

May 6, 2026

Mr. Matt Cesario, P.E.

BLA, Inc.

333 Pierce Road, Suite 200

Itasca, IL 60143

Re: Geotechnical Engineering Services, Phase I Completion
Kirk Road over Reed Road and the Union Pacific Railroad
Kirk Road Viaduct Replacement
Kane County, Illinois

This letter report presents the results of Wang Engineering, Inc.'s (Wang) subsurface investigation, laboratory testing, geotechnical evaluations, and recommendations to complete the Phase 1 geotechnical work for the Kirk Road Bridges over Reed Road and the Union Pacific Railroad (UPRR), and the associated retaining walls in Kane County, Illinois. These improvements are part of the Kirk Road Viaduct replacement project, from Cherry Lane on the south end to Illinois Route 38 on the north end. A *Site Location Map* is presented as Exhibit 1.

Wang has been provided with Structure Geotechnical Reports (SGRs), completed by others in 2015. We understand the work to be completed for the Phase 1 geotechnical scope includes: extending soil borings at each abutment location to bedrock and provide revised driven pile estimates; perform slope stability evaluations for the proposed retaining walls; and extend four additional soil borings and perform in-situ pressuremeter testing to assess potential ground improvement or settlement mitigation measures along the retaining wall portion where soft and compressible soil conditions have been encountered immediately north of the UPRR.

Based on the TSL plans provided by BLA, Inc., Wang understands the existing viaduct spans over Reed Road and the UPRR will be replaced by single-span bridges with integral abutments. In addition, a third bridge has been added to cross Whites Creek approximately 150 feet south of the UPRR Bridge. The approach spans to the bridges, which are currently open-span viaducts, will be replaced by retaining walls, which will wrap around the front of the bridges. We assume the retaining walls will be designed as either mechanically-stabilized earth (MSE) or pre-cast modular block type walls, as shown in the TSL plans provided by BLA. The Phase 1 Structure Geotechnical Report (SGR) reviews by Kane County indicate the remaining Phase 1 geotechnical items include extending soil borings and pile recommendations to the top of bedrock elevations, evaluating the level of anticipated downdrag on the piles, checking global stability of the proposed retaining walls,

and providing initial recommendations and guidance for mitigation of estimated settlements along the retaining wall immediately north of the UPRR Bridge.

SUBSURFACE INVESTIGATION

The current subsurface investigation to complete Phase 1 consisted of eight structure borings, designated as REED-01, REED-02, UPRR-01, UPRR-02, and RWB-01 thru RWB-04. The borings were drilled by Wang in October 2021. The borings were drilled from elevations of 756.1 to 770.1 feet and were advanced to depths of 40 to 89 feet below ground surface (bgs). The as-drilled northings, eastings, elevations, stations, and offsets were provided by BLA. Boring location data are presented in the *Boring Logs* (Appendix A) and the as-drilled boring locations are shown in the *Boring Location Plans* (Exhibit 2). The Phase 1 investigation included soil borings designated as SB-101 through SB-130 along the retaining wall alignments and SB-1 through SB-8 at the proposed bridge abutments. We have re-attached the boring location plans provided in the Phase 1 SGRs (Exhibit 2) and have plotted the various *Soil Profiles* along the retaining walls and at the bridges (Exhibit 3).

Truck-mounted drilling rigs, equipped with rotary equipment and drilling fluid used to advance and maintain open boreholes. Soil sampling was performed according to AASHTO T 206, "*Penetration Test and Split Barrel Sampling of Soils*." The soil was sampled at 2.5-foot intervals to 30 feet bgs and at 5.0-foot intervals from 30 feet down. Bedrock cores were obtained in the bridge borings in 5- to 10-foot runs with an NWD4-sized core barrel. Bedrock Core photographs are presented in Appendix D. Soil samples collected from each sampling interval were placed in sealed jars and transported to the laboratory for further examination and laboratory testing.

Field boring logs, prepared and maintained by Wang geologists, include lithological descriptions, visual-manual soil (IDH Textural) classifications, results of Rimac and pocket penetrometer unconfined compressive strength tests, and results of Standard Penetration Tests (SPT) recorded as blows per 6 inches of penetration. The boreholes were backfilled upon completion with soil cuttings and bentonite chips.

Groundwater levels were measured while drilling; at completion of drilling the boreholes were filled with grout and bentonite. A groundwater monitoring piezometer with a 10-foot screen was installed between 5 and 15 feet bgs along the north side of the proposed UPRR Bridge.

LABORATORY INVESTIGATION

The soil samples were tested in the laboratory for moisture content (AASHTO T265). Selected soil samples were tested for Atterberg limits (AASHTO T 89/90) and particle size (AASHTO T 88) analyses. Uniaxial compressive strength tests were performed on selected bedrock cores. Field

visual descriptions of the soil samples were verified in the laboratory. Laboratory test results are shown in the *Boring Logs* (Appendix A) and in the *Laboratory Test Results* (Appendix B).

LITHOLOGICAL PROFILE

The surface condition below the existing viaduct consists of 12 inches of black, silty clay topsoil at the Reed Road Bridge and a thin, gravelly surface covering around the UPRR Bridge. In descending order, the general lithologic succession encountered beneath the surface includes: 1) man-made ground (fill); 2) stiff to hard silty clay to silty clay loam; and 3) loose to dense silt and silty loam; and 4) strong, very poor to fair quality dolostone.

1) Man-made ground (fill)

Beneath the surface, the borings encountered 9 to 10.5 feet of fill. The fill consists primarily of medium stiff to hard, black, brown, and gray silty clay to silty clay loam. The cohesive fill has unconfined compressive strength (Q_u) values of 0.5 to 6.0 tsf and moisture content values of 15 to 38%. Granular fill was encountered at the UPRR Bridge in the form of loose to dense, brown sandy loam and gravelly sand, some cemented in a matrix of silty clay loam. These granular fill deposits N-values of 4 blows per foot of penetration close to surface and 26 to 37 blows per foot at depths of 5 to 10 feet bgs.

2) Soft to hard silty clay and silty clay loam

Beneath the fill, the borings advanced through 42 to 57 feet of stiff to hard, gray silty clay and silty clay loam. The cohesive soil has Q_u values from about 0.4 to greater than 6.0 tsf and moisture contents from 12 to 31%. The top 10 to 15 feet of this layer has generally higher Q_u values in the very stiff to hard consistency and lower moisture content values below about 16%. Deeper than approximately 25 to 30 feet bgs, the consistency turns primarily stiff to very stiff and the moisture content is greater than 20%.

The borings drilled in the area immediately north of the UPRR Bridge encountered soft to stiff, gray silty clay loam extending to an elevation of about 747 to 745 feet. In general, the soils sampled in this layer had Q_u values less than 1.0 tsf and moisture content values of 25 to 40% from beneath the proposed north UPRR Bridge abutment north to Station 119+00. Laboratory testing shows liquid limit (L_L) values of 35 to 59% and plastic limit (P_L) values of 18 to 22%; most samples were closer in natural moisture content to the L_L than to the P_L indicating the potential for deformations under retaining wall loads.

3) Loose to dense silty loam

At elevations of 707 to 701 feet, the borings encountered medium dense to dense, gray silty loam continuing to the top of bedrock. The silt and silty loam has N-values as low as 7 blows per foot in

UPRR-01, and as high as 50 blows per 6 inches of penetration. The majority of the layer, however, has N-values of about 14 to 29 blows per foot, occasionally measuring in the very dense range around 55 to 80 blows per foot.

4) *Strong, very poor to fair quality dolostone*

Sound bedrock was encountered at elevations of 690 to 693 feet, or 63 to 79 feet bgs. The bedrock is very poor to fair quality dolostone bedrock with closely-spaced, slightly weathered horizontal joints. The rock quality designation (RQD) ranges from 0 to 75% and axial compressive strength tests measured 8 ksi. Bedrock core photographs are presented in Appendix D.

GROUNDWATER CONDITIONS

Groundwater was observed while drilling between elevations of 758 and 717 feet (5.5 and 52 feet bgs), although the majority of the borings encountered water between 756 and 750 feet. To obtain long term groundwater information, we have installed a groundwater monitoring well with a 10-foot long screen situated between 5 to 15 feet bgs.

ANALYSIS AND RECOMMENDATIONS

Wang has completed the requested Phase 1 analyses and recommendations for the proposed bridges and retaining walls. The pile lengths at the UPRR and Reed Road Bridges have been modified and the top of bedrock elevations for Steel H-Piles have been confirmed. The global stability of the retaining walls has been confirmed and further investigation into the soft and compressible soil conditions immediately north of the UPRR Bridge has been conducted with additional analysis and recommendations performed on bearing capacity and settlement. The proposed bridge over Whites Creek will be analyzed and recommendations will be provided during Phase 2.

Bridge Foundations

IDOT specifies the maximum nominal required bearing (R_{NMAX}) for each pile and states the factored resistance available (R_F) for steel H-piles and MSP should be based on a geotechnical resistance factor (ϕ_G) of 0.55 (IDOT 2012). Nominal tip and side resistance were estimated using the methods and empirical equations presented in the latest *IDOT Geotechnical Pile Design Guide* (IDOT 2020). Based on the preliminary loads provided by BLA and the proposed width of the substructure, we anticipate that the design load will vary between approximately 140 and 180 kips per pile along the abutments.

Both IDOT (2020a) and AASHTO (2021) standards require downdrag loading to be applied to piles with greater than 0.4 inch of post-construction relative settlement along the sides. We estimate that less than 0.4 inch of settlement will remain following the construction of the retaining walls at Reed Road; however, due to some higher moisture soils encountered at the UPRR Bridge, we anticipate

that some minor downdrag losses should be expected. The downdrag will be accounted for in the design of the piles and we anticipate that precoring of the pile locations will not be necessary.

The piles will be driven through the reinforcement zone of the walls wrapping around the front of the abutments. The length of pile from the top of leveling pad elevation to the base of the abutment should be encased in a corrugated metal pipe or an equivalent, approved form of separation from the MSE select fill. The annular space between the pile and the pipe should be backfilled with bentonite in accordance with the IDOT *Bridge Manual*. Due to this requirement, the soils within 10 feet below the abutment pile cap elevations will have equivalent Q_u values appropriate for the use of integral abutments in accordance with *All Bridge Designers Memo 19.8* (IDOT 2019). The available pile sizes have expansion lengths greater than the structure expansion length and are suitable for use with integral abutments.

The R_F , R_N , estimated pile tip elevations, and pile lengths for 14-inch diameter MSP with 0.312-inch thick shells, 16-inch diameter MSP with 0.375-inch thick shells, HP12x53, and HP14x73, and HP14x89 steel H-piles are summarized in Tables 1, 2, and 3. If steel piles are used they should be driven to R_{NMAX} at the top of sound bedrock. Pile lengths assume a 2-foot pile embedment into the abutment pile caps. Boring UPRR-02, at the south abutment of the UPRR Bridge encountered a relatively dense layer of sand and sandy gravel beginning at about 5 feet bgs. These layers result in relatively short pile length estimates for the MSP at this substructure and we recommend either designing for steel H-Piles or revisiting this area during Phase II once the abutment loads have been finalized.

Table 1: Estimated Pile Lengths and Tip Elevations for 14-inch Dia. MSP with 0.312-inch walls

Structure Unit (Reference Boring)	Pile Cap Base Elevations (feet)	Nominal Required Bearing, R_N (kips)	Factored Geotechnical Loss (kips)	Factored Geotechnical Load Loss (kips)	Factored Resistance Available, R_F (kips)	Total Estimated Pile Length (feet)	Estimated Pile Tip Elevation (feet)
Reed Road North Abutment Boring REED-01	782.0	255	0	0	140	26	758
		291	0	0	160	30	754
		327	0	0	180	33	751
		570 (R_{Nmax})	0	0	314	60	724
Reed Road South	780.5	255	0	0	140	32	750

Structure Unit (Reference Boring)	Pile Cap Base Elevations (feet)	Nominal Required Bearing, R_N (kips)	Factored Geotechnical Loss (kips)	Factored Geotechnical Load Loss (kips)	Factored Resistance Available, R_F (kips)	Total Estimated Pile Length (feet)	Estimated Pile Tip Elevation (feet)
Abutment Boring REED-02		291	0	0	160	36	746
		327	0	0	180	41	741
		570 (R_{Nmax})	0	0	314	65	717
UPRR North Abutment Boring UPRR-01	780.5	356	12	25	160	36	746
		393	12	25	180	42	740
		430	12	25	200	49	733
		570 (R_{Nmax})	12	25	277	57	725
UPRR South Abutment Boring UPRR-02	782.9	300	2	3	160	10	775
		336	2	3	180	10	775
		373	2	3	200	10	775
		570 (R_{Nmax})	2	3	309	46	739

Table 2: Estimated Pile Lengths and Tip Elevations for 16-inch Dia. MSP with 0.375-inch walls

Structure Unit (Reference Boring)	Pile Cap Base Elevations (feet)	Nominal Required Bearing, R_N (kips)	Factored Geotechnical Loss (kips)	Factored Geotechnical Load Loss (kips)	Factored Resistance Available, R_F (kips)	Total Estimated Pile Length (feet)	Estimated Pile Tip Elevation (feet)
Reed Road North Abutment Boring REED-01	782.0	255	0	0	140	24	760
		291	0	0	160	26	758
		327	0	0	180	29	755
		782 (R_{Nmax})	0	0	430	65	719

Structure Unit (Reference Boring)	Pile Cap Base Elevations (feet)	Nominal Required Bearing, R_N (kips)	Factored Geotechnical Loss (kips)	Factored Geotechnical Load Loss (kips)	Factored Resistance Available, R_F (kips)	Total Estimated Pile Length (feet)	Estimated Pile Tip Elevation (feet)
Reed Road South Abutment Boring REED-02	780.5	255	0	0	140	25	757
		291	0	0	160	31	751
		327	0	0	180	34	748
		782 (R_{Nmax})	0	0	430	62	720
UPRR North Abutment Boring UPRR-01	780.5	365	14	28	160	36	746
		402	14	28	180	41	741
		438	14	28	200	46	736
		782 (R_{Nmax})	14	28	430	57	725
UPRR South Abutment Boring UPRR-02	782.9	302	2	4	160	10	775
		338	2	4	180	10	775
		375	2	4	200	10	775
		782 (R_{Nmax})	2	4	424	59	739

Table 3: Estimated Pile Lengths and Tip Elevations for Steel H-Piles Driven to R_{Nmax}

Substructure Unit (Reference Boring)	Pile Cap Base Elevations (feet)	Pile Size	Maximum Nominal Bearing, R_N (kips)	Factored Geotechnical Losses (kips)	Factored Resistance Available, R_F (kips)	Total Estimated Pile Length (feet)	Estimated Pile Tip Elevation (feet)
Reed Road North Abutment Boring REED-01	782.0	HP12x53	418	0	184	93	691
		HP12x63	497	0	227	93	691
		HP14x73	578	0	273	93	691

Substructure Unit (Reference Boring)	Pile Cap Base Elevations (feet)	Pile Size	Maximum Nominal Bearing, R_N (kips)	Factored Geotechnical Losses (kips)	Factored Resistance Available, R_F (kips)	Total Estimated Pile Length (feet)	Estimated Pile Tip Elevation (feet)
		HP14x89	705	0	388	93	691
Reed Road South Abutment Boring REED-02	780.5	HP12x53	418	0	184	90	692
		HP12x63	497	0	230	90	692
		HP14x73	578	0	273	90	692
		HP14x89	705	0	388	90	692
		HP12x53	418	25	159	92	690
UPRR North Abutment Boring UPRR-01	780.5	HP12x63	497	25	205	92	690
		HP14x73	578	30	243	92	690
		HP14x89	705	30	358	92	690
		HP12x53	418	3	181	92	693
UPRR South Abutment Boring UPRR-02	782.9	HP12x63	497	3	227	92	693
		HP14x73	578	4	269	92	693
		HP14x89	705	4	384	92	693
		HP12x53	418	3	181	92	693

Lateral loads on the piles should be analyzed for maximum moments and lateral deflections. Recommended lateral soil modulus and strain parameters required for analysis via the p-y curve method are included in Table 4.

Table 4: Recommended Soil Parameters for Lateral Load Analysis

Soil Description	Unit Weight, γ (pcf)	Undrained Shear Strength, c_u (psf)	Estimated Friction Angle, Φ ($^\circ$)	Estimated Lateral Soil Modulus Parameter, k (pci)	Estimated Soil Strain Parameter, ϵ_{50} (%)
Avg Elevation Limits					
Stiff to V Stiff CLAY LOAM Abut Base to 730 feet	120	1800	0	1000	0.6
Loose to M Dense SAND and GRAVEL EL 730 feet to 714 feet	58 (submerged)	0	32	70	--
Dense SAND and GRAVEL EL 714 feet to 707 feet	63 (submerged)	0	36	110	--
Stiff SILTY LOAM EL 707 feet to TOR	58 (submerged)	0	30	40	--

Retaining Wall Recommendations

Wang has evaluated the global stability of the Phase 1 retaining wall geometry using the soil borings obtained by Wang in October 2021 and previously by others. The wall stability has been evaluated for four back-to-back pairs of retaining wall cross-sections; Retaining Wall 1 (RW1) runs from the south limit of the existing viaduct to the south abutment of the proposed Whites Creek Bridge, Retaining Wall 2 (RW2) will be constructed between the north abutment of Whites Creek and the south abutment of the UPRR Bridge, Retaining Wall 3 (RW3) will run between the UPRR and Reed Road Bridges, and Retaining Wall 4 (RW4) will extend north of the Reed Road Bridge to the project limit. The walls have been evaluated using the Bishop Modified method of analysis and *Slide 2021* software package in both the undrained (short-term) and drained (long-term) conditions. The results of the analyses are shown in Appendix C and each of the sections has a factor of safety greater than the IDOT required 1.5.

Wang has reviewed the boring logs provided from the Phase 1 SGRs and identified locations that will require ground improvement or other mitigations due to soft and compressible soils. The area investigated by Borings SB-118 and SB-119 along the west side of RW2, however, will require removal and replacement of the foundations soils to depths deeper than the retaining wall leveling pad elevations. The recommended undercuts are shown in Table 5 divided into two segments. The initial segment, encountered in Boring SB-118 should be removed down to an elevation of 748 feet, while the second from Boring SB-119 should be removed to an elevation of 745 feet. We estimate these undercuts will extend between approximately 1.5 to 4 feet below the proposed leveling pad

elevations for the wall. Additional undercuts recommended by IDOT in review comments dated 10/7/2025 are included in Table 5.

Table 5: Proposed Undercut Summary

Retaining Wall ID	Station Limits	Width (feet)	EL Limits (feet)	Soil Concerns
RW 2	115+80 to 116+10	Full MSE Wall and Embankment Width	748	Qu < 1.0 tsf MC > 25%
RW 2	116+10 to 116+85	Full MSE Wall and Embankment Width	745	Qu < 1.0 tsf MC > 25%
RW2	116+85 to 117+34	Full MSE Wall and Embankment Width	749	Per IDOT District 1
RW1	111+60 to 112+35	Full MSE Wall and Embankment Width	764	Per IDOT District 1
RW1	114+60 to 115+10	Full MSE Wall and Embankment Width	748	Per IDOT District 1
RW4	121+98 to 122+75	Full MSE Wall and Embankment Width	765	Per IDOT District 1
RW4	123+55 to 124+35	Full MSE Wall and Embankment Width	771	Per IDOT District 1

The borings drilled in the area along the south portion of RW3, immediately north of the UPRR, encountered soft and compressible soil conditions. These soils consist of soft to stiff silty clay loam with Qu values from 0.4 to 1.6 tsf and moisture contents between about 25 and 30%. The liquidity index (LI) of these soils is greater than 0.8 in several areas, indicating a soil that will be prone to large deformations under the weight of the proposed retaining wall. Furthermore, Wang performed in-situ pressuremeter testing at Boring RWB-01 along the proposed retaining wall location north of the UPRR Bridge. A summary of the data is provided in Table 6 and confirms a soft to medium stiff, clayey soil prone to deformation under loads greater than about 3.0 to 3.5 ksf.

Table 6: Summary of In-Situ Pressuremeter Testing

PMT	Test	Test							
Test ID	Elevation (feet)	Depth (feet)	PL (tsf)	Pf (tsf)	Po (tsf)	Eo (tsf)	Er (tsf)	PL/Pf	Eo/Er

RWB-01 PMT#1	753 to 749	10 to 14	2.9	1.7	0.6	13	26	1.7	0.51
RWB-01 PMT#2	749 to 745	14 to 18	4.3	2.0	0.7	29	62	2.1	0.47

We estimate the settlement could reach as much as 4 to 6 inches, which is not an issue for MSE type walls, but will pose issues with the adjacent bridge and the wall segments connected to the north. To mitigate the estimated settlement of the retaining wall portion between Stations 118+40 and 119+00 we recommend either: a) supporting the walls on an aggregate column ground improvement or b) constructing the entire width of the proposed walls, including the embankment between, from lightweight cellular concrete.

The aggregate column ground improvement would extend from the southern edge of the proposed MSE wall north of the UPRR back to Station 119+00. The columns should extend a minimum of 1 column beyond the outside edges of the retaining walls and for the entire width of the proposed walls and embankment. The columns should be designed by the contractor to meet the estimated maximum bearing pressure and should limit the walls and embankment to a maximum of 3 inches of total settlement with 1 inch of settlement after the placement of pavement. If initial construction estimates are needed, we recommend considering 30-inch diameter aggregate columns installed in a triangular pattern and spaced at 7 feet on-center. The columns will extend vertically to an estimated elevation of 745 feet. These design values should be updated by the contractor and issued with shop drawings for review prior to construction.

The walls and embankments could also be partially constructed from lightweight cellular concrete (LCC). We understand the abutments at the UPRR are proposed as integral abutments; therefore, the backfill behind the abutments must have sufficient elasticity to allow for the expansion and contraction of the bridge deck. The LCC would likely not allow for the necessary movements and the backfill, therefore, needs to be conventional granular backfill for structures. Furthermore, constructing the top 8 to 10 feet of the walls and embankment from conventional fill will allow utilities to be placed along the proposed alignment, whereas LCC poured to the base of the pavement makes utility installation undesirable. The factored bearing resistance of the foundation soil is estimated at 3,450 psf, considered with a resistance factor of 0.65 (AASHTO 2021). We estimate that a retaining wall and embankment combination consisting of 24 feet of Type II LCC, unit weight 36 lbs per cubic foot (pcf), and 10 feet of conventional granular backfill will result in a composite unit weight of about 57 pcf and a maximum applied factored bearing pressure of 3,400 psf and meet the factored bearing resistance.

The estimated total settlement of the composite system is about 1.5 inches, with less than an inch remaining post-construction. Each of these assumptions and calculations will require confirmation and refinement during Phase II of the retaining wall and bridge design. We have included downdrag allowances on the driven pile lengths shown in Tables 1, 2, and 3 as a result of the proposed settlements behind the UPRR abutments.

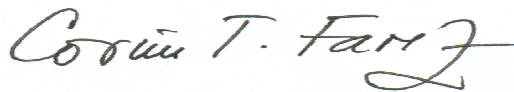
Excavation Support

We estimate the removal and replacement recommended in Table 5 could be completed using excavations sloped at a maximum of 1:1.5 (V:H). If the sloped excavations cannot be fit within the ROW, we estimate they could be supported by temporary steel sheet piling. We do not anticipate the removal and replacement being deep enough to require a full *Temporary Soil Retention System* pay item.

If you have any questions, or for further discussion on the Phase I topics addressed above, please contact us at (630) 953-9928. We look forward to continuing the Kirk Road Viaduct Improvement project into Phase II.

Sincerely,

WANG ENGINEERING, INC.

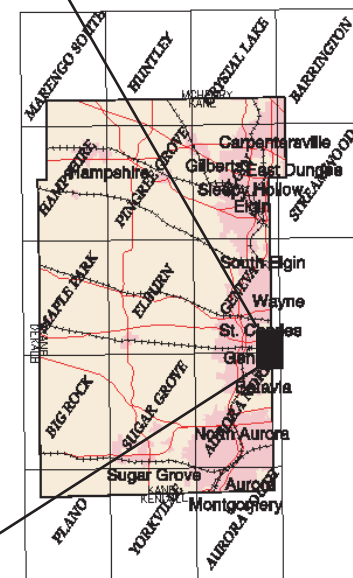
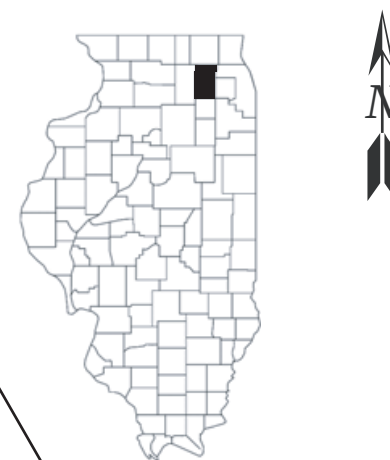
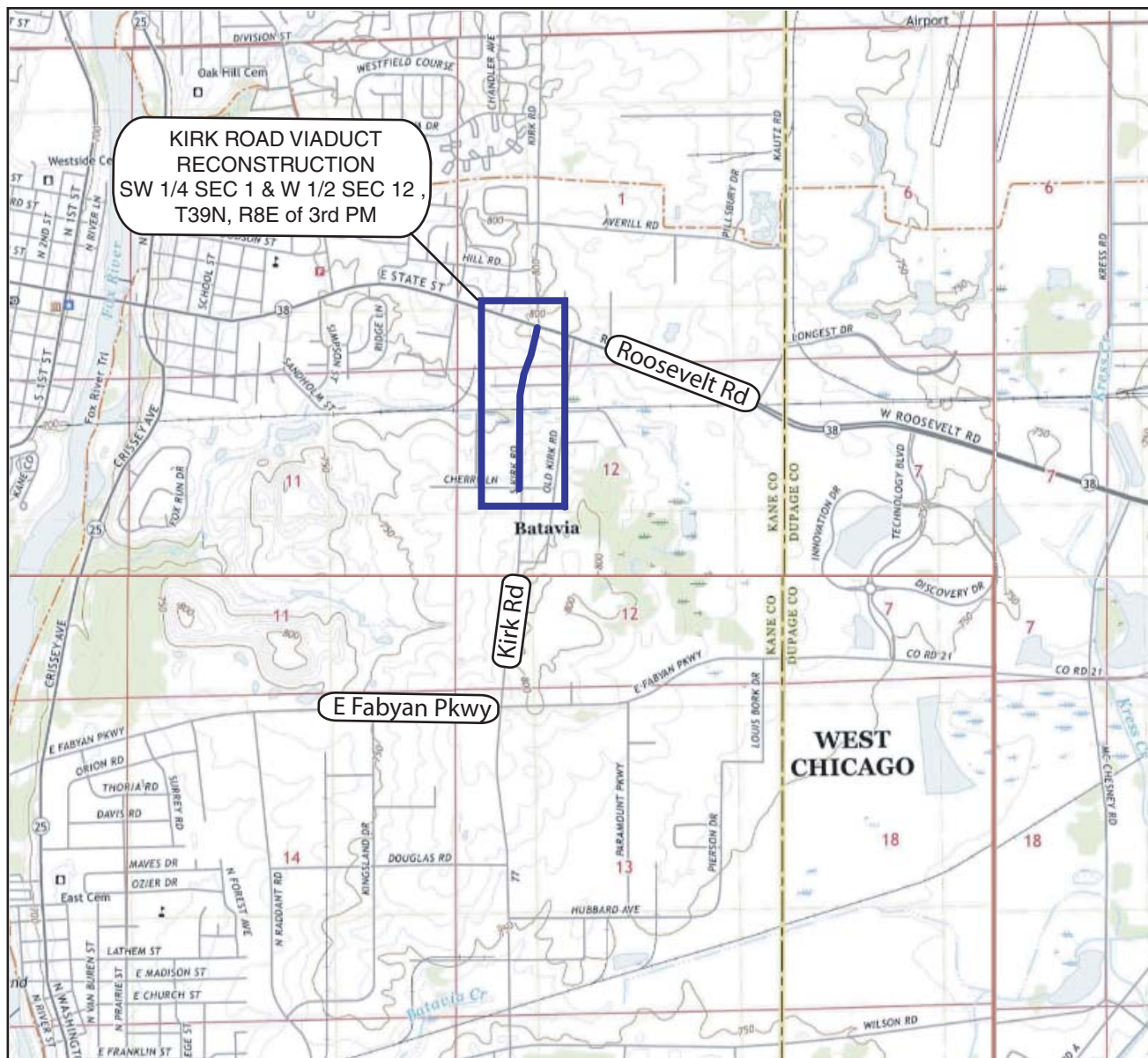


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EXHIBITS



Kane County

SITE LOCATION MAP: KIRK ROAD VIADUCT RECONSTRUCTION
KANE COUNTY, ILLINOIS

SCALE: GRAPHICAL

EXHIBIT 1

DRAWN BY: J. Bensen
CHECKED BY: M. Snider

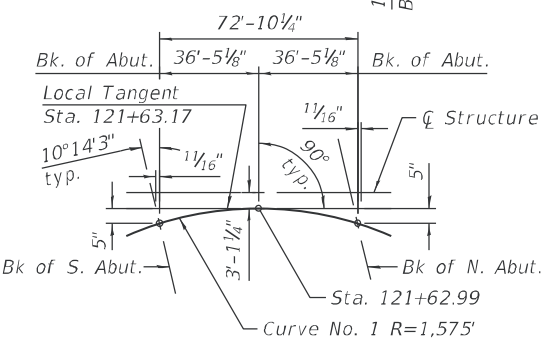
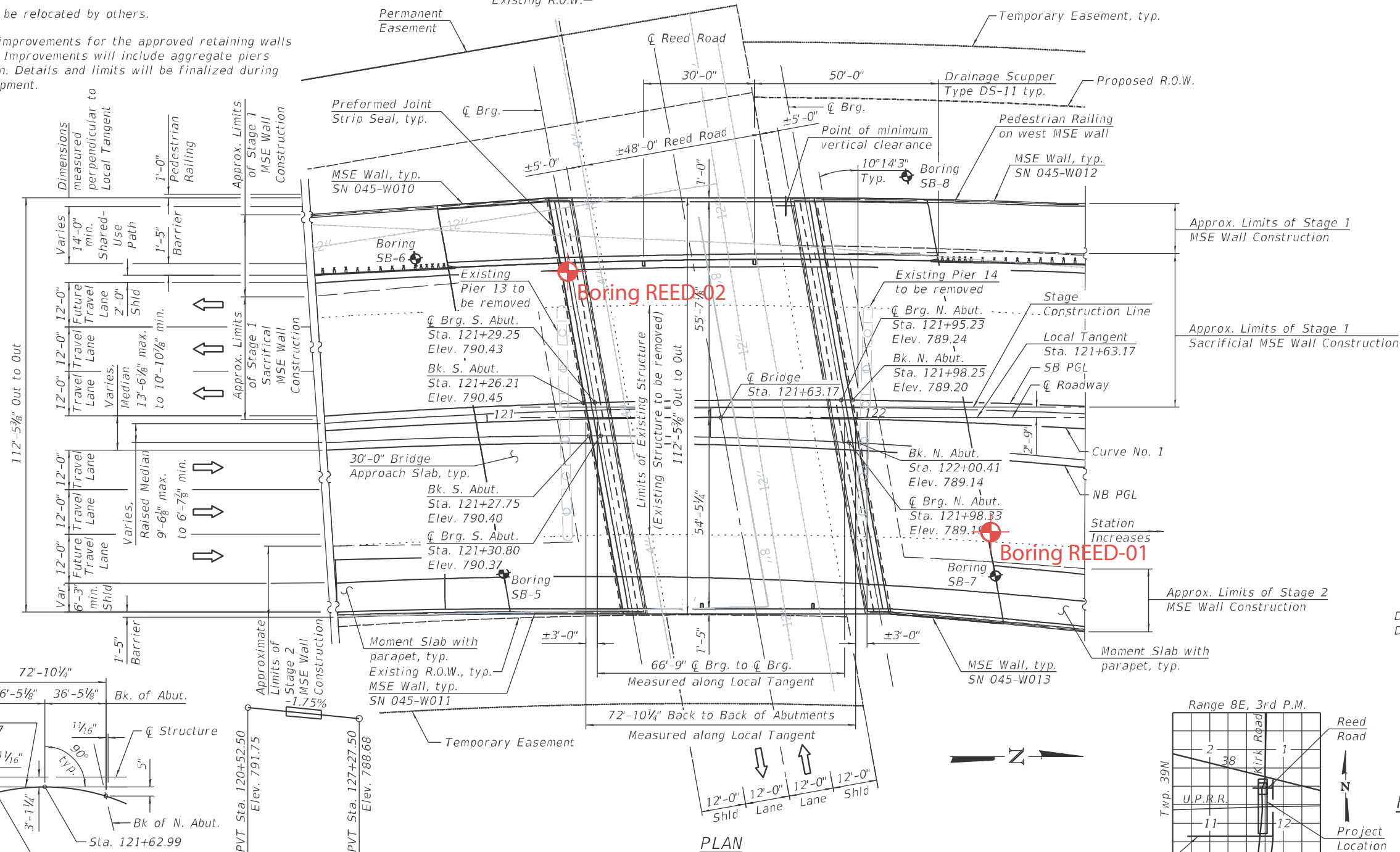
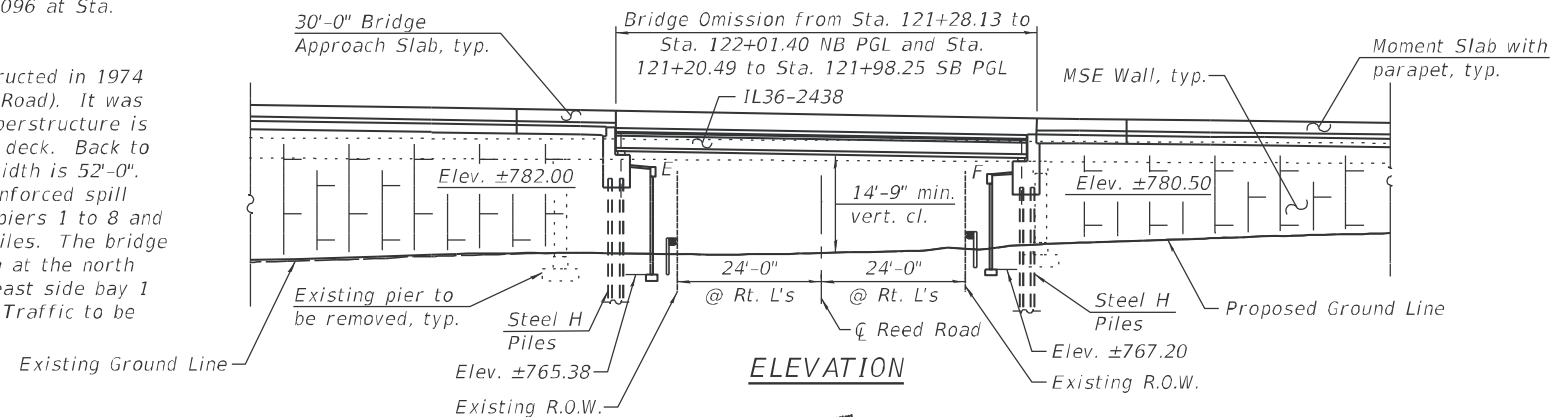


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FOR BLA, INC.

165-07-01

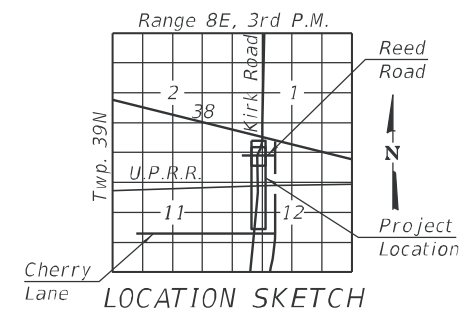
Subsurface soil improvements for the approved retaining walls will be required. Improvements will include aggregate piers and/or excavation. Details and limits will be finalized during final plan development.



OFFSET SKETCH

PROFILE GRADE
(Along N.B. & S.B. PGL)

PLAN



LOCATION SKETCH

BORING LOCATION PLAN: KIRK ROAD VIADUCT RECONSTRUCTION
KANE COUNTY, ILLINOIS

SCALE: GRAPHICAL
see graphic scale

EXHIBIT 2-1

DRAWN BY: N. Balakumaran
CHECKED BY: M. Snider



1145 N. Main Street
Lombard, IL 60148
www.wangeng.com

FOR BLA, INC.

165-07-01

CURVE No. 1

P.I. Sta. = 122+41.65
 $\Delta = 24^{\circ}35'23''$ (RT)
 $D = 3^{\circ}38'16''$
 $R = 1,575.00'$
 $T = 343.26'$
 $L = 675.95'$
 $E = 36.97'$
P.C. Sta. = 118+98.39
P.T. Sta. = 125+74.34

DESIGN SPECIFICATIONS

2017 AASHTO LRFD Bridge Design
Specifications, 8th Edition

LOADING HL-93

Allow 50#/sq. ft. for future wearing surface.

DESIGN STRESSES

FIELD UNITS

$f'_c = 3,500$ psi (Substructure Concrete)
 $f'_c = 4,000$ psi (Superstructure Concrete)
 $f_y = 60,000$ psi (Reinforcement)

PRECAST PRESTRESSED UNITS

$f'c = 8,500 \text{ psi}$
 $f'ci = 7,000 \text{ psi}$
 $f_{pu} = 270,000 \text{ psi } (\frac{1}{2}'' \text{ low lax. strands})$
 $f_{pbt} = 201,960 \text{ psi } (\frac{1}{2}'' \text{ low lax. strands})$

HIGHWAY CLASSIFICATION

F.A.P. Rte. 360 - Kirk Road
Functional Class: Other Principal Arterial
ADT: 25,500 (2017); 28,500 (2040)
ADTT: 1,020 (2017); 1,140 (2040)
DHV: 1,310 (2017); 1,465 (2040)
Design Speed: 45 m.p.h.
Posted Speed: 45 m.p.h.
Two-Way Traffic
Directional Distribution: 50:50

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.088g
Design Spectral Acceleration at 0.2 sec. (S_{D5}) = 0.159g
Soil Site Class = D

GENERAL PLAN

KIRK ROAD OVER
REED ROAD
F.A.P. RTE. 360 SEC. 12-00192-04-BR
KANE COUNTY
STA. 121+63.17
STRUCTURE NO. 045-3133

Bench Mark: Chiseled square in top of parapet wall located at the southwest corner of existing bridge, S.N. 045-3096 at Sta. 111+08.40 Offset 30.19' LT. Elev. 782.00.

Existing Structure: S.N. 045-3096 originally constructed in 1974 as FAU Route 2, Section 12-00192-04-BR (Kirk Road). It was repaired in 1987, 2003, and 2013. Existing superstructure is 18 spans of steel girder supporting a concrete deck. Back to back of abutments is 1,376'-2" and Out to Out width 52'-0". Existing substructure contains two concrete reinforced spill through abutments on piles and 17 piers; with piers 1 to 8 and 17 on spread footings, and piers 10 to 16 on piles. The bridge contains a curve with super-elevation transition at the north end. Existing utility pipes are located on the east side bay 1 and west side fascia and bay 9 of the bridge. Traffic to be maintained using Stage Construction.

Salvage: No Salvage.

Note: Utilities to be relocated by others.

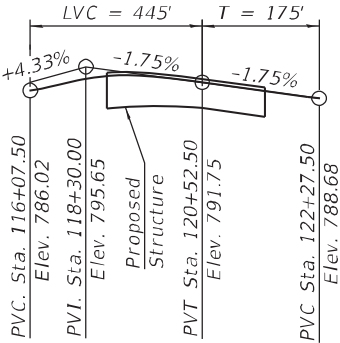
Subsurface soil improvements for the approved retaining walls and bridges will be required. Improvements will include aggregate piers and/or excavation. Details and limits will be finalized during final plan development.

LEGEND

- Soil Boring
- Stage 1 MSE Wall Soil Mass Reinforcement
- Stage 1 Sacrificial Soil Mass Reinforcement
- Stage 2 MSE Wall Soil Mass Reinforcement

Notes:
Wall Station and offsets are measured from the C of F.A.P. Rte. 360 to the front face of precast panels.

*MSE Panels within 50'-0" of Rail Road main track lines 1, 2 & 3 shall be 2'-6" thick up to a height 12'-0" above top of rail.



PROFILE GRADE
(along N.B. & S.B. PGL)

CURVE DATA

P.I. Sta. = 122+41.65
 $\Delta = 24^\circ 35' 23''$ (RT)
 $D = 3^\circ 38' 16''$
 $R = 1,575.00'$
 $T = 343.26'$
 $L = 675.95'$
 $E = 36.97'$
P.C. Sta. = 118+98.39
P.T. Sta. = 125+74.34

HIGHWAY CLASSIFICATION

F.A.P. Rte. 360 - Kirk Road
Functional Class: Other Principal Arterial
ADT: 25,500 (2017); 28,500 (2040)
ADTT: 1,020 (2017); 1,140 (2040)
DHV: 1,310 (2017); 1,465 (2040)
Design Speed: 45 m.p.h.
Posted Speed: 45 m.p.h.
Two-Way Traffic
Directional Distribution: 50:50

DESIGN SPECIFICATIONS

2017 AASHTO LRFD Bridge Design
Specifications, 8th Edition
Design Life: 75 Years

LOADING HL-93

Allow 50#/sq. ft. for future wearing surface.

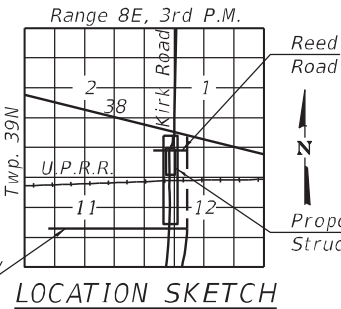
DESIGN STRESSES

FIELD UNITS

$f'_c = 3,500$ psi
 $f_y = 60,000$ psi (Reinforcement)

PRECAST UNITS

$f'_c = 4,500$ psi (Precast Panels)
 $f_y = 60,000$ psi (Reinforcement)



LOCATION SKETCH

BORING LOCATION PLAN: KIRK ROAD VIADUCT RECONSTRUCTION
KANE COUNTY, ILLINOIS

SCALE: GRAPHICAL see graphic scale

EXHIBIT 2-3

DRAWN BY: N. Balakumaran
CHECKED BY: M. Snider

1145 N. Main Street
Lombard, IL 60148
www.wangeng.com

FOR BLA, INC.

165-07-01

GENERAL PLAN & ELEVATION

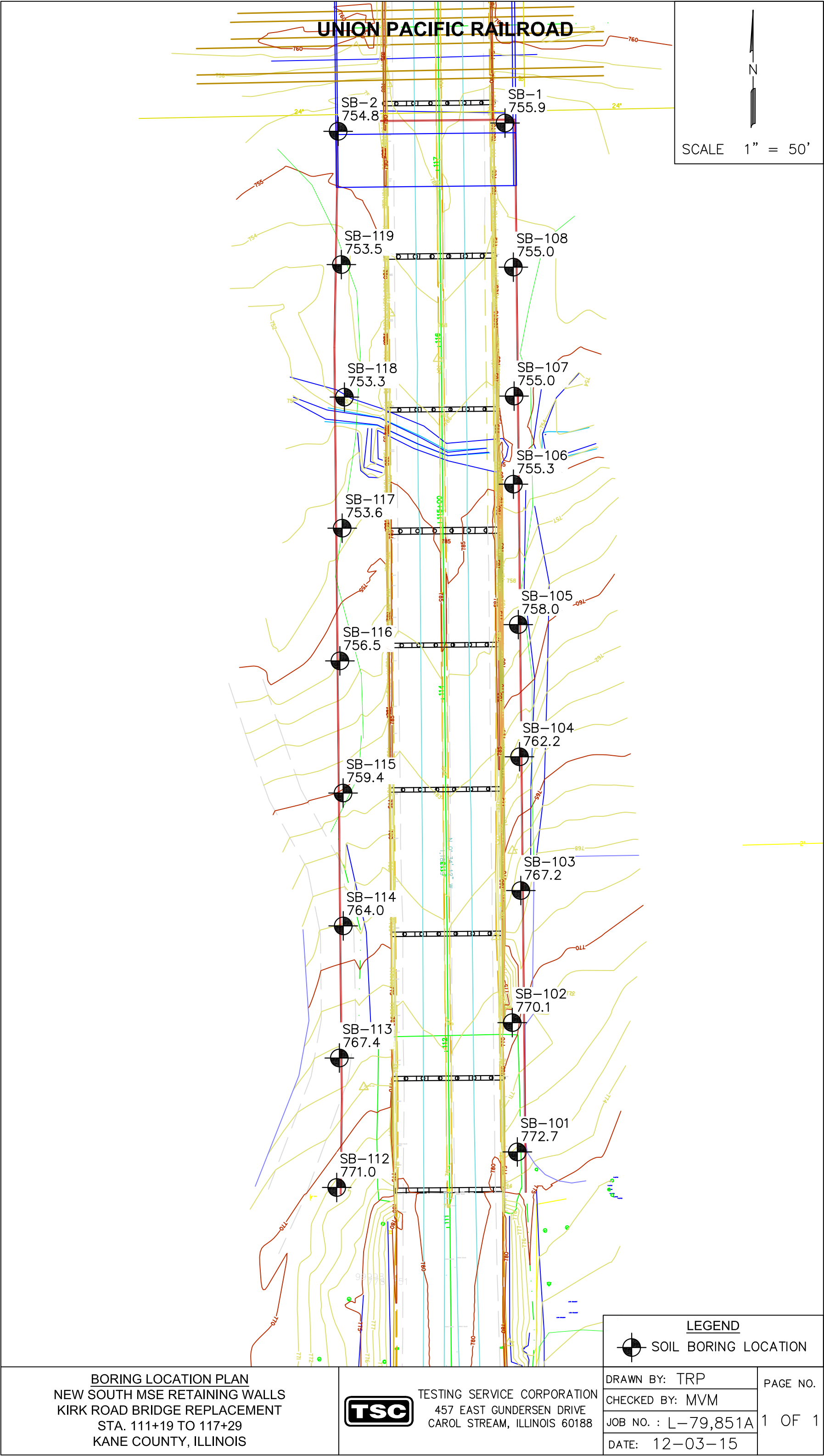
KIRK ROAD

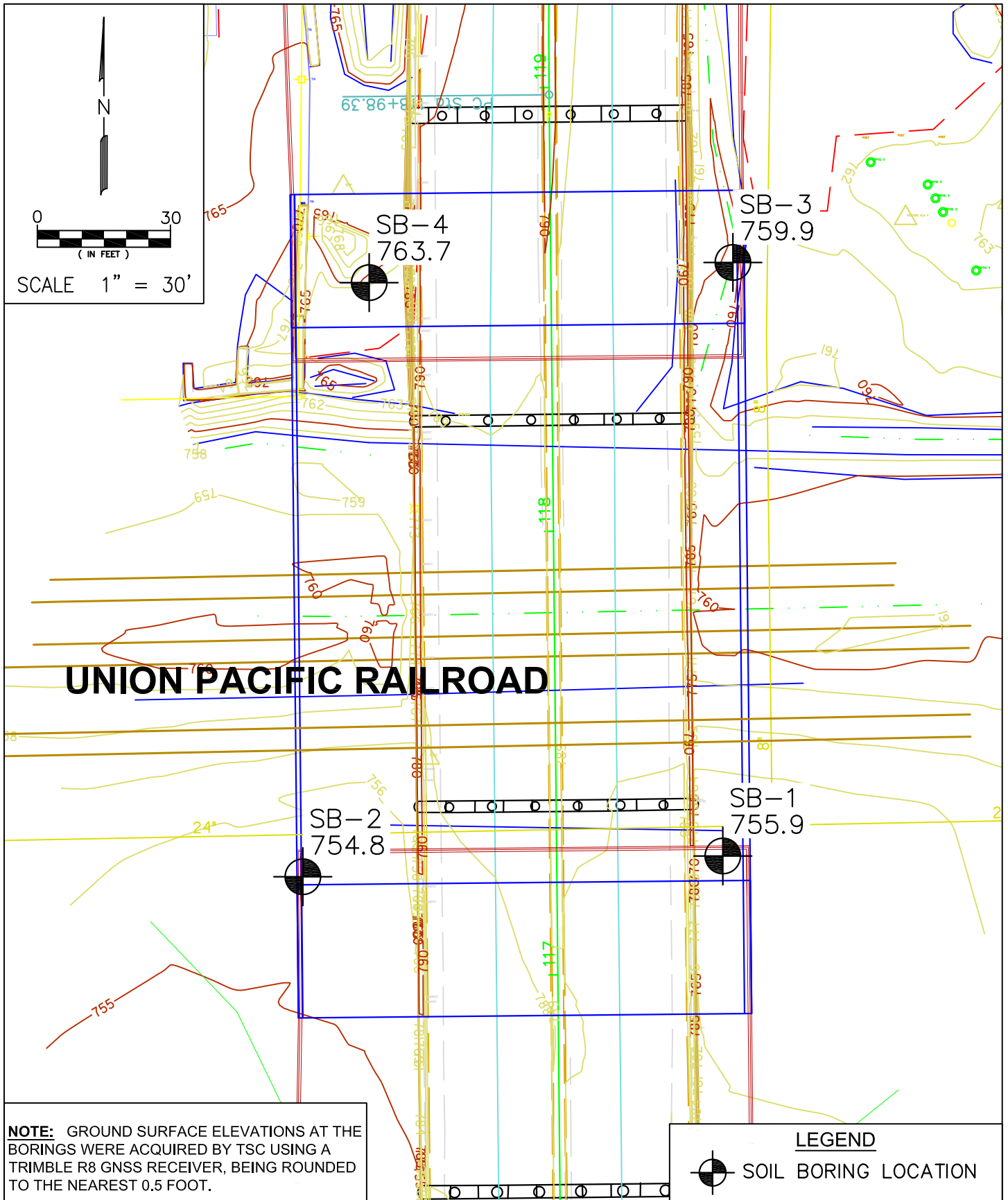
F.A.P. RTE. 360 SEC. 12-00192-04-BR

KANE COUNTY

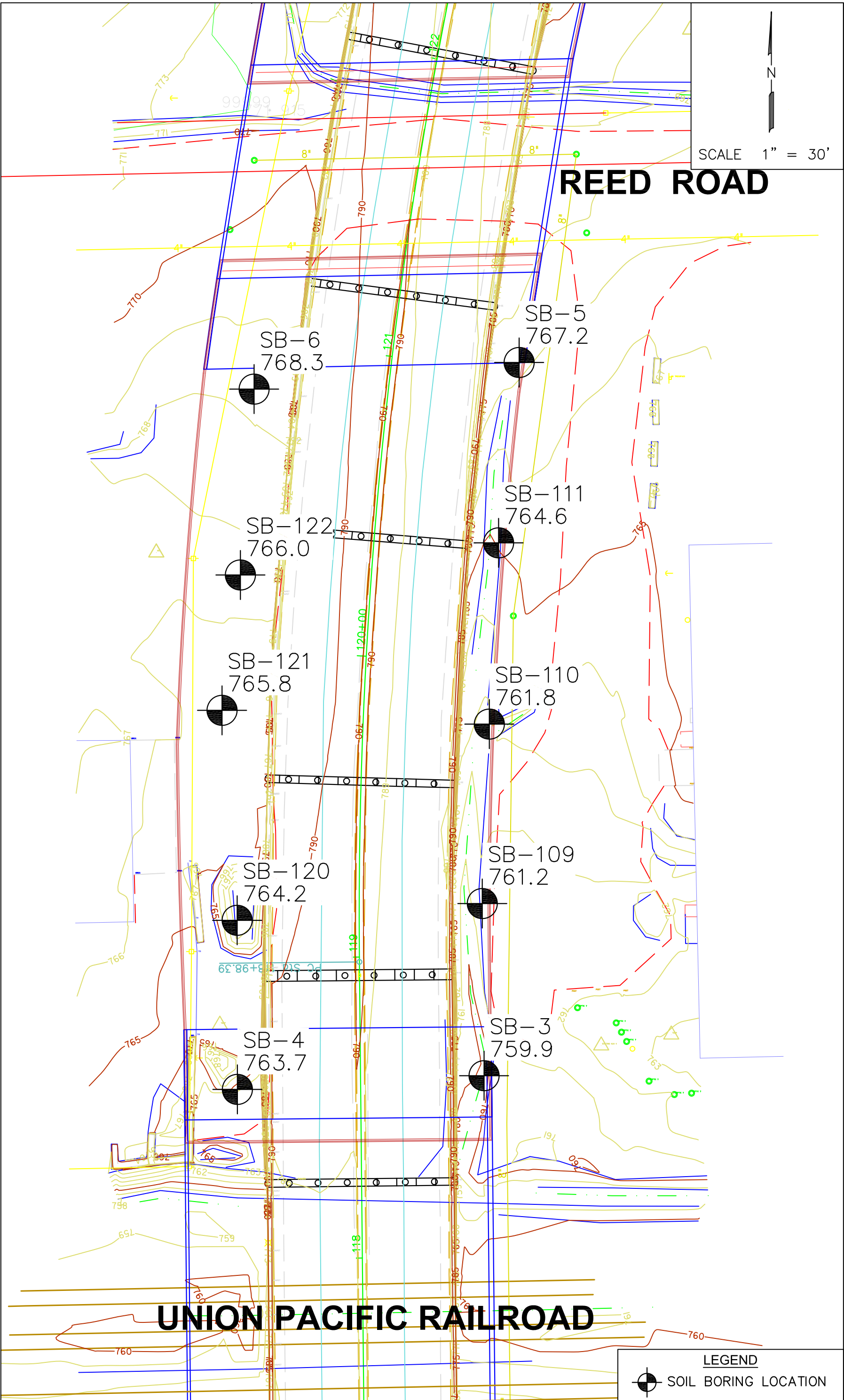
STA. 118+39.70 to STA. 121+42.21

STRUCTURE NO. 045-W010 & 045-W011





BORING LOCATION PLAN KIRK ROAD BRIDGE REPLACEMENT KIRK ROAD OVER UNION PACIFIC RR STA. 117+24 TO 118+44 KANE COUNTY, ILLINOIS	TSC TESTING SERVICE CORP. 457 EAST GUNDERSEN DRIVE CAROL STREAM, ILLINOIS 60188	DRAWN BY: TRP	PAGE NO. 1 OF 1
		CHECKED BY: MVM	
		JOB NO. : L-79,851B	
		DATE: 12-30-15	



SCALE 1" = 30'

REED ROAD

UNION PACIFIC RAILROAD

LEGEND
SOIL BORING LOCATION

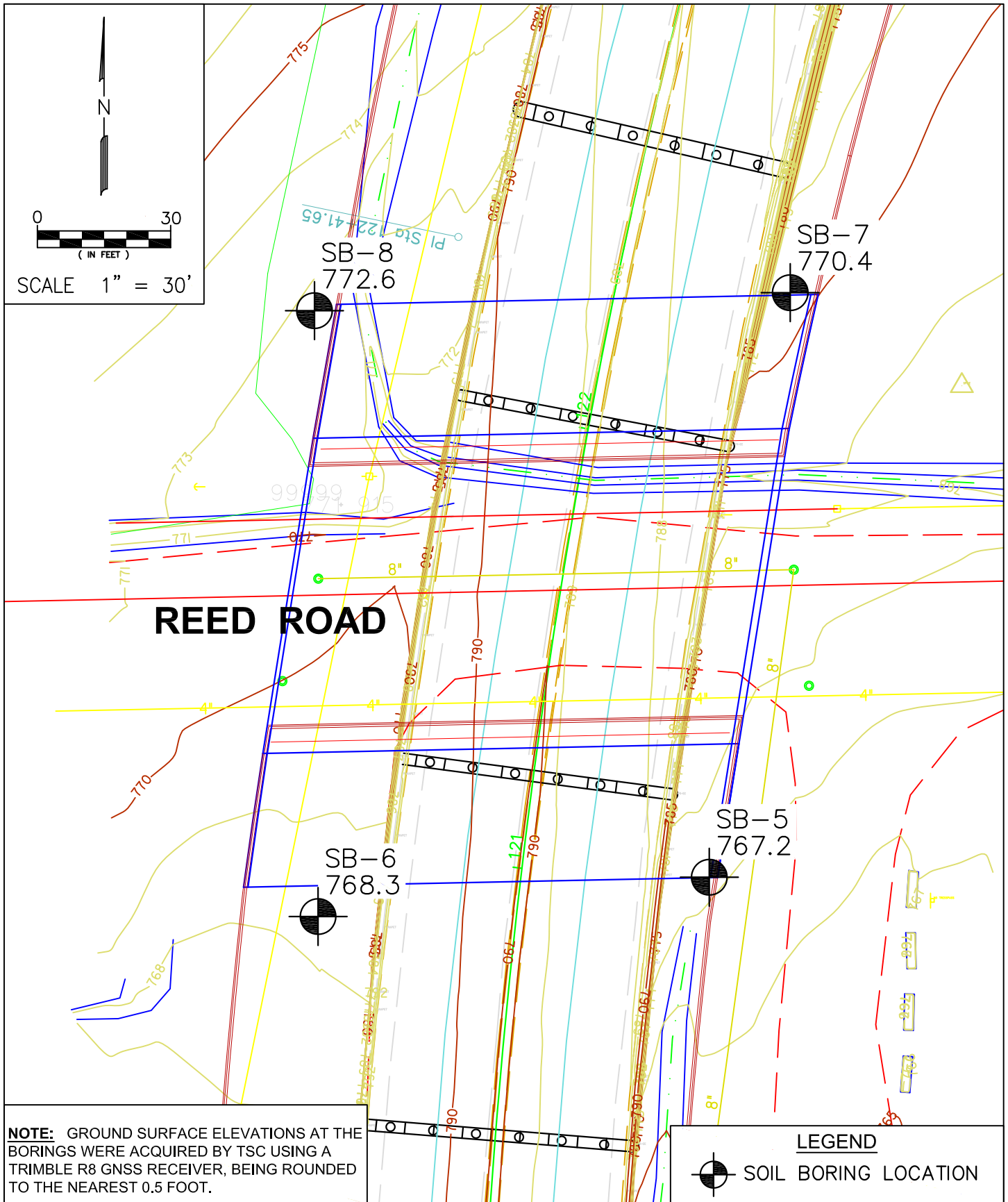
BORING LOCATION PLAN
CENTER MSE RETAINING WALLS
KIRK ROAD BRIDGE REPLACEMENT
STA. 118+40 TO 121+41
KANE COUNTY, ILLINOIS



TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DRAWN BY: TRP
CHECKED BY: MVM
JOB NO. : L-79,851C
DATE: 10-15-15

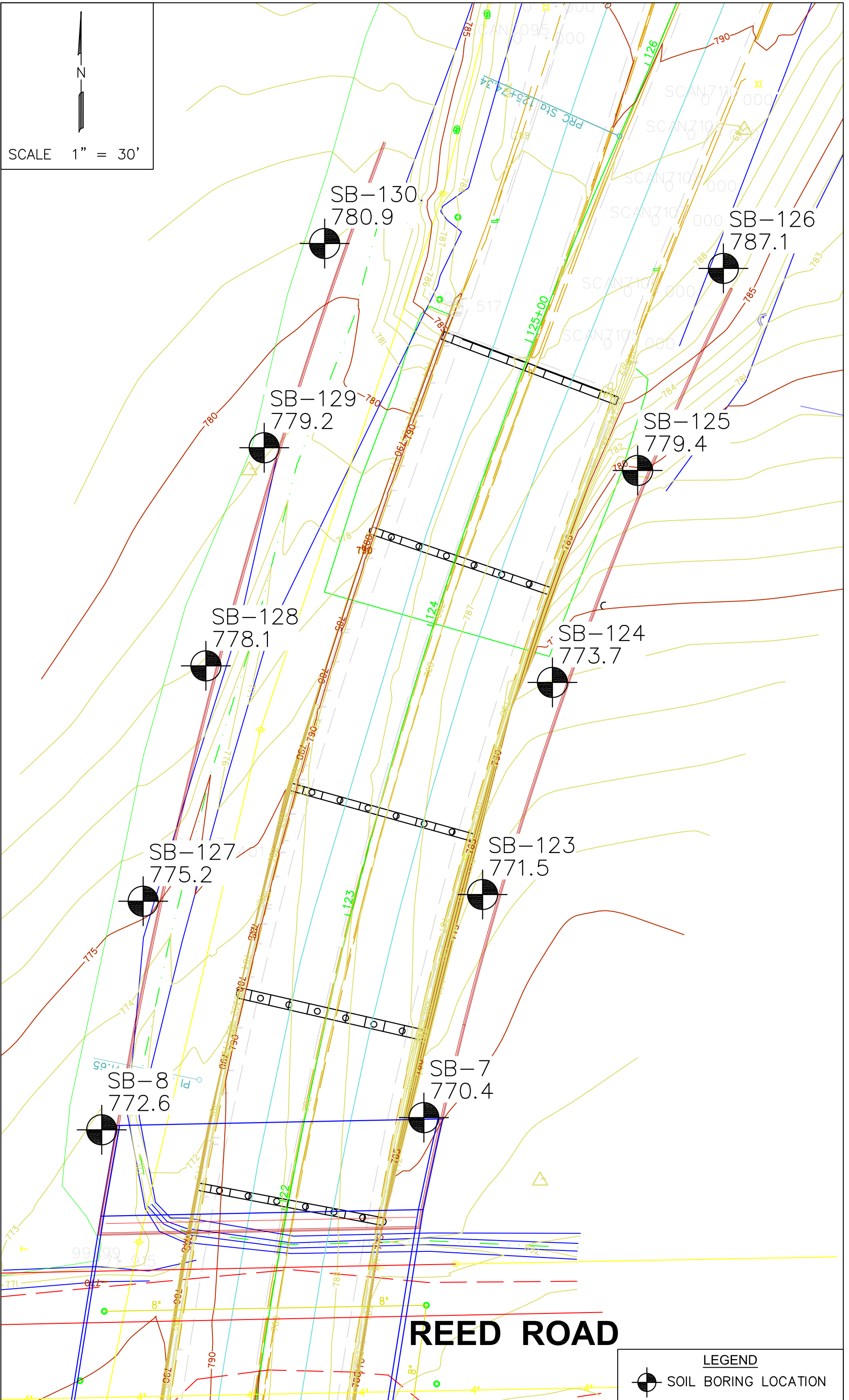
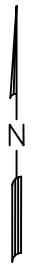
PAGE NO.
1 OF 1



NOTE: GROUND SURFACE ELEVATIONS AT THE BORINGS WERE ACQUIRED BY TSC USING A TRIMBLE R8 GNSS RECEIVER, BEING ROUNDED TO THE NEAREST 0.5 FOOT.

LEGEND	
	SOIL BORING LOCATION

SCALE 1" = 30'



REED ROAD

LEGEND



SOIL BORING LOCATION

BORING LOCATION PLAN
NORTH MSE RETAINING WALLS
KIRK ROAD BRIDGE REPLACEMENT
STA. 121+80 TO 125+42
KANE COUNTY, ILLINOIS



TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
CAROL STREAM, ILLINOIS 60188

DRAWN BY: TRP

CHECKED BY: MVM

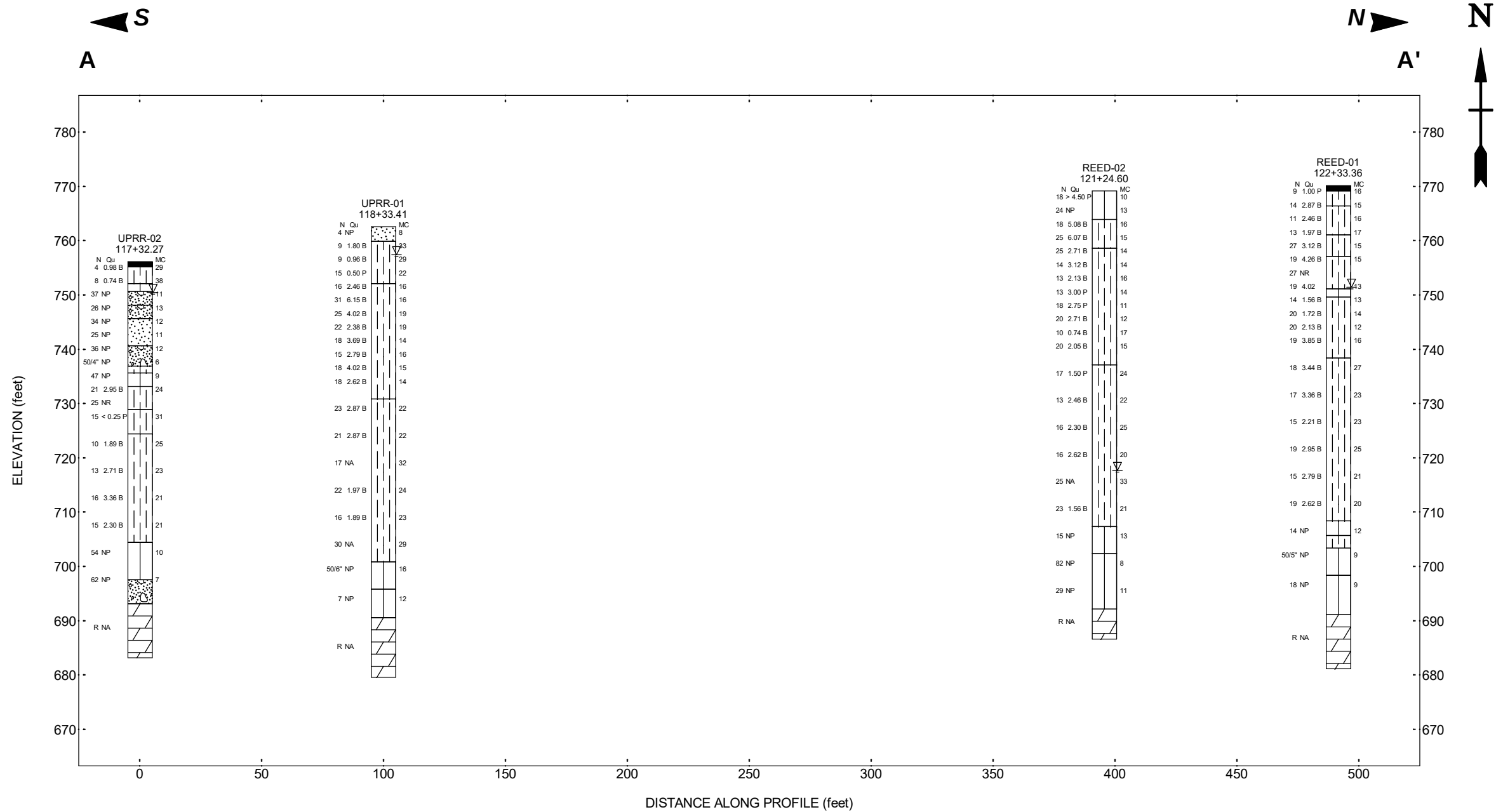
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DATE: 12-04-15

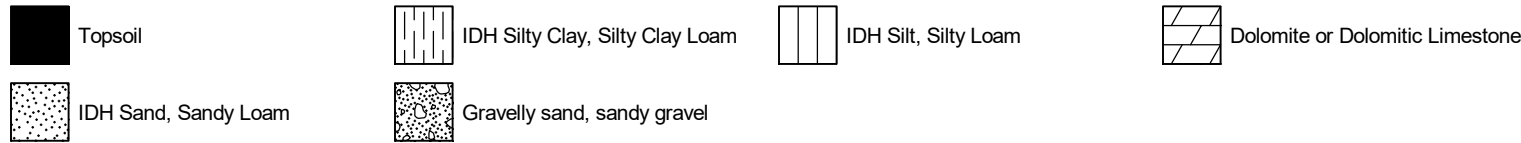
PAGE NO.

1 OF 1

WEI 11X17 1650701.GPJ WANGENG.GDT 1/13/22

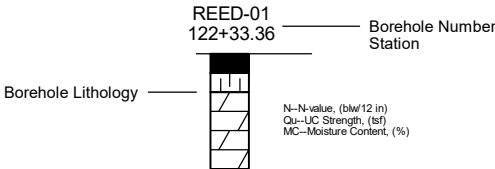


Lithology Graphics



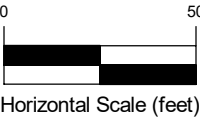
Site Map Scale 1 inch equals 185 feet

Explanation:



Water Level Reading at time of drilling (▽)

Water Level Reading 24-hr after drilling or at end of drilling (▼)



Vertical Exaggeration: 2x

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Lombard, IL 60148

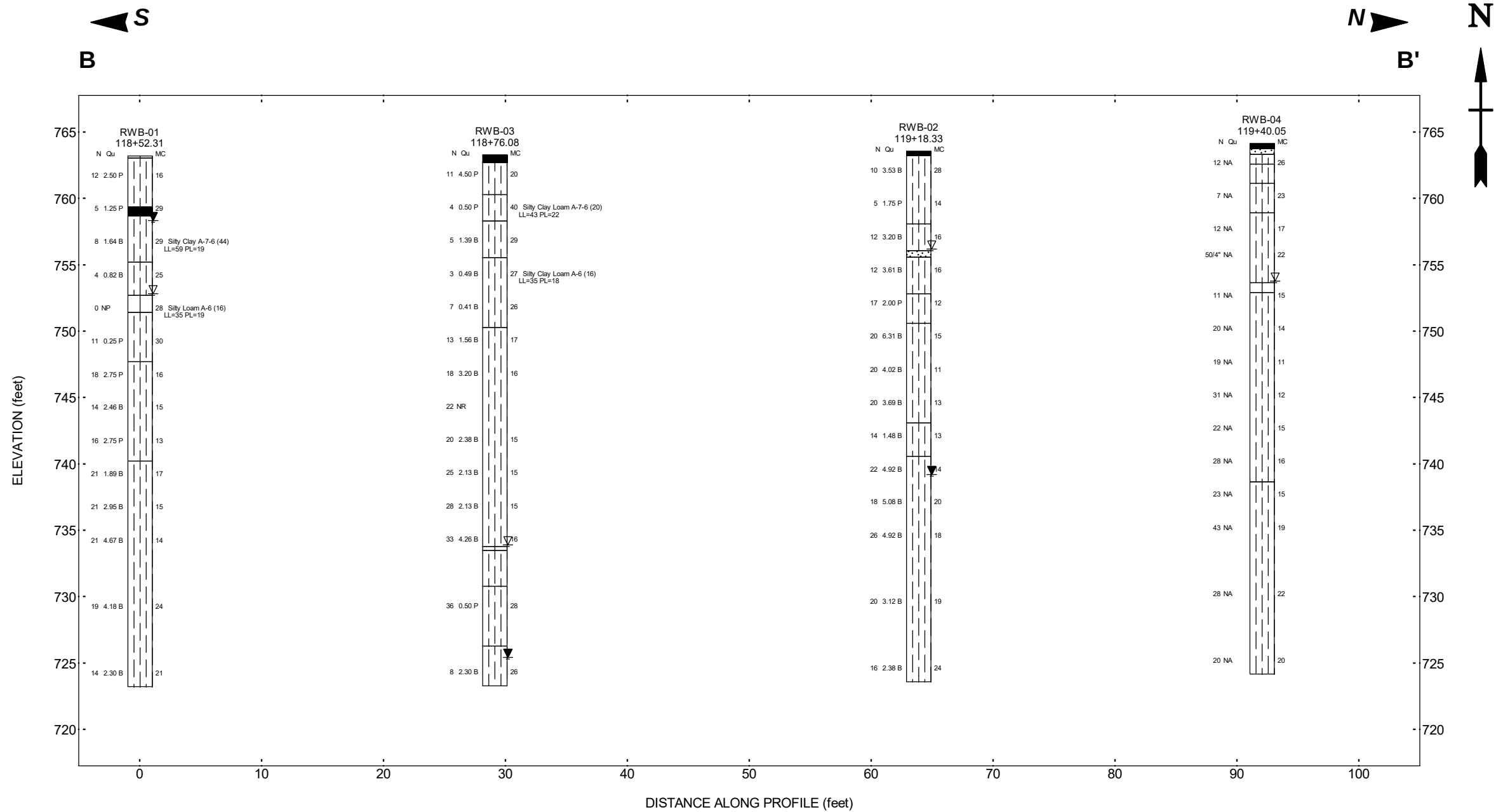
Soil Profile A-A' Reed Road and UPRR Bridges



Kirk Road Viaduct Replacement
Kane County, IL

JOB NUMBER	PLATE NUMBER
165-07-01	EXHIBIT 3-1

WEI 11X17 1650701.GPJ WANGENG.GDT 1/13/22



Lithology Graphics



IDH Silty Clay, Silty Clay Loam



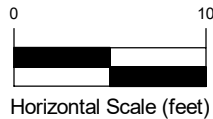
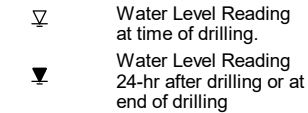
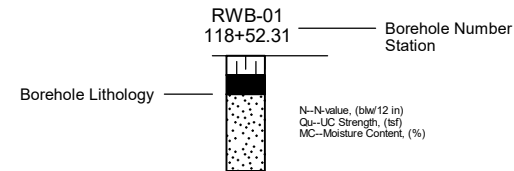
Topsoil



IDH Silt, Silty Loam



IDH Sand, Sandy Loam



Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

Soil Profile B-B'
Retaining Wall North
of UPRR Bridge



Kirk Road Viaduct Replacement
Kane County, IL

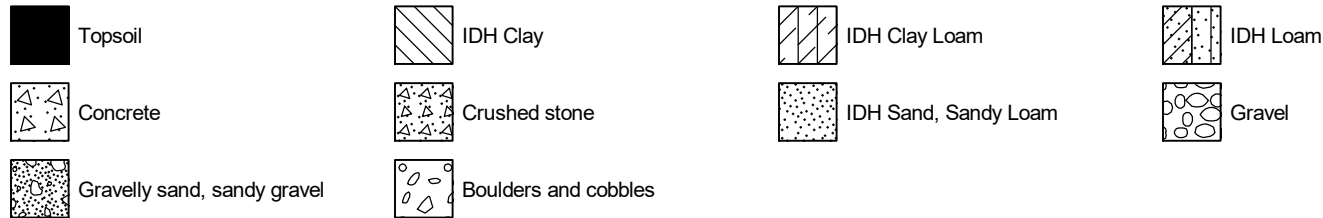
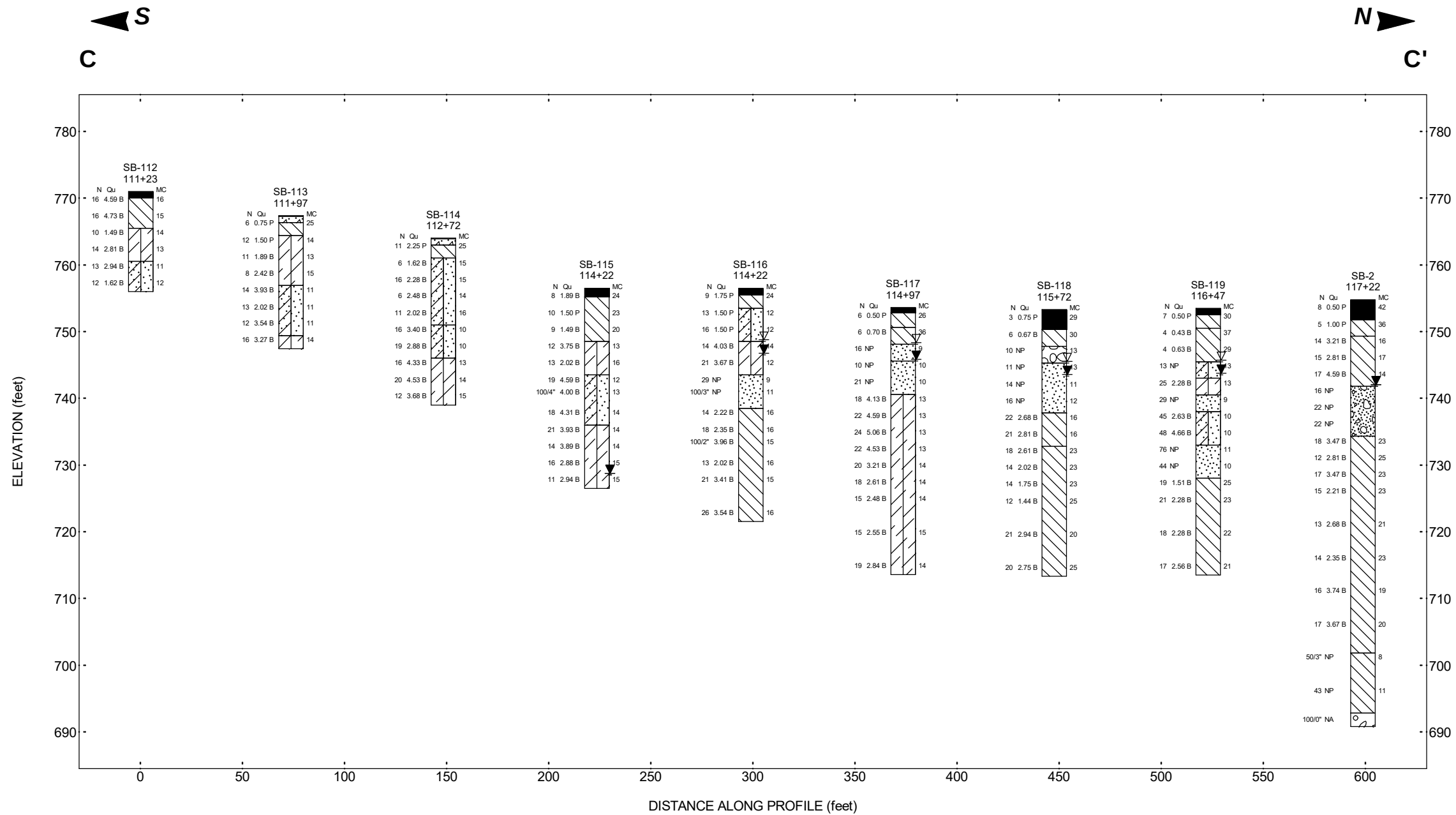
JOB NUMBER

165-07-01

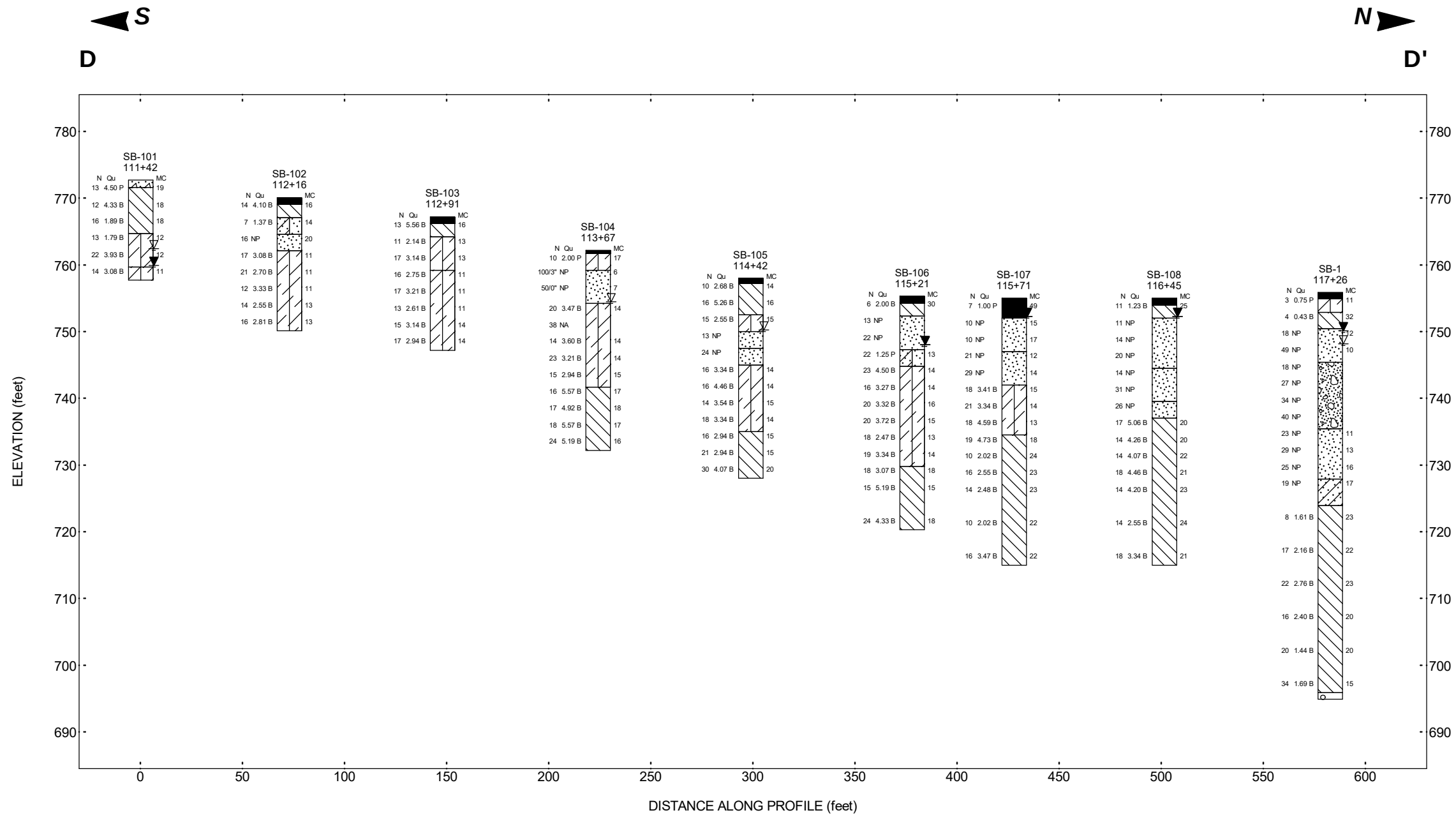
PLATE NUMBER

EXHIBIT 3-2

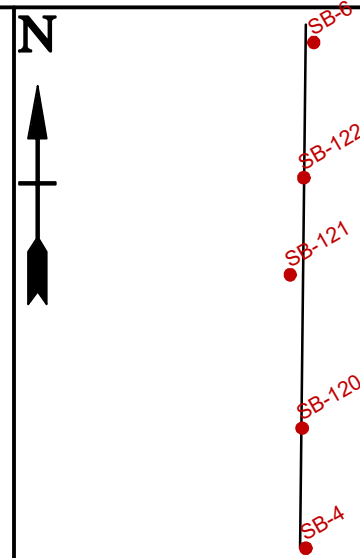
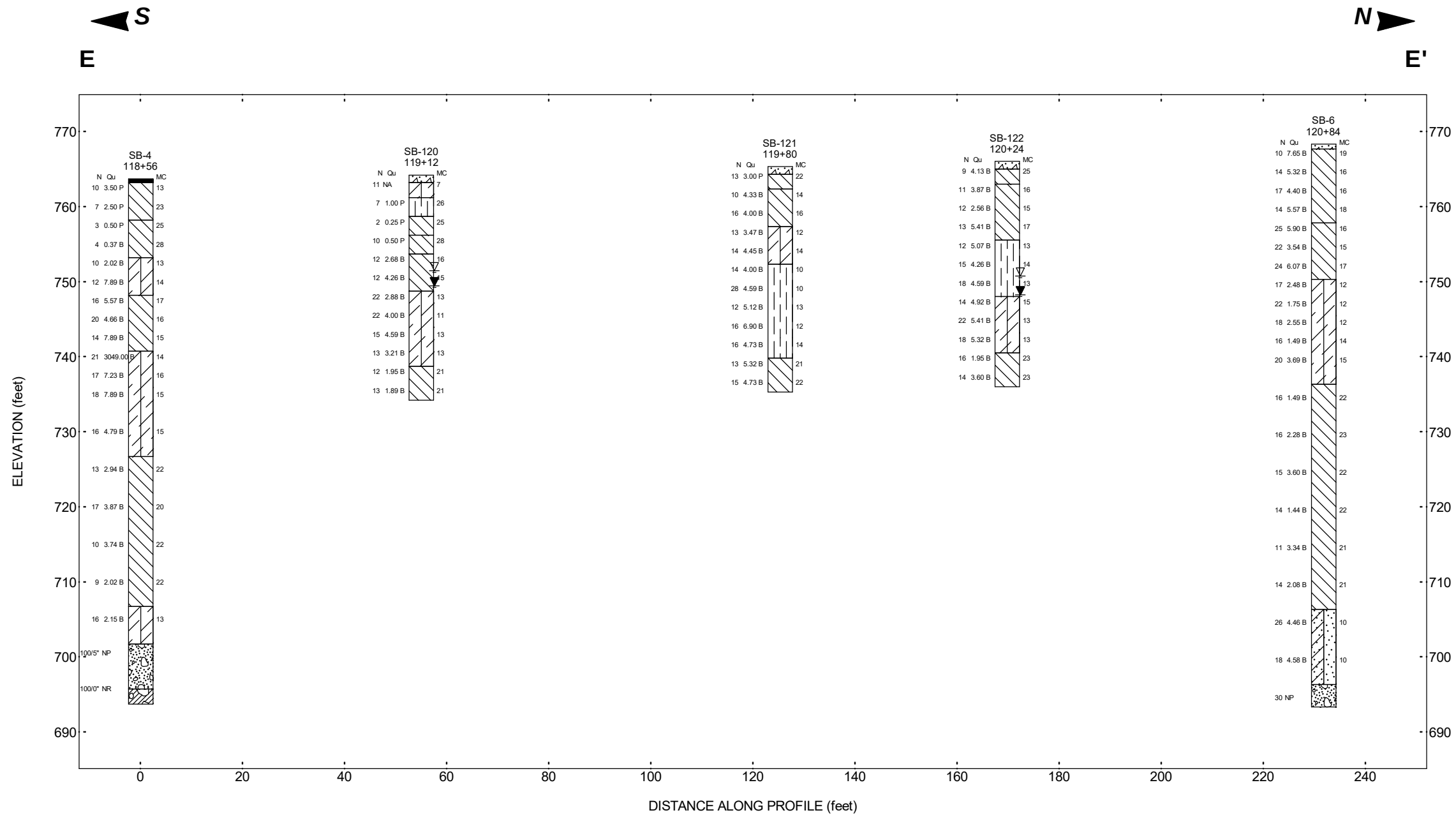
WEI 11X17 1650701.GPJ WANGENG.GDT 3/23/22



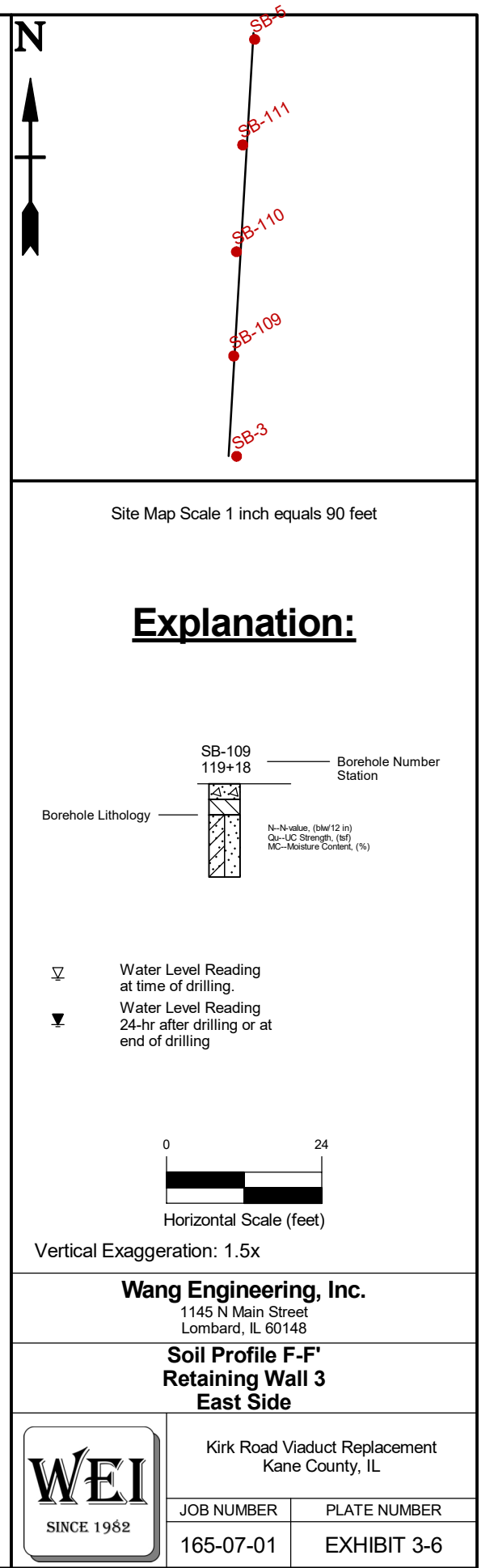
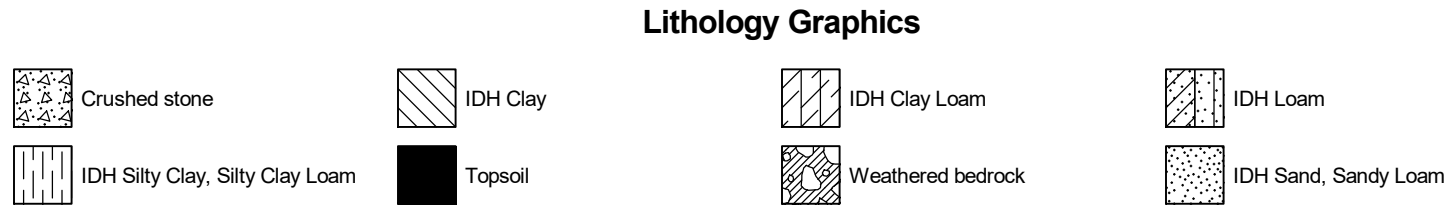
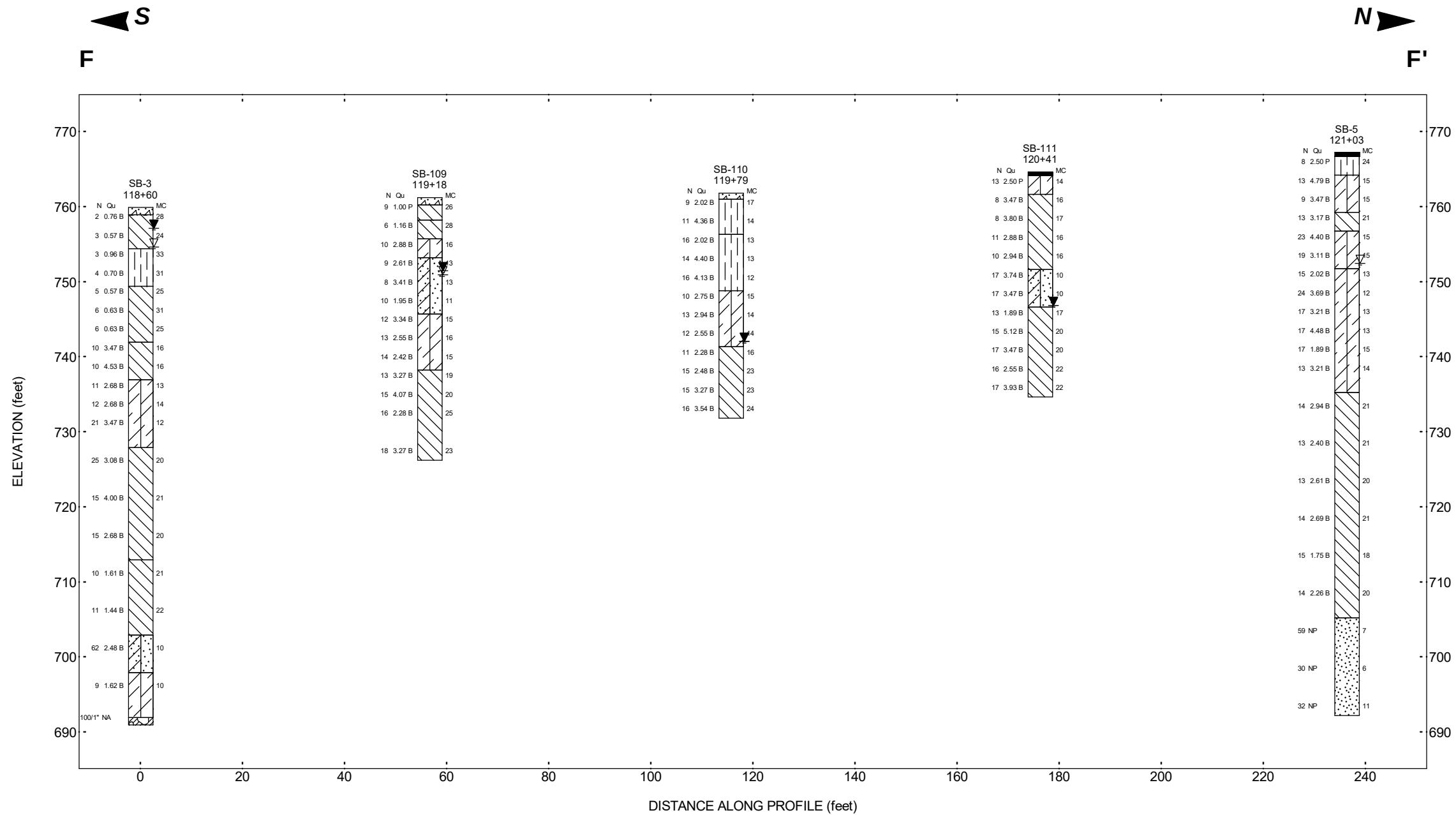
WEI 11X17 1650701.GPJ WANGENG.GDT 3/23/22



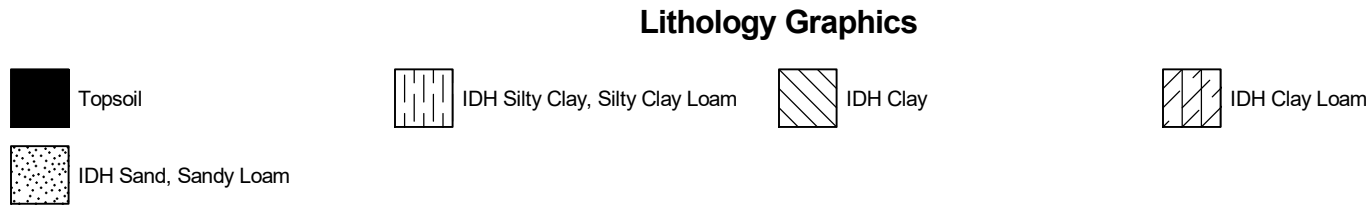
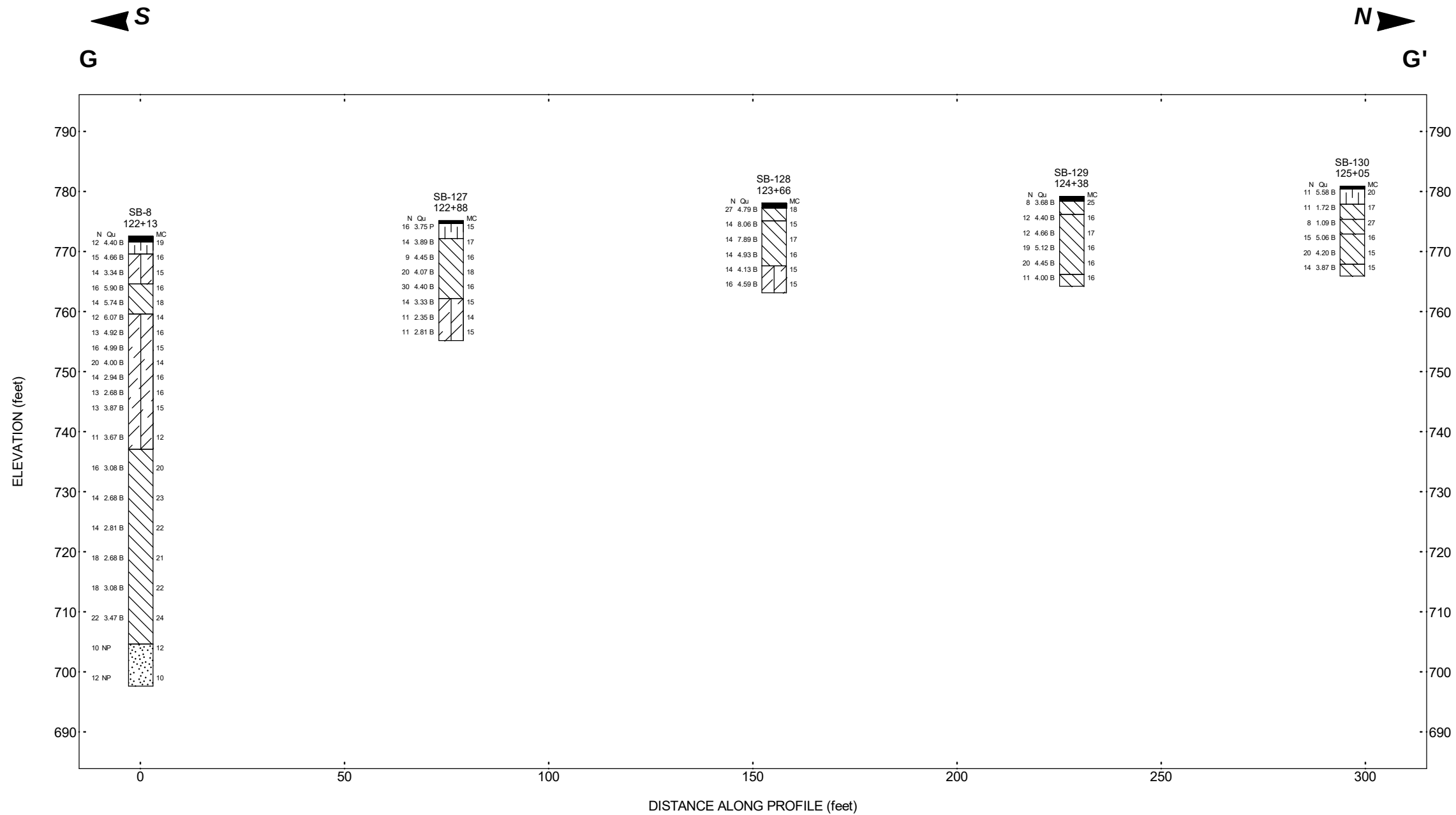
WEI 11X17 1650701.GPJ WANGENG.GDT 3/23/22



WEI 11X17 1650701.GPJ WANGENG.GDT 3/23/22



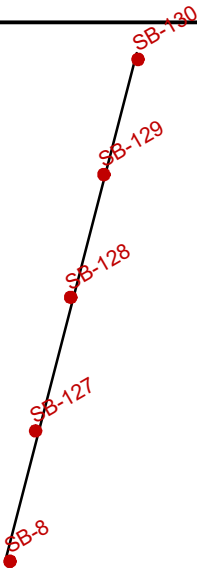
WEI 11X17 1650701.GPJ WANGENG.GDT 3/23/22



N



SB-8 SB-127 SB-128 SB-129 SB-130



Site Map Scale 1 inch equals 110 feet

Explanation:

SB-127 122+88 Borehole Number Station

Borehole Lithology

N--N-value, (blw/12 in)
Qu--UC Strength, (tsf)
MC--Moisture Content, (%)

▽ Water Level Reading at time of drilling.
▼ Water Level Reading 24-hr after drilling or at end of drilling

0 30
Horizontal Scale (feet)

Vertical Exaggeration: 1.5x

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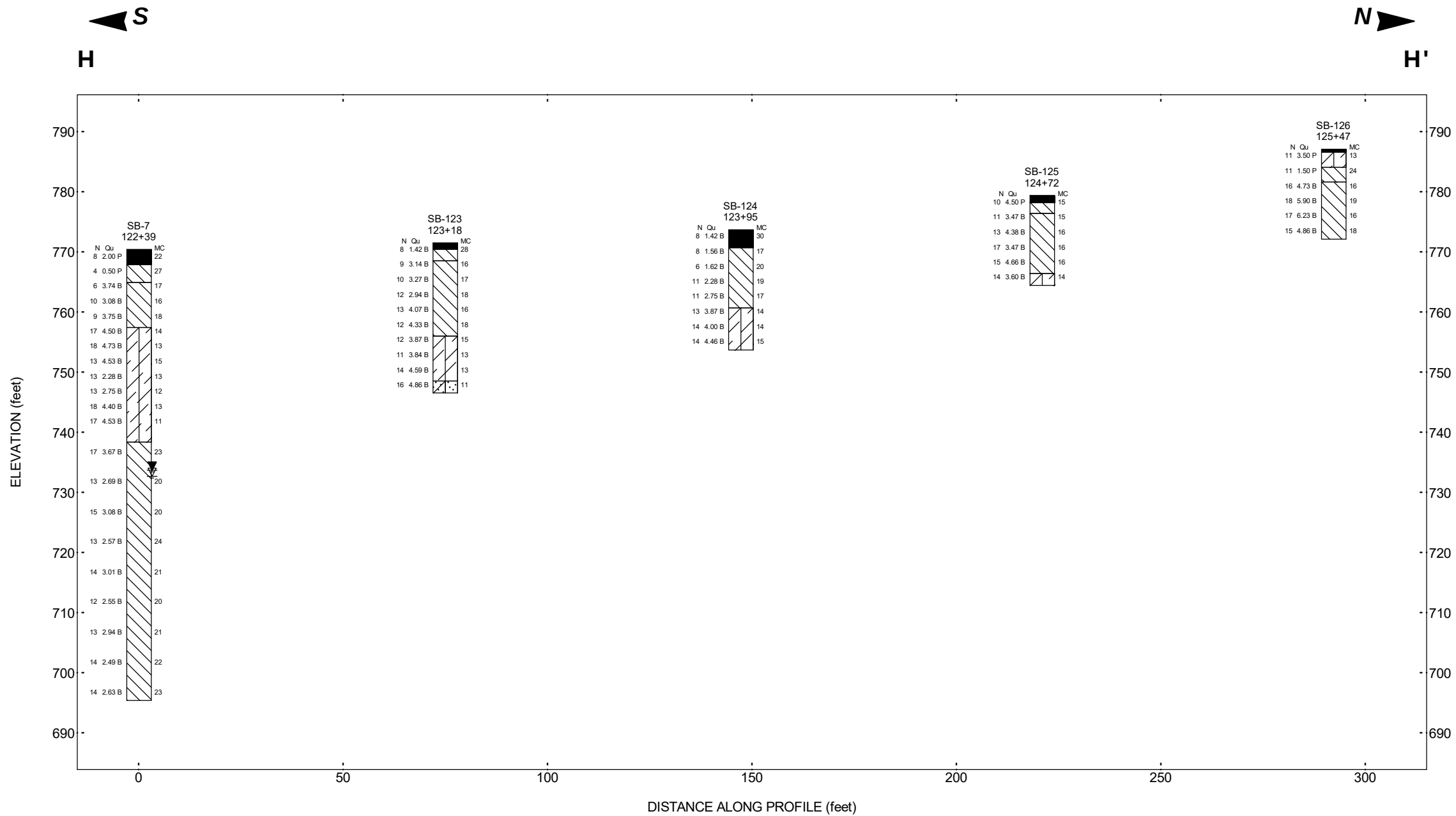
**Soil Profile G-G'
Retaining Wall 4
West Side**



Kirk Road Viaduct Replacement
Kane County, IL

JOB NUMBER	PLATE NUMBER
165-07-01	EXHIBIT 3-7

WEI 11X17 1650701.GPJ WANGENG.GDT 3/23/22



Site Map Scale 1 inch equals 110 feet

Explanation:

SB-123 123+18

Borehole Number Station

Borehole Lithology

N--N-value, (blw/12 in)
Qu--UC Strength, (tsf)
MC--Moisture Content, (%)

Water Level Reading at time of drilling.

Water Level Reading 24-hr after drilling or at end of drilling

Horizontal Scale (feet)

Vertical Exaggeration: 1.5x

Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

**Soil Profile H-H'
Retaining Wall 4
East Side**

Kirk Road Viaduct Replacement
Kane County, IL

WEI
SINCE 1982

JOB NUMBER	PLATE NUMBER
165-07-01	EXHIBIT 3-8

APPENDIX A



wangeng@wangeng.com
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Telephone: (630) 953-9928
Fax:

BORING LOG REED-01

WEI Job No.: 165-07-01

Client **Bollinger, Lach & Associates, Inc.**
Project **Kirk Road Viaduct Replacement**
Location **Kane County, IL**

Datum: NAVD 88
Elevation: 770.13 ft
North: 1900189.51 ft
East: 999342.88 ft
Station: 122+33.36
Offset: 35.66' Rt.

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	769.1	12 inch thick, black SILTY CLAY; damp --TOPSOIL-- Stiff, black SILTY CLAY, trace gravel; damp --FILL-- --RDR 2--			1	2 3 6	1.00 P	16		749.6	--RDR 2-- Stiff to very stiff, gray SILTY CLAY LOAM, little gravel; damp to moist --RDR 2--			9	5 6 8	1.56 B	13
	766.4	Very stiff, brown SILTY CLAY, trace gravel; damp --FILL-- --RDR 2--	5		2	6 6 8	2.87 B	15				25		10	5 9 11	1.72 B	14
		--silt seam--			3	4 5 6	2.46 B	16						11	6 9 11	2.13 B	12
	761.0	Stiff to very stiff, brown and gray SILTY CLAY to SILTY CLAY LOAM, little gravel --RDR 2--	10		4	4 6 7	1.97 B	17				30		12	6 7 12	3.85 B	16
	757.1	Hard, gray SILTY CLAY LOAM, trace gravel; damp --RDR 2--	15		5	10 12 15	3.12 B	15		738.4	Very stiff, gray SILTY CLAY, trace gravel; moist --RDR 2--			13	5 7 11	3.44 B	27
	751.1	Medium dense, gray SILT, trace gravel; saturated	20		6	6 7 12	4.26 B	15				35		14	5 8 9	3.36 B	23
					7	10 12 15	NR					40					
					8	7 8 11	4.02	13									

GENERAL NOTES

Begin Drilling **10-05-2021** Complete Drilling **10-05-2021**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **KS&AP** Logger **A. Scifers** Checked by **EG**
Drilling Method **2.25" ID HSA; 2.5' int to 30'; 5' thereafter; rotary after 10'; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **19.00 ft**
At Completion of Drilling **MUD**
Time After Drilling **NA**
Depth to Water **NA**
The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



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Fax:

BORING LOG REED-01

WEI Job No.: 165-07-01

Client **Bollinger, Lach & Associates, Inc.**
Project **Kirk Road Viaduct Replacement**
Location **Kane County, IL**

Datum: NAVD 88
Elevation: 770.13 ft
North: 1900189.51 ft
East: 999342.88 ft
Station: 122+33.36
Offset: 35.66' Rt.

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
											--RDR 3-- --rig chatter, 62 to 63 feet-- --possible cobbles--						
										708.4	Medium dense, gray SILT, trace gravel; moist						
											--RDR 2 to 3--						
			45		15	4 6 9	2.21 B	23		705.7	Very stiff, SILTY CLAY, trace gravel; moist	65		19	16 6 8	NP	12
											--RDR 2--						
										703.4	Very dense, gray SILTY LOAM, trace gravel; moist						
											--RDR 2 to 3--						
			50		16	6 8 11	2.95 B	25						20	50/5"	NP	9
											--rig chatter, 69 to 70 feet-- --possible cobbles--	70					
										698.4	Medium dense, gray SILT, trace gravel; saturated						
											--RDR 2 to 3--						
			55		17	5 7 8	2.79 B	21						21	12 6 12	NP	9
											--rig chatter, 76 to 77 feet-- --possible cobbles--	75					
										691.1	Medium strong to strong, light greyish green and yellow, fair	80					
			60		18	6 8 11	2.62 B	20									

GENERAL NOTES

Begin Drilling **10-05-2021** Complete Drilling **10-05-2021**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **KS&AP** Logger **A. Scifers** Checked by **EG**
Drilling Method **2.25" ID HSA; 2.5' int to 30'; 5' thereafter; rotary after 10'; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **19.00 ft**
At Completion of Drilling **MUD**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



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Lombard, IL 60148
Telephone: (630) 953-9928
Fax:

BORING LOG REED-01

WEI Job No.: 165-07-01

Client **Bollinger, Lach & Associates, Inc.**
Project **Kirk Road Viaduct Replacement**
Location **Kane County, IL**

Datum: NAVD 88
Elevation: 770.13 ft
North: 1900189.51 ft
East: 999342.88 ft
Station: 122+33.36
Offset: 35.66' Rt.

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		quality DOLOSTONE with siltstone infill; slightly to moderately weathered rock and slightly weathered joints, closely spaced horizontal and vertical joints, with less than 0.05-inch opening, hard joint wall, slightly rough joint wall surface, soft infill strength, and greater than 0.2-inch infill thickness. -- Run 1: 79.0 to 89.0 feet-- --Recovery = 98%--85 --RQD = 58%--			1												
	681.1	Boring terminated at 89.00 ft	90														
			95														
			100														

GENERAL NOTES

Begin Drilling **10-05-2021** Complete Drilling **10-05-2021**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **KS&AP** Logger **A. Scifers** Checked by **EG**
Drilling Method **2.25" ID HSA; 2.5' int to 30'; 5' thereafter; rotary after 10'; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **19.00 ft**
At Completion of Drilling **MUD**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



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Lombard, IL 60148
Telephone: (630) 953-9928
Fax:

BORING LOG REED-02

WEI Job No.: 165-07-01

Client **Bollinger, Lach & Associates, Inc.**
Project **Kirk Road Viaduct Replacement**
Location **Kane County, IL**

Datum: NAVD 88
Elevation: 769.13 ft
North: 1900094.22 ft
East: 999254.57 ft
Station: 121+24.60
Offset: 35.48' Lt.

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		Medium dense, brown SILTY LOAM, trace gravel; damp --FILL-- --RDR 2--															
					1	5 8 10	4.50 P	10						9	6 7 11	2.75 P	11
					2	6 11 13	NP	13						10	8 9 11	2.71 B	12
	763.9	Hard, brown SILTY CLAY LOAM, trace gravel; damp --FILL-- --RDR 2--	5														
					3	7 9 9	5.08 B	16						11	2 4 6	0.74 B	17
					4	10 11 14	6.07 B	15						12	5 7 13	2.05 B	15
	758.6	Medium stiff to very stiff, gray SILTY CLAY to SILTY CLAY LOAM, trace to little gravel; damp to moist --RDR 2--	10														
					5	8 9 16	2.71 B	14		737.1	Stiff to very stiff, gray SILTY CLAY, trace gravel; damp to moist --RDR 2--						
					6	6 6 8	3.12 B	14						13	4 7 10	1.50 P	24
			15														
					7	5 6 7	2.13 B	16									
					8	4 5 8	3.00 P	14						14	5 5 8	2.46 B	22
			20														

GENERAL NOTES

Begin Drilling **10-04-2021** Complete Drilling **10-04-2021**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **KS&AP** Logger **A. Scifers** Checked by **EG**
Drilling Method **2.25" ID HSA; 2.5' int to 30'; 5' thereafter; rotary after 10'; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **51.75 ft**
At Completion of Drilling **MUD**
Time After Drilling **NA**
Depth to Water **NA**
The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



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Lombard, IL 60148
Telephone: (630) 953-9928
Fax:

BORING LOG REED-02

WEI Job No.: 165-07-01

Client **Bollinger, Lach & Associates, Inc.**

Project **Kirk Road Viaduct Replacement**

Location **Kane County, IL**

Datum: NAVD 88
Elevation: 769.13 ft
North: 1900094.22 ft
East: 999254.57 ft
Station: 121+24.60
Offset: 35.48' Lt.

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type <i>recovery</i>	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--RDR 3-- --rig chatter, 62 to 63 feet-- --possible cobbles--						
	707.4	Medium dense, gray SILT, trace gravel; saturated --RDR 2 to 3--						
			45		15	5 7 9	2.30 B	25
			50		16	6 7 9	2.62 B	20
		--disturbed sample-- --wet--	55		17	10 11 14	NA	33
			60		18	5 7 16	1.56 B	21
	702.4	Medium dense to very dense, gray SILTY LOAM; moist to wet --RDR 2 to 3--						
		--rig chatter, 71 to 71.5 feet-- --possible cobbles--	70		20	39 43 39		
		--rig chatter, 75 to 76 feet-- --possible cobbles--	75		21	16 15 14		
	692.1	Strong, light yellowish brown and gray, very poor quality DOLOSTONE; slightly weathered rock and slightly to moderately weathered joints, very closely spaced horizontal joints, with less than 0.05-inch opening, hard	80			CORE		

GENERAL NOTES

Begin Drilling **10-04-2021** Complete Drilling **10-04-2021**
 Drilling Contractor **Wang Testing Services** Drill Rig
 Driller **KS&AP** Logger **A. Scifers** Checked by **EG**
 Drilling Method **2.25" ID HSA; 2.5' int to 30'; 5' thereafter; rotary after 10'; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling		51.75 ft
At Completion of Drilling		MUD
Time After Drilling		NA
Depth to Water		NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



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BORING LOG REED-02

WEI Job No.: 165-07-01

Client **Bollinger, Lach & Associates, Inc.**
Project **Kirk Road Viaduct Replacement**
Location **Kane County, IL**

Datum: NAVD 88
Elevation: 769.13 ft
North: 1900094.22 ft
East: 999254.57 ft
Station: 121+24.60
Offset: 35.48' Lt.

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	686.6	joint wall, slicken to slightly rough joint wall surface, hard infill strength, and less than 0.2-inch infill thickness. -- Run 1: 77.5 to 82.5 feet-- --Recovery = 73%-- --RQD = 0%-- --water loss, 79 feet-- Boring terminated at 82.50 ft			1												
			85														
			90														
			95														
			100														

GENERAL NOTES

Begin Drilling **10-04-2021** Complete Drilling **10-04-2021**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **KS&AP** Logger **A. Scifers** Checked by **EG**
Drilling Method **2.25" ID HSA; 2.5' int to 30'; 5' thereafter; rotary after 10'; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **51.75 ft**
At Completion of Drilling **MUD**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



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BORING LOG RWB-01

WEI Job No.: 165-07-01

Client **Bollinger, Lach & Associates, Inc.**
Project **Kirk Road Viaduct Replacement**
Location **Kane County, IL**

Datum: NAVD 88
Elevation: 763.21 ft
North: 1899817.94 ft
East: 999288.08 ft
Station: 118+52.31
Offset: 11.86' Rt.

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	763.0	2-inch thick black SILTY CLAY LOAM --FILL-- Stiff to very stiff, dark brown to brown SILTY CLAY LOAM, trace to little gravel			1	8 7 5	2.50 P	16						9	7 7 9	2.75 P	13
	759.4	Stiff, black SILTY CLAY LOAM --RDR 2--			2	2 3 2	1.25 P	29		740.2	Stiff to hard, gray SILTY CLAY, trace gravel --RDR 2--			10	9 9 12	1.89 B	17
	758.7	--BURIED TOPSOIL-- Stiff, brown and gray SILTY CLAY	5									25					
					3	2 4 4	1.64 B	29						11	7 8 13	2.95 B	15
	755.2	Medium stiff, brown and gray SILTY CLAY LOAM --RDR 2--			4	2 1 3	0.82 B	25						12	7 9 12	4.67 B	14
	752.7	Very loose, brown and gray SILTY LOAM; wet --RDR 1--	10		5	0 0 0	NP	28			--RDR 3-- --hard drilling, 31.0 to 32.0 feet-- --possible cobbles--						
	751.4	Soft brown and gray SILTY CLAY LOAM; moist --RDR 1--			6	5 5 6	0.25 P	30						13	6 8 11	4.18 B	24
	747.7	Very stiff, brown SILTY CLAY LOAM, trace gravel --RDR 2--	15		7	7 9 9	2.75 P	16									
					8	5 5 9	2.46 B	15		723.2				14	4 6 8	2.30 B	21
			20								Boring terminated at 40.00 ft	40					

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **09-23-2021** Complete Drilling **09-23-2021**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **J&R** Logger **FB&AS** Checked by **EG**
Drilling Method **2.25" ID HSA; boring backfilled upon completion**

While Drilling **10.50 ft**
At Completion of Drilling **5.00 ft**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



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BORING LOG RWB-02

WEI Job No.: 165-07-01

Client **Bollinger, Lach & Associates, Inc.**
Project **Kirk Road Viaduct Replacement**
Location **Kane County, IL**

Datum: NAVD 88
Elevation: 763.57 ft
North: 1899883.81 ft
East: 999287.80 ft
Station: 119+18.33
Offset: 12.10' Rt.

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	763.2	Black SILTY CLAY LOAM --TOPSOIL-- Stiff to very stiff, brown and dark gray SILTY CLAY LOAM, trace to little gravel --FILL-- --RDR 2--								743.1	Stiff, gray SILTY CLAY LOAM --sand seams; wet-- --RDR 2--						
					1	4 5 5	3.53 B	28						9	9 8 6	1.48 B	13
					2	4 2 3	1.75 P	14		740.6	Very stiff to hard, gray SILTY CLAY, trace gravel --RDR 2--			10	8 10 12	4.92 B	14
	758.1	Very stiff, brown and gray SILTY CLAY, trace gravel --RDR 2--			3	5 5 7	3.20 B	16						11	4 8 10	5.08 B	20
	756.1	Brown SAND; wet															
	755.6	Very stiff, brown SILTY CLAY, trace gravel --RDR 2--			4	5 5 7	3.61 B	16						12	5 11 15	4.92 B	18
	752.8	Very stiff, brown SILTY CLAY LOAM, little gravel --RDR 2--			5	8 8 9	2.00 P	12									
	750.6	Very stiff to hard, brown and gray to gray SILTY CLAY, trace gravel --RDR 2--			6	9 8 12	6.31 B	15						13	6 8 12	3.12 B	19
					7	8 8 12	4.02 B	11									
					8	6 9 11	3.69 B	13		723.6	Boring terminated at 40.00 ft			14	5 6 10	2.38 B	24

GENERAL NOTES

Begin Drilling **09-23-2021** Complete Drilling **09-23-2021**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **J&R** Logger **FB&AS** Checked by **EG**
Drilling Method **2.25" ID HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **7.50 ft**
At Completion of Drilling **24.50 ft**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



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BORING LOG RWB-03

WEI Job No.: 165-07-01

Client **Bollinger, Lach & Associates, Inc.**
Project **Kirk Road Viaduct Replacement**
Location **Kane County, IL**

Datum: NAVD 88
Elevation: 763.29 ft
North: 1899841.46 ft
East: 999262.53 ft
Station: 118+76.08
Offset: 13.46' Lt.

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	762.7	7-inch thick brown SANDY LOAM --TOPSOIL-- Hard, black, SILTY CLAY LOAM, trace gravel; damp --FILL--															
					1	4 5 6	4.50 P	20						9	6 8 12	2.38 B	15
	760.3	Medium stiff, black SILTY CLAY LOAM, trace gravel; moist --FILL-- --RDR 2--			2	1 2 2	0.50 P	40						10	9 10 15	2.13 B	15
	758.3	Stiff, black and brown, SILTY CLAY, trace gravel; damp --FILL-- --RDR 2--	5		3	2 3 2	1.39 B	29				25		11	7 12 16	2.13 B	15
	755.5	Soft, brown SILTY CLAY LOAM, trace gravel; moist --FILL-- --RDR 2--			4	2 1 2	0.49 B	27						12	7 13 20	4.26 B	16
			10		5	2 3 4	0.41 B	26		733.8 733.5	Dense, gray SILT, trace gravel; saturated Hard (4.0P), gray SILTY CLAY LOAM, trace gravel; damp --RDR 2 to 3-- --some rig chatter, 31.0 to 33.5 feet--	30					
	750.3	Stiff to hard, brown to gray SILTY CLAY LOAM, trace gravel; damp to moist --RDR 2--			6	4 6 7	1.56 B	17		730.8	Medium stiff, gray SILTY CLAY LOAM, trace gravel; moist --RDR 2 to 3--			13	12 16 20	0.50 P	28
			15		7	5 8 10	3.20 B	16		726.3	Very stiff, gray SILTY CLAY, trace gravel; moist --RDR 2--						
					8	8 9 13	NR			723.3		40		14	6 3 5	2.30 B	26
			20														

Boring terminated at 40.00 ft

GENERAL NOTES

Begin Drilling **10-07-2021** Complete Drilling **10-07-2021**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **KS&AP** Logger **A. Scifers** Checked by **EG**
Drilling Method **2.25" ID HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **29.50 ft**
At Completion of Drilling **38.00 ft**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



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BORING LOG RWB-04

WEI Job No.: 165-07-01

Client **Bollinger, Lach & Associates, Inc.**

Project **Kirk Road Viaduct Replacement**

Location **Kane County, IL**

Datum: NAVD 88
Elevation: 764.16 ft
North: 1899905.82 ft
East: 999260.27 ft
Station: 119+40.05
Offset: 15.64' Lt.

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type <i>recovery</i>	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type <i>recovery</i>	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	
	763.7	5-inch thick brown SANDY LOAM																
	763.3	--TOPSOIL--																
	762.6	5-inch thick dark brown SANDY LOAM			1	5 5 7		26						9	6 10 12		15	
	761.2	Medium dense, gray SILTY CLAY and gravel; moist																
		--RDR 2--			2	3 3 4		23						10	8 12 16		16	
		--RDR 2--	5									25						
	758.9	Medium stiff, black and brown SILTY CLAY LOAM, trace gravel									738.7	Very stiff to hard, gray SILTY CLAY, trace gravel; damp to moist						
		--FILL-- --RDR 2--			3	3 5 7		17				--RDR 2--			11	7 10 13		15
		Stiff to very stiff, brown SILTY CLAY LOAM, trace gravel; damp																
		--FILL-- --RDR 2 to 3--			4	50/4		22							12	11 17 26		19
			10															
	753.7	--some rig chatter, 10.0 to 11.0 feet--																
	752.9	--possible gravel or cobbles--																
		Medium dense, brown SILT, trace gravel			5	4 4 7		15										
		Stiff to hard, brown to gray SILTY CLAY LOAM, little to some gravel; damp																
		--RDR 2--			6	4 8 12		14						13	11 12 16		22	
			15															
					7	5 9 10		11										
					8	13 16 15		12						14	9 9 11		20	
			20							724.2	Boring terminated at 40.00 ft	40						

GENERAL NOTES

Begin Drilling **10-07-2021** Complete Drilling **10-07-2021**

Drilling Contractor **Wang Testing Services** Drill Rig

Driller **KS&AP** Logger **A. Scifers** Checked by **EG**

Drilling Method **2.25" ID HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling		10.50 ft
At Completion of Drilling		
Time After Drilling		NA
Depth to Water		NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



BORING LOG UPRR-01

WEI Job No.: 165-07-01

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Client **Bollinger, Lach & Associates, Inc.**

Project **Kirk Road Viaduct Replacement**

Location **Kane County, IL**

Datum: NAVD 88
Elevation: 762.59 ft
North: 1899798.57 ft
East: 999240.54 ft
Station: 118+33.41
Offset: 35.88' Lt.

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type <i>recovery</i>	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type <i>recovery</i>	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	759.8	Loose, brown SANDY LOAM, some gravel; damp --FILL-- --RDR 2--			1	1 2 2	NP	8		730.8	Stiff to very stiff, gray SILTY CLAY, trace gravel; damp --RDR 2--			9	6 9 9	3.69 B	14
						4 6 9											
	752.1	Medium stiff to stiff, black and brown SILTY CLAY, trace gravel; damp to wet --FILL-- --RDR 2--			2	3 4 5	1.80 B	33						10	4 6 9	2.79 B	16
						3 3 6									7 8 10		
		Very stiff to hard, brown to gray SILTY CLAY LOAM, trace gravel; damp --RDR 2--			3	3 3 6	0.96 B	29						11	7 8 10	4.02 B	15
						3 6 9									6 7 11		
					4	3 6 9	0.50 P	22						12	6 7 11	2.62 B	14
						7 7 9									6 11 12		
					5	7 7 9	2.46 B	16						13	6 11 12	2.87 B	22
						9 16 15									6 9 12		
					6	9 16 15	6.15 B	16						14	6 9 12	2.87 B	22
						9 11 14											
					7	9 11 14	4.02 B	19									
						9 11 11											
					8	9 11 11	2.38 B	19									

GENERAL NOTES

Begin Drilling **10-06-2021** Complete Drilling **10-06-2021**
 Drilling Contractor **Wang Testing Services** Drill Rig
 Driller **KS&AP** Logger **A. Scifers** Checked by **EG**
 Drilling Method **2.25" ID HSA; 2.5' int to 30'; 5' thereafter; rotary after 10'; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling		5.50 ft
At Completion of Drilling		MUD
Time After Drilling		NA
Depth to Water		NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



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Client **Bollinger, Lach & Associates, Inc.**

Project **Kirk Road Viaduct Replacement**

Location **Kane County, IL**

Datum: NAVD 88
Elevation: 762.59 ft
North: 1899798.57 ft
East: 999240.54 ft
Station: 118+33.41
Offset: 35.88' Lt.

[illegible]

GENERAL NOTES

Begin Drilling **10-06-2021** Complete Drilling **10-06-2021**
 Drilling Contractor **Wang Testing Services** Drill Rig
 Driller **KS&AP** Logger **A. Scifers** Checked by **EG**
 Drilling Method **2.25" ID HSA; 2.5' int to 30'; 5' thereafter; rotary after 10'; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling		5.50 ft
At Completion of Drilling		MUD
Time After Drilling		NA
Depth to Water		NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



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BORING LOG UPRR-01

WEI Job No.: 165-07-01

Client **Bollinger, Lach & Associates, Inc.**
Project **Kirk Road Viaduct Replacement**
Location **Kane County, IL**

Datum: NAVD 88
Elevation: 762.59 ft
North: 1899798.57 ft
East: 999240.54 ft
Station: 118+33.41
Offset: 35.88' Lt.

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	679.6	Boring terminated at 83.00 ft	85														
			90														
			95														
			100														

GENERAL NOTES

Begin Drilling **10-06-2021** Complete Drilling **10-06-2021**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **KS&AP** Logger **A. Scifers** Checked by **EG**
Drilling Method **2.25" ID HSA; 2.5' int to 30'; 5' thereafter; rotary after 10'; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **5.50 ft**
At Completion of Drilling **MUD**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



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BORING LOG UPRR-02

WEI Job No.: 165-07-01

Client **Bollinger, Lach & Associates, Inc.**
Project **Kirk Road Viaduct Replacement**
Location **Kane County, IL**

Datum: NAVD 88
Elevation: 756.14 ft
North: 1899698.18 ft
East: 999316.35 ft
Station: 117+32.27
Offset: 38.93' Rt.

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	755.1	12-inch thick, black SILTY CLAY --TOPSOIL--								735.6	gravel --RDR 3-4--						
		Medium stiff, black SILTY CLAY LOAM; moist --FILL-- --RDR 2--			1	1 2 2	0.98 B	29			Dense, gray SILTY LOAM, some gravel --RDR 3-4--			9	10 28 19	NP	9
	752.1	Loose, brown SILT to SILTY LOAM; moist --FILL-- --RDR 2--			2	4 4 4	0.74 B	38		733.1	Very stiff, gray SILTY CLAY, trace gravel; moist --RDR 2-3--			10	8 9 12	2.95 B	24
	750.6	Dense, brown GRAVELLY SANDY LOAM; saturated --FILL-- --RDR 2--			3	9 12 25	NP	11						11	8 10 15	NR	
	748.1	Medium dense, brown GRAVEL with SILTY CLAY LOAM --FILL-- --RDR 2--			4	13 14 12	NP	13		728.9	Very soft, gray SILTY CLAY, trace to little gravel --RDR 2--			12	6 7 8	< 0.25 P	31
	745.6	--rig chatter; possible cobbles-- Medium dense to dense, brown SANDY LOAM, some gravel; saturated --RDR 3-4-- --rig chatter; possible cobbles--			5	16 14 20	NP	12		724.4	Stiff to very stiff, gray SILTY CLAY, trace gravel --RDR 2--			13	4 5 5	1.89 B	25
	740.6	Dense to very dense, brown SANDY GRAVEL; saturated --RDR 3-4--			7	13 17 19	NP	12						14	4 6 7	2.71 B	23
	736.9	Gray SILTY CLAY LOAM, some			8	15 16	NP	6									

GENERAL NOTES

Begin Drilling **10-12-2021** Complete Drilling **10-13-2021**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **KS&AP** Logger **A. Scifers** Checked by **JAB**
Drilling Method **2.25" ID HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **6.00 ft**
At Completion of Drilling **MUD**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.



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BORING LOG UPRR-02

WEI Job No.: 165-07-01

Client **Bollinger, Lach & Associates, Inc.**
Project **Kirk Road Viaduct Replacement**
Location **Kane County, IL**

Datum: NAVD 88
Elevation: 756.14 ft
North: 1899698.18 ft
East: 999316.35 ft
Station: 117+32.27
Offset: 38.93' Rt.

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	
											--rig chatter, 60 to 63 feet-- --possible cobbles--							
										693.1	Strong, light grayish brown, fair quality, DOLOSTONE; Closely spaced, slightly weathered, horizontal JOINTS, with <0.05 inch opening, slightly rough walls, 65 and >0.2 inch thick clay infill. -- Run 1: 63.0 to 73.0 feet-- --Recovery = 100%-- --RQD = 62%--							
				45		15	6 7 9	3.36 B		21								
				50		16	5 7 8	2.30 B		21			--water loss at 69.0 feet--	70				
		--rig chatter; possible cobbles--																
	704.4	Very dense, gray SILT, trace gravel --RDR 2-3--																
										683.1	Boring terminated at 73.00 ft							
				55		17	29 28 26	NP	10									
	697.6	Very dense, brown SANDY GRAVEL --RDR 2--																

GENERAL NOTES

Begin Drilling **10-12-2021** Complete Drilling **10-13-2021**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **KS&AP** Logger **A. Scifers** Checked by **JAB**
Drilling Method **2.25" ID HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **6.00 ft**
At Completion of Drilling **MUD**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 2

Date Started 8/6/15

Date Completed 8/6/15

ROUTE 360 DESCRIPTION Kirk Road Bridge over Railroad Tracks

SECT. 21-00192-04-BR STRUCT. NO. 045-xxxx DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION Southeast Corner S. 1SW/12NW, TWP. 39N, RNG. 8E

Boring No. <u>SB-1</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 117+26</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>37.00ft RT</u>	P	O			when drilling <u>747.9</u>	P	O		
	T	W	Qu	W	at Completion <u>749.9</u>	T	W	Qu	W
Surface Elev. <u>755.90</u> ft	H	S	tsf	%	after _____ Hrs. _____	H	S	tsf	%
Black clayey TOPSOIL									
754.90					Med. dense brown and gray SANDY LOAM, wet A-2-4				
		2	P	11.2			12		15.7
Medium stiff brown CLAY LOAM, little gravel, very moist A-4		1	0.75				11		
752.90		2					14		
					727.90				
Soft brown and gray CLAY, trace gravel, very moist A-6		1	B	31.5	Med. dense gray SANDY CLAY LOAM, wet A-4		9		17.3
		1	0.43				11		
750.40		3	15%				8		
	-5					-30			
Med. dense to dense brown and gray SANDY LOAM, some gravel, occasional Cobbles, moist to wet A-1-b		6		12.1					
Sample 3: LL/PL/PI = 19/15/4		8			723.90				
		10							
					Very stiff to stiff gray CLAY, trace gravel, moist to very moist A-6				
		7		10.1			4	B	23.3
		20					4	1.61	
		29					4	15%	
745.40	-10					-35			
Med. dense to dense brown and gray SAND and GRAVEL, saturated to dense A-1		7							
		9							
		9							
		12					7	B	22.4
		15					9	2.16	
		12					8	15%	
	-15					-40			
		12							
		16							
		18							
		12					7	B	22.9
		17					13	2.76	
		23					9	15%	
735.40	-20					-45			
Med. dense brown and gray SANDY LOAM, wet A-2-4		10		10.7					
		9							
		14							
		12		12.5			5	B	20.2
		15					7	2.40	
		14					9	15%	
	-25					-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

STRUCTURE BORING LOG

Page 2 of 2

Date Started 8/6/15

Date Completed 8/6/15

STRUCTURE NO. 045-xxxx

ROUTE 360

SECTION 21-00192-04-BR

COUNTY Kane

Boring No.	SB-1	D E P T H	B L O W S	Qu tsf	W %
Station	Sta. 117+26				
Offset	37.00ft RT				
Elevation	705.90 ft				
Very stiff to stiff gray CLAY, trace gravel, moist to very moist A-6		-55	7 11 9	B 1.44 15%	20.1
		-60	9 12 22	B 1.69 15%	15.1
Weathered/Fractured Rock or Boulder Zone [Hard Drilling]		695.90 694.90			
Auger Refusal at 61.0'					
CME-75 Truck Rig (#256) CME Automatic Hammer		-65			
		-70			
		-75			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 2

Date Started 9/5/15

Date Completed 9/5/15

ROUTE 360 DESCRIPTION Kirk Road Bridge over Railroad Tracks

SECT. 21-00192-04-BR STRUCT. NO. 045-xxxx DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION Southwest Corner S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-2</u>	D	B			Surface Water Elev. <u> </u>	D	B		
Station <u>Sta. 117+22</u>	E	L			Groundwater Elev.: <u> </u>	E	L		
Offset <u>57.00ft LT</u>	P	O			when drilling <u>741.8</u>	P	O		
	T	W	Qu	W	at Completion <u>741.8</u>	T	W	Qu	W
Surface Elev. <u>754.80</u> ft	H	S	tsf	%	after <u> </u> Hrs. <u> </u>	H	S	tsf	%
FILL - Black CLAY (Topsoil), trace organic, very moist A-7-6 Wet Combustion = 3.0%		2 4 4	P 0.5	41.5	Very stiff gray CLAY, trace gravel, moist A-6		5 8 9	B 3.47 15%	22.6
751.80									
Medium stiff brown and gray CLAY, trace gravel, very moist A-7-6		2 2 3	P 1.0	35.7			6 6 9	B 2.21 15%	23.4
749.30	-5					-30			
Very stiff to hard brown and gray CLAY, little gravel, moist A-6		5 7 7	B 3.21 15%	16.3					
		6 6 9	B 2.81 15%	16.5			6 6 7	B 2.68 15%	21.4
-10						-35			
		7 7 10	B 4.59 15%	14.0					
741.80									
Med. dense gray SAND and GRAVEL, saturated A-1		6 8 8					5 7 7	B 2.35 15%	23.1
-15						-40			
		7 9 13							
		7 11 11					7 8 8	B 3.74 15%	19.1
-20						-45			
734.30									
Very stiff gray CLAY, trace gravel, moist A-6		6 8 10	B 3.47 15%	22.5					
		4 6 6	B 2.81 15%	24.6			7 7 10	B 3.67 15%	19.6
-25						-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 2 of 2

Date Started 9/5/15

Date Completed 9/5/15

STRUCTURE NO. 045-xxxx
 ROUTE 360
 SECTION 21-00192-04-BR
 COUNTY Kane

Boring No. SB-2
 Station Sta. 117+22
 Offset 57.00ft LT
 Elevation 704.80 ft

D E P T H	B L O W S	Qu tsf	W %
701.80			
-55	25 43 50/3"		8.1
-60	19 23 20		11.3
692.80			
690.80	100/0"		
-65			
-70			
-75			

Very stiff gray CLAY, trace
gravel, moist
A-6

Very dense to dense gray
SANDY LOAM, trace gravel,
moist
A-2-4

Weathered/Fractured
Bedrock or Possible Boulder
Zone [Hard Drilling]

Auger Refusal at 64.0'

CME 750 ATV Drill Rig (#275)
CME Automatic Hammer

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 2

Date Started 8/11/15

Date Completed 8/11/15

ROUTE 360 DESCRIPTION Kirk Road Bridge over Railroad Tracks

SECT. 21-00192-04-BR STRUCT. NO. 045-xxxx DRILLED BY TSC/L-79,851B

COUNTY Kane LOCATION Northeast Corner S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-3</u>	D	B			Surface Water Elev. <u> </u>	D	B		
Station <u>Sta. 118+60</u>	E	L			Groundwater Elev.: <u> </u>	E	L		
Offset <u>41.00ft RT</u>	P	O			when drilling <u>754.4</u>	P	O		
Surface Elev. <u>759.90</u> ft	T	W	Qu	W	at Completion <u>756.9</u>	H	S	Qu	W
	H	S	tsf	%	after <u> </u> Hrs. <u> </u>			tsf	%
12" Uncrushed Stone									
758.90					Very stiff gray CLAY LOAM, little gravel, occasional silt seams, moist A-6				
		0	B	27.5			5	B	14.3
Medium stiff to soft dark brown CLAY, trace gravel, trace organic, very moist A-7-6		1	0.76				5	2.68	
		1	15%				7	15%	
		1	B	23.6			7	B	12.1
		1	0.57				9	3.47	
		2	15%				12	15%	
754.40	-5					-30			
Medium stiff brown and gray SILTY CLAY, very moist A-7-6 Sample 3: LL/PL/PI = 59/18/41		1	B	32.9					
		1	0.96		727.90				
		2	15%						
					Very stiff to hard gray CLAY, trace gravel, moist A-6				
		2	B	31.1			8	B	20.4
		2	0.70				10	3.08	
		2	15%				15	15%	
749.40	-10					-35			
Soft to medium stiff brown and gray CLAY, very moist A-7-6		2	B	24.8					
		2	0.57						
		3	15%						
		2	B	31.0			5	B	20.7
		2	0.63				7	4.00	
		4	15%				8	15%	
741.90	-15					-40			
		2	B	24.5					
		3	0.63						
		3	15%						
		4	B	15.6			6	B	19.6
Very stiff to hard gray CLAY, little gravel, occasional silt seams, moist A-4		5	3.47				6	2.68	
		5	15%				9	15%	
736.90	-20					-45			
		4	B	15.7					
		4	4.53		712.90				
		6	15%						
					Stiff gray CLAY, trace gravel, very moist A-6				
		4	B	12.9			4	B	20.7
Very stiff gray CLAY LOAM, little gravel, occasional silt seams, moist A-6		5	2.68				4	1.61	
		6	15%				6	15%	
	-25					-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

STRUCTURE BORING LOG

Page 2 of 2

Date Started 8/11/15

Date Completed 8/11/15

STRUCTURE NO. 045-xxxx

ROUTE 360

SECTION 21-00192-04-BR

COUNTY Kane

Boring No.		D E P T H	B L O W S	Qu tsf	W %
Station	SB-3				
Offset	Sta. 118+60				
Elevation	41.00ft RT				
	709.90 ft				
Stiff gray CLAY, trace gravel, very moist A-6		-55	5 5 6	B 1.44 15%	22.1
	702.90				
Very stiff gray LOAM, little gravel, moist A-4		-60	39 39 23	B 2.84 10%	9.9
	697.90				
Stiff gray CLAY LOAM, little gravel, very moist A-4		-65	4 4 5	B 1.62 15%	10.4
	691.90				
Weathered/Fractured Bedrock or Boulder Zone [Hard Drilling]	690.90	-70	100/1"		
Auger Refusal at 69.0'					
CME 750 ATV Drill Rig (#275) CME Automatic Hammer		-75			

IILDOT_BORING 79851-IDOT.GPJ IDOT.GDT 12/31/15

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 2

Date Started 9/4/15

Date Completed 9/4/15

ROUTE 360 DESCRIPTION Kirk Road Bridge over Railroad Tracks

SECT. 21-00192-04-BR STRUCT. NO. 045-xxxx DRILLED BY TSC/L-79,851B

COUNTY Kane LOCATION Northwest Corner S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-4</u>	D	B			Surface Water Elev. <u></u>	D	B		
Station <u>Sta. 118+56</u>	E	L			Groundwater Elev.: <u></u>	E	L		
Offset <u>41.00ft LT</u>	P	O			when drilling <u>Wash @ 10.5'</u>	P	O		
	T	W	Qu	W	at Completion <u>Wash @ 10.5'</u>	T	W	Qu	W
Surface Elev. <u>763.70</u> ft	H	S	tsf	%	after <u></u> Hrs. <u></u>	H	S	tsf	%
FILL - Black clayey TOPSOIL 763.20					Very stiff to hard gray CLAY				
					LOAM, moist				
FILL - Brown and black CLAY,		4	P	13.0	A-6		7	B	15.8
trace gravel, moist to very		4	3.5				7	7.23	
moist A-6		6					10	15%	
		3	P	23.1			5	B	14.9
		3	2.5				8	7.89	
		4					10	15%	
	-5					-30			
758.20									
Soft brown and gray CLAY,		1	P	24.9					
trace gravel, very moist		2	0.5						
A-7-6		1							
		2	B	28.1			6	B	15.4
		2	0.37				7	4.79	
	-10	2	15%			-35	9	15%	
753.20									
Very stiff to hard brown and		3	B	12.8					
gray CLAY LOAM, little gravel,		4	2.02						
moist A-6		6	15%			726.70			
					Very stiff gray CLAY, little				
		4	B	14.0	gravel, moist				
		5	7.89		A-6		6	B	21.8
	-15	7	15%				6	2.94	
748.20						-40	7	15%	
Hard gray CLAY, little gravel,		6	B	17.3					
moist		7	5.57						
A-6		9	15%						
		7	B	16.0			6	B	20.1
		10	4.66				8	3.87	
	-20	10	15%			-45	9	15%	
		6	B	15.2					
		6	7.89						
		8	15%						
740.70									
Very stiff to hard gray CLAY		7	B	14.4			4	B	22.2
LOAM, moist		9	3.49				4	3.74	
A-6		12	15%				6	15%	
	-25					-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

STRUCTURE BORING LOG

Page 2 of 2

Date Started 9/4/15

Date Completed 9/4/15

STRUCTURE NO. 045-xxxx

ROUTE 360

SECTION 21-00192-04-BR

COUNTY Kane

Boring No.	D E P T H	B L O W S	Qu tsf	W %
Station SB-4 Sta. 118+56				
Offset 41.00ft LT				
Elevation 713.70 ft				
Very stiff gray CLAY, little gravel, moist A-6	-55	3 4 5	B 2.02 15%	22.1
706.70				
Very stiff gray CLAY LOAM, little gravel, moist A-4	-60	6 6 10	B 2.15 15%	13.0
701.70				
Very dense gray SAND and GRAVEL, with Cobbles and Boulders, saturated A-1-a	-65	100/5"		
695.70				
Weathered/Fractured Bedrock or Possible Boulder Zone [Hard Drilling]	-70	100/0"		
693.70				
Auger Refusal at 70.0'				
Diedrich D-120 Truck Rig (#315)				
CME Automatic Hammer				
	-75			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

ILDOT_BORING 79851-IDOT.GPJ IDOT.GDT 12/31/15

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 2

Date Started 8/6/15

Date Completed 8/6/15

ROUTE 360 DESCRIPTION Kirk Road Bridge over Reed Road

SECT. 21-00192-04-BR STRUCT. NO. 045-xxxx DRILLED BY TSC/L-79,851C

COUNTY Kane LOCATION Southeast Corner S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-5</u>	D	B			Surface Water Elev. <u> </u>	D	B		
Station <u>Sta. 121+03</u>	E	L			Groundwater Elev.: <u> </u>	E	L		
Offset <u>ft RT</u>	P	O			when drilling <u>752.2</u>	P	O		
	T	W	Qu	W	at Completion <u>Dry</u>	T	W	Qu	W
Surface Elev. <u>767.20</u> ft	H	S	tsf	%	after <u> </u> Hrs. <u> </u>	H	S	tsf	%
Black clayey TOPSOIL 766.70									
Very stiff brown SILTY CLAY, trace gravel, moist A-7-6		3 4 4	P 2.5	23.5	Very stiff to hard gray CLAY LOAM, little gravel, occasional silt seams, moist A-4		5 7 10	B 1.89 15%	15.4
764.20									
Hard to very stiff brown CLAY LOAM, little gravel, moist A-6		4 6 7	B 4.79 15%	15.0			3 6 7	B 3.21 15%	13.6
-5									
		4 4 5	B 3.47 15%	15.1					
759.20					735.20				
Very stiff brown and gray CLAY, trace gravel, moist A-6		3 6 7	B 3.17 15%	20.7	Very stiff to stiff gray CLAY, trace gravel, moist A-6		7 6 8	B 2.94 15%	20.6
-10									
756.70									
Hard to very stiff gray CLAY LOAM, little gravel, moist A-6		9 11 12	B 4.40 15%	14.8					
		4 7 12	B 3.11 15%	14.9			5 6 7	B 2.40 15%	20.7
-15									
751.70									
Very stiff to hard gray CLAY LOAM, little gravel, occasional silt seams, moist A-4		4 6 9	B 2.02 15%	13.2					
		6 12 12	B 3.69 15%	11.6			4 6 7	B 2.61 15%	19.5
-20									
		8 8 9	B 3.21 15%	12.7					
		7 7 10	B 4.48 15%	12.5			5 6 8	B 2.69 15%	20.8
-25									

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

STRUCTURE BORING LOG

Page 2 of 2

Date Started 8/6/15

Date Completed 8/6/15

STRUCTURE NO. 045-xxxx
ROUTE 360
SECTION 21-00192-04-BR
COUNTY Kane

STRUCTURE NO. 045-xxxx
ROUTE 360
SECTION 21-00192-04-BR
COUNTY Kane

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SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 2

Date Started 9/2/15

Date Completed 9/2/15

ROUTE 360 DESCRIPTION Kirk Road Bridge over Reed Road

SECT. 21-00192-04-BR STRUCT. NO. 045-xxxx DRILLED BY TSC/L-79,851C

COUNTY Kane LOCATION Southwest Corner S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-6</u>	D	B			Surface Water Elev. <u></u>	D	B		
Station <u>Sta. 120+84</u>	E	L			Groundwater Elev.: <u></u>	E	L		
Offset <u>ft LT</u>	P	O			when drilling <u>Wash @ 10.5'</u>	P	O		
Surface Elev. <u>768.30</u> ft	T	W	Qu	W	at Completion <u>Wash @ 10.5'</u>	H	S	tsf	%
	H	S	tsf	%	after <u></u> Hrs. <u></u>				
8" Crushed Stone <u>767.60</u>									
Hard brown CLAY, little gravel, moist A-6		4	B	19.4	Stiff to very stiff gray CLAY LOAM, trace to little gravel A-6		5	B	14.0
		5	7.65				7	1.49	
		5	10%				9	15%	
		5	B	15.7			7	B	14.6
		6	5.32				11	3.69	
		8	15%				9	15%	
	-5					-30			
		6	B	16.0					
		8	4.40						
		9	15%		736.30				
					Stiff to very stiff gray CLAY, trace gravel A-6				
		6	B	17.5			7	B	21.9
		7	5.57				9	1.49	
	-10	7	15%			-35	7	15%	
		7	B	15.6					
		12	5.90						
		13	15%						
		7	B	14.9			6	B	22.6
		9	3.54				7	2.28	
	-15	13	15%			-40	9	15%	
		7	B	17.1					
		11	6.07						
		13	15%						
		4	B	11.9			5	B	22.2
		7	2.48				7	3.60	
	-20	10	15%			-45	8	15%	
		8	B	11.5					
		11	1.75						
		11	15%						
		5	B	12.1			6	B	22.0
		9	2.55				7	1.44	
	-25	9	15%			-50	7	15%	

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

STRUCTURE BORING LOG

Page 2 of 2

Date Started 9/2/15

Date Completed 9/2/15

STRUCTURE NO. 045-xxxx
ROUTE 360
SECTION 21-00192-04-BR
COUNTY Kane

STRUCTURE NO. 045-xxxx
ROUTE 360
SECTION 21-00192-04-BR
COUNTY Kane

Boring No.	SB-6	D E P T H	B L O W S	Qu tsf	W %	Elevation	DEPTH	B L O W S	Qu tsf	W %
Station	Sta. 120+84									
Offset	ft LT									
Elevation	718.30 ft					Elevation	693.30 ft			
Stiff to very stiff gray CLAY, trace gravel A-6						CME-75 Truck Rig (#256) CME Automatic Hammer				
	-55	6 6 5	B 3.34 15%	21.1			-80			
	-60	5 7 7	B 2.08 15%	21.3			-85			
706.30										
Hard gray LOAM, little gravel, moist A-4	-65	9 12 14	B 4.46 15%	10.1			-90			
	-70	11 8 10	B 4.58 15%	9.9			-95			
696.30										
Dense gray SAND and GRAVEL, moist A-1		6 11 19								
End of Boring at 75.0'	693.30 -75						-100			

ILDOT_BORING 79851-IDOT.GPJ IDOT.GDT 12/4/15

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 2

Date Started 8/6/15

Date Completed 8/6/15

ROUTE 360 DESCRIPTION Kirk Road Bridge over Reed Road

SECT. 21-00192-04-BR STRUCT. NO. 045-xxxx DRILLED BY TSC/L-79,851D

COUNTY Kane LOCATION Northeast Corner S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-7</u>	D	B			Surface Water Elev. <u> </u>	D	B		
Station <u>Sta. 122+39</u>	E	L			Groundwater Elev.: <u> </u>	E	L		
Offset <u>39.00ft RT</u>	P	O			when drilling <u>732.4</u>	P	O		
	T	W	Qu	W	at Completion <u>733.4</u>	T	W	Qu	W
Surface Elev. <u>770.40</u> ft	H	S	tsf	%	after <u> </u> Hrs. <u> </u>	H	S	tsf	%
Stiff black CLAY (Topsoil), trace organic, moist A-7-6					Very stiff to hard gray CLAY LOAM, little gravel, moist A-4				
		2	P	22.4			1	B	13.4
		3	2.0				9	4.40	
		5					9	15%	
<u>767.90</u>									
Soft dark brown CLAY, trace organic, very moist A-7-6									
		4	P	26.5			3	B	11.2
		2	0.5				6	4.53	
		2					11	15%	
<u>764.90</u>	-5					-30			
Very stiff gray CLAY, little gravel, moist A-6									
		2	B	16.7					
		2	3.74						
		4	15%		<u>738.40</u>				
					Very stiff gray CLAY, little gravel, moist A-6				
		3	B	16.0			4	B	22.6
		4	3.08				7	3.67	
		6	15%				10	15%	
<u>757.40</u>	-10					-35			
		3	B	18.3					
		3	3.75						
		6	15%						
Very stiff to hard gray CLAY LOAM, little gravel, moist A-4									
		4	B	13.8			2	B	20.3
		7	4.5				5	2.69	
		10	15%				8	15%	
<u>750.40</u>	-15					-40			
		8	B	12.9					
		8	4.73						
		10	15%						
		2	B	15.2			4	B	20.1
		7	4.53				7	3.08	
		6	15%				8	15%	
<u>743.40</u>	-20					-45			
		3	B	13.1					
		5	2.28						
		8	15%						
		2	B	11.9			3	B	23.5
		5	2.75				5	2.57	
		8	15%				8	15%	
<u>736.40</u>	-25					-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

STRUCTURE BORING LOG

Page 2 of 2

Date Started 8/6/15

Date Completed 8/6/15

STRUCTURE NO. 045-xxxx
ROUTE 360
SECTION 21-00192-04-BR
COUNTY Kane

STRUCTURE NO. 045-xxxx
ROUTE 360
SECTION 21-00192-04-BR
COUNTY Kane

Boring No.	D E P T H	B L O W S	Qu tsf	W %
SB-7				
Sta. 122+39				
Offset 39.00ft RT				
Elevation 720.40 ft				
Very stiff gray CLAY, little gravel, moist A-6	-55	4 6 8	B 3.01 15%	20.5
	-60	3 5 7	B 2.55 15%	20.4
	-65	3 4 9	B 2.94 15%	20.8
	-70	3 5 9	B 2.49 15%	21.6
End of Boring at 75.0'	-75	4 6 8	B 2.63 15%	22.7

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

IILDOT_BORING 79851-IDOT.GPJ IDOT.GDT 12/31/15

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 2

Date Started 9/3/15

Date Completed 9/3/15

ROUTE 360 DESCRIPTION Kirk Road Bridge over Reed Road

SECT. 21-00192-04-BR STRUCT. NO. 045-xxxx DRILLED BY TSC/L-79,851D

COUNTY Kane LOCATION Northwest Corner S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-8</u>	D	B			Surface Water Elev. <u></u>	D	B		
Station <u>Sta. 122+13</u>	E	L			Groundwater Elev.: <u></u>	E	L		
Offset <u>66.00ft LT</u>	P	O			when drilling <u>Wash @ 10.5'</u>	P	O		
	T	W	Qu	W	at Completion <u>Wash @ 10.5'</u>	T	W	Qu	W
Surface Elev. <u>772.60</u> ft	H	S	tsf	%	after <u></u> Hrs. <u></u>	H	S	tsf	%
Black clayey TOPSOIL									
771.60					Hard to very stiff gray CLAY				
Hard dark brown SILTY		4	B	19.2	LOAM, trace gravel,		5	B	15.8
CLAY, trace gravel, moist		6	4.40		occasional silt seams, moist		6	2.68	
A-7-6 LL/PL/PI = 52/19/33		6	15%		A-4		7	15%	
769.60									
Hard to very stiff brown CLAY		5	B	15.6			4	B	14.9
LOAM, trace gravel,		7	4.66				6	3.87	
occasional silt seams, moist		8	15%				7	15%	
A-4	-5					-30			
		5	B	15.4					
		7	3.34						
		7	15%						
764.60									
Hard brown and gray CLAY,		5	B	16.1			4	B	12.0
little gravel, occasional silt		7	5.90				5	3.67	
seams, moist		9	15%				6	15%	
A-6	-10					-35			
		6	B	18.1	Very stiff gray CLAY, trace				
		6	5.74		gravel, moist				
		8	15%		A-6				
759.60									
Hard to very stiff gray CLAY		5	B	13.9			5	B	20.4
LOAM, trace gravel,		5	6.07				7	3.08	
occasional silt seams, moist		7	15%				9	15%	
A-4	-15					-40			
		6	B	15.7					
		7	4.92						
		6	15%						
		5	B	15.0			6	B	23.2
		7	4.99				6	2.68	
		9	15%				8	15%	
	-20					-45			
		6	B	14.0					
		9	4.00						
		11	15%						
		5	B	15.6			5	B	22.0
		7	2.94				6	2.81	
		7	15%				8	15%	
	-25					-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 2 of 2

Date Started 9/3/15

Date Completed 9/3/15

STRUCTURE NO. 045-xxxx
 ROUTE 360
 SECTION 21-00192-04-BR
 COUNTY Kane

STRUCTURE NO. 045-xxxx
 ROUTE 360
 SECTION 21-00192-04-BR
 COUNTY Kane

Boring No. SB-8
 Station Sta. 122+13
 Offset 66.00ft LT
 Elevation 722.60 ft

D
E
P
T
H
B
L
O
W
S
Qu
tsf
W
%

Elevation 697.60 ft
 D
E
P
T
H
B
L
O
W
S
Qu
tsf
W
%

Very stiff gray CLAY, trace
 gravel, moist
 A-6

6
8
10
B
2.68
15%
20.9

5
9
9
B
3.08
15%
22.0

6
9
13
B
3.47
15%
24.2

2
6
4
11.5

4
6
6
10.0

Diedrich D-120 Truck Rig
 (#315)
 CME Automatic Hammer

-55
-80
-85
-90
-95
-100

704.60

Medium dense gray SANDY
 LOAM, trace gravel,
 occasional Cobbles, moist
 A-2-4

End of Boring at 75.0' 697.60 -75

ILDOT_BORING 79851-IDOT.GPJ IDOT.GDT 12/31/15

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
 Stations, Depths, Offset, and Elevations are in Feet

STRUCTURE BORING LOG

Date Started 8/6/15

Date Completed 8/6/15

ROUTE	<u>360</u>	DESCRIPTION	<u>Kirk Road South Retining Wall</u>
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SECT. 21-00192-04-BR STRUCT. NO. DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

[illegible]

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

JULDOT_BORING 79851-IDOT.GPJ IDOT.GDT 12/3/15

STRUCTURE BORING LOG

Date Completed 8/6/15

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

ILDOT_BORING 79851-IDOT.GPJ IDOT.GDT 12/3/15

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

STRUCTURE BORING LOG

Date Started 8/6/15

Date Completed 8/6/15

ROUTE 360 DESCRIPTION Kirk Road South Retining Wall

SECT. 21-00192-04-BR STRUCT. NO. DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 8/6/15

Date Completed 8/6/15

ROUTE 360 DESCRIPTION Kirk Road South Retining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-104</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 113+67</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>42.00ft RT</u>	P	O			when drilling <u>754.2</u>	P	O		
Surface Elev. <u>762.20</u> ft	T	W	Qu	W	at Completion <u>Dry</u>	H	S	Qu	W
	H	S	tsf	%	after _____ Hrs. _____			tsf	%
<u>Black clayey TOPSOIL</u> <u>761.70</u>									
<u>Very stiff brown CLAY LOAM,</u> <u>little gravel, moist A-6</u> <u>LL/PL/PI = 40/15/25</u>		<u>4</u> <u>4</u> <u>6</u>	<u>P</u> <u>2.0</u>	<u>17.3</u>	<u>Hard gray CLAY, little gravel,</u> <u>moist</u> <u>A-6</u>		<u>6</u> <u>8</u> <u>10</u>	<u>B</u> <u>5.57</u> <u>15%</u>	<u>16.5</u>
<u>759.20</u>									
<u>Very dense brown SANDY</u> <u>LOAM, numerous Cobbles</u> <u>and Boulders, damp to moist</u> <u>A-4</u>		<u>10</u> <u>100/3"</u>		<u>6.4</u>			<u>8</u> <u>10</u> <u>14</u>	<u>B</u> <u>5.19</u> <u>15%</u>	<u>16.2</u>
	<u>-5</u>				<u>732.20</u>	<u>-30</u>			
					<u>End of Boring at 30.0'</u>				
		<u>25</u> <u>50/0"</u>		<u>7.1</u>	<u>Diedrich D-120 Truck Rig</u> <u>(#315)</u> <u>CME Automatic Hammer</u>				
<u>754.20</u>									
<u>Very stiff gray CLAY LOAM,</u> <u>little gravel, occasional</u> <u>Cobbles and Boulders, moist</u> <u>A-6</u>		<u>6</u> <u>8</u> <u>12</u>	<u>B</u> <u>3.47</u> <u>15%</u>	<u>14.2</u>					
	<u>-10</u>								
		<u>10</u> <u>18</u> <u>20</u>	<u>Rock</u>						
		<u>4</u> <u>6</u> <u>8</u>	<u>B</u> <u>3.60</u> <u>15%</u>	<u>13.6</u>					
	<u>-15</u>								
		<u>6</u> <u>10</u> <u>13</u>	<u>B</u> <u>3.21</u> <u>15%</u>	<u>13.8</u>					
		<u>4</u> <u>6</u> <u>9</u>	<u>B</u> <u>2.94</u> <u>15%</u>	<u>15.0</u>					
<u>741.70</u>	<u>-20</u>								
<u>Hard gray CLAY, little gravel,</u> <u>moist</u> <u>A-6</u>		<u>4</u> <u>7</u> <u>9</u>	<u>B</u> <u>5.57</u> <u>15%</u>	<u>17.1</u>					
		<u>5</u> <u>7</u> <u>10</u>	<u>B</u> <u>4.92</u> <u>15%</u>	<u>18.2</u>					
	<u>-25</u>								

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 8/6/15

Date Completed 8/6/15

ROUTE 360 DESCRIPTION Kirk Road South Retining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-105</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 114+42</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>42.00ft RT</u>	P	O			when drilling <u>750.0</u>	P	O		
Surface Elev. <u>758.00</u> ft	T	W	Qu	W	at Completion <u>Dry</u>	T	W	Qu	W
	H	S	tsf	%	after _____ Hrs. _____	H	S	tsf	%
Black sandy TOPSOIL									
757.20									
Very stiff to hard brown CLAY, little gravel, moist A-6		4	B	13.8	Very stiff gray CLAY, little gravel, moist A-6		7	B	15.2
		4	2.68				9	2.94	
		6	15%				12	15%	
		6	B	15.5			10	B	19.9
		7	5.26				14	4.07	
		9	15%				16	15%	
-5					728.00	-30			
752.50									
Very stiff brown and gray CLAY LOAM, little gravel, moist A-6		6	B	15.4	End of Boring at 30.0'				
		7	2.55		Diedrich D-120 Truck Rig (#315)				
		8	15%		CME Automatic Hammer				
750.00									
Medium dense brown and gray SANDY LOAM, little to some gravel, wet A-2-4		6							
		6							
		7							
-10									
747.50									
Medium dense gray SANDY LOAM, some gravel, wet A-2-4		21							
		13							
		11							
745.00									
Very stiff gray CLAY LOAM, little gravel, moist A-4		17	B	13.8					
		7	3.34						
		9	15%						
-15									
		6	B	13.9					
		7	4.46						
		9	15%						
		6	B	14.5					
		6	3.54						
		8	15%						
-20									
		6	B	14.3					
		7	3.34						
		11	15%						
735.00									
Very stiff to hard gray CLAY, little gravel, moist A-6		4	B	15.1					
		7	2.94						
		9	15%						
-25									

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 8/7/15

Date Completed 8/7/15

ROUTE 360 DESCRIPTION Kirk Road South Retining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. _____ Station _____ Offset _____ Surface Elev. _____ ft	DEPTH	BLOW COUNT	Qu tsf	W %	Surface Water Elev. _____ Groundwater Elev.: when drilling _____ at Completion _____ after _____ Hrs. _____	DEPTH	BLOW COUNT	Qu tsf	W %
FILL - Black clayey TOPSOIL 754.30					729.80				
FILL - Black and brown CLAY, trace gravel, trace organic, moist A-7-6 Wet Combustion = 5.5% 752.30		3 3 3	B 2.0	29.8	Hard gray CLAY, little gravel, moist A-6		6 9 9	B 3.07 15%	18.2
Med. dense brown SANDY LOAM, some gravel, moist to wet A-1-b -5		6 6 7					9 6 9	B 5.19 15%	15.1
		11 11 11							
747.30									
Stiff brown LOAM, little gravel, very moist A-4 -10		9 11 11	P 1.25	13.0			11 14 10	B 4.33 15%	17.8
744.80					720.30	-35			
Hard to very stiff gray CLAY LOAM, little gravel, moist A-4		9 11 12	B 4.5 15%	14.3	End of Boring at 35.0' CME-75 Truck Rig (#256) CME Automatic Hammer				
		9 7 9	B 3.27 15%	14.4					
-15						-40			
		7 9 11	B 3.32 15%	15.6					
		7 11 9	B 3.72 15%	14.5					
-20						-45			
		6 9 9	B 2.47 15%	12.8					
		7 11 8	B 3.34 15%	14.0					
-25						-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 8/7/15

Date Completed 8/7/15

ROUTE 360 DESCRIPTION Kirk Road South Retaining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-107</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 115+71</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>ft RT</u>	P	O			when drilling <u>752.0</u>	P	O		
Surface Elev. <u>755.00</u> ft	T	W	Qu	W	at Completion <u>752.0</u>	H	S	tsf	%
	H	S	tsf	%	after _____ Hrs. _____				
Fill -Black CLAY (Topsoil), little organic, very moist A-7-6 Wet Combustion = 13.1%					Hard to very stiff gray CLAY, trace gravel, moist A-6				
		3	P	48.5			5	B	22.9
		3	1.0				7	2.55	
		4					9	15%	
752.00									
Med. dense brown and gray SANDY LOAM, little gravel, very moist A-2-4		2		15.2			4	B	22.7
		5					6	2.48	
	-5	5				-30	8	15%	
		3		16.7					
		4							
		6							
747.00									
Med. dense gray SANDY LOAM, some gravel, wet A-2-4		7		11.5			4	B	21.5
		9					5	2.02	
	-10	12				-35	5	15%	
		10		14.0					
		13							
		16							
742.00									
Very stiff to hard gray CLAY LOAM, little gravel, moist A-4		6	B	14.5			6	B	21.5
		8	3.41				7	3.47	
	-15	10	15%			-40	9	15%	
					715.00				
					End of Boring at 40.0'				
		7	B	14.2	Diedrich D-120 Truck Rig (#315) CME Automatic Hammer				
		9	3.34						
		12	15%						
		6	B	12.9					
		8	4.59						
	-20	10	15%			-45			
734.50									
Hard to very stiff gray CLAY, trace gravel, moist A-6		6	B	18.2					
		9	4.73						
		10	15%						
		4	B	23.8					
		4	2.02						
		6	15%						
	-25					-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 8/7/15

Date Completed 8/7/15

ROUTE 360 DESCRIPTION Kirk Road South Retining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-108</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 116+45</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>ft RT</u>	P	O			when drilling <u>752.0</u>	P	O		
Surface Elev. <u>755.00</u> ft	T	W	Qu	W	at Completion <u>752.0</u>	H	S	tsf	%
	H	S	tsf	%	after _____ Hrs. _____				
Black clayey TOPSOIL									
<u>753.90</u>					Hard to very stiff gray CLAY,				
		3	B	24.7	trace gravel, moist A-6		6	B	21.3
Stiff brown and gray CLAY,		5	1.23				8	4.46	
trace gravel, very moist A-6		6	15%				10	15%	
<u>752.00</u>									
Med. dense brown SAND,		5					4	B	22.7
some gravel, very moist to		5					6	4.20	
saturated A-1-b	-5	6				-30	8	15%	
		5							
		7							
		7							
		5					5	B	24.4
		9					7	2.55	
	-10	11				-35	7	15%	
<u>744.50</u>									
Med. dense to dense gray		5							
SAND, some gravel,		7							
occasional Cobbles and		7							
Boulders, saturated A-1-b									
		20					6	B	20.9
		17					8	3.34	
	-15	14				-40	10	15%	
<u>739.50</u>					715.00				
Medium dense gray SANDY		9			End of Boring at 40.0'				
LOAM, little gravel, wet A-2-4		13			Diedrich D-120 Truck Rig				
		13			(#315)				
<u>737.00</u>					CME Automatic Hammer				
Hard to very stiff gray CLAY,		6	B	19.9					
trace gravel, moist A-6		7	5.06						
	-20	10	15%			-45			
		5	B	19.9					
		6	4.26						
		8	15%						
		3	B	21.5					
		6	4.07						
	-25	8	15%			-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 8/7/15

Date Completed 8/7/15

ROUTE 360 DESCRIPTION Kirk Road Center Retaining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851C

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-109</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 119+18</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>ft RT</u>	P	O			when drilling <u>750.7</u>	P	O		
	T	W	Qu	W	at Completion <u>751.2</u>	T	W	Qu	W
Surface Elev. <u>761.20</u> ft	H	S	tsf	%	after _____ Hrs. _____	H	S	tsf	%
12" Crushed Stone									
<u>760.20</u>					Very stiff to hard gray CLAY,				
Stiff black CLAY, trace gravel,		4	P	26.3	trace gravel, moist A-6		6	B	20.3
trace organic, moist A-7-6		4	1.0				7	4.07	
Wet Combustion = 3.7%		5					8	15%	
<u>758.20</u>									
Stiff brown CLAY, trace		3	B	27.9			7	B	25.4
gravel, very moist A-7-6		3	1.16				8	2.28	
	-5	3	15%			-30	8	15%	
<u>755.70</u>									
Very stiff brown and gray		4	B	16.3					
CLAY LOAM, little gravel,		4	2.88						
moist A-6		6	15%						
<u>753.20</u>									
Very stiff gray LOAM, little		4	B	13.2			6	B	22.7
gravel, moist A-4		4	2.61				9	3.27	
	-10	5	15%			-35	9	15%	
<u>726.20</u>					End of Boring at 35.0'				
		3	B	13.3	CME 750 ATV Drill Rig (#275)				
		4	3.41		CME Automatic Hammer				
		4	15%						
		4	B	11.4					
		5	1.95						
	-15	5	15%			-40			
<u>745.70</u>									
Very stiff gray CLAY LOAM,		5	B	14.5					
little gravel, moist A-4		5	3.34						
		7	15%						
		4	B	15.5					
		6	2.55						
	-20	7	15%			-45			
<u>738.20</u>									
Very stiff to hard gray CLAY,		6	B	14.8					
trace gravel, moist A-6		6	2.42						
		8	15%						
		4	B	18.8					
		5	3.27						
	-25	8	15%			-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 8/7/15

Date Completed 8/7/15

ROUTE 360 DESCRIPTION Kirk Road Center Retaining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851C

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-110</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 119+79</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>ft RT</u>	P	O			when drilling <u>741.8</u>	P	O		
Surface Elev. <u>761.80</u> ft	T	W	Qu	W	at Completion <u>741.8</u>	H	S	tsf	%
	H	S	tsf	%	after _____ Hrs. _____				
10" Crushed Stone									
761.00									
Very stiff to hard brown SILTY CLAY, trace gravel, moist A-7-6		4	B	17.1	Very stiff gray CLAY, trace gravel, moist A-6		7	B	22.6
		4	2.02				7	3.27	
		5	15%				8	15%	
		4	B	13.9			6	B	23.7
		5	4.36				8	3.54	
		6	15%				8	15%	
		-5			731.80	-30			
756.30									
Very stiff to hard brown and gray SILTY CLAY LOAM, little gravel, moist A-4		3	B	13.3	End of Boring at 30.0'				
		8	2.02		CME 750 ATV Drill Rig (#275)				
		8	15%		CME Automatic Hammer				
		6	B	12.8					
		6	4.40						
		8	15%						
		-10				-35			
		5	B	11.5					
		7	4.13						
		9	15%						
748.80									
Very stiff gray CLAY LOAM, little gravel, moist A-6		4	B	14.7					
		4	2.75						
		6	15%						
		-15				-40			
		4	B	14.1					
		8	2.94						
		5	15%						
		3	B	13.9					
		5	2.55						
		7	15%						
		-20				-45			
741.30									
Very stiff gray CLAY, trace gravel, moist A-6		4	B	16.1					
		5	2.28						
		6	15%						
		6	B	23.0					
		6	2.48						
		9	15%						
		-25				-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 8/7/15

Date Completed 8/7/15

ROUTE 360 DESCRIPTION Kirk Road Center Retaining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851C

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-111</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 120+41</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>ft RT</u>	P	O			when drilling <u>746.6</u>	P	O		
Surface Elev. <u>764.60</u> ft	T	W	Qu	W	at Completion <u>746.6</u>	H	S	tsf	%
	H	S	tsf	%	after _____ Hrs. _____				
<u>Black clayey TOPSOIL</u> <u>764.10</u>									
<u>Very stiff brown CLAY LOAM,</u> <u>little gravel, moist A-6</u>		4 5 8	P 2.5	13.6	<u>Stiff to hard gray CLAY, trace</u> <u>gravel, moist A-6</u>		6 6 10	B 2.55 15%	21.8
<u>761.60</u>									
<u>Very stiff brown and gray</u> <u>CLAY, little gravel, moist A-6</u>		4 4 4	B 3.47 15%	16.4			7 8 9	B 3.93 15%	22.1
	-5				<u>734.60</u>	-30			
					<u>End of Boring at 30.0'</u>				
		3 3 5	B 3.80 15%	16.5	<u>CME 750 ATV Drill Rig (#275)</u> <u>CME Automatic Hammer</u>				
		4 5 6	B 2.88 15%	15.8					
	-10					-35			
		3 5 5	B 2.94 15%	16.0					
<u>751.60</u>									
<u>Very stiff gray LOAM, little</u> <u>gravel, moist A-4</u>		6 7 10	B 3.74 15%	9.9					
	-15					-40			
		5 8 9	B 3.47 15%	9.5					
<u>746.60</u>									
<u>Stiff to hard gray CLAY, trace</u> <u>gravel, moist A-6</u>		4 6 7	B 1.89 15%	17.3					
	-20					-45			
		7 9 6	B 5.12 15%	19.5					
		5 8 9	B 3.47 15%	19.9					
	-25					-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

STRUCTURE BORING LOG

Date Started 9/2/15

Date Completed 9/2/15

ROUTE 360 DESCRIPTION Kirk Road South Retining Wall

SECT. 21-00192-04-BR STRUCT. NO. DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION West Side S. 1SW/12NW , TWP. 39N , RNG. 8E

[illegible]

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

STRUCTURE BORING LOG

Date Started 9/2/15

Date Completed 9/2/15

ROUTE	360	DESCRIPTION	Kirk Road South Retining Wall
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SECT. 21-00192-04-BR STRUCT. NO. DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION West Side S. 1SW/12NW , TWP. 39N , RNG. 8E

[illegible]

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

LDOT BORING 79851-IDOT.GPJ IDOT.GDT 12/3/15

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 9/9/15

Date Completed 9/9/15

ROUTE 360 DESCRIPTION Kirk Road South Retining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION West Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-114</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 112+72</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>59.00ft LT</u>	P	O			when drilling <u>Dry</u>	P	O		
	T	W	Qu	W	at Completion <u>Dry</u>	T	W	Qu	W
Surface Elev. <u>764.00</u> ft	H	S	tsf	%	after _____ Hrs. _____	H	S	tsf	%
1" Bituminous Concrete <u>763.90</u>									
11" Crushed Stone Base <u>763.00</u>					Diedrich D-120 Truck Rig (#315)				
Very stiff dark brown CLAY, trace gravel, trace organic, moist A-7-6 <u>761.00</u>		3 5 6	P 2.25	25.4	CME Automatic Hammer				
Stiff to very stiff brown and gray LOAM, trace gravel, moist A-6 <u>-5</u>		3 3 3	B 1.62 15%	15.1					
Sample 2: LL/PL/PI = 24/12/12									
		6 8 8	B 2.28 15%	14.5					
		3 3 3	B 2.48 15%	13.7					
	-10								
		3 5 6	B 2.02 15%	16.0					
<u>751.00</u>									
Very stiff gray LOAM, little gravel, moist A-4 <u>-15</u>		4 7 9	B 3.40 15%	10.3					
		6 8 11	B 2.88 15%	10.4					
<u>746.00</u>									
Hard to very stiff gray CLAY LOAM, little gravel, moist A-6 <u>-20</u>		5 7 9	B 4.33 15%	13.1					
		6 9 11	B 4.53 15%	13.5					
		4 5 7	B 3.68 15%	14.6					
End of Boring at 25.0' <u>739.00</u>	-25								

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 9/9/15

Date Completed 9/9/15

ROUTE 360 DESCRIPTION Kirk Road South Retining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION West Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-115</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 113+47</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>58.00ft LT</u>	P	O			when drilling <u>731.4</u>	P	O		
Surface Elev. <u>759.40</u> ft	T	W	Qu	W	at Completion <u>731.4</u>	H	S	tsf	%
	H	S	tsf	%	after _____ Hrs. _____				
Black clayey TOPSOIL									
<u>758.10</u>		2	B	23.6	Very stiff gray CLAY LOAM, little gravel, moist A-4		5	B	14.8
		3	1.89				7	2.88	
Stiff brown CLAY, trace gravel, moist to very moist A-6		5	15%				9	15%	
		4	P	23.4			3	B	15.4
		5	1.5				5	2.94	
		5					6	15%	
	-5				729.40	-30			
					End of Boring at 30.0'				
		4	B	19.7	Diedrich D-120 Truck Rig (#315) CME Automatic Hammer				
		4	1.49						
		5	15%						
<u>751.40</u>									
Very stiff brown CLAY LOAM, trace gravel, moist A-6		4	B	13.4					
		6	3.75						
	-10	6	15%			-35			
		5	B	16.0					
		6	2.02						
		7	15%						
<u>746.40</u>									
Hard gray LOAM, little gravel, occasional Cobbles and Boulders, moist A-4		6	B	12.1					
		8	4.59						
	-15	11	15%			-40			
		100/4"	B	12.6					
			4.00						
			15%						
		5	B	13.6					
		7	4.31						
		11	15%						
<u>738.90</u>	-20					-45			
Very stiff gray CLAY LOAM, little gravel, moist A-4		6	B	14.0					
		9	3.93						
		12	15%						
		5	B	14.0					
		6	3.89						
		8	15%						
	-25					-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 9/9/15

Date Completed 9/9/15

ROUTE 360 DESCRIPTION Kirk Road South Retining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION West Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-116</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 114+22</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>59.00ft LT</u>	P	O			when drilling <u>748.5</u>	P	O		
	T	W	Qu	W	at Completion <u>746.5</u>	T	W	Qu	W
Surface Elev. <u>756.50</u> ft	H	S	tsf	%	after _____ Hrs. _____	H	S	tsf	%
FILL - Black clayey TOPSOIL, trace Asphalt pieces <u>755.50</u>					Very stiff gray CLAY, little gravel, moist A-6				
Stiff brown CLAY, trace gravel, moist A-6		3	P	23.8			4	B	15.7
		4	1.75				6	2.02	
		5					7	15%	
<u>753.50</u>									
Stiff brown LOAM, little to some gravel, moist A-6		4	P	12.1			7	B	15.1
Sample 2:		6	1.5				10	3.41	
LL/PL/PI = 19/12/7	-5	7				-30	11	15%	
		6	P	11.6					
		7	1.5						
		9							
<u>748.50</u>									
Hard to very stiff brown and gray CLAY LOAM, little gravel, occasional sand seams, moist A-4		6	B	13.6			7	B	15.7
		6	4.03				12	3.54	
	-10	8	10%			-35	14	15%	
					End of Boring at 35.0'				
		8	B	12.3	Diedrich D-120 Truck Rig (#315)				
		10	3.67		CME Automatic Hammer				
		11	15%						
<u>743.50</u>									
Medium dense to dense SANDY LOAM, some gravel, occasional Cobbles and Boulders, wet A-2-4		10		9.1					
		13							
	-15	16				-40			
		100/3"		10.5					
<u>738.50</u>									
Very stiff gray CLAY, little gravel, moist A-6		4	B	16.0					
		6	2.22						
	-20	8	15%			-45			
		6	B	15.5					
		7	2.35						
		11	15%						
		100/2"	B	15.3					
			3.96						
	-25		15%			-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 9/4/15

Date Completed 9/4/15

ROUTE 360 DESCRIPTION Kirk Road South Retining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION West Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-117</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 114+97</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>57.00ft LT</u>	P	O			when drilling <u>748.1</u>	P	O		
	T	W	Qu	W	at Completion <u>745.6</u>	T	W	Qu	W
Surface Elev. <u>753.60</u> ft	H	S	tsf	%	after _____ Hrs. _____	H	S	tsf	%
FILL - Black clayey TOPSOIL									
<u>752.80</u>									
FILL - Black and gray CLAY,		2	P	26.2	Hard to very stiff gray CLAY		8	B	13.7
trace gravel, trace organic,		3	0.5		LOAM, little gravel, moist		9	2.61	
very moist		3			A-4		9	15%	
A-7-6									
<u>750.60</u>									
Medium Stiff dark brown and		3	B	35.5			6	B	14.1
brown CLAY, trace gravel,		3	0.70				7	2.48	
trace organic, very moist		3	15%				8	15%	
A-7-6	-5					-30			
<u>748.10</u>									
Med. dense brown SANDY		5		9.3					
LOAM, some gravel, wet		7							
A-2-4		9							
<u>745.60</u>									
Med. dense brown SANDY		4		9.9			7	B	14.5
LOAM, trace gravel, wet		4					7	2.55	
A-2-4		6					8	15%	
	-10					-35			
		8		9.8					
		9							
		12							
<u>740.60</u>									
Hard to very stiff gray CLAY		12	B	13.2			8	B	14.1
LOAM, little gravel, moist		8	4.13				9	2.84	
A-4		10	15%				10	15%	
	-15				713.60	-40			
		7	B	13.1	End of Boring at 40.0'				
		10	4.59		CME 750 ATV Drill Rig (#275)				
		12	15%		CME Automatic Hammer				
		12	B	13.1					
		13	5.06						
		11	15%						
	-20					-45			
		8	B	13.3					
		10	4.53						
		12	15%						
		7	B	14.4					
		9	3.21						
		11	15%						
	-25					-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 9/4/15

Date Completed 9/4/15

ROUTE 360 DESCRIPTION Kirk Road South Retining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION West Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-118</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 115+72</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>55.00ft LT</u>	P	O			when drilling <u>745.3</u>	P	O		
	T	W	Qu	W	at Completion <u>743.3</u>	T	W	Qu	W
Surface Elev. <u>753.30</u> ft	H	S	tsf	%	after _____ Hrs. _____	H	S	tsf	%
Medium stiff black CLAY (Topsoil), trace organic, very moist A-7-6		2 1 2	P 0.75	29.3	Very stiff to stiff gray CLAY, trace gravel, moist to very moist A-6		5 6 8	B 1.75 15%	23.3
750.30									
Medium stiff brown and gray CLAY, trace gravel, very moist A-7-6		2 3 3	B 0.67 15%	30.4			4 6 6	B 1.44 15%	24.6
747.80	-5					-30			
Med. dense brown and gray GRAVEL, some sand, moist to very moist A-1-a		4 4 6		13.3					
745.30									
Med. dense brown and gray SANDY LOAM, little to some gravel, occasional Cobbles, very moist to wet A-2-4		5 5 6		13.4			8 9 12	B 2.94 15%	20.0
	-10					-35			
		6 6 8		11.0					
		7 7 9		11.5			7 10 10	B 2.75 15%	24.5
737.80	-15				713.30	-40			
Very stiff gray CLAY, little gravel, moist A-6		7 9 13	B 2.68 15%	15.9	End of Boring at 40.0'				
					CME 750 ATV Drill Rig (#275)				
					CME Automatic Hammer				
		6 10 11	B 2.81 15%	16.0					
732.80	-20					-45			
Very stiff to stiff gray CLAY, trace gravel, moist to very moist A-6		7 9 9	B 2.61 15%	22.7					
		6 7 7	B 2.02 15%	23.0					
	-25					-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 9/4/15

Date Completed 9/4/15

ROUTE 360 DESCRIPTION Kirk Road South Retining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851A

COUNTY Kane LOCATION West Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-119</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 116+47</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>56.00ft LT</u>	P	O			when drilling <u>745.5</u>	P	O		
	T	W	Qu	W	at Completion <u>743.5</u>	T	W	Qu	W
Surface Elev. <u>753.50</u> ft	H	S	tsf	%	after _____ Hrs. _____	H	S	tsf	%
Black clayey TOPSOIL					728.00				
752.50									
Soft dark brown and gray		3	P	29.5	Stiff to very stiff gray CLAY,		6	B	25.3
CLAY, trace gravel, very moist		3	0.5		trace gravel, very moist to		9	1.51	
A-7-6		4			moist		10	15%	
750.50					A-6				
Soft to medium stiff brown		2	B	36.5			9	B	22.7
and gray CLAY, occasional silt		2	0.43				9	2.28	
seams, very moist	-5	2	15%			-30	12	15%	
A-7-6									
		1	B	28.9					
		2	0.63						
		2	15%						
745.50									
Med. dense brown and gray		6		12.8			8	B	22.1
SANDY LOAM, some gravel,		6					8	2.28	
very moist to wet	-10	7				-35	10	15%	
A-2-4									
743.00									
Very stiff gray CLAY LOAM,		8	B	12.7					
little gravel, moist		11	2.28						
A-4		14	15%						
740.50									
Medium dense gray SANDY		14		8.7			86	B	20.9
LOAM, some gravel		14					8	2.56	
occasional Cobbles, wet	-15	15			713.50	-40	9	15%	
A-2-4									
738.00									
Very stiff to hard gray LOAM,		17	B	10.3	End of Boring at 40.0'				
little gravel, numerous silt		21	2.63		CME 750 ATV Drill Rig (#275)				
seams, moist		24	15%		CME Automatic Hammer				
A-4									
		19	B	10.1					
		23	4.66						
	-20	25	15%			-45			
733.00									
Very dense to dense gray		24		11.2					
SANDY LOAM, some gravel		31							
occasional Cobbles, wet		45							
A-2-4									
		14		9.5					
		21							
	-25	23				-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 9/1/15

Date Completed 9/1/15

ROUTE 360 DESCRIPTION Kirk Road Center Retaining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851C

COUNTY Kane LOCATION West Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-120</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 119+12</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>ft LT</u>	P	O			when drilling <u>751.2</u>	P	O		
	T	W	Qu	W	at Completion <u>749.2</u>	T	W	Qu	W
Surface Elev. <u>764.20</u> ft	H	S	tsf	%	after _____ Hrs. _____	H	S	tsf	%
12" Crushed Stone					738.70				
763.20					Stiff gray CLAY, trace gravel, moist A-6				
FILL - Brown CLAY LOAM, little gravel, trace Asphalt pieces, moist A-4		5		7.2			5	B	20.9
		6					7	1.95	
		5					5	15%	
761.20									
FILL - Black SILTY CLAY LOAM, trace organic, very moist A-6		3	P	26.3			4	B	20.8
LL/PL/PI = 27/14/13		3	1.0				6	1.89	
		4					7	15%	
758.70	-5				734.20	-30			
Very soft black CLAY, trace gravel, trace organic, very moist A-6		2	P	24.5	End of Boring at 30.0'				
		1	0.25		CME-75 Truck Rig (#256)				
		1			CME Automatic Hammer				
756.20									
Very soft brown CLAY, very moist A-7-6		5	P	27.5					
		5	0.5						
		5							
753.70	-10					-35			
Very stiff to hard brown CLAY, trace gravel, occasional silt seams, moist A-6		5	B	15.6					
		6	2.68						
		6	15%						
		6	B	14.6					
		6	4.26						
		6	15%						
748.70	-15					-40			
Hard to very stiff gray CLAY LOAM, trace gravel, moist A-4		7	B	13.3					
		12	2.88						
		10	15%						
		12	B	11.2					
		12	4.00						
		10	15%						
	-20					-45			
		7	B	13.0					
		8	4.59						
		7	15%						
		6	B	13.0					
		7	3.21						
		6	15%						
	-25					-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 9/1/15

Date Completed 9/1/15

ROUTE 360 DESCRIPTION Kirk Road Center Retaining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851C

COUNTY Kane LOCATION West Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-121</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 119+80</u>	E	L			Groundwater Elev.: _____	E	L		
Offset _____ ft LT	P	O			when drilling _____ Dry	P	O		
Surface Elev. <u>765.30</u> ft	T	W	Qu	W	at Completion _____ Dry	H	S	tsf	%
	H	S	tsf	%	after _____ Hrs. _____				
12" Crushed Stone					739.80				
764.30					Hard gray CLAY, little gravel, moist A-6		6	B	21.0
FILL - Brown and gray CLAY, trace gravel, moist A-6		6	P	22.4			5	5.32	
		7	3.0				8	15%	
		6							
762.30									
Hard brown CLAY, little gravel, occasional silt seams, moist A-6		4	B	14.3			5	B	21.6
		5	4.33				7	4.73	
		5	15%				8	15%	
-5					735.30	-30			
					End of Boring at 30.0'				
		10	B	16.2	CME-75 Truck Rig (#256)				
		8	4.00		CME Automatic Hammer				
		8	15%						
757.30									
Very stiff to hard brown and gray CLAY LOAM, trace gravel, moist A-6		6	B	12.4					
		7	3.47						
		6	15%						
-10						-35			
		7	B	13.5					
		7	4.45						
		7	15%						
752.30									
Hard gray SILTY CLAY LOAM, trace gravel, moist A-4		6	B	10.0					
		7	4.00						
		7	15%						
-15						-40			
		10	B	10.2					
		13	4.59						
		15	15%						
		7	B	12.9					
		6	5.12						
		6	15%						
-20						-45			
		9	B	12.4					
		9	6.90						
		7	15%						
		5	B	13.6					
		7	4.73						
		9	15%						
-25						-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 9/1/15

Date Completed 9/1/15

ROUTE 360 DESCRIPTION Kirk Road Center Retaining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851C

COUNTY Kane LOCATION West Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-122</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 120+24</u>	E	L			Groundwater Elev.: _____	E	L		
Offset _____ ft LT	P	O			when drilling <u>750.5</u>	P	O		
Surface Elev. <u>766.00</u> ft	T	W	Qu	W	at Completion <u>748.0</u>	H	S	tsf	%
	H	S	tsf	%	after _____ Hrs. _____				
12" Crushed Stone					740.50				
765.00					Very tough CLAY, trace gravel, moist A-6		7	B	22.9
Hard brown and dark brown CLAY, trace gravel, trace organic, moist A-6		5	B	25.4			7	1.95	
		5	4.13				9	15%	
		4	15%						
763.00									
Very stiff to hard brown CLAY, little gravel, moist A-6		4	B	15.5			8	B	22.8
		5	3.87				6	3.60	
		6	15%				8	15%	
	-5				736.00	-30			
					End of Boring at 30.0'				
		5	B	14.9	CME-75 Truck Rig (#256)				
		6	2.56		CME Automatic Hammer				
		6	15%						
		6	B	17.0					
		7	5.41						
	-10	6	15%			-35			
755.50									
Hard gray SILTY CLAY LOAM, trace gravel, occasional silt seams, moist A-4		6	B	12.6					
		6	5.07						
		6	15%						
		6	B	14.1					
		7	4.26						
	-15	8	15%			-40			
		5	B	12.9					
		10	4.59						
		8	15%						
748.00									
Hard gray CLAY LOAM, little gravel, occasional silt seams, moist A-6		8	B	14.6					
		8	4.92						
	-20	6	15%			-45			
		8	B	13.3					
		12	5.41						
		10	15%						
		7	B	13.0					
		10	5.32						
	-25	8	15%			-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 8/10/15

Date Completed 8/10/15

ROUTE 360 DESCRIPTION Kirk Road North Retaining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851E

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-123</u>	D	B			Surface Water Elev. _____	D	B		
Station <u>Sta. 123+18</u>	E	L			Groundwater Elev.: _____	E	L		
Offset <u>41.00ft RT</u>	P	O			when drilling <u>Dry</u>	P	O		
Surface Elev. <u>771.50</u> ft	T	W	Qu	W	at Completion <u>Dry</u>	H	S	Qu	W
	H	S	tsf	%	after _____ Hrs. _____			tsf	%
Black clayey TOPSOIL									
770.50					End of Boring at 25.0'				
Stiff brown CLAY, very moist		3	B	27.7					
A-7-6		4	1.42		CME 750 ATV Drill Rig (#275)				
LL/PL/PI = 57/20/37		4	15%		CME Automatic Hammer				
768.50									
Very stiff to hard brown and		4	B	16.3					
gray CLAY, little gravel, moist		4	3.14						
A-6	-5	5	15%			-30			
		4	B	17.3					
		5	3.27						
		5	15%						
		4	B	18.3					
		6	2.94						
-10		6	15%			-35			
		5	B	16.0					
		6	4.07						
		7	15%						
		5	B	17.6					
		5	4.33						
-15		7	15%			-40			
756.00									
Very stiff gray CLAY LOAM,		4	B	15.4					
little gravel, moist A-6		5	3.87						
		7	15%						
		4	B	13.0					
		5	3.84						
-20		6	15%			-45			
		6	B	13.2					
		6	4.59						
		8	15%						
748.50									
Very stiff gray LOAM, little		6	B	10.5					
gravel, moist A-4		7	4.86						
746.50	-25	9	15%			-50			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.

Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 8/10/15

Date Completed 8/10/15

ROUTE 360 DESCRIPTION Kirk Road North Retaining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851E

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-124</u>	D E P T H	B L O W S	Qu tsf	W %	Surface Water Elev. _____
Station <u>Sta. 123+95</u>					Groundwater Elev.: _____
Offset <u>43.00ft RT</u>					when drilling _____ <u>Dry</u>
Surface Elev. <u>773.70</u> ft					at Completion _____ <u>Dry</u>
					after _____ Hrs. _____

Stiff black CLAY (Topsoil), very moist A-7-6 Wet Combustion = 1.7%	—	—	—	—
	—	4	B	29.6
	—	4	1.42	15%
	—	4	15%	

770.70

Stiff to very stiff brown and gray CLAY, little gravel, moist A-6	—	3	B	17.0
	—	3	1.56	15%
	—	5	15%	
	-5			

—	2	B	19.8
—	3	1.62	15%
—	3	15%	

—	3	B	18.6
—	4	2.28	15%
—	7	15%	
	-10		

—	4	B	17.1
—	5	2.75	15%
—	6	15%	

760.70

Very tough to hard gray CLAY LOAM, little gravel, moist A-6	—	4	B	14.2
	—	6	3.87	15%
	—	7	15%	
	-15			

—	4	B	13.9
—	7	4.0	15%
—	7	15%	

—	6	B	14.6
—	6	4.46	15%
—	8	15%	
	-20		

753.70

End of Boring at 20.0'

CME 750 ATV Drill Rig (#275)
CME Automatic Hammer

-25

ILDOT_BORING 79851-IDOT.GPJ IDOT.GDT 12/4/15

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

STRUCTURE BORING LOG

Date Started 8/10/15

Date Completed 8/10/15

ROUTE 360 DESCRIPTION Kirk Road North Retaining Wall

SECT. 21-00192-04-BR STRUCT. NO. DRILLED BY TSC/L-79,851E

COUNTY Kane LOCATION East Side S. 1SW/12NW, TWP. 39N, RNG. 8E

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 8/10/15

Date Completed 8/10/15

ROUTE 360 DESCRIPTION Kirk Road North Retaining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851E

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. <u>SB-126</u>	D	B			Surface Water Elev. _____
Station <u>Sta. 125+47</u>	E	L			Groundwater Elev.: _____
Offset <u>49.00ft RT</u>	P	O			when drilling _____ <u>Dry</u>
	T	W	Qu	W	at Completion _____ <u>Dry</u>
	H	S	tsf	%	after _____ Hrs. _____
Surface Elev. <u>787.10</u> ft					

FILL - Black clayey TOPSOIL	786.60				
FILL - Brown, black and gray					
CLAY LOAM, trace gravel,		4	P	12.9	
trace organic, moist A-4		5	3.5		
		6	15%		
	784.10				
Stiff brown and black CLAY,					
trace gravel, trace organic,		5	P	23.5	
very moist A-6		5	1.5		
[Disturbed Native]		6	15%		
	781.60				
Hard brown and gray CLAY,					
little gravel, moist A-6		7	B	16.3	
		7	4.73		
		9	15%		
		6	B	18.5	
		9	5.90		
		9	15%		
	-10				
		5	B	16.2	
		7	6.23		
		10	15%		
		6	B	18.2	
		6	4.86		
		9	15%		
	772.10	-15			

End of Boring at 15.0'

CME 750 ATV Drill Rig (#275)
CME Automatic Hammer

ILDOT_BORING 79851-1DOT.GPJ IDOT.GDT 12/4/15

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

Testing Service Corporation

STRUCTURE BORING LOG

Page 1 of 1

Date Started 9/9/15

Date Completed 9/9/15

ROUTE 360 DESCRIPTION Kirk Road North Retaining Wall

SECT. 21-00192-04-BR STRUCT. NO. _____ DRILLED BY TSC/L-79,851E

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

Boring No. SB-127
 Station Sta. 122+88
 Offset 68.00ft LT
 Surface Elev. 775.20 ft

Surface Water Elev. _____
 Groundwater Elev.: _____
 when drilling _____ Dry
 at Completion _____ Dry
 after _____ Hrs. _____

DEPTH	BLOWS	Qu tsf	W %
Black clayey TOPSOIL	774.70		
Very stiff brown SILTY CLAY, trace gravel, moist A-6 LL/PL/PI = 32/14/18	6 7 9	P 3.75	15.2
772.20			
Hard brown CLAY, little gravel, moist A-6	5 6 8	B 3.89 10%	16.8
-5			
	4 4 5	B 4.45 15%	16.0
	7 9 11	B 4.07 15%	18.2
-10			
	9 15 15	B 4.40 15%	16.4
762.20			
Very stiff gray CLAY LOAM, little gravel, moist A-6	5 6 8	B 3.33 15%	14.9
-15			
	4 5 6	B 2.35 15%	14.4
	3 5 6	B 2.81 15%	14.5
755.20	-20		
End of Boring at 20.0'			
Diedrich D-120 Truck Rig (#315) CME Automatic Hammer			
-25			

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
 Stations, Depths, Offset, and Elevations are in Feet

STRUCTURE BORING LOG

Date Started 9/4/15

Date Completed 9/4/15

ROUTE	<u>360</u>	DESCRIPTION	<u>Kirk Road North Retaining Wall</u>
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SECT. 21-00192-04-BR STRUCT. NO. DRILLED BY TSC/L-79,851E

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

JULDOT_BORING 79851-IDOT.GPJ IDOT.GDT 12/4/15

STRUCTURE BORING LOG

Date Started 9/3/15

Date Completed 9/3/15

ROUTE	<u>360</u>	DESCRIPTION	<u>Kirk Road North Retaining Wall</u>
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SECT. 21-00192-04-BR STRUCT. NO. DRILLED BY TSC/L-79,851E

COUNTY Kane LOCATION East Side S. 1SW/12NW , TWP. 39N , RNG. 8E

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

ILDOT_BORING 79851-IDOT.GPJ IDOT.GDT 12/4/15

STRUCTURE BORING LOG

Date Started 9/3/15

Date Completed 9/3/15

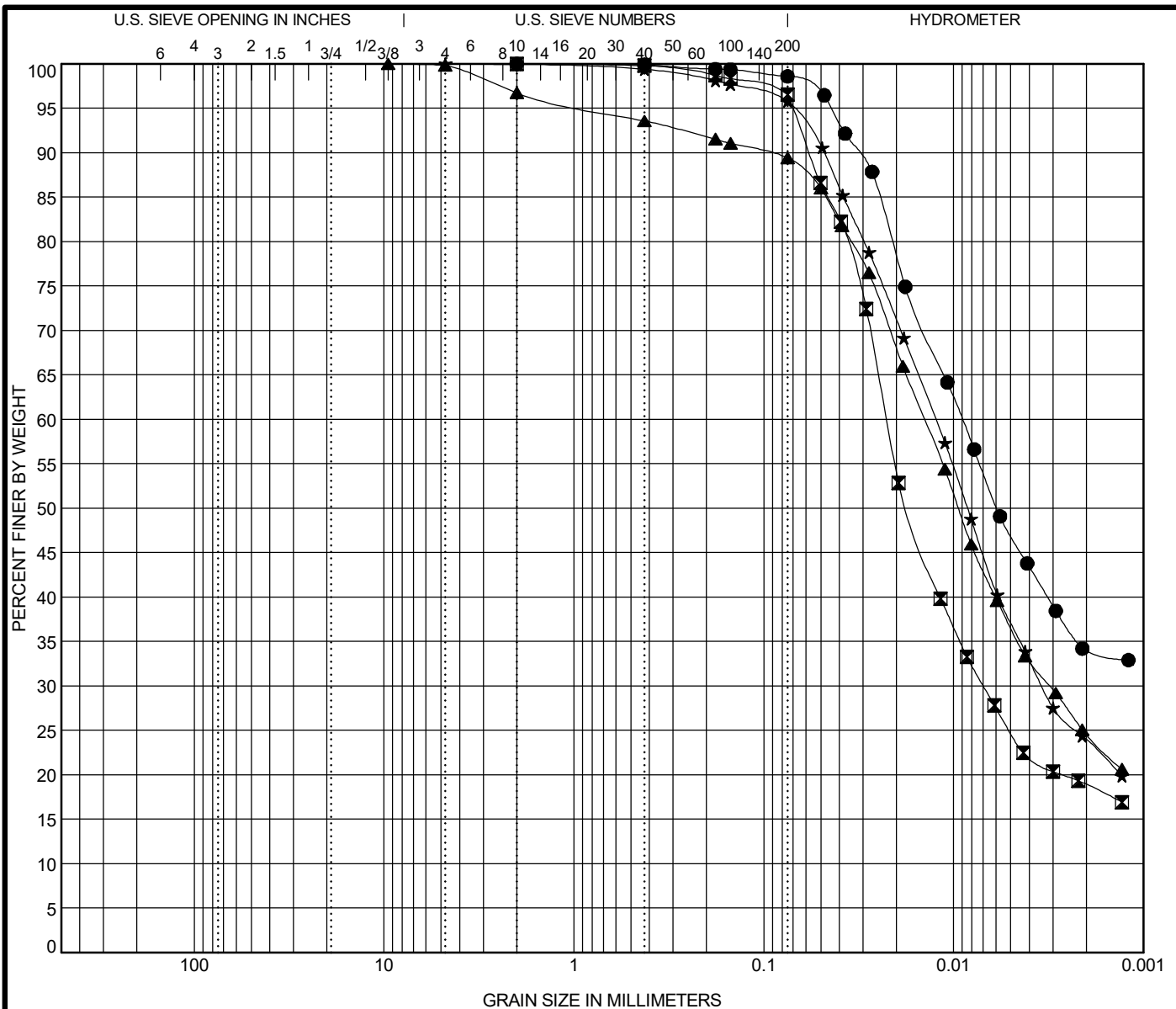
ROUTE 360 DESCRIPTION Kirk Road North Retaining Wall

SECT. 21-00192-04-BR STRUCT. NO. DRILLED BY TSC/L-79,851E

COUNTY Kane LOCATION East Side S. 1SW/12NW, TWP. 39N, RNG. 8E

SPT. (N) = Sum of last two blow values in sample. (Qu) S=Shear, B=Bulge at 15% Strain, P=Penetration Test.
Stations, Depths, Offset, and Elevations are in Feet

APPENDIX B



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

Specimen Identification			IDH Classification				LL	PL	PI	Cc	Cu
●	RWB-01#3	6.0 ft	Silty Clay				59	19	40		
✕	RWB-01#5	11.0 ft	Silty Loam				35	19	16		
▲	RWB-03#2	3.5 ft	Silty Clay Loam				43	22	21		
★	RWB-03#4	8.5 ft	Silty Clay Loam				35	18	17		
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	
●	RWB-01#3	6.0 ft	2	0.009			0.0	1.5	64.4	34.1	
✕	RWB-01#5	11.0 ft	2	0.022	0.007		0.0	3.8	77.3	18.9	
▲	RWB-03#2	3.5 ft	9.5	0.014	0.003		3.3	7.4	64.7	24.6	
★	RWB-03#4	8.5 ft	4.75	0.012	0.003		0.1	4.3	71.7	23.9	



Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax:

GRAIN SIZE DISTRIBUTION

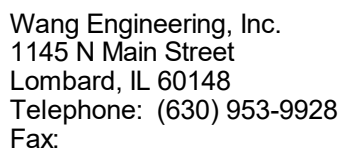
Project: Kirk Road Viaduct Replacement

Location: Kane County, IL

Number: 165-07-01



WEI ATTERBERG LIMITS IDH 1650701.GPJ US LAB.GDT 1/13/22



Number: 165-07-01



Unconfined Compressive Strength of Intact Rock Core Specimens

Project: Kirk Road Viaduct Replacement

Client: BLA

WEI Job No.: 165-07-01

Field Sample ID	Run #	Depth (ft)	Location	Sample Description	Length (in)		Diameter (in)	Total Load (lbs)	Total Pressure (psi)	Fracture Type*	Break Date	Tested By	Area (in ²)
					Before Capping	After Capping							
Reed-01	1	84.0	Kirk over Reed Rd North Abutment	Dolostone	4.16	NA	2.07	27880	8301	3	12/13/21	MAC	3.36
UPRR-01	1	75.0	Kirk over UPRR North Abutment	Dolostone	4.18	NA	2.07	29490	8780	3	12/13/21	MAC	3.36

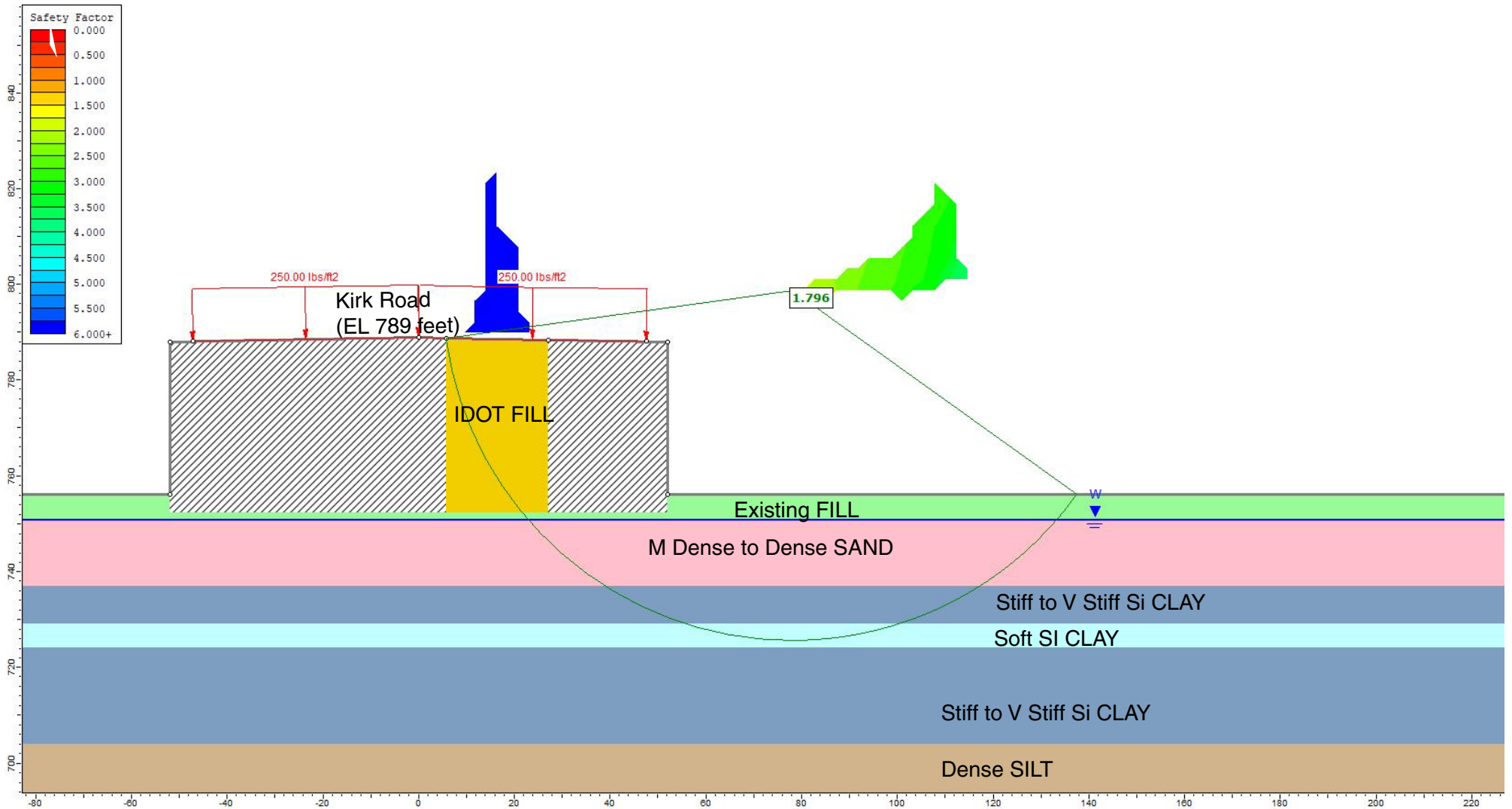
*** Fracture Types:**

Type 1 - Reasonably well-formed cones on both ends, less than 1 in. [25 mm] of cracking through caps;
 Type 2 - Well-formed cone on one end, vertical cracks running through caps, no well defined cone on other end;
 Type 3 - Columnar vertical cracking through both ends, no well-formed cones;
 Type 4 - Diagonal fracture with no cracking through ends; tap with hammer to distinguish from Type 1;
 Type 5 - Side fractures at top or bottom (occur commonly with unbonded caps);
 Type 6 - Similar to Type 5 but end of cylinder is pointed.

Prepared by: _____

Checked by: _____

APPENDIX C



Undrained Analysis for SN 045-W008 and 045-W009, Ref Boring UPRR-02

Layer ID	Description	Total Unit Weight (pcf)	Undrained Cohesion (psf)	Undrained Friction Angle (degrees)
1	IDOT FILL	125	1000	0
2	Existing FILL	120	800	0
3	M Dense to Dense SAND	120	0	34
4	Stiff to V Stiff Si CLAY	120	1800	0
5	Soft SI CLAY	120	250	0
6	V Dense SILT	120	0	36

GLOBAL STABILITY: KIRK ROAD VIADUCT REPLACEMENT
RETAINING WALLS SOUTH OF UPRR

SCALE: GRAPHICAL

APPENDIX C-1

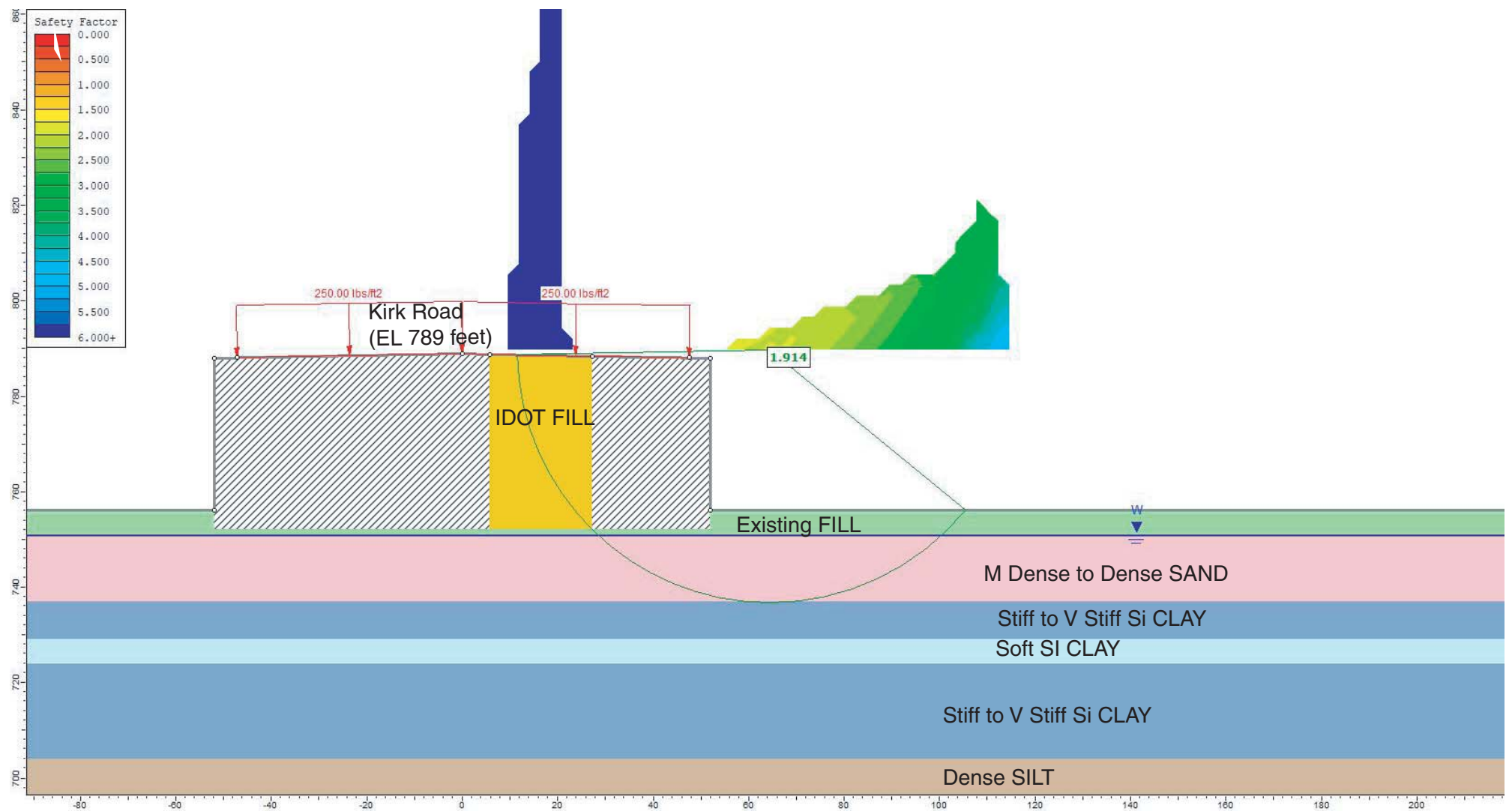
DRAWN BY: NSB
CHECKED BY: AZH



1145 N. Main Street
Lombard, IL 60148
www.wangeng.com

FOR BLA, Inc.

165-07-01



Drained Analysis for SN 045-W008 and 045-W009, Ref Boring UPRR-02

Layer ID	Description	Total Unit Weight (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
1	IDOT FILL	125	100	30
2	Existing FILL	120	100	30
3	M Dense to Dense SAND	120	0	34
4	Stiff to V Stiff Si CLAY	120	100	30
5	Soft Si CLAY	120	0	28
6	V Dense SILT	120	0	36

GLOBAL STABILITY: KIRK ROAD VIADUCT REPLACEMENT
RETAINING WALLS SOUTH OF UPRR

SCALE: GRAPHICAL

APPENDIX C-2

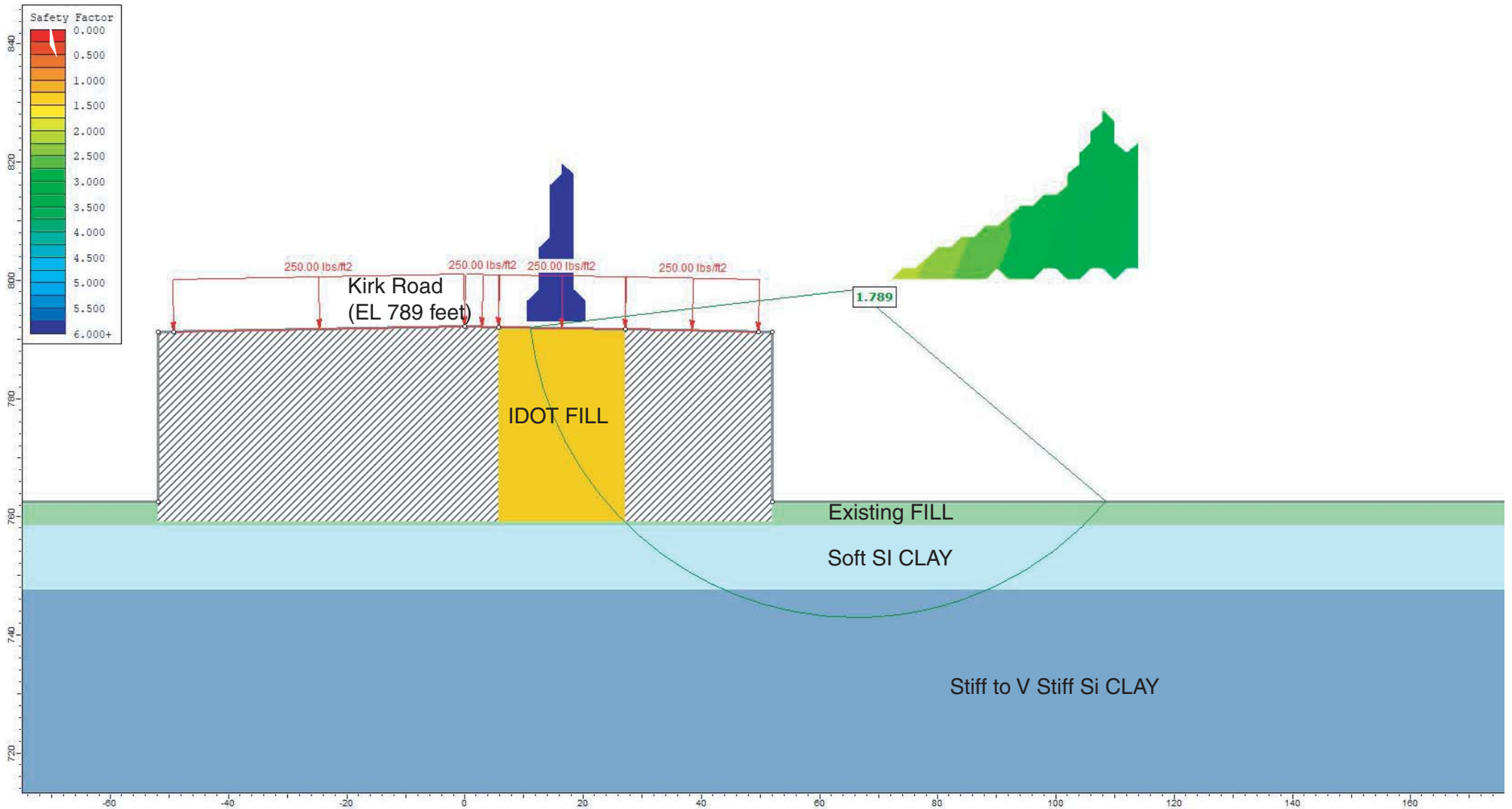
DRAWN BY: NSB
CHECKED BY: AZH



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165-07-01



Undrained Analysis for SN 045-W010 and 045-W011, Ref Borings UPRR-01 and RWB-01

Layer ID	Description	Total Unit Weight (pcf)	Undrained Cohesion (psf)	Undrained Friction Angle (degrees)
1	IDOT FILL	125	1000	0
2	Existing FILL	120	1000	0
3	Soft SI CLAY	120	800	0
4	Stiff to V Stiff Si CLAY	120	1800	0

GLOBAL STABILITY: KIRK ROAD VIADUCT REPLACEMENT
RETAINING WALLS NORTH OF UPRR

SCALE: GRAPHICAL

APPENDIX C-3

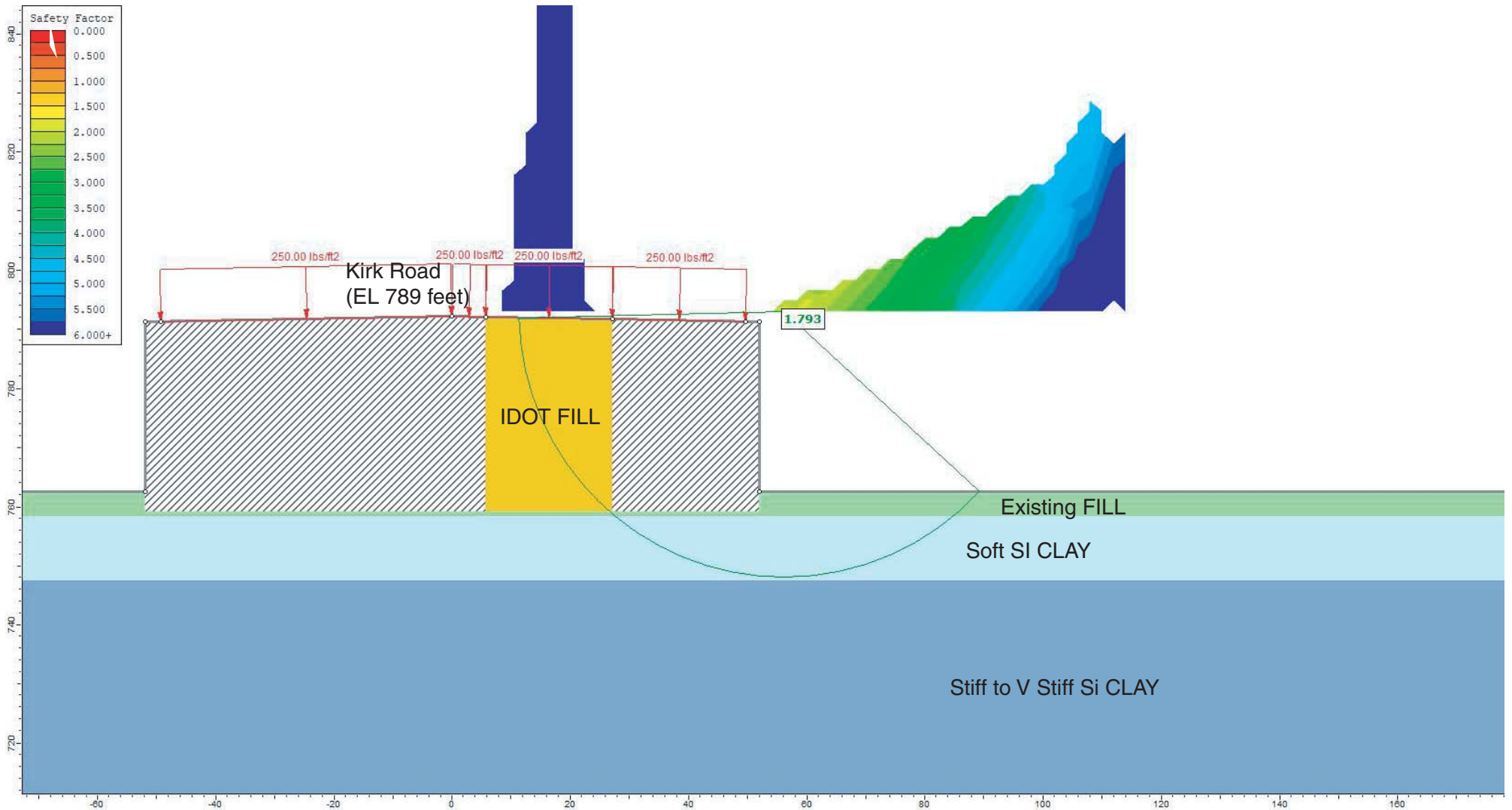
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Drained Analysis for SN 045-W010 and 045-W011, Ref Borings UPRR-01 and RWB-01

Layer ID	Description	Total Unit Weight (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
1	IDOT FILL	125	1000	30
2	Existing FILL	120	100	30
3	Soft SI CLAY	120	0	28
4	Stiff to V Stiff SI CLAY	120	100	30

GLOBAL STABILITY: KIRK ROAD VIADUCT REPLACEMENT
RETAINING WALLS NORTH OF UPRR

SCALE: GRAPHICAL

APPENDIX C-4

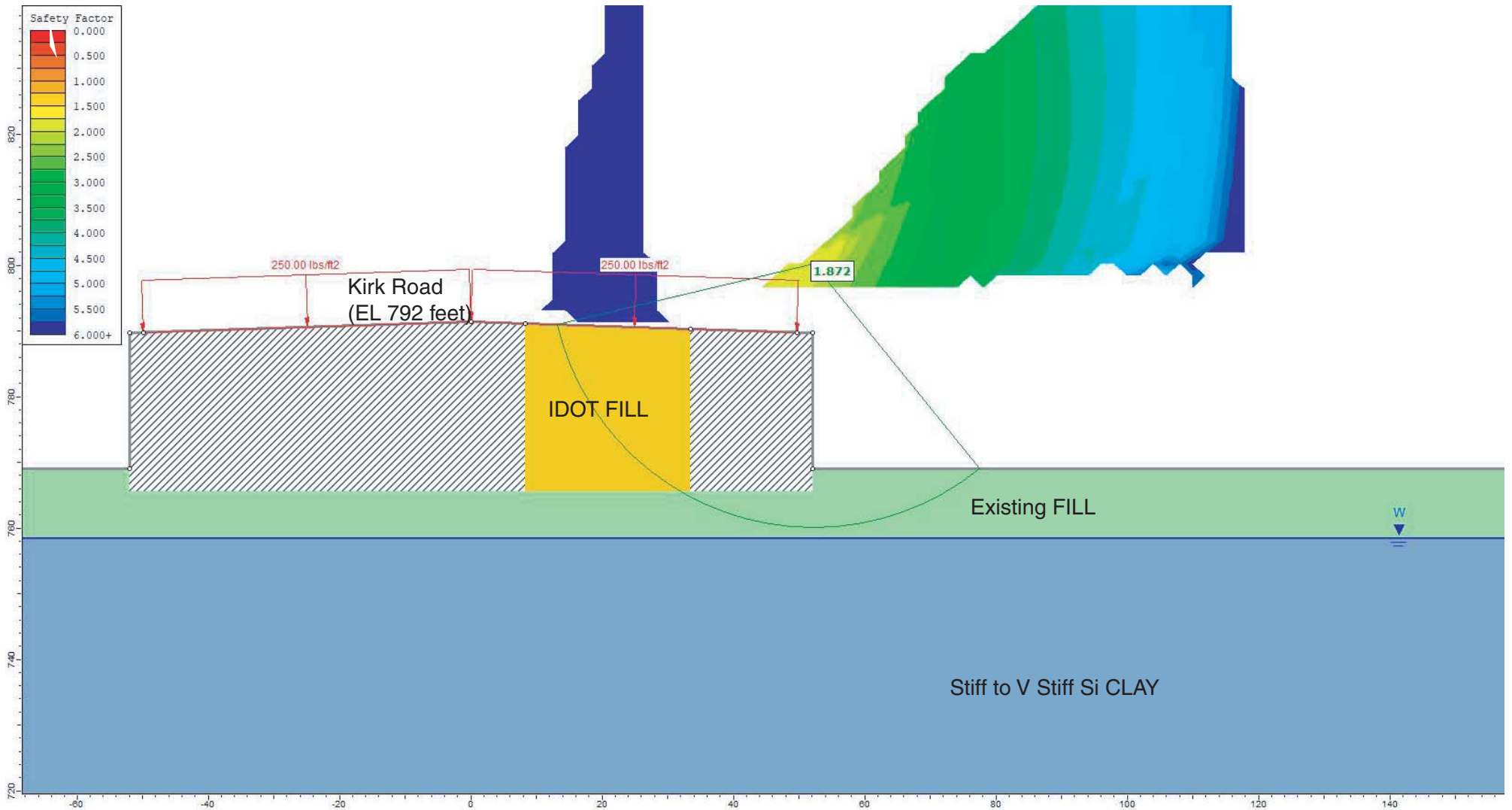
DRAWN BY: NSB
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Undrained Analysis for SN 045-W012 and 045-W013, Ref Borings REED-01 and REED-02

Layer ID	Description	Total Unit Weight (pcf)	Undrained Cohesion (psf)	Undrained Friction Angle (degrees)
1	IDOT FILL	125	1000	0
2	Existing FILL	120	1000	0
3	Stiff to V Stiff SI CLAY	120	1800	0

GLOBAL STABILITY: KIRK ROAD VIADUCT REPLACEMENT
REED ROAD RETAINING WALLS

SCALE: GRAPHICAL

APPENDIX C-5

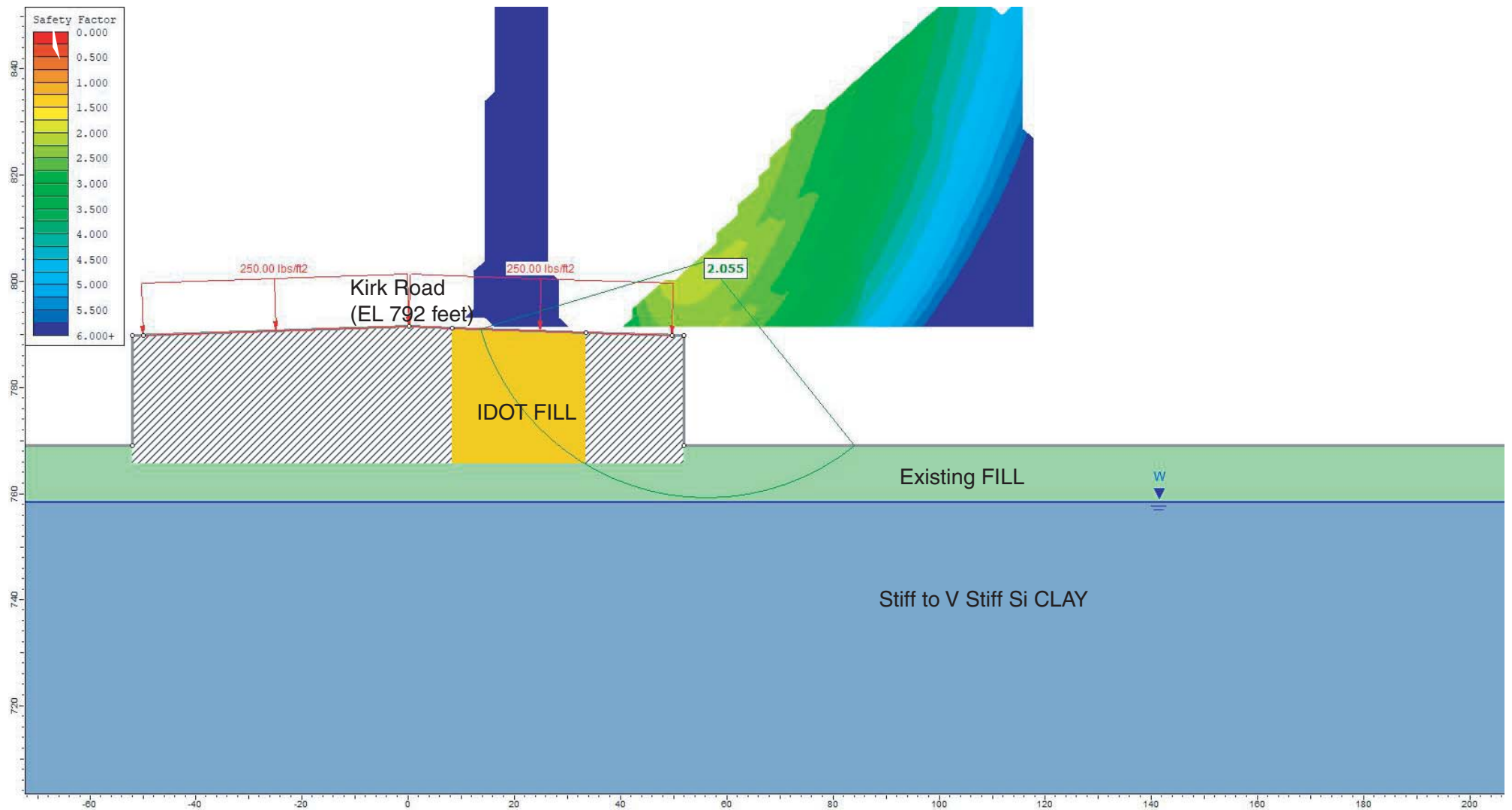
DRAWN BY: NSB
CHECKED BY: AZH



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Drained Analysis for SN 045-W012 and 045-W013, Ref Borings REED-01 and REED-02

Layer ID	Description	Total Unit Weight (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
1	IDOT FILL	125	100	30
2	Existing FILL	120	100	30
3	Stiff to V Stiff SI CLAY	120	100	30

GLOBAL STABILITY: KIRK ROAD VIADUCT REPLACEMENT
REED ROAD RETAINING WALLS

SCALE: GRAPHICAL

APPENDIX C-6

DRAWN BY: NSB
CHECKED BY: AZH



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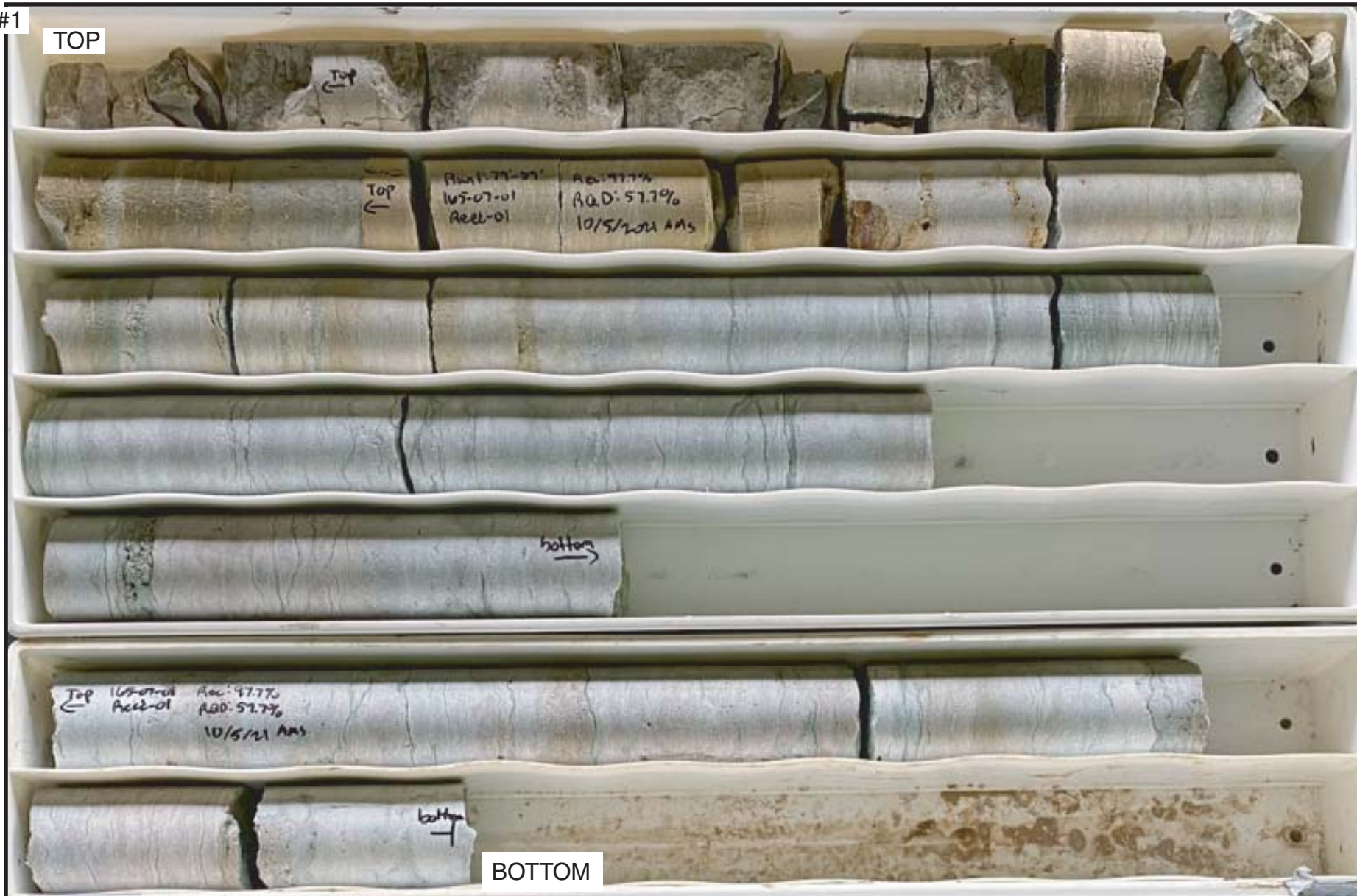
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APPENDIX D

Run #1

TOP



BOTTOM



6 inches

Boring REED-01:
Run #1, 79.0 to 89.0 feet, RECOVERY=98%, RQD=58%

BEDROCK CORE: KIRK ROAD VIADUCT REPLACEMENT
KANE COUNTY, ILLINOIS

SCALE: GRAPHICAL

APPENDIX D-1

DRAWN BY: J. Bensen
CHECKED BY: M. Snider



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Run #1



Boring REED-02:
Run #1, 77.5 to 82.5 feet, RECOVERY=73%, RQD=0%

BEDROCK CORE: KIRK ROAD VIADUCT REPLACEMENT KANE COUNTY, ILLINOIS		
SCALE: GRAPHICAL	APPENDIX D-2	DRAWN BY: J. Bensen CHECKED BY: M. Snider
 The logo for Wang Engineering, featuring a stylized 'W' made of two overlapping chevron shapes, one gold and one black, followed by the text 'Wang Engineering' in a bold, sans-serif font. Wang Engineering		1145 N. Main Street Lombard, IL 60148 www.wangeng.com
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Run #1



Boring UPRR-01:
Run #1, 73.0 to 83.0 feet, RECOVERY=94%, RQD=75%

BEDROCK CORE: KIRK ROAD VIADUCT REPLACEMENT KANE COUNTY, ILLINOIS		
SCALE: GRAPHICAL	APPENDIX D-3	DRAWN BY: J. Bensen CHECKED BY: M. Snider
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Run #1

TOP



BOTTOM

0 6 inches

Boring UPRR-02:
Run #1, 63.0 to 73.0 feet, RECOVERY=100%, RQD=62%

BEDROCK CORE: KIRK ROAD VIADUCT REPLACEMENT
KANE COUNTY, ILLINOIS

SCALE: GRAPHICAL

APPENDIX D-4

DRAWN BY: J. Bensen
CHECKED BY: M. Snider



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165-07-01



Illinois Department of Transportation

Memorandum

To:	Fawad Aqueel	Attn:	Muhammad Zeekrya Carmen Ramos
From:	Stephen Jones	By:	Giancarlo Gierbolini
Subject:	Structure Geotechnical Report* Wang Memorandum		
Date:	October 27, 2025		

A handwritten signature in blue ink, appearing to read 'G. Gierbolini', is written over the 'By:' field.

*Route: FAP 360 (Kirk Road)
Location: from Cherry Lane to IL 38
Section: 21-00192-04-BR
County: Kane
Contract: 61M13

The IDOT District One Geotechnical Unit has reviewed the letter report prepared by Wang Engineering, dated March 23, 2022 for the above-referenced project. The report provides geotechnical recommendations for the proposed improvements to Kirk Road in unincorporated Geneva Township, Kane County.

The proposed improvements will include the widening of Kirk Road within the project limits. The existing roadway within the project limits primarily consists of a 17 span bridge structure, which will be removed and replaced with 3, single span bridges and four wrap around MSE retaining wall structures.

Wang completed a supplementary geotechnical exploration to provide additional soil borings, additional analysis for the bridges, retaining walls, and the area where ground improvement is recommended.

It is our understanding that the SGR has been submitted to the Bureau of Bridges and Structures (BBS) in Springfield for review. The review summarized with this memo is limited to the earthwork and roadway and embankment improvements and will not include comments about the retaining wall structure.

After reviewing the report, we have the following comments and recommendations. The report should be revised and resubmitted along with a disposition of comments for final review and approval.

1. The report included a slope stability analysis for the proposed embankment and MSE wall construction. The following comments and questions are directed to the slope stability results included in Appendix C.
 - a. The report recommended constructing a section of MSE Wall 3 entirely out of Lightweight Cellular Concrete Fill (LCCF) or a combination of LCCF at the base, and fill material for the upper 10 feet. It is unclear if the MSE walls are being modelled as LCCF or as the LCCF/embankment combination.
 - b. The slope stability analysis should include the load from the MSE walls, either as unit weights or as a line load at the base.
 - c. The analysis only considered circular failure envelopes. Based on the geometry of the proposed embankment fill and the MSE walls, the failure surface for some of results was forced to pass through the stronger, underlying soils, resulting in higher factor of safety. We recommend also including block failure analysis.
2. TSC provided 3 SGR's for the proposed MSE retaining walls, which included undercuts of low strength soils below the structures. The memo provided by Wang recommended revisions to the undercut areas. We are in general agreement with the undercuts included in the TSC reports.

A summary of the undercuts from the 3 SGR's along with our comments and revisions is attached to this review memo.

We also have the following comments regarding the undercut areas:

- a. The Wang report states that the stiff to very stiff soils present below Retaining Walls 1 and 4 do not require undercuts, however, low strength soils were encountered in these areas. We recommend including the undercuts listed in the attached undercut summary.
- b. Some areas encountered soils that may be partially or completely removed as part of the excavation for the MSE walls, however there is still embankment fill between the MSE walls that will require undercuts from the existing ground surface.
- c. Given the height of the proposed walls and embankments, we recommend following a more conservative approach and do not recommend undercuts below only half of an embankment area. The boring layout was typically drilled in pairs, and the actual transition from one side to the other is unknown. We recommend that the proposed undercuts include the entire embankment width. The limits of the low strength soils can be further evaluated in the field, during construction.

3. For MSE Wall 3 the borings directly north of the UPRR bridge encountered low strength soils to depths up to 18 feet below the existing ground surface. The TSC report recommended either removal and replacement of the low strength soils, or the construction of a ground improvement system. The Wang report recommended either the construction of a ground improvement system, or leaving the low strength soils in place and building the embankment out of LCCF.

- a. A **deep undercut** to remove the low strength soils is impractical. Due to the depth and proximity to the existing railroad, it would require a temporary soil retention system. The replacement of the poor soils would also require large quantities of removal and import, as well as time needed to remove the material and place structural fill.
- b. Supporting the MSE walls and embankment on a **ground improvement system** would be the lower risk option, as the design of the system would be required to address the settlement and stability concerns. Contractor Designed Ground Improvement is the option the Department recommends for this section of MSE Wall 3.
- c. **Constructing the MSE walls and embankment out of LCCF** directly on the low strength material includes a series of risks:

- i. Settlement. The report estimates 4 to 6 inches of settlement in this area. It is possible to estimate the settlement the soils will exhibit under new load, however, it is greatly impacted by how conservative the analysis is. These estimates can range from less conservative approaches using correlated soil parameters and assumptions, or more thorough laboratory analysis such as consolidation tests. Based on the soils encountered, and the height of the proposed improvements, we are apprehensive about the projected settlement numbers provided. The District's Geotechnical Section requests that the settlement analyses performed for MSE Wall 3 be provided as soon as possible.

Pressure meter testing can be used to determine soil parameters that can correlate to settlement analysis. For soft, high moisture cohesive soils, consolidation testing is the preferred, more accurate test method used to determine the anticipated settlement. It does not appear that any consolidation tests were completed as part of TSC's or Wang's explorations.

- ii. Bearing capacity. The estimated factored bearing resistance provided in the report seems high given the soft and medium stiff cohesive soils encountered at the bearing

elevation. We recommend reevaluating the bearing capacity analysis and providing it for review and discussion.

- iii. Phase 3 constructability. The contractor will need to be able to establish a stable working platform on which to construct these walls and embankment. While this could be considered “means and methods”, given the low strength soil profile, it should be anticipated that there will be issues in the field during construction. The challenging unmitigated soil conditions present a high potential for Phase III Authorizations/Change Orders.
- iv. Risk Management. There are a series of design challenges with using the LCCF approach. When each issue is evaluated, the assumptions and correlations made impact the probable outcome. Being overly conservative can be unrealistic, while not being conservative enough can cause major issues during and after construction. It is assumed that this option is being considered as a cost saving measure. With the understanding that the cost savings of each option have not been discussed, at this point the risks associated with this approach seem high.

If you have any questions regarding this review, please contact Robert Claussen, P.E. at (847)705-4735 or Giancarlo Gierbolini, P.E. at (847) 705-4003.

Cc: IDOT Soil Inspector

MSE Retaining Wall 1

Undercut Location	Lateral Limits	Recommended undercut depth	
		Depth	Elevation
Station 111+60 to 112+35	Full MSE walls and embankment width.	3 feet	764.4
Station 114+60 to 115+10	Full MSE walls and embankment width.	5.5 feet	748.1

MSE Retaining Wall 2

Undercut Location	Lateral Limits	Recommended undercut depth	
		Depth	Elevation
Station 115+80 to 116+10	Full MSE walls and embankment width.	5.5 feet	747.8
Station 116+10 to 116+85	Full MSE walls and embankment width.	8 feet	745.5
Station 116+85 to 117+34	Full MSE walls and embankment width.	5.5 feet	749.3

MSE Retaining Wall 3

Undercut Location	Lateral Limits	Recommended undercut depth	
		Depth	Elevation
Station 118+44 to 119+00 (see note 1)	Full MSE walls and embankment width.	18 feet	741.9
Station 119+00 to 119+50 (see note 1)	Full MSE walls and embankment width.	10.5 feet	753.7

Note 1: The limits of this undercut are covered in the ground improvement alternate included in the SGR.

MSE Retaining Wall 4

Undercut Location	Lateral Limits	Recommended undercut depth	
		Depth	Elevation
Station 121+98 to 122+75	Full MSE walls and embankment width.	5.5 feet	764.9
Station 123+55 to 124+35	Full MSE walls and embankment width.	3 feet	770.7

The following pay items should be included in the Schedule Of Quantities (SOQ):

- AGGREGATE SUBGRADE IMPROVEMENT (CU YD)
- GEOTECHNICAL FABRIC FOR GROUND STABILIZATION (SQ YD)
- REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL FOR STRUCTURES (CU YD)