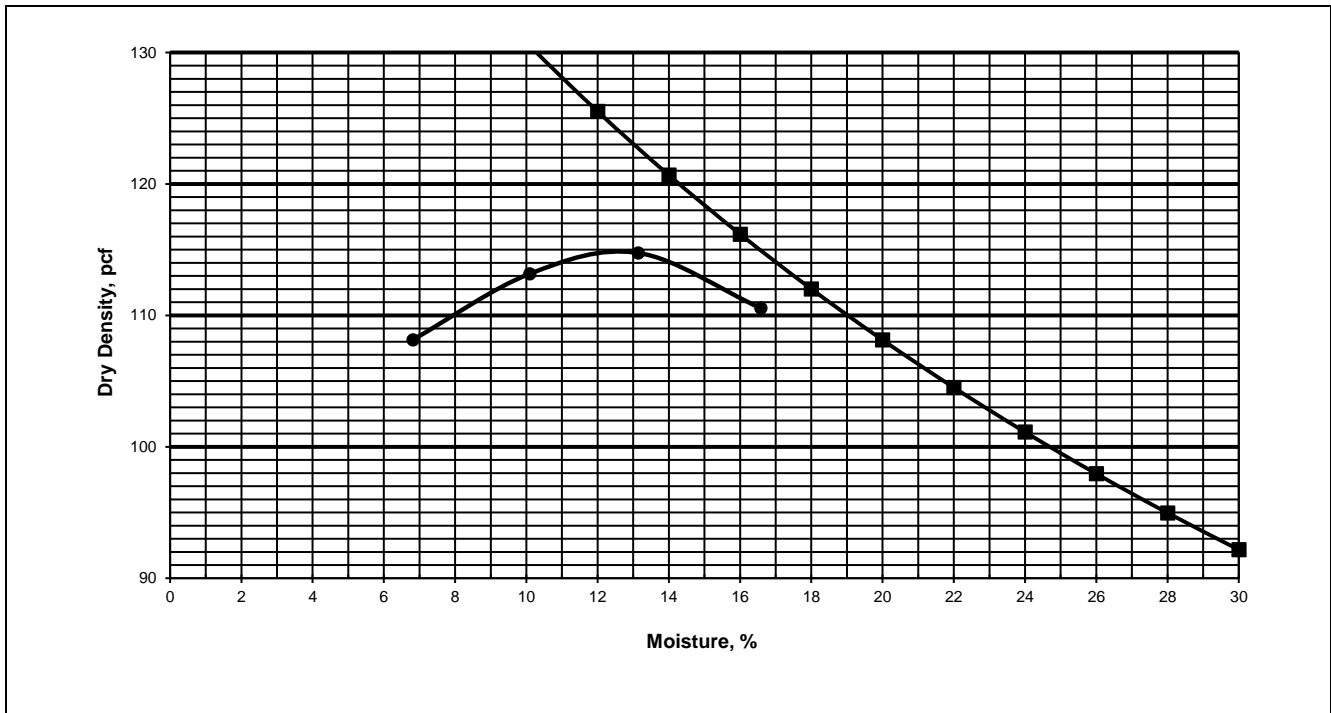


**MOISTURE - DENSITY
RELATIONSHIP CURVE**

AASHTO T99

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-39-BS-01	Date Tested	6/18/2022	Tested By	DG
						Qc By	AB

Date Sample Recd.	6/13/22								
Sample Location	1'-4'								
Sample Description	Black and blackish green sandy loam with little gravel								
Type of Proctor	Standard	Method:	C	Mold Size, in.	4	Hammer Weight, lb.	5.5	Drop, in.	12
No. of Layers	3	No. of Blows per Layer		25					



Zero Air Void Curve Specific Gravity: 2.65

Results					
Maximum Dry Density, pcf	114.9	Optimum Moisture Content, %	12.7	Natural Moisture Content, %	16.9
Corrected Max. Dry Density, pcf		Corrected Optimum Moisture Content, %			

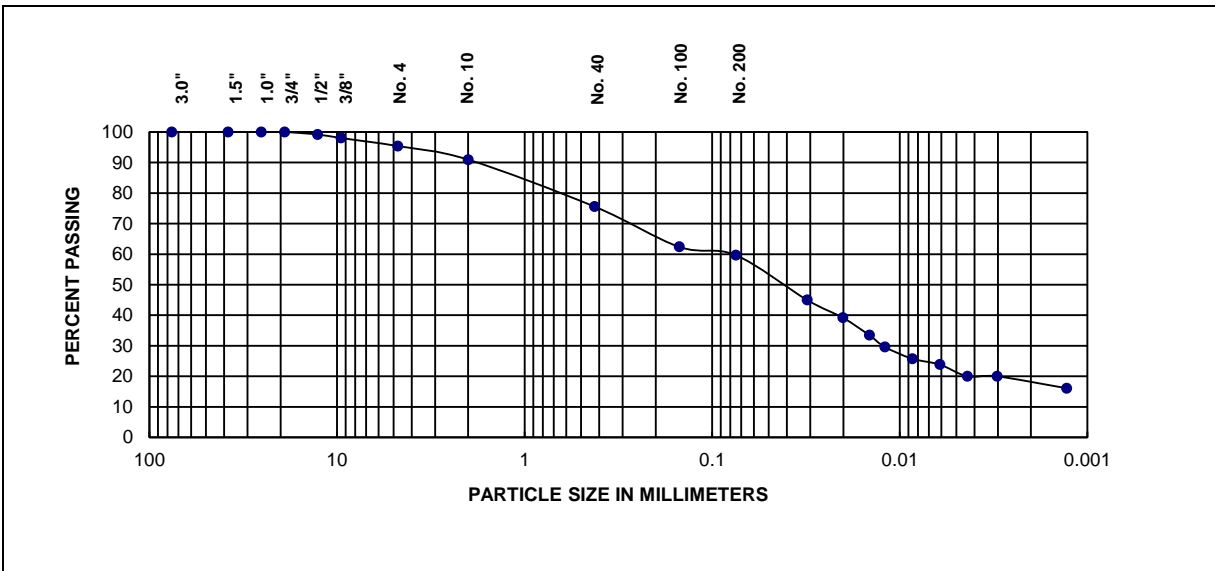
Remarks



**GRAIN SIZE ANALYSIS
AASHTO T 88**

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-47-BS-01	Date Tested	6/17/2022	Tested by	BKP
						Qc by	AB

Date Sample Received:	6/13/2022
Sample Location	1'-4'
Sample Description	Black and green sandy loam with trace gravel



% + 3"	% Gravel	% Sand	Fines	
			% Silt	% Clay
0.0	9.0	31.3	41.9	17.8

For coarse-grained soils with <12% Fines	D60(mm)	D30(mm)	D10(mm)	Cu	Cc

Sieve Size	Percent Passing	Liquid Limit, L _L	Plastic Limit, PL	Plasticity Index, PI
3.0"	100.0	38	17	21
1.5"	100.0			
1.0"	100.0			
3/4"	100.0	AASHTO Classification:		A-6(10)
1/2"	99.2	IDH Classification:		Sandy Loam
3/8"	98.0			
No. 4	95.4			
No. 10	91.0			
No. 40	75.6			
No. 100	62.4			
No. 200	59.7			

Remarks:	

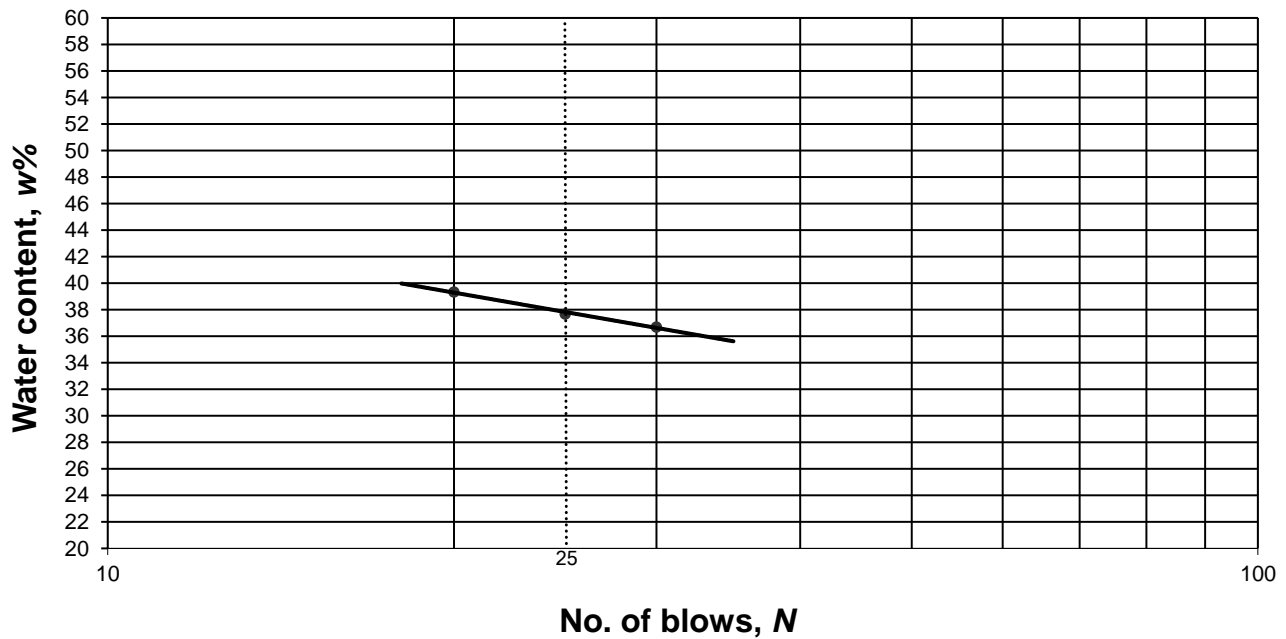


Atterberg Limits
AAASHTO T 89,90

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-47-BS-01	Date Tested	6/18/2022	Tested By	DG
						Qc By	AB

Date Sample Recd.	6/13/2022
Sample Location	1'-4'
Sample Description	Black and green sandy loam with trace gravel

LIQUID LIMIT DETERMINATION



Results					
Liquid Limit, LL	38	Plastic Limit, PL	17	Plasticity Index, PI	21

Remarks	
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Moisture Content
AASHTO T265

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-47-BS-01	Date Tested	6/16/2022	Tested By	BKP
						Qc By	AB

Date Sample Received	6/13/2022
Sample Location	1'-4'
Sample Description	Black and green sandy loam with trace gravel
<p>Can Number : P-20</p> <p>Can Weight : 268.69 gm</p> <p>Can + Wet Sample Weight : 627.11 gm</p> <p>Can + Dry Sample Weight : 559.87 gm</p> <p>Moisture Content : 23.09 %</p>	

Remarks	
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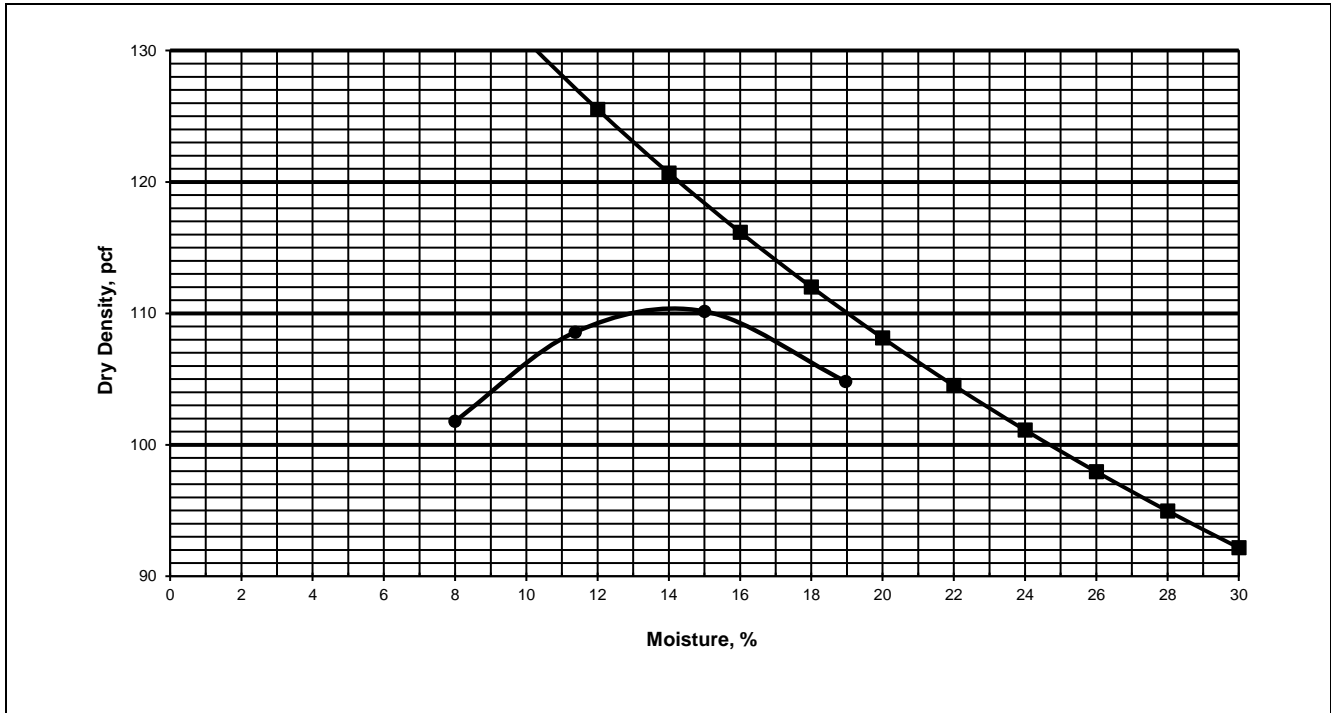


**MOISTURE - DENSITY
RELATIONSHIP CURVE**

AASHTO T99

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation							
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532							
File No.	9012	Sample #	SGB-47-BS-01	Date Tested	6/17/2022	Tested By	BKP	
							Qc By	AB

Date Sample Recd.	6/13/22								
Sample Location	1'-4'								
Sample Description	Black and green sandy loam with trace gravel								
Type of Proctor	Standard	Method:	C	Mold Size, in.	4	Hammer Weight, lb.	5.5	Drop, in.	12
No. of Layers	3	No. of Blows per Layer		25					



Zero Air Void Curve Specific Gravity: 2.65

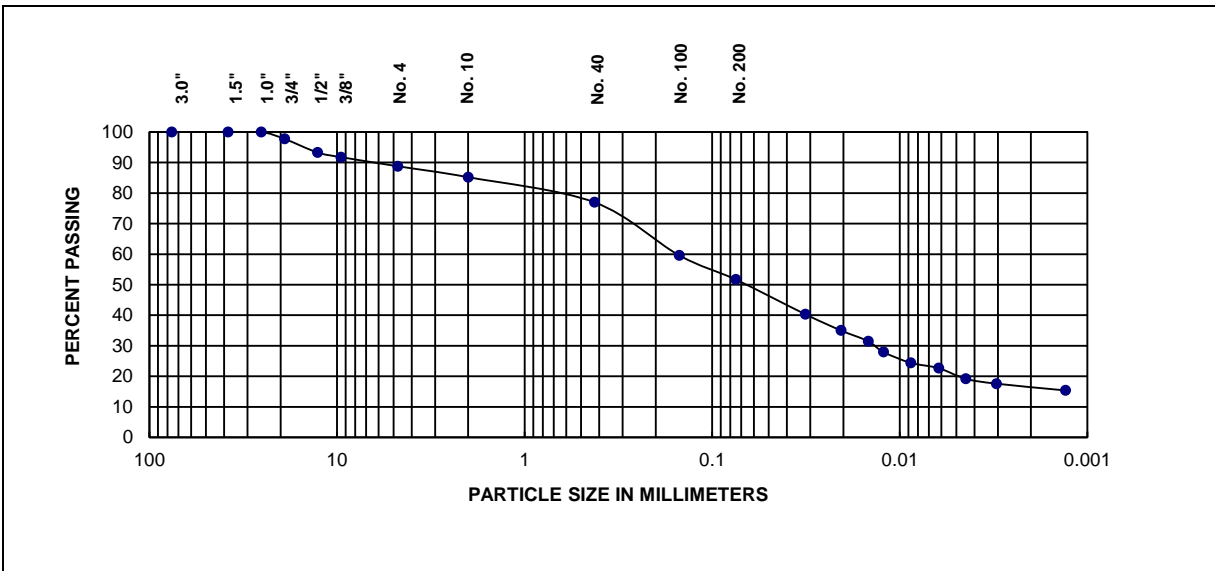
Results					
Maximum Dry Density, pcf	110.5	Optimum Moisture Content, %	14.0	Natural Moisture Content, %	23.1
Corrected Max. Dry Density, pcf		Corrected Optimum Moisture Content, %			

Remarks



**GRAIN SIZE ANALYSIS
AASHTO T 88**

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-52-BS01	Date Tested	5/10/2022	Tested by	DG
						Qc by	RC
Date Sample Received:	5/9/2022						
Sample Location	1'-4'						
Sample Description	Black & Brown Sandy Loam						



% + 3"	% Gravel	% Sand	Fines	
			% Silt	% Clay
0.0	14.8	33.5	35.2	16.5

For coarse-grained soils with <12% Fines	D60(mm)	D30(mm)	D10(mm)	Cu	Cc

Sieve Size	Percent Passing	Liquid Limit, L _L	Plastic Limit, PL	Plasticity Index, PI
3.0"	100.0	31	15	16
1.5"	100.0			
1.0"	100.0			
3/4"	97.7	AASHTO Classification:		A-6(5)
1/2"	93.3	IDH Classification:		Sandy Loam
3/8"	91.8			
No. 4	88.8			
No. 10	85.2			
No. 40	77.0			
No. 100	59.6			
No. 200	51.7			

Remarks:	

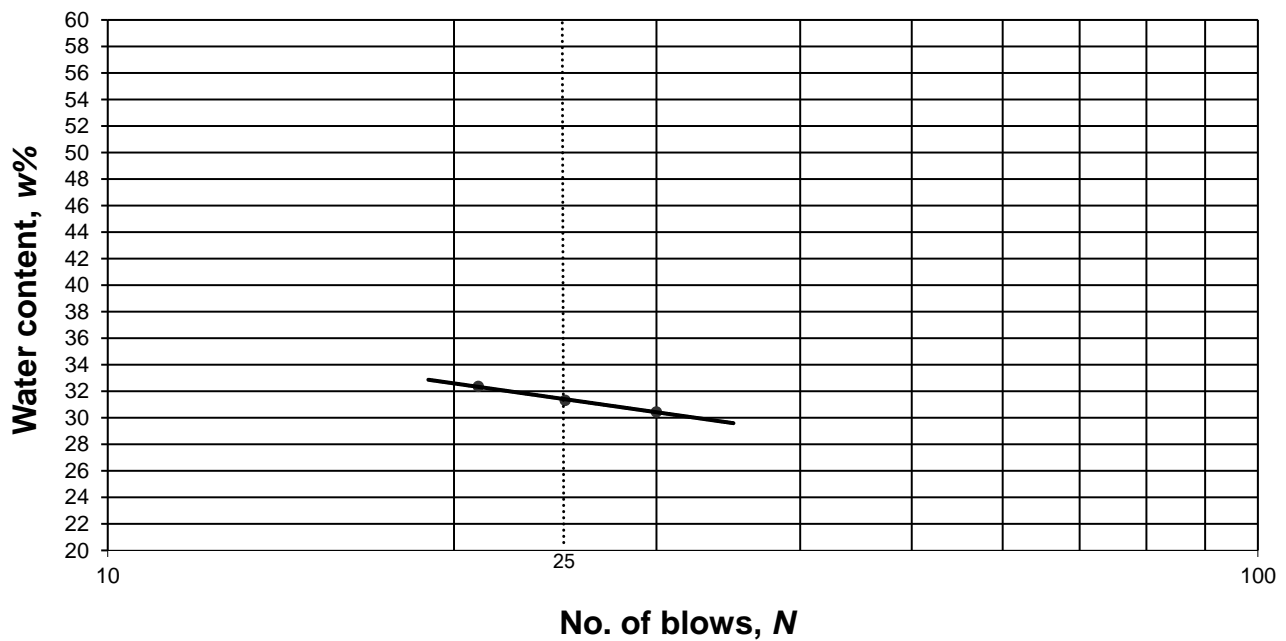


Atterberg Limits
AAASHTO T 89,90

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-52-BS01	Date Tested	5/9/2022	Tested By	DG
						Qc By	RC

Date Sample Recd.	5/9/2022
Sample Location	1'-4'
Sample Description	Black & brown sandy loam

LIQUID LIMIT DETERMINATION



Results					
Liquid Limit, LL	31	Plastic Limit, PL	15	Plasticity Index, PI	16

Remarks	
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Moisture Content
AASHTO T265

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-52-BS01	Date Tested	5/9/2022	Tested By	DG
						Qc By	RC

Date Sample Received	5/9/2022
Sample Location	1'-4'
Sample Description	Black & Brown sandy loam
Can Number : 4	
Can Weight : 330.40 gm	
Can + Wet Sample Weight : 1198.50 gm	
Can + Dry Sample Weight : 1081.50 gm	
Moisture Content : 15.58 %	

Remarks	
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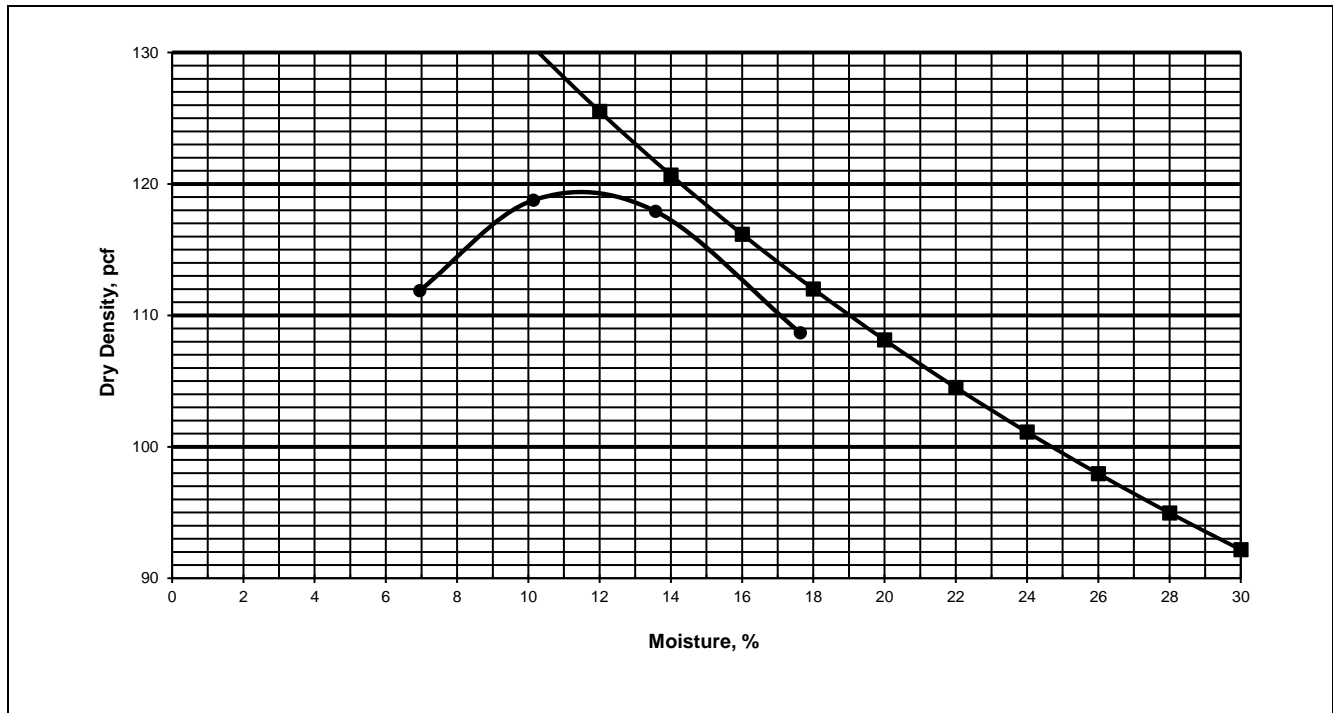


**MOISTURE - DENSITY
RELATIONSHIP CURVE**

AASHTO T 99

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-52-BS01	Date Tested	5/10/2022	Tested By	DG
						Qc By	RC

Date Sample Recd.	5/9/22								
Sample Location	1'-4'								
Sample Description	Black & brown sandy loam								
Type of Proctor	Standard	Method:	C	Mold Size, in.	4	Hammer Weight, lb.	5.5	Drop, in.	12
No. of Layers	3	No. of Blows per Layer		25					



Zero Air Void Curve Specific Gravity: 2.65

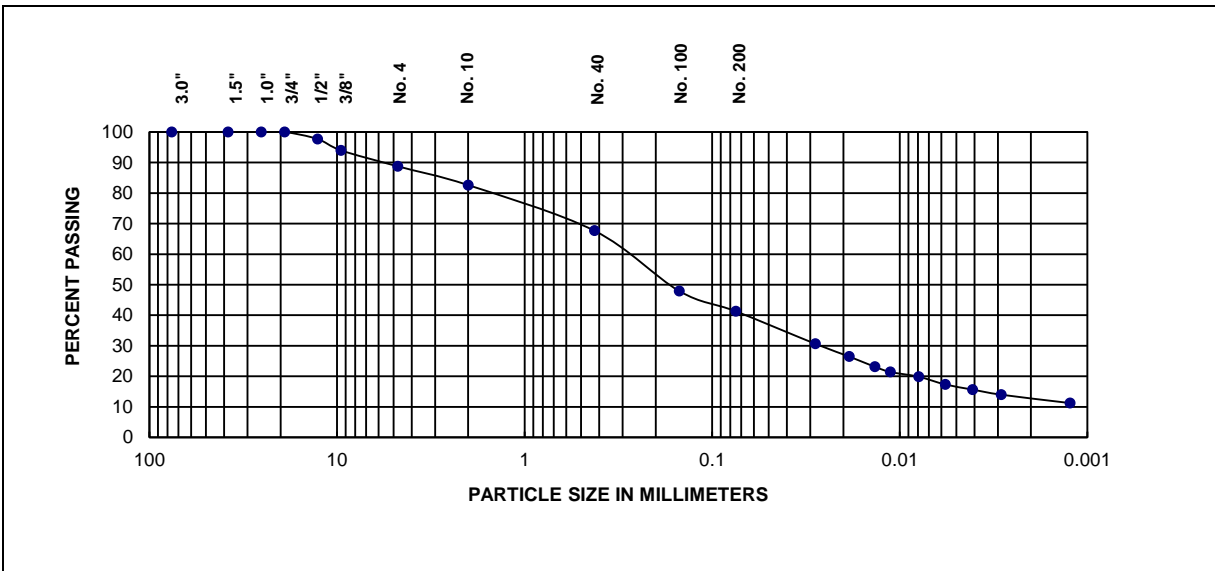
Results					
Maximum Dry Density, pcf	119.3	Optimum Moisture Content, %	11.5	Natural Moisture Content, %	15.6
Corrected Max. Dry Density, pcf		Corrected Optimum Moisture Content, %			

Remarks				
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**GRAIN SIZE ANALYSIS
AASHTO T 88**

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-57-BS-01	Date Tested	6/16/2022	Tested by	BKP
						Qc by	AB
Date Sample Received:	6/13/2022						
Sample Location	1'-4'						
Sample Description	Black and brown sandy loam with little gravel						



% + 3"	% Gravel	% Sand	Fines	
			% Silt	% Clay
0.0	17.4	41.3	28.3	13.0

For coarse-grained soils with <12% Fines	D60(mm)	D30(mm)	D10(mm)	Cu	Cc

Sieve Size	Percent Passing	Liquid Limit, L _L	Plastic Limit, PL	Plasticity Index, PI
3.0"	100.0	24	13	11
1.5"	100.0			
1.0"	100.0			
3/4"	100.0	AASHTO Classification:		A-6(2)
1/2"	97.7	IDH Classification:		Sandy Loam
3/8"	94.0			
No. 4	88.8			
No. 10	82.6			
No. 40	67.7			
No. 100	47.9			
No. 200	41.3			

Remarks:	

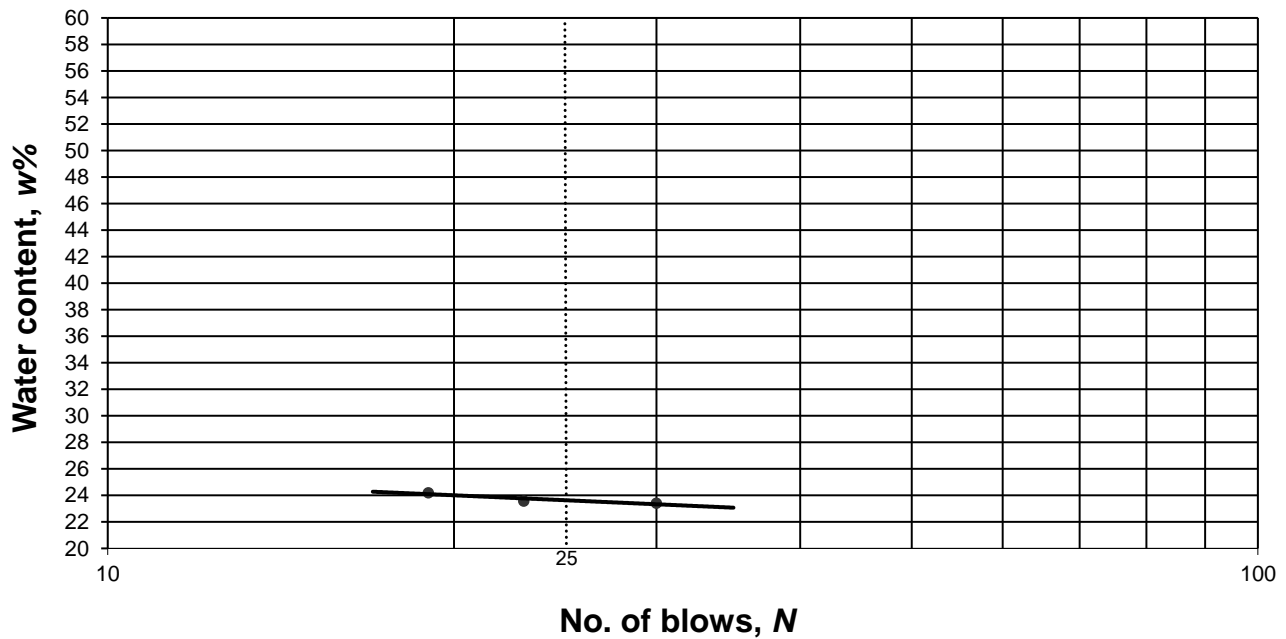


Atterberg Limits
AAASHTO T 89,90

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-57-BS-01	Date Tested	6/18/2022	Tested By	DG
						Qc By	AB

Date Sample Recd.	6/13/2022
Sample Location	1'-4'
Sample Description	Black and brown sandy loam with little gravel

LIQUID LIMIT DETERMINATION



Results					
Liquid Limit, LL	24	Plastic Limit, PL	13	Plasticity Index, PI	11

Remarks	
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Moisture Content
AASHTO T265

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation							
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532							
File No.	9012	Sample #	SGB-57-BS-01	Date Tested	6/14/2022	Tested By	BKP	
							Qc By	

Date Sample Received	6/13/2022
Sample Location	1'-4'
Sample Description	Black and brown sandy loam with little gravel
<p>Can Number : 45C</p> <p>Can Weight : 31.43 gm</p> <p>Can + Wet Sample Weight : 153.51 gm</p> <p>Can + Dry Sample Weight : 140.10 gm</p> <p>Moisture Content : 12.34 %</p>	

Remarks	
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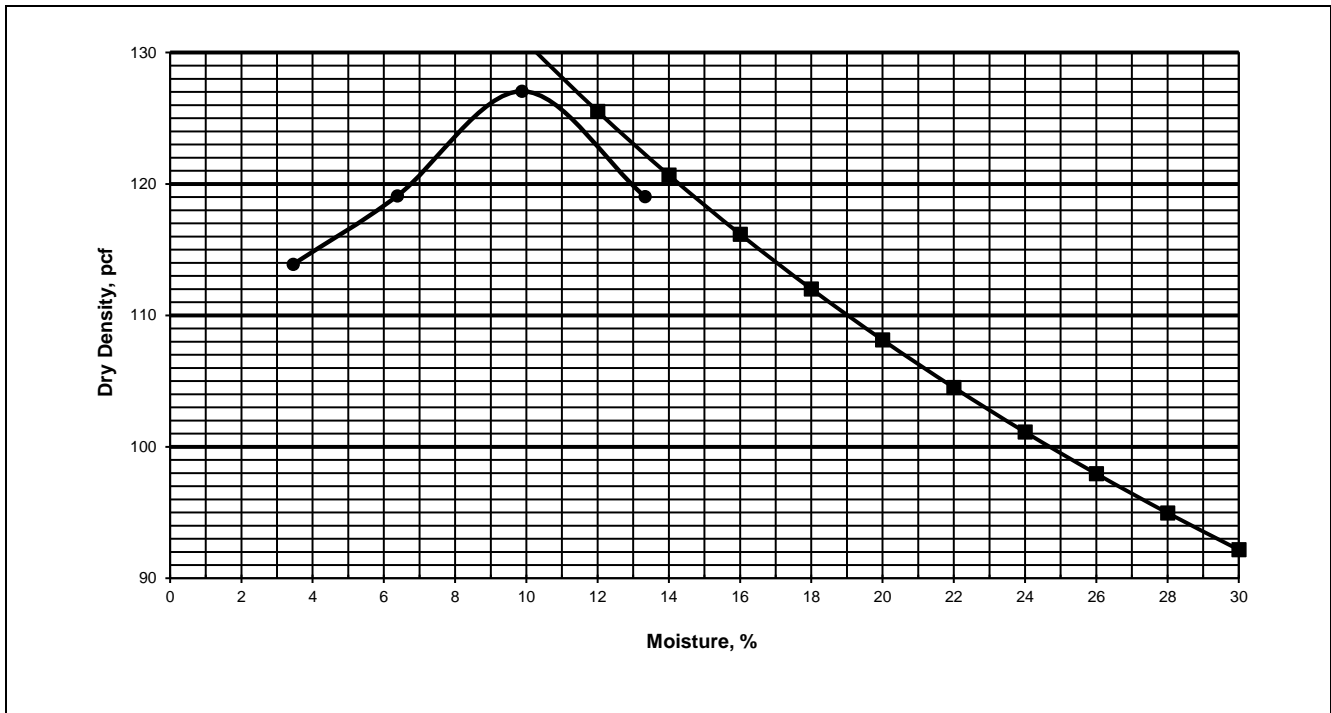


**MOISTURE - DENSITY
RELATIONSHIP CURVE**

AASHTO T99

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-57-BS-01	Date Tested	6/18/2022	Tested By	DG
						Qc By	AB

Date Sample Recd.	6/13/22								
Sample Location	1'-4'								
Sample Description	Black and brown sandy loam with little gravel								
Type of Proctor	Standard	Method:	C	Mold Size, in.	4	Hammer Weight, lb.	5.5	Drop, in.	12
No. of Layers	3	No. of Blows per Layer		25					



Zero Air Void Curve Specific Gravity: 2.65

Results					
Maximum Dry Density, pcf	127.1	Optimum Moisture Content, %	9.9	Natural Moisture Content, %	12.3
Corrected Max. Dry Density, pcf		Corrected Optimum Moisture Content, %			

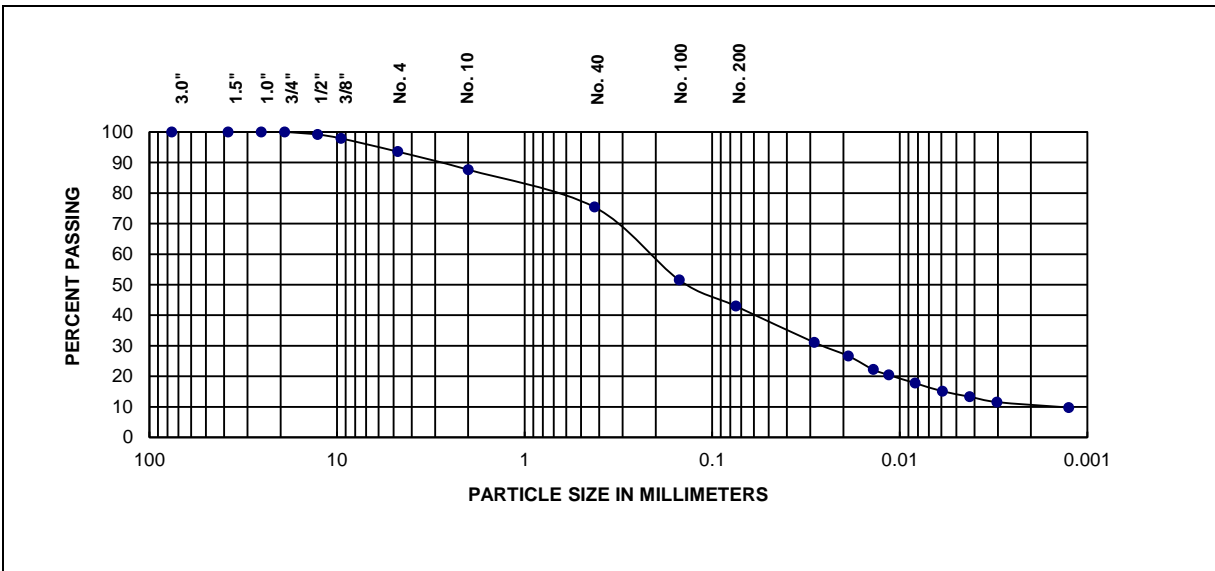
Remarks



**GRAIN SIZE ANALYSIS
AASHTO T 88**

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-62-BS-01	Date Tested	7/18/2022	Tested by	BKP
						Qc by	RC

Date Sample Received:	7/14/2022
Sample Location	1-4'
Sample Description	Brown sandy loam, little gravel



% + 3"	% Gravel	% Sand	Fines	
			% Silt	% Clay
0.0	12.3	44.7	32.3	10.7

For coarse-grained soils with <12% Fines	D60(mm)	D30(mm)	D10(mm)	Cu	Cc

Sieve Size	Percent Passing	Liquid Limit, L _L	Plastic Limit, PL	Plasticity Index, PI
3.0"	100.0	18	13	5
1.5"	100.0			
1.0"	100.0			
3/4"	100.0	AASHTO Classification:		A-4(0)
1/2"	99.2	IDH Classification:		Sandy Loam
3/8"	97.9			
No. 4	93.6			
No. 10	87.7			
No. 40	75.4			
No. 100	51.5			
No. 200	43.0			

Remarks:	

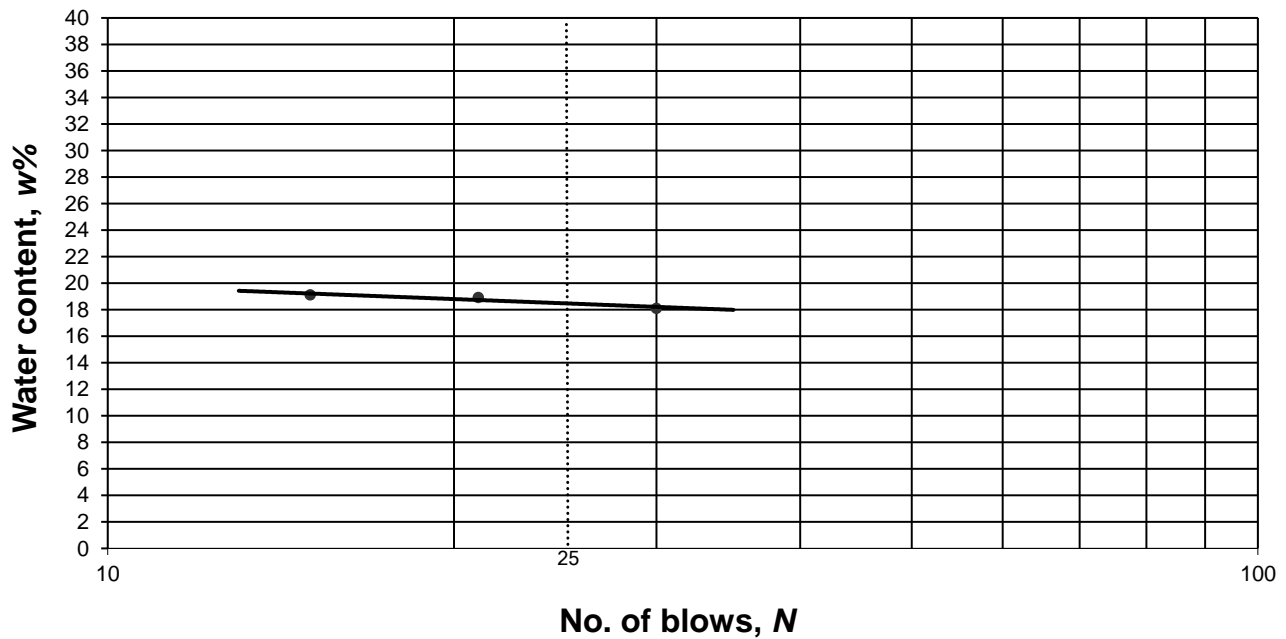


Atterberg Limits
AAASHTO T 89,90

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-62-BS-01	Date Tested	7/18/2022	Tested By	BKP
						Qc By	RC

Date Sample Recd.	7/14/2022
Sample Location	1-4'
Sample Description	Brown sandy loam, little gravel

LIQUID LIMIT DETERMINATION



Results					
Liquid Limit, LL	18	Plastic Limit, PL	13	Plasticity Index, PI	5

Remarks	
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Moisture Content
AASHTO T265

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-62-BS-01	Date Tested	7/17/2022	Tested By	BKP
						Qc By	

Date Sample Received	7/14/2022
Sample Location	1-4'
Sample Description	Brown sandy loam, little gravel
<p>Can Number : L-1</p> <p>Can Weight : 271.10 gm</p> <p>Can + Wet Sample Weight : 619.40 gm</p> <p>Can + Dry Sample Weight : 583.60 gm</p> <p>Moisture Content : 11.46 %</p>	

Remarks	
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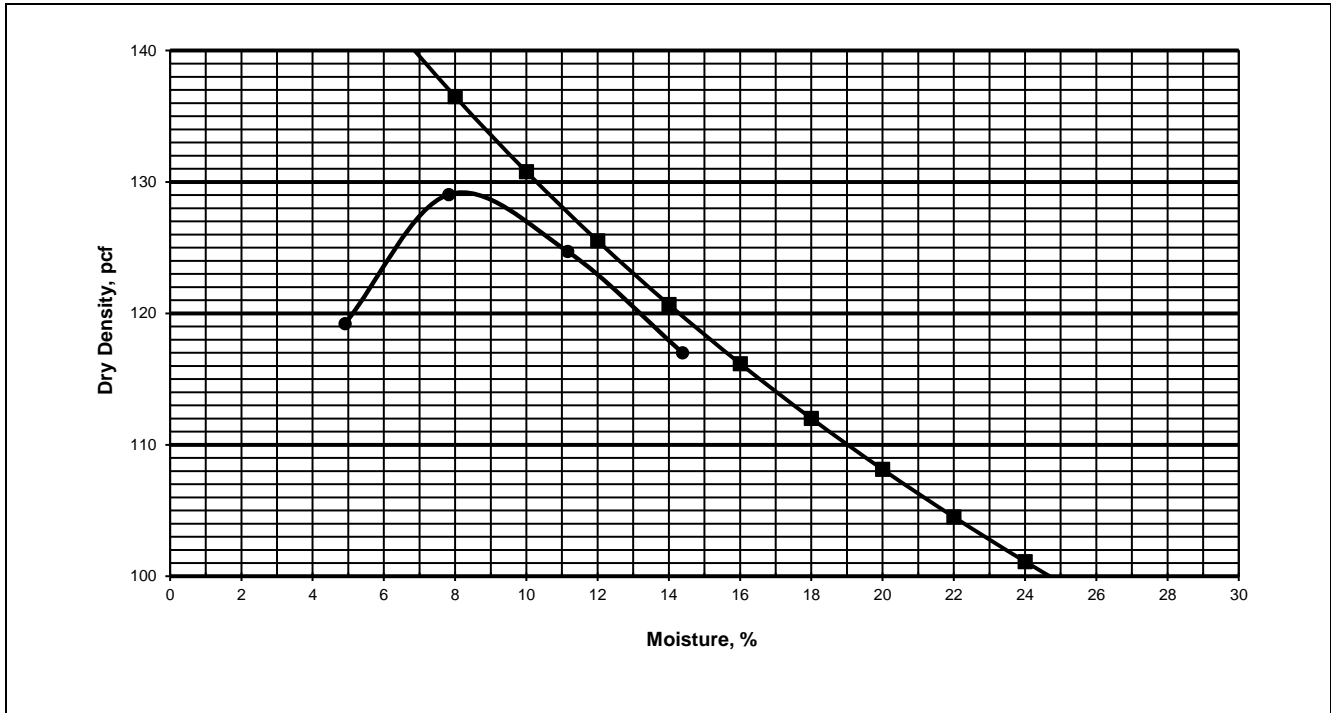


**MOISTURE - DENSITY
RELATIONSHIP CURVE**

AASHTO T 99

Project	IL 31 from IL 120 to IL 176 PTB 195-015 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	SGB-62-BS-01	Date Tested	7/17/2022	Tested By	BKP
						Qc By	RC

Date Sample Recd.	7/14/22								
Sample Location	1-4'								
Sample Description	Brown sandy loam, little gravel								
Type of Proctor	Standard	Method:	C	Mold Size, in.	4	Hammer Weight, lb.	5.5	Drop, in.	12
No. of Layers	3	No. of Blows per Layer		25					



Zero Air Void Curve Specific Gravity: 2.65

Results					
Maximum Dry Density, pcf	129.1	Optimum Moisture Content, %	8.2	Natural Moisture Content, %	11.5
Corrected Max. Dry Density, pcf		Corrected Optimum Moisture Content, %			

Remarks



Moisture Content
AASHTO T265

Project	IL 31 from IL 120 to IL 176 PTB 195-005 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	TSB SL 01-ST-08	Date Tested	5/1/2024	Tested By	DG
						Qc By	AB

Date Sample Received	4/12/2024
Sample Location	18.5-20'
Sample Description	Dark gray (10YR 4/1) silty clay
<p>Can Number : M-60</p> <p>Can Weight : 20.49 gm</p> <p>Can + Wet Sample Weight : 212.79 gm</p> <p>Can + Dry Sample Weight : 191.44 gm</p> <p>Moisture Content : 12.49 %</p>	

Remarks	
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Moisture Content
AASHTO T265

Project	IL 31 from IL 120 to IL 176 PTB 195-005 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	CUL07 01-ST-04	Date Tested	5/1/2024	Tested By	DG
						Qc By	AB

Date Sample Received	4/8/2024
Sample Location	8.5'-10.5'
Sample Description	Dark yellowish brown (10YR 4/4) fine sandy loam
<p>Can Number : 24C</p> <p>Can Weight : 30.53 gm</p> <p>Can + Wet Sample Weight : 205.07 gm</p> <p>Can + Dry Sample Weight : 187.02 gm</p> <p>Moisture Content : 11.53 %</p>	

Remarks	
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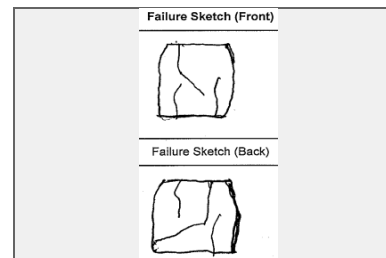


UNCONFINED COMPRESSIVE STRENGTH (ASTM D 2166)

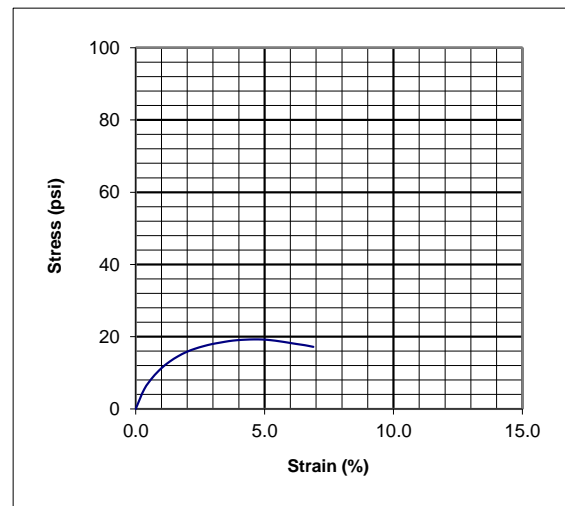
Project	IL 31 from IL 120 to IL 176 PTB 195-005 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample No.	CUL07 02-ST-03	Date Tested	5/2/24	Tested By	DG
						QC By	AB

Date Sample Received	4/8/24
Description of Soil	Brown (10YR 4/3) silty clay, trace gravel
Location	6-8'

Type of Sample	ST
Average Height =	15.48 cm
Average Diameter =	7.25 cm
Height/Diameter Ratio =	2.14
Wet Sample Weight=	1263.28 g
Wet Density =	1.98 g/cc
Moisture Content =	33.4 %
Dry Density =	1.48 g/cc
Strain Rate =	1.00 %/min



Failure Image



Unconfined Compressive Strength =	19.25 psi
	1.39 tsf
Shear Strength =	9.62 psi
	0.69 tsf
Strain at Failure =	4.6 %

Remarks:



Moisture Content
AASHTO T265

Project	IL 31 from IL 120 to IL 176 PTB 195-005 Geotechnical Investigation							
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532							
File No.	9012	Sample #	CUL07 03-ST-04	Date Tested	5/2/2024	Tested By	DG	
							Qc By	AB

Date Sample Received	4/8/2024
Sample Location	8.5'-10.5'
Sample Description	Dark yellowish brown (10YR 4/6) fine sandy loam, trace gravel
Can Number : 41C	
Can Weight : 30.85 gm	
Can + Wet Sample Weight : 207.73 gm	
Can + Dry Sample Weight : 189.81 gm	
Moisture Content : 11.27 %	

Remarks	
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Moisture Content
AASHTO T265

Project	IL 31 from IL 120 to IL 176 PTB 195-005 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	CUL08 03-ST-04	Date Tested	5/2/2024	Tested By	DG
						Qc By	AB

Date Sample Received	4/8/2024
Sample Location	8.5-10.5'
Sample Description	Yellowish brown (10YR 5/4) brown sand
<p>Can Number : 87-A</p> <p>Can Weight : 30.50 gm</p> <p>Can + Wet Sample Weight : 83.13 gm</p> <p>Can + Dry Sample Weight : 80.06 gm</p> <p>Moisture Content : 6.19 %</p>	

Remarks	
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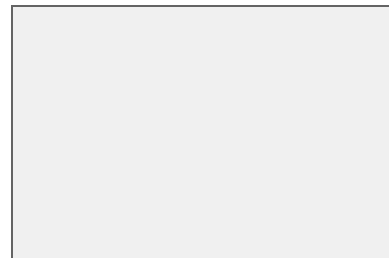


UNCONFINED COMPRESSIVE STRENGTH (ASTM D 2166)

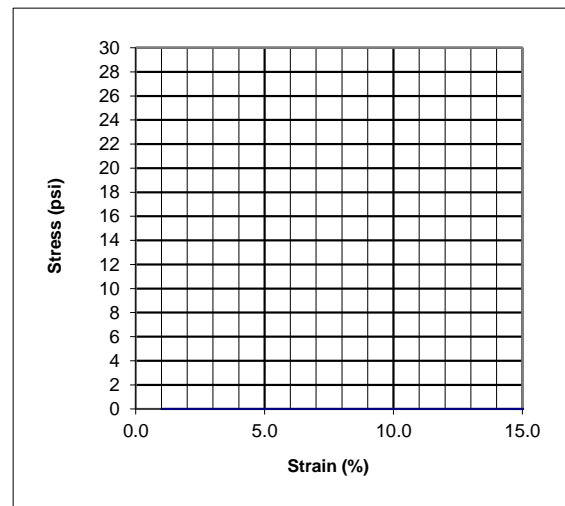
Project	IL 31 from IL 120 to IL 176 PTB 195-005 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample No.	CUL09 03-ST-03	Date Tested	5/2/24	Tested By	DG
						QC By	AB

Date Sample Received	4/8/24
Description of Soil	Gray (10YR 6/1) silty loam
Location	6-7.5'

Type of Sample	
Average Height =	cm
Average Diameter =	cm
Height/Diameter Ratio =	
Wet Sample Weight=	g
Wet Density =	g/cc
Moisture Content =	%
Dry Density =	g/cc
Strain Rate =	%/min



Failure Image



Unconfined Compressive Strength =	0.00 psi
	0.00 tsf
Shear Strength =	0.00 psi
	0.00 tsf
Strain at Failure =	%

Remarks:
 Not enough sample to run test. Top = 4.5+ tsf, Bottom = 4.5+ tsf



Moisture Content
AASHTO T265

Project	IL 31 from IL 120 to IL 176 PTB 195-005 Geotechnical Investigation						
Client	Patrick Engineering, Inc., 4970 Varsity Drive, Lisle, IL 60532						
File No.	9012	Sample #	CUL12 02-ST-05	Date Tested	5/1/2024	Tested By	DG
						Qc By	AB

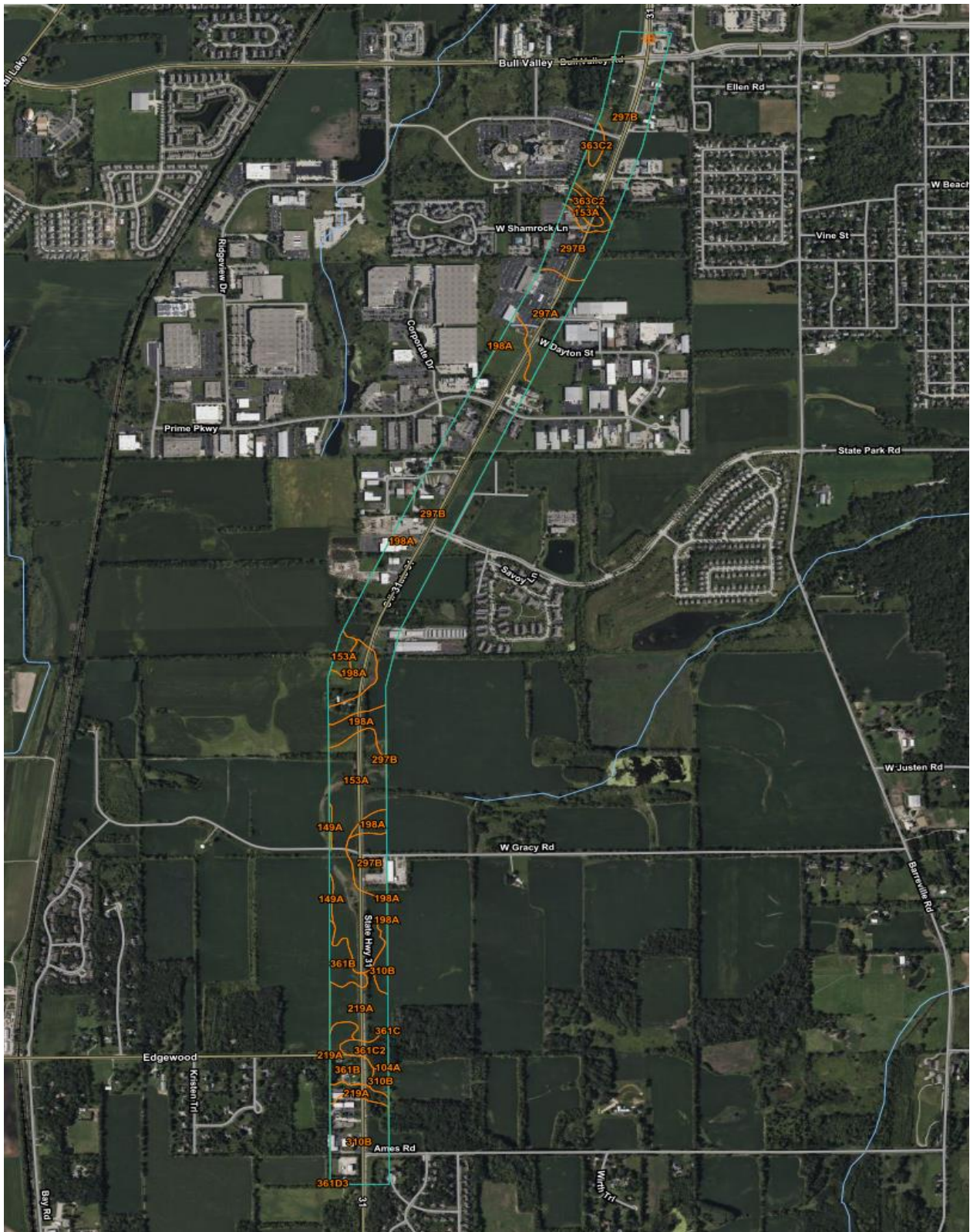
Date Sample Received	4/9/2024
Sample Location	10.5-12.5'
Sample Description	Dark yellowish brown (10YR 4/4) fine sand
<p>Can Number : 58-A</p> <p>Can Weight : 30.80 gm</p> <p>Can + Wet Sample Weight : 180.31 gm</p> <p>Can + Dry Sample Weight : 164.09 gm</p> <p>Moisture Content : 12.17 %</p>	

Remarks	
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Appendix E

Soil Erosion Factors and Hazard Ratings

Soil Types for Erosion Factors and Hazard Rating



Hazard Rating and Soil Erosion Factors

Map Unit Symbol	Map Unit Name	Soil Erosion Factor, k	Hazard Rating
104A	Virgil silt loam, 0 to 2 percent slopes	0.37	slight
149A	Brenton silt loam, 0 to 2 percent slopes	0.32	slight
153A	Pella silty clay loam, cool, 0 to 2 percent slopes	0.28	slight
198A	Elburn silt loam, cool, 0 to 2 percent slopes	0.28	slight
219A	Millbrook silt loam, 0 to 2 percent slopes	0.32	slight
297A	Ringwood silt loam, 0 to 2 percent slopes	0.32	slight
297B	Ringwood silt loam, 2 to 4 percent slopes	0.24	slight
310B	McHenry silt loam, 2 to 4 percent slopes	0.49	slight
361B	Kidder loam, 2 to 4 percent slopes	0.28	slight
361C	Kidder loam, 4 to 6 percent slopes	0.37	moderate
361C2	Kidder loam, 4 to 6 percent slopes, eroded	0.28	moderate
361D3	Kidder clay loam, 6 to 12 percent slopes, severely eroded	0.28	moderate
363C2	Griswold loam, 4 to 6 percent slopes, eroded	0.24	moderate