STRUCTURE GEOTECHNICAL REPORT
INTERSTATE 80 BRIDGES OVER
MIDLAND AVENUE
EX SNS 099-0050 AND 099-0051
PR SNS 099-8322 AND 099-8323
WILL COUNTY, ILLINOIS

For
TranSystems Corporation
1475 East Woodfield Road, Suite 600
Schaumburg, IL 60173

Submitted by
Wang Engineering, Inc.
1145 North Main Street
Lombard, IL 60148

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9. Prepared by Wang Engineering, Inc. 1145 N Main Street Lombard, IL 60148	**Contributor(s)** Author: Azza Hamad, PE Nesam Balakumaran, P. Eng QC/QA: Corina Farez, PE, PG	**Contact** (630) 480-5539 ahamad@wangeng.com
10. Prepared for TranSystems Corporation 1475 East Woodfield Road Suite 600 Schaumburg, IL, 60173	**Design Engineer** Martin Ross, PE	**Contacts** (847) 407-5281 maross@transystems.com

11. Abstract

Two new, single-span bridges will replace the existing three-span bridges carrying Interstate 80 over Midland Avenue in Will County, Illinois. The proposed structures will have back-to-back of abutments length of 79.7 feet and out-to-out widths of 74.8 feet. The proposed abutment cap base elevations range from 633.78 to 637.30 feet. Wrap-around Mechanically Stabilized Earth (MSE) walls are proposed in front of each of the abutments. The walls will have maximum total heights of 18.7 and 19.7 feet at the east and west abutments, respectively. This report provides geotechnical recommendations for the design and construction of the proposed approach embankments, approach slabs, retaining walls, and bridge foundations.

The pavement structure along I-80 consists of 9.0 to 22.0 inches of asphalt pavement over 2.0 to 14.0 inches of aggregate base whereas the Midland Avenue surface consists of 10.5 to 11.0 inches of asphalt over 3.0 to 25.0 inches of aggregate base. Beneath the pavement, the general lithologic profile includes up to 16.0 feet of embankment materials consisting of medium stiff to hard silty clay to silty clay loam fill followed by up to 34.0 feet of stiff to hard silty clay and silty clay loam with lenses of sand overlying dense to very dense sand to sandy loam and silty loam to gravelly silty loam. Dolostone bedrock was encountered at elevations of about 547 to 545 feet. The groundwater level was measured at elevations ranging from 622 to 581 feet.

The MSE walls will experience settlements of up to 1.0 inch due to the long-term consolidation of underlying soils under the MSE wall loads. Global stability analyses at the MSE walls show FOS meeting the IDOT minimum requirement of 1.5. The maximum factored soil bearing resistance for the approach footings is 2,500 psf.

The bridge abutments could be supported on driven piles. To support the integral abutments, driven 14-inch MSP, 16-inch MSP, and HP14x89 steel piles will provide 100 to 384 kips of factored resistance at total lengths of 41 to 94 feet. Downdrag allowances on the piles are included.

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Wang Engineering

1145 North Main Street
Lombard, Illinois 60148
Phone (630) 953-9928
www.wangeng.com

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FOR
TRANSYSTEMS CORPORATION

1.0 INTRODUCTION

This report presents the results of our subsurface investigation, laboratory testing, geotechnical evaluations, and recommendations in support of the design and reconstruction of the existing bridges carrying eastbound (EX SN 099-0050) and westbound (EX SN 099-0051) Interstate 80 (I-80) over Midland Avenue in Will County, Illinois. On the USGS *Joliet 7.5 Minute Series Quadrangle* map, the bridge is located in Joliet Township, SW ¼ of Section 17, Tier 35N, Range 10E of the of the Third Principal Meridian (Exhibit 1). The bridge replacements are part of the proposed widening and reconstruction of I-80 from Houbolt Road to west of Center Street and Larkin Avenue Interchange in Will County, Illinois. These bridges will be reconstructed as part of Contract ML-3.

The purpose of this investigation was to characterize the site soil and groundwater conditions, perform geotechnical analyses, and provide recommendations for the design and construction of the proposed bridge foundations, approach embankments, approach slabs, and retaining walls.

1.1 Existing Structure and Ground Conditions

Based on the *Bridge Condition Reports (BCRs)*, dated May 2011 and provided by TranSystems Corporation (TranSystems), Wang Engineering, Inc. (Wang) understands the existing bridges were originally built in 1963 as three-span structures supported by cast-in-place reinforced concrete stub abutment and piers. The piers are supported on spreads footings, whereas the abutments and wingwalls are supported on 30-ton capacity concrete piles. The approach slabs are supported on timber piles with estimated lengths of 20.0 feet. The existing bridges have lengths of 138.7 from back-to-back of abutments and out-to-out widths of 44.0 feet, which accommodates two 12.0-foot wide traffic lanes, a 10.0-foot wide right shoulder, a 4.0-foot wide left shoulder, and parapets. Reinforced concrete wingwalls and 4-inch thick concrete slope walls are located at the ends of the structures. At both ends, the concrete slope walls are continuous between the eastbound and westbound bridge structures. The approach slabs were repaired in 1981 whereas the structures were repaired in 1992,

repainted in 1986, and zone painted in 2003. Surface elevations at the bridge site range from 621 to 625 feet along Midland Avenue and from 639 to 644 feet along I-80.

In the project area (see Exhibit 2), an about 80-foot thick overburden made up of moderate plasticity, moderate to high strength, moderate moisture clayey diamicton with occasional silt, sand, and gravel lenses rest over low to moderate plasticity, high strength, and low to moderate moisture content silty clayey diamicton (Bauer et al. 1991, Hansel and Johnson 1996, Willman et al. 1971). The bedrock is made up of dolostone. Top of bedrock is mapped at about 545.0 feet elevation. Sinkholes and other dissolution features are not unknown in the project area (Bretz 1940; Otto 1963). The site is located on the northern, downthrown block of the inactive Sandwich Fault Zone that may be traced five miles southwest of the proposed improvements (Kolata 2005). There are no records of mining activity within the bridge site. Neither the overburden nor the upper bedrock is known to include significant sources of water supply (Woller and Sanderson 1983).

1.2 Proposed Structure

Based on the proposed *General Plan and Elevation Drawings* (Appendix E), provided by TranSystems and dated July 28, 2022, Wang understands the existing three-span bridges will be removed and replaced with two new single-span bridges with integral abutments. The new bridges will have back-to-back of abutments length of 79.7 feet and out-to-out widths of 74.8 feet to accommodate two 12-foot wide lanes, a future 12-foot wide lanes or auxiliary lane, a 12-foot wide shoulder or future auxiliary lane, shoulders, two 12-foot wide shoulders, and 1.4-foot wide parapets.

Based on the provided *Cross-sections* (Appendix F), dated January 17, 2022, the existing grade along I-80 is approximately 635.0 to 643.5 feet and the proposed back of abutment elevations are approximately 641.5 to 645.02 feet at the east and west abutments, respectively; therefore, the grade will be raised by up to 6.0 feet along each centerline at the approaches. From the *BCRs* and the design drawings, we estimate the east and west abutments will be constructed about 35.0 feet in front of the existing ones and will be offset from the existing piers to avoid construction conflicts. This will require the placement of about 12.5 to 18.0 feet of new fill behind the proposed abutments. Up to 5.5 feet of new fill will be placed along the existing median at the west and east approaches, respectively, to facilitate the inward widening of the bridges by about 26.0 feet at the north and south sides of the eastbound and westbound bridges.

The plans indicate the existing concrete end slopes will be removed and in its place wrap around Mechanically Stabilized Earth (MSE) walls are proposed in front of each of the abutments. The MSE walls will be placed along the existing end slopes and will support the new fill placed at the bridge

approaches and behind the abutments. The MSE walls will run parallel to Midland Avenue and will wrap around the north and south side of the bridge approaches, extending about 37.4 and 44.4 feet along the southeast and southwest ends and about 38.0 and 46.7 feet along the northeast and northwest ends, respectively. The walls will have maximum total heights of 18.7 and 19.7 feet at the east and west abutments, respectively.

2.0 METHODS OF INVESTIGATION

The following sections outline the subsurface and laboratory investigations performed by Wang.

2.1 Field Investigation

The subsurface investigation consisted of eleven bridge borings, designated as MLA-BSB-01 to MLA-BSB-10 and MLA-BSB-09B, drilled by Wang between March and April of 2021. The bedrock coring was stopped in Boring MLA-BSB-09 due to technical difficulties and was moved about 10.0 feet north where a hole was blind-drilled to 73.5 feet bgs and a 10-foot long bedrock core was collected (MLA-BSB-09B). The borings were drilled from elevations of 621.6 to 643.5 feet and were advanced to depths of 75.0 to 93.5 feet bgs. The as-drilled northings and eastings were acquired with a mapping-grade GPS unit. Stations, offsets, and elevations were provided by TranSystems. Boring location data are presented in the *Boring Logs* (Appendix A) and the as-drilled boring locations are shown in the *Boring Location Plan* (Exhibit 3).

Truck-mounted drilling rigs, equipped with hollow stem augers, were used to advance and maintain open boreholes. Mud rotary drilling techniques were used from 10.0 feet bgs to advance the bridge boreholes. Soil sampling was performed according to AASHTO T206, *"Penetration Test and Split Barrel Sampling of Soils."* The soil was sampled at 2.5-foot intervals to 30.0 feet bgs and at 5.0-foot intervals thereafter to the boring termination depth. Bedrock cores were collected from Borings MLA-BSB-07, MLA-BSB-08, MLA-BSB-09B, and MLA-BSB-10 in 5- and 10-foot runs with an NWD4-sized core barrel. Soil samples collected from each sampling interval were placed in sealed jars and rock cores were placed into marked core boxes and transported to the laboratory for further examination and testing.

Field boring logs, prepared and maintained by Wang field engineers, included 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.

Groundwater levels were measured while drilling. Since mud rotary drilling techniques were used to advance and maintain open boreholes, groundwater level recordings were not available at completion of the borings. Prior to being backfilled, Borings MLA-BSB-03 and MLA-BSB-04 were left open to record 24- to 48-hour water level readings. A groundwater monitoring piezometer (MLA-PZ-01) was installed near Boring MLA-BSB-08 to monitor the water level elevations over a longer period of time. Each borehole location was backfilled upon completion with lean grout, soil cuttings, and/or bentonite chips and, where necessary, the pavement surface was restored as much as possible to its original condition.

2.2 Laboratory Testing

The soil samples were tested in the laboratory for moisture content (AASHTO T265). Atterberg limits (AASHTO T89 and T90) and particle size analysis (AASHTO T88) tests were performed on selected samples. Unconfined compressive strength tests were performed on selected bedrock cores. Field visual descriptions of the soil samples were verified in the laboratory and index tested soils were classified according to the IDH soil Classification System. The laboratory test results are shown in the *Boring Logs* (Appendix A) and in the *Laboratory Test Results* (Appendix B).

3.0 INVESTIGATION RESULTS

Detailed descriptions of the soil conditions encountered during the subsurface investigation are presented in the attached *Boring Logs* (Appendix A) and in the *Soil Profile* (Exhibit 4). Please note that strata contact lines represent approximate boundaries between soil types. The actual transition between soil types in the field may be gradual in horizontal and vertical directions.

Our subsurface investigation results fit into the local geologic context. The borings drilled in the project area revealed the native sediments consists of silty clay to silty clay loam diamicton (Unit 2) with occasional lenses of silt, sand, and gravel (Units 3 to 5) over silty clay loam to silty loam diamicton (Unit 6) over dolostone bedrock. The top of dolostone bedrock was reached in the structure borings at an elevation of about 545 to 547 feet (75.5 to 78.5 feet bgs) as predicted based on geological data.

3.1 Lithological Profile

Borings MLA-BSB-01, MLA-BSB-03, MLA-BSB-04, and MLA-BSB-06 were drilled along the I-80 shoulders and revealed the pavement structure consists of 9 to 22 inches of asphalt overlying 2 to 14 inches of damp, sandy gravel aggregate base. Borings MLA-BSB-02 and MLA-BSB-05 were drilled along the I-80 median and sampled 6 to 18 inches of silty clay loam topsoil. Borings MLA-BSB-07 to

MLA-BSB-10, drilled along Midland Avenue, showed the pavement structure consists of 10.5 to 11 inches of asphalt pavement overlying 3 to 25 inches of damp sandy gravel aggregate base. In descending order, the general lithologic succession encountered beneath the pavement or topsoil includes: 1) man-made ground (fill); 2) stiff to hard silty clay to silty clay loam; 3) loose to very dense silt to silty loam; 4) medium dense to very dense sand to sandy loam and sandy gravel; 5) medium dense to very dense silt to silty loam and gravelly silty loam; 6) stiff to hard silty clay loam to silty loam; and 7) strong to very strong, fair to excellent quality dolostone.

1) Man-made ground (fill)

Beneath the topsoil or pavement structure, the borings drilled along I-80 encountered up to 16.0 feet of cohesive fill. The cohesive fill consists of medium stiff to hard, black, brown, and gray silty clay to silty clay loam with unconfined compressive strength (Q_u) values of 0.8 to 5.3 tsf and moisture content values of 16 to 28%. Laboratory index testing on samples from this layer showed liquid limit (LL) values of 39 to 44% and plastic limit (PL) values of 17 to 19%. Construction debris and wood fragments were noted within the fill in Boring MLA-BSB-03. Boring MLA-BSB-07, drilled along Midland Avenue, sampled about 5.0 feet of medium dense, gray sandy gravel fill with SPT N-values of 18 to 28 blows per foot and moisture content values of 8 to 19%.

A 24-inch thick layer of buried, black silty clay loam topsoil with a moisture content value of 31% was sampled beneath the fill in Boring MLA-BSB-05. The presence of this layer most likely indicates the boundary between fill and natural soils.

2) Stiff to hard silty clay to silty clay loam

Beneath the fill, at elevations of 631 to 616 feet, the borings advanced through 20.0 to 34.0 feet of stiff to hard, brown to gray silty clay to silty clay loam. The silty clay to silty clay loam is characterized by Q_u values of 1.0 to 8.7 tsf and moisture content values of 14 to 26%. Laboratory index testing on samples from this layer showed LL values of 34 to 42% and PL values of 16 to 19%. A 2.0-foot thick brown, saturated fine sand lens was encountered in Boring MLA-BSB-03 at an elevation of 614 feet. Hard drilling and rig chatter, indicating the possible presence of cobbles was noted at elevations of 615.6 to 610.6 feet (depths of 23.0 to 30.0 feet bgs) within Borings MLA-BSB-03, MLA-BSB-05, and MLA-BSB-07.

3) Loose to very dense silt to silty loam

At elevations of 610 to 594 feet, the borings advanced through 2.0 to 5.0 feet of loose to very dense, brown and gray, moist to saturated silt to silty loam. This soil unit has N-values of 5 to 53 blows per foot, and moisture content values of 16 to 28%.

4) Medium dense to very dense sand to sandy loam and sandy gravel

At elevations of 595 to 592 feet, the borings advanced through 22.0 to 35.0 feet of medium dense to very dense, brown and gray, damp to saturated, sand to sandy loam and sandy gravel. This soil unit has N-values of 16 to 78 blows per foot, and moisture content values of 8 to 24%.

5) Medium dense to very dense silt to silty loam and gravelly silty loam

At elevations of 572 to 552 feet, the borings advanced through 2.5 to 14.0 feet of medium dense to very dense, gray, damp to saturated silt to silty loam and gravelly silty loam. This soil unit has N-values of 14 blows per foot to more than 50 blows per 3 inches, and moisture content values of 11 to 26%.

6) Stiff to hard silty clay loam to silty loam

At elevations of 570 to 555 feet, the borings advanced through up to 13.5 feet of medium stiff to hard, gray silty clay loam to silty loam. These soils have Q_u values of 0.8 to 7.6 tsf and moisture content values of 11 to 21%. In Boring MLA-BSB-03, at an elevation of 558 feet, a 2 foot thick, black granite boulder was encountered during drilling.

Hard drilling and rig chatter, indicating the possible presence of cobbles, was noted in Borings MLA-BSB-01 and MLA-BSB-03 within this layer at depths of 81.5 to 85.0 feet (elevations of 562.0 to 556.0 feet).

7) Strong to very strong, fair to excellent quality dolostone

At elevations of 554 to 548 feet, the borings advanced through 2.0 to 7.0 feet of very dense, gray, damp weathered dolostone bedrock. This soil unit has N-values of greater than 50 blows per 5 inch, and a moisture content value of 10%.

At elevations of 547 to 545 feet (depths of 75.5 to 78.5 feet bgs), Borings MLA-BSB-07, MLA-BSB-08, MLA-BSB-09B, and MLA-BSB-10 encountered and cored strong to very strong, fair to excellent quality, slightly weathered dolostone bedrock. The Rock Quality Designation (RQD) ranges from 50 to 96% and uniaxial compressive strength tests revealed Q_u values of 8,046 to 14,463 psi. The bedrock core data is shown in the *Bedrock Core Photographs* (Appendix C).

3.2 Groundwater Conditions

Along I-80, groundwater was encountered while drilling at elevations of 614 to 582 feet (29.5 to 58.5 feet bgs) within the medium dense to dense silt and sand layers. Along Midland Avenue, groundwater was encountered while drilling at elevations of 618 to 581 feet (3.5 to 44.5 feet bgs) within the

medium dense sandy gravel fill material and the medium dense to very dense silt and sand layers. At the end of drilling, the mud from Borings MLA-BSB-03 and MLA-BSB-04 was flushed out and left open to measure 24- to 48-hour groundwater levels. The 24- to 48-hour groundwater level was recorded at elevations of 603 and 622 feet (22.0 and 36.0 feet bgs). It should be noted that groundwater levels might change with seasonal rainfall patterns and long-term climate fluctuations or may be influenced by local site conditions. Additionally, water perched within the upper fil layers maybe encountered.

A groundwater monitoring piezometer (MLA-PZ-01) was installed along Midland Avenue near Boring MLA-BSB-08. The piezometer is screened between elevations of 593.0 to 573.0 feet. A summary of the groundwater monitoring data recorded between June of 2021 and February of 2022 is shown in Figure 1.

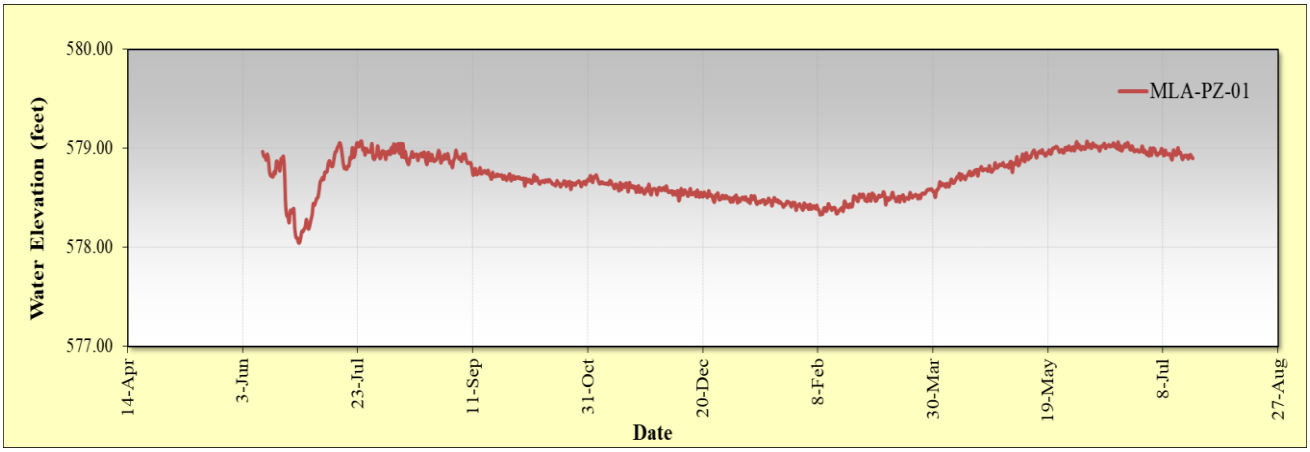

Figure 1: Groundwater Monitoring Data at MLA-PZ-01

The information from the piezometer shows groundwater levels correlating to the information contained in the boring logs. The average groundwater elevation is approximately 578.7 feet within the deeper granular soils, which is generally where the groundwater was recorded during drilling. The maximum recorded groundwater elevation was 579.1 feet during heavy precipitation in July of 2021.

4.0 FOUNDATION ANALYSIS AND RECOMMENDATIONS

The *Cross-Section* drawings (Appendix F), provided by TranSystems, indicate the existing grade along I-80 will be raised by up to 5.5 feet along each centerline at the approaches. We understand the east and west integral abutments will be constructed about 35.0 feet in front of the existing abutments which will require the placement of about 12.5 to 18.0 feet of new fill. The new fill placed along the approaches and behind the abutments will be supported by wrap-around MSE walls with maximum

total heights ranging from 18.7 to 19.7 feet at the east and west abutments, respectively. About 5.5 feet of new fill will be placed along the existing median at the approaches to facilitate the inward widening of the bridges by about 26.0 feet. The plans indicate the existing concrete end slopes will be removed and in its place wrap around MSE walls are proposed in front of each of the abutments.

Wang recommends supporting the integral abutments on driven pile foundations. Supporting the substructures on shallow foundations is not feasible due to the large loads anticipated from the abutments. Drilled shaft foundations are not approved for use with integral abutments (IDOT 2020a). Geotechnical evaluations and recommendations for the approach embankments, approach slabs, substructure foundations, and retaining walls are included in the following sections.

4.1 Seismic Design Considerations

The seismic site class was determined in accordance with the IDOT *Geotechnical Manual* (IDOT 2020a). The soils within the top 100 feet have a weighted average N-value of 26 blows/foot (Method C controlling) and the results classify the site in the Seismic Site Class D. The project location belongs to the Seismic Performance Zone 1 (IDOT 2020a). The seismic spectral acceleration parameters recommended for design in accordance with the AASHTO *LRFD Bridge Design Specifications* (AASHTO 2020) are summarized in Table 1. According to the IDOT *Bridge Manual* (IDOT 2012), liquefaction analysis is not required for sites located in Seismic Performance Zone 1.

Table 1: Recommended Seismic Design Parameters

Spectral Acceleration Period (sec)	Spectral Acceleration Coefficient[1)] (% g)	Site Factors	Design Spectrum for Site Class D[2)] (% g)
0.0	PGA= 4.9	F_{pga}= 1.6	**A_s= 7.8**
0.2	S_s= 10.5	F_a= 1.6	**S_{DS}= 16.8**
1.0	S_1= 4.0	F_v= 2.4	**S_{D1}= 9.6**

1) Spectral acceleration coefficients based on Site Class D

2) Site Class D Spectrum to be included on plans; $A_s = PGA*F_{pga}$; $S_{DS}= S_s*F_a$; $S_{D1}= S_1*F_v$

4.2 Mechanically Stabilized Earth Walls

The plans indicate the existing concrete end slopes will be removed and in its place wrap around MSE walls are proposed in front of each of the four abutments. The MSE walls are proposed along the existing end slopes and will support the new fill placed along the approaches and behind the abutments. The walls will also wrap around the north and south side of the bridge approaches,

extending about 37.4 and 44.4 feet along the southeast and southwest ends and about 38.0 and 46.7 feet along the northeast and northwest ends, respectively. The wall station limits and maximum total wall heights are summarized in Table 2.

Table 2: Proposed MSE Walls

Structure	Retaining Wall	Station Limits	Maximum Total Height (feet)
Eastbound Bridge	West Abutment MSE Wall (SW Corner)	614+69.84, 99.27 RT to 614+70.30, 101.78 LT	18.18
	East Abutment MSE Wall (SE Corner)	616+18.37, 114.80 LT to 616+14.95, 98.21 RT	18.75
Westbound Bridge	West Abutment MSE Wall (NW Corner)	614+69.84, 99.27 RT to 614+70.30, 101.78 LT	19.69
	East Abutment MSE Wall (NE Corner)	616+18.37, 114.80 LT to 616+14.95, 98.21 RT	17.32

The following sections provide bearing resistance, settlement, sliding, and global stability analyses for the MSE walls supporting the abutments and approach embankments. The borings show primarily low moisture, cohesive soils within the zone of influence of strength and deformation. Wang estimates these soils will provide adequate bearing resistance and global stability along with suitable total and differential long-term consolidation settlement performance.

4.2.1 Bearing Resistance

The top of the MSE leveling pads should be established at a depth of at least 3.5 feet below the finished grade at the front face of the wall (IDOT 2012). The reinforcement width should be taken as 0.7 times the total height or a minimum of 8.0 feet. We estimate equivalent factored bearing pressures of 5,500 and 5,700 psf for maximum total wall heights of approximately 18.8 and 19.7 feet at the east and west walls, respectively.

Wang evaluated the suitability of the soils encountered below the estimated top of the leveling pad proposed at elevations of 618.3 to 630.1 feet. The foundation soils primarily consist of stiff to hard silty clay. However, Boring MLA-BSB-05, drilled in the median, encountered buried topsoil near the proposed top of levelling pad with a Q_u value of 0.4 tsf and a moisture content value of 31%. To provide sufficient bearing resistance and minimize potential settlement, we recommend removing the unsuitable soils and replacing them with compacted granular fill. Before placing the granular fill, the base of the excavation should be underlain with geotextile fabric. Other patches of buried topsoil may occur below the leveling pad elevation in the vicinity of Boring MLA-BSB-05 or elsewhere within the footprint of the east abutment retaining wall. We recommend including in the contract documents

a pay item for soil removal and replacement. Assumed limits for the area requiring removal and replacement are summarized in Table 3.

Table 3: Summary of Foundation Soil Treatment Recommendations

Approximate Wall Station Limits	Treatment Width(1)	Treatment Vertical Extent (feet)	Reference Borings, Concerns
615+80, 36 LT to 615+78, 37 RT (East Abutment MSE Wall)	MSE Wall Reinforcement Width	1.5	MLA-BSB-05 (Buried topsoil, Q_u=0.4 tsf, and MC=31%)

(1) Foundation treatment should extend a minimum of 1.0 foot outside the foundation footprint.

The actual need for removal and replacement of soils, including the required width and depth of improvement shown in Table 3, should be determined in the field at the time of construction. Following the recommended foundation treatment, we estimate the foundation soils will provide a maximum factored bearing resistance of 6,000 psf based on a geotechnical resistance factor of 0.65 (AASHTO 2020).

4.2.2 Lateral Design Pressure and Resistance

Lateral earth pressure distribution for the design of the MSE walls should be taken as per the 2020 AASHTO LRFD *Bridge Design Specifications* Article 3.11.5.8 (AASHTO 2020); and applicable 2012 IDOT *Bridge Manual* (IDOT 2012). Design lateral pressure from surcharge loads due to roadway traffic and construction equipment should be added to the lateral earth pressure load. The estimated friction angles between the base of the MSE walls and the underlying silty clay or granular backfill are 28° and 30°, respectively and the corresponding friction coefficients are 0.53 and 0.58, respectively (AASHTO 2020). MSE retaining walls are designed based on an AASHTO sliding resistance factor of 1.0 for soil-on-soil contact (AASHTO 2020). We estimate the eccentricity lies within the middle 2/3 of the walls and resistance against overturning is sufficient. The MSE walls must have both internal and external stability. The wall supplier is responsible for all internal stability aspects of the wall design.

4.2.3 Settlement

Settlement estimates have been made based on correlations to measured index properties obtained from the laboratory tests (Appendix B). Based on the soil conditions, we estimate the MSE walls will undergo maximum long-term consolidation settlements of up to 1.0 inch. We anticipate that more than 0.4 inches of settlement will remain after construction of the MSE walls. A relative settlement between the pile and surrounding soils of more than 0.4 inches would result in downdrag loads. The

estimated settlements are appropriate for the construction of the approach slabs; however, we anticipate downdrag allowances for the proposed abutment piles.

4.2.4 Global Stability

The global stability of the MSE walls was analyzed at the critical sections based on the soil profile described in Section 3.1 and the information provided in the *General Plan and Elevation* and *Cross-sections* (Appendixes E and F). The minimum required FOS for both short (undrained) and long-term (drained) conditions is 1.5 (IDOT 2012). Our analysis indicates that the MSE walls have adequate FOS. *Slide2* exhibits employing the Bishop Simplified method of analysis are shown in Appendix D.

4.2.5 Approach Slabs

We assume the approach slabs will be supported on spread footing foundations (IDOT 2012). Based on the design drawings and soil conditions revealed in Borings MLA-BSB-01 to MLA-BSB-06, the approach footings will be supported mainly on the new fill to be placed behind the abutments. We estimate the fill has a maximum factored bearing resistance of 2,500 psf calculated for a geotechnical resistance factor (Φ_b) of 0.45 (AASHTO 2020). Settlement of the approach footing is estimated to be less than 1.0 inch.

4.3 Structure Foundations

The soil conditions along the structure show stiff to hard clayey soils followed by medium dense to very dense silty loam and sand to sandy loam and sandy gravel overlying dolostone bedrock. Wang recommends supporting the integral abutments on driven metal shell piles (MSP) or steel H-piles.

The preliminary factored loading information provided by TranSystems on December 8, 2021 and proposed abutment cap base elevations as shown in the *GPE* are summarized in Table 4.

Table 4: Preliminary Factored Loads and Proposed Pile Cap Elevations

Direction	Substructure	Pile Cap Elevations (feet)	Total Factored Load (kips)
Eastbound	West Abutment	637.30	2635
	East Abutment	636.40	
Westbound	West Abutment	634.76	
	East Abutment	633.78	

4.3.1 Driven Piles

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 2020a). Based on the loads provided by TranSystems and the proposed width of the substructures, the load per pile at the abutments will range between about 103 and 274 kips for a single row of piles spaced at 3- to 8-feet.

Based on IDOT standards, piles with greater than 0.4-inch of relative settlement along the sides require allowances for downdrag loads. We estimate that more than 0.4 inch of settlement will remain following the construction of the MSE walls and subsequent pile driving. As such, we estimate that downdrag allowances will be required for the abutment piles.

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, and HP14x89 steel H-piles for the abutments are summarized in Tables 5 to 7. In accordance with *All Bridge Designers Memo 19.8* (IDOT 2019), a pile sleeve of either corrugated metal or HDPE pipe shall be placed around each pile for the full height of the MSE select backfill. The void between the pile and the pile sleeve shall be filled with bentonite. We assume the piles would be driven through the sleeves and the pile capacity evaluations have been performed assuming that pile driving begins at the base of the MSE walls at elevations of 618.3 to 621.9 feet. The pile lengths and capacities should be reevaluated if a different construction sequence is planned. The pile lengths shown in the tables assume a 2-foot pile embedment into the pile cap and include the section of the pile within the MSE reinforced zone.

High blow counts and hard drilling were noted within the borings below an approximate elevation of 595 feet indicating the presence of cobbles. As such, pile shoes should be used for piles driven to or below an elevation of 595 feet to avoid damage to the piles. Additionally, to achieve the maximum nominal required bearing at the abutments, the analysis shows the H-piles would need to be driven about 1.0 to 2.0 feet into the weathered bedrock. In these instances, the piles should be considered end bearing and designed for the maximum capacity of the pile. IDOT generally recommends that H-piles be driven to their maximum nominal required bearing.

Table 5: Estimated Pile Lengths and Tip Elevations for 14-inch Diameter MSP with 0.312-inch walls

Structure Unit (Reference Boring)	Pile Cap Base Elevations (feet)	Nominal Required Bearing, RN (kips)	Factored Geotechnical Loss (kips)	Factored Geotechnical Load Loss (kips)	Factored Resistance Available, RF (kips)	Total Estimated Pile Length (feet)	Estimated Pile Tip Elevation (feet)
Westbound West Abutment (MLA-BSB-01, MLA-BSB-02, and MLA-BSB-07)	634.76	273	17	33	100	43	594
		455	17	33	200	47	590
		546	17	33	250	55	582
		570(1)	17	33	263	56	581
Eastbound West Abutment (MLA-BSB-02, MLA-BSB-03, and MLA-BSB-08)	637.30	255	13	27	100	41	598
		437	13	27	200	42	597
		570(2)	13	27	273	47	592
Westbound East Abutment (MLA-BSB-04, MLA-BSB-05, and MLA-BSB-09)	633.78	296	21	42	100	43	593
		478	21	42	200	44	592
		570(1)	21	42	250	55	581
Eastbound East Abutment (MLA-BSB-05, MLA-BSB-06, and MLA-BSB-10)	636.40	282	18	37	100	47	591
		463	18	37	200	48	590
		570(1)	18	37	259	52	586

(1) Maximum Nominal Required Bearing

Table 6: Estimated Pile Lengths and Tip Elevations for 16-inch Diameter 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)
Westbound West Abutment (MLA-BSB-01, MLA-BSB-02, and MLA-BSB-07)	634.76	285	19	38	100	42	595
		467	19	38	200	45	592
		649	19	38	300	55	582
		782(1)	19	38	373	62	575
Eastbound West Abutment (MLA-BSB-02, MLA-BSB-03, and MLA-BSB-08)	637.30	266	15	31	100	40	599
		448	15	31	200	42	597
		538	15	31	250	43	596
		629	15	31	300	47	592
		782(1)	15	31	384	48	591
Westbound East Abutment (MLA-BSB-04, MLA-BSB-05, and MLA-BSB-09)	633.78	313	24	48	100	43	593
		495	24	48	200	44	592
		676	24	48	300	55	581
		782(2)	24	48	358	69	567
Eastbound East Abutment (MLA-BSB-05, MLA-BSB-06, and MLA-BSB-10)	636.40	296	21	42	100	46	592
		478	21	42	200	47	591
		569	21	42	250	48	590
		660	21	42	300	51	587
		782(1)	21	42	367	71	567

(1) Maximum Nominal Required Bearing

Table 7: Estimated Pile Lengths and Tip Elevations for HP14x89 Steel Piles

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)
Westbound West Abutment (MLA-BSB-01, MLA-BSB-02, and MLA-BSB-07)	634.76	227	8	17	100	45	592
		318	8	17	150	79	558
		409	8	17	200	86	551
		500	8	17	250	91	546
		591	8	17	300	93	544[(2)]
		705[(1)]	8	17	363	94	543
Eastbound West Abutment (MLA-BSB-02, MLA-BSB-03, and MLA-BSB-08)	637.30	242	11	22	100	42	597
		333	11	22	150	66	573
		424	11	22	200	81	558
		515	11	22	250	82	557
		605	11	22	300	84	555
		705[(1)]	11	22	354	87	552
Westbound East Abutment (MLA-BSB-04, MLA-BSB-05, and MLA-BSB-09)	633.78	237	10	20	100	45	591
		327	10	20	150	73	563
		418	10	20	200	84	552
		509	10	20	250	88	548
		600	10	20	300	90	546
		705[(1)]	10	20	357	91	545
Eastbound East Abutment (MLA-BSB-05, MLA-BSB-06, and MLA-BSB-	636.40	226	8	16	100	47	591
		316	8	16	150	77	561

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)
10)		407	8	16	200	87	551
		498	8	16	250	90	548
		589	8	16	300	92	546(3)
		705(1)	8	16	363	93	545

(1) Maximum Nominal Required Bearing

(2) Approximate top of bedrock at Boring MLA-BSB-07

(3) Approximate top of bedrock at Boring MLA-BSB-10

4.3.2 Lateral Loading

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 Tables 8 to 10.

Table 8: Recommended Soil Parameters for Lateral Load Analysis at West Abutments
Reference Borings MLA-BSB-01 to MLA-BSB-03, MLA-BSB-07, and MLA-BSB-08

Elevation Range (feet) Soil Type (Layer)	Unit Weight, γ (pcf)	Undrained Shear Strength, c_u (psf)	Estimated Friction Angle, Φ (°)	Estimated Lateral Soil Modulus Parameter, k (pci)	Estimated Soil Strain Parameter, ε_{50} (%)
Proposed Pile Cap Base to Top of Leveling Pad New FILL	125	1000	0	500	0.7
Top of Leveling Pad to 618.5 Very Stiff to Hard SILTY CLAY	120	4000	0	1000	0.5
618.5 to 597.0 Stiff to Very Stiff SILTY CLAY	120	2400	0	1000	0.5
597.0 to 554.0 Medium Dense to Very Dense SAND to GRAVELLY SAND	53(1)	0	33	60	--
564.0 to 554.0 Very Stiff to Hard SILTY CLAY LOAM to SILTY LOAM	58(1)	2500	0	1000	0.5

Elevation Range (feet) Soil Type (Layer)	Unit Weight, γ (pcf)	Undrained Shear Strength, c_u (psf)	Estimated Friction Angle, Φ (°)	Estimated Lateral Soil Modulus Parameter, k (pci)	Estimated Soil Strain Parameter, ε_{50} (%)
554.0 to Top of Bedrock V Dense WEATHERED BEDROCK	58(1)	0	36	125	--

(1) Submerged unit weight.

Table 9: Recommended Soil Parameters for Lateral Load Analysis at East Abutments
Reference Boring MLA-BSB-04 to MLA-BSB-06, MLA-BSB-09, and MLA-BSB-10

Elevation Range (feet) Soil Type (Layer)	Unit Weight, γ (pcf)	Undrained Shear Strength, c_u (psf)	Estimated Friction Angle, Φ (°)	Estimated Lateral Soil Modulus Parameter, k (pci)	Estimated Soil Strain Parameter, ε_{50} (%)
Proposed Pile Cap Base to Top of Leveling Pad New FILL	125	1000	0	500	0.7
Top of Leveling Pad to 614.5 Very Stiff to Hard SILTY CLAY to SILTY CLAY LOAM	120	4000	0	1000	0.5
614.5 to 593.0 Stiff to Very Stiff SILTY CLAY	120	2000	0	1000	0.5
593.0 to 560.0 Medium Dense to Dense SAND to SANDY LOAM AND GRAVELLY SAND	53(1)	0	33	60	--
560.0 to 552.0 Very Stiff to Hard SILTY CLAY LOAM to SILTY LOAM	58(1)	4000	0	1000	0.5
552.0 to 549.0 Dense to Very Dense SILTY LOAM	58(1)	0	36	125	--
549.0 to Top of Bedrock Very Dense WEATHERED BEDROCK	58(1)	0	36	125	--

(1) Submerged unit weight.

Table 10: Bedrock Parameters for Lateral Load Analysis
Reference Borings MLA-BSB-07, MLA-BSB-08, MLA-BSB-09B, and MLA-BSB-10

Bedrock	Total Unit Weight, γ (pcf)	Modulus of Rock Mass (ksi)	Uniaxial Compressive Strength (psi)	RQD (%)	Strain Factor
Dolostone	140	450	8,046 to 14,463	57 to 96	0.0005

4.4 Stage Construction

Stage construction is identified in the *GPE* (Appendix E). Wang understands that the bridge replacements will be performed utilizing two main stages of construction to maintain traffic on each bridge. During Stage I, two lanes of traffic would be maintained on the existing bridges so that the widening can advance within the existing median area. During Stage II, the two lanes of traffic would utilize the roadway constructed during Stage I so that the existing bridges can be removed and the outside portion of the widening can be constructed.

The construction activities will likely involve excavations of up to 26.0 and 27.0 feet along the sides of the existing east and west abutments, respectively. Due to the presence of very hard cohesive soils with Q_u values of greater than 4.5 tsf and very dense soils with N values of greater than 45 blows per foot, we estimate these excavations may not be supported with cantilever steel sheet piling, and we recommend including the pay item, *Temporary Soil Retention System* for the shoring. Temporary MSE walls could also be considered for support of the fill portions at the abutments. A value engineering analysis is recommended to select the most suitable type of temporary support system.

Based on the geometry shown in the *GPE* (Appendix E), we assume the existing pier spread footings may conflict with the excavation and/or construction of the MSE walls. The proposed MSE wall leveling pads locations should be selected to miss the existing footings.

5.0 CONSTRUCTION CONSIDERATIONS

5.1 Site Preparation

Vegetation, surface topsoil, pavements, and debris should be cleared and stripped where the structures will be placed. If unstable or unsuitable materials are exposed during excavation, they should be removed and replaced with compacted structural fill as described in Section 6.3.

5.2 Excavation, Dewatering, and Utilities

Excavations should be performed in accordance with local, state, and federal regulations. The potential effect of ground movements upon nearby utilities should be considered during construction. Any slope that cannot be graded at 1:2 (V: H) should be properly shored.

During the subsurface investigation, the groundwater was encountered at elevations ranging from 618 to 581 feet, as discussed in Section 4.2. At the abutments, the groundwater will be about 14.0 to 31.0 feet below the proposed pile cap base elevations at the west and east abutments, respectively; therefore, we do not anticipate the need for dewatering. The proposed top of leveling pad for the MSE walls will be about 15.0 to 35.0 feet above the estimated groundwater table and we do not anticipate the need for significant dewatering systems. However, perched, or temporary water, such as that encountered within the upper fill in Boring MLA-BSB-07, may be encountered during times of heavy precipitation while excavating within the upper fill soils and will require dewatering efforts. Water that does accumulate in open excavations by seepage or runoff should be immediately removed by sump pump.

5.3 Filling and Backfilling

Fill material used to attain final design elevations should be pre-approved, compacted, cohesive or granular soil conforming to Section 204, *Borrow and Furnished Excavation* (IDOT 2016). The fill material should be free of organic matter and debris and should be placed in lifts and compacted according to Section 205, *Embankment* (IDOT 2016). In accordance with IDOT Section 205, *Embankment*, the embankments proposed for widening should be properly benched or deeply plowed prior to placement of new fill along the slopes (IDOT 2016).

Backfill materials for the abutments must be pre-approved by the Resident Engineer. To backfill the abutments, we recommend porous granular material conforming to the requirements specified in the IDOT Supplemental Special and Recurring Special Provisions, *Granular Backfill for Structures* (IDOT 2020b).

5.4 Earthwork Operations

The required earthwork can be accomplished with conventional construction equipment. Moisture and traffic will cause deterioration of exposed subgrade soils. Precautions should be taken by the Contractor to prevent water erosion of the exposed subgrade. A compacted subgrade will minimize water runoff erosion.

Earth moving operations should be scheduled to not coincide with excessive cold or wet weather (early spring, late fall or winter). Any soil allowed to freeze or soften due to the standing water should be removed. Wet weather can cause problems with subgrade compaction.

It is recommended that an experienced geotechnical engineer be retained to inspect the exposed subgrade, monitor earthwork operations, and provide material inspection services during the construction phase of this project.

5.5 Pile Installation

The driven piles shall be furnished and installed according to the requirements of IDOT Section 512, *Piling* (IDOT 2016). Wang recommends performing one test pile at each substructure location. Since hard driving is expected below an approximate elevation of 595 feet, pile shoes are required as indicated in Section 5.3.1.

6.0 QUALIFICATIONS

The analysis and recommendations submitted in this report are based upon the data obtained from the borings drilled at the locations shown on the boring logs and in Exhibit 3. This report does not reflect any variations that may occur between the borings or elsewhere on the site, variations whose nature and extent may not become evident until the course of construction. In the event that any changes in the design and/or location of the structure are planned, we should be timely informed so that our recommendations can be adjusted accordingly.

It has been a pleasure to assist TranSystems Corporation and the Illinois Department of Transportation on this project. Please call if there are any questions, or if we can be of further service.

Respectfully Submitted,

WANG ENGINEERING, INC.

Azza Hamad, P.E.
Senior Geotechnical Engineer

Nesam Balakumaran, P.Eng.
Project Geotechnical Engineer

Corina Farez, P.E., P.G.
QC/QA Reviewer

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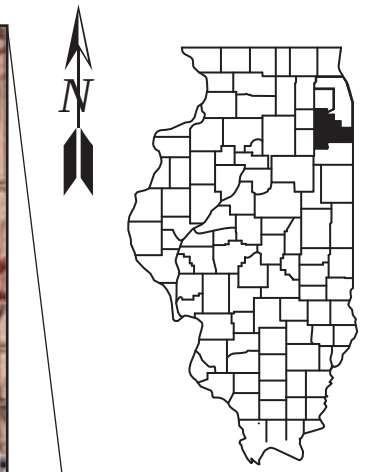
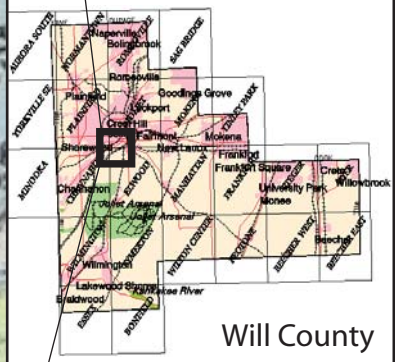
Wang Engineering
1145 North Main Street
Lombard, Illinois 60148
Phone (630) 953-9928
www.wangeng.com

EXHIBITS





SITE LOCATION MAP: I-80 BRIDGE OVER MIDLAND AVENUE; I-80 RECONSTRUCTION FROM HOUBOLT RD TO W CENTER ST & LARKIN AVE INTERCHANGE; CONTRACT D-91-207-19, PTB 194/11, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	EXHIBIT 1	DRAWN BY: J. Bensen CHECKED BY: A. Hamad

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

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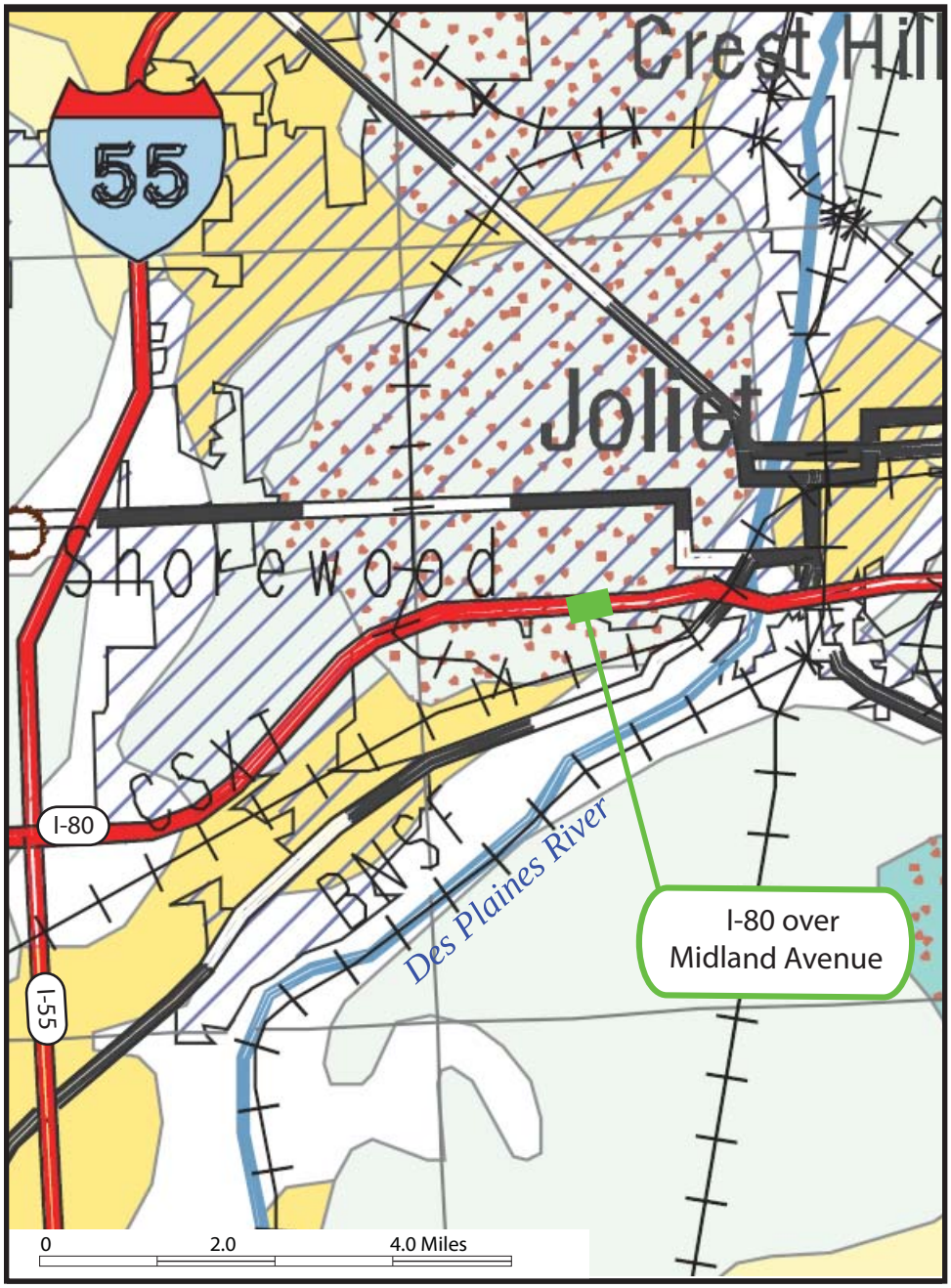

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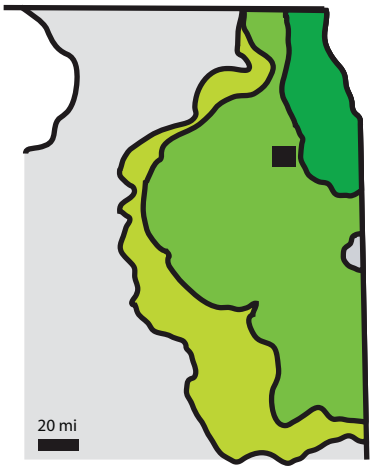
REGIONAL GEOLOGY



Wedron Group

- Wadsworth Formation
- Lemont Formation
- Tiskilwa Formation

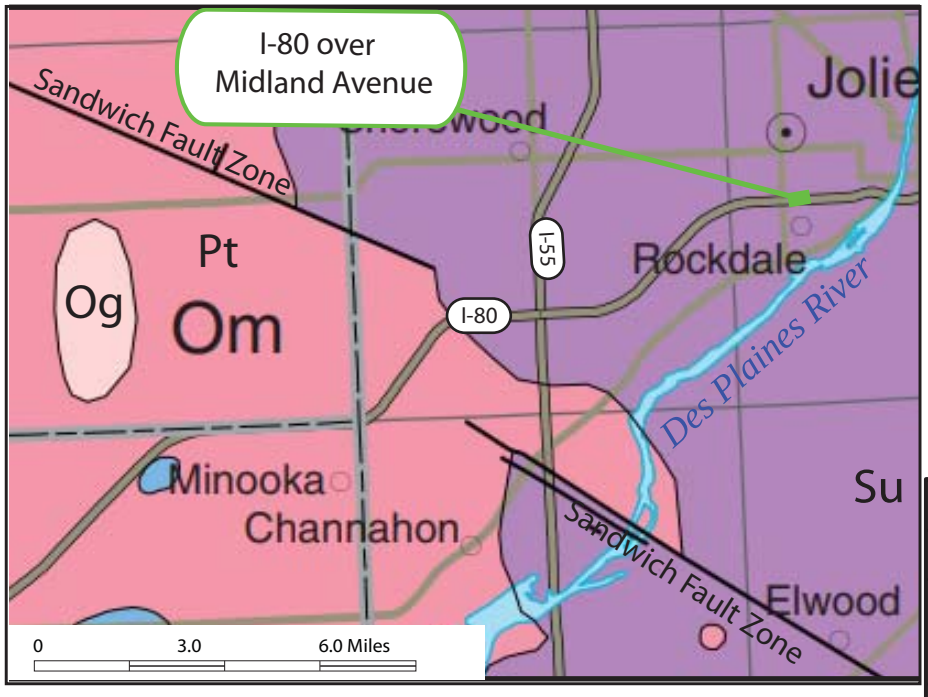
Modified after Hansel and Johnson (1996)

Modified after William W. Shilts (2000)

Legend

- **Cahokia Formation** — Bedded silts, clays and sand and gravel deposited in floodplains and channels of modern rivers and streams
- **Equality Formation** — Laminated silt, clay, or fine sand deposited in slackwater, glacial, and postglacial lakes; massive to bedded, calcareous
- **Henry Formation** — Predominantly stratified sand and gravel; locally occurring silt, clay, organic debris, wood, shell lenses; outwash on floodplains
- **Lemont Formation** — Diamicton; silty clay loam to silty clay; fine grained matrix; unsorted, unstratified mixture of gravel, sand, silt, and clay; containing lenses of sand, gravel and/or silt.
- Bedrock near or at the surface
- Major metropolitan area

Modified after William W. Shilts (2000)



Modified after Dennis R. Kolata (2005)

Legend

- **Pt** — Pennsylvanian Shale, Tadewater Formation
- **Su** — Silurian Dolomitic Limestone
- **Om** — Ordovician Formation, Maquoketa Group
- **Og** — Ordovician Formation, Galena Group

SITE AND REGIONAL GEOLOGY: I-80 RECONSTRUCTION, I-80 BRIDGE over MIDLAND AVENUE, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	EXHIBIT 2	DRAWN BY: C. Marin CHECKED BY: L. Iordache

Wang Engineering
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Lombard, IL 60148
www.wangeng.com

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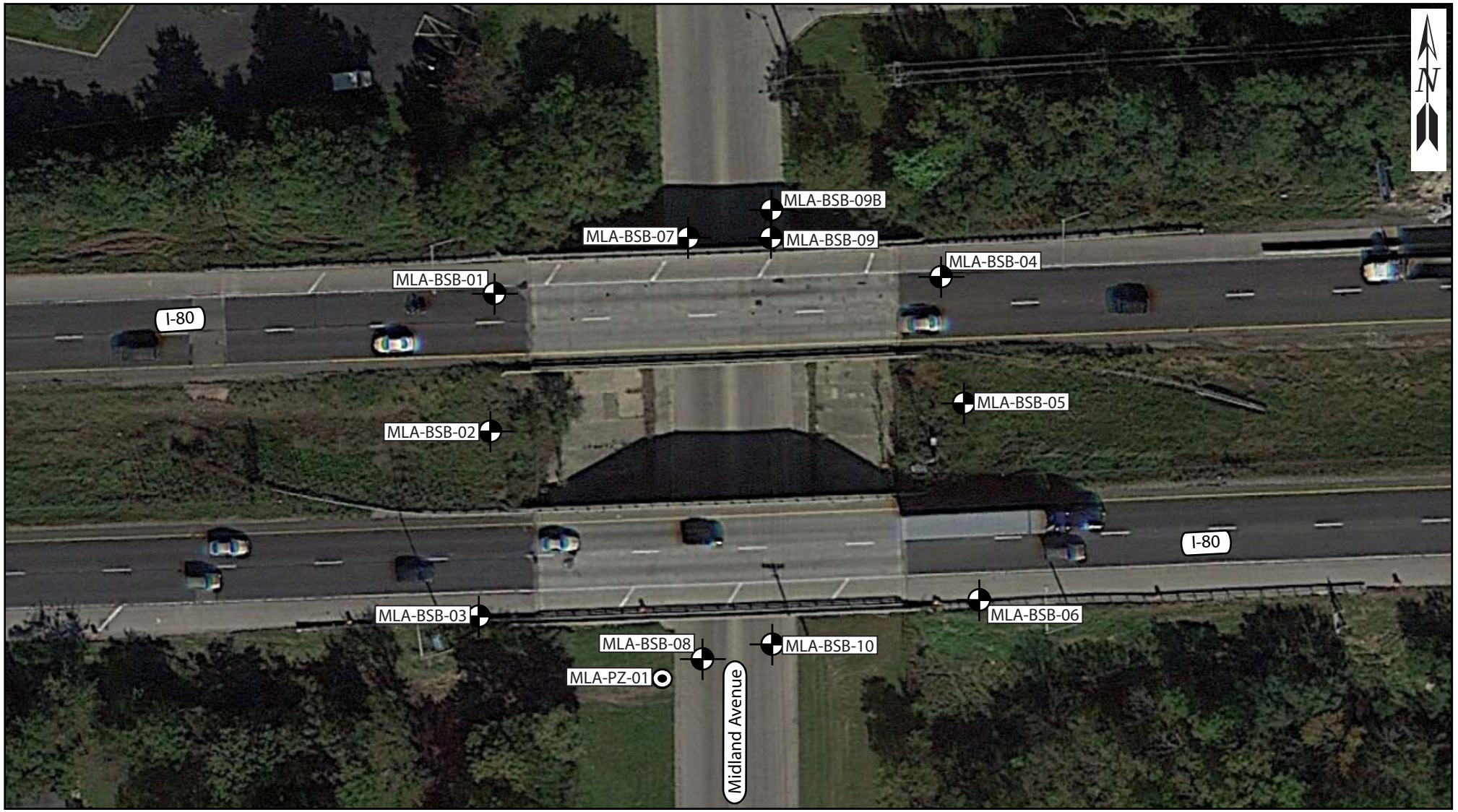

0 100 200 Feet

Legend

Boring Location

Peizometer Location

BORING LOCATION PLAN: I-80 BRIDGE OVER MIDLAND AVE; I-80 RECONSTRUCTION FROM HOUBOLT RD TO W CENTER ST & LARKIN AVE INTERCHANGE; CONTRACT D-91-207-19, PTB 194/11, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	EXHIBIT 3	DRAWN BY: J. Bensen CHECKED BY: A. Hamad

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www.wangeng.com

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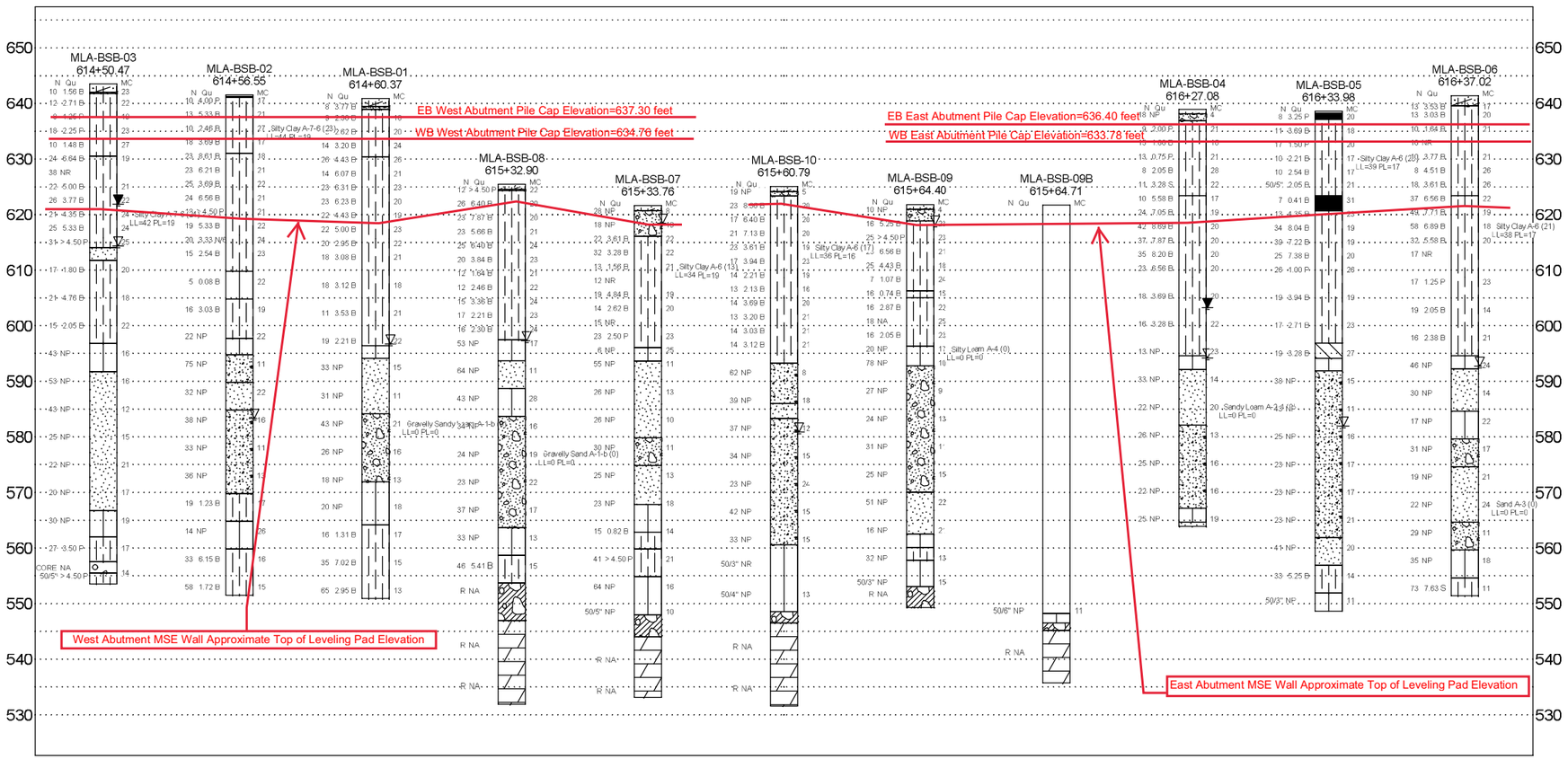
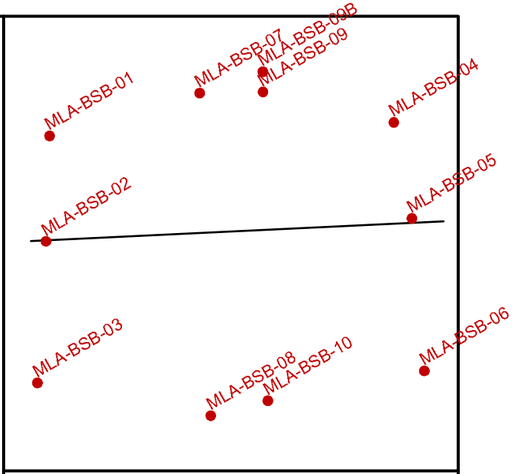


Lithology Graphics

- Pavement
- IDH Sand, Sandy Loam
- IDH Clay
- Gravelly sand, sandy gravel
- Topsoil
- Weathered bedrock
- IDH Silty Clay, Silty Clay Loam
- Coarse sand
- Dolomite or Dolomitic Limestone
- IDH Silt, Silty Loam
- Boulders and cobbles



Site Map Scale 1 inch equals 75 feet

Explanation:

MLA-BSB-01
614+60.37 — 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 20

Horizontal Scale (feet)

Vertical Exaggeration: 1x

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

Soil Profile
I-80 Bridges over Midland Avenue

WEI SINCE 1982

I-80 Reconstruction (Houbolt Rd to Center St)
Will County, Illinois

JOB NUMBER	PLATE NUMBER
7901-15-01	EXHIBIT 4

WEI 11X17 7901501.GPJ WANGENG.GDT 9/11/22

Wang Engineering
1145 North Main Street
Lombard, Illinois 60148
Phone (630) 953-9928
www.wangeng.com

APPENDIX A

Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-01

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 640.88 ft
North: 1764736.17 ft
East: 1044039.14 ft
Station: 614+60.37
Offset: 57.14 LT

Depth (ft)	Elevation (ft)	Profile	SOIL AND ROCK DESCRIPTION	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	639.4		18-inch thick ASPHALT --PAVEMENT--					
	638.9		Brown and gray SANDY GRAVEL; damp --BASE COURSE--		1	5 4 4	3.77 B	
5			Very stiff brown, gray and black SILTY CLAY to SILTY CLAY LOAM, trace gravel; damp --FILL-- --RDR 2--		2	4 5 4	2.30 B	18
					3	11 4 5	2.62 B	20
10					4	13 7 7	3.20 B	24
	630.4		Very stiff to hard, brown to gray SILTY CLAY, trace gravel; damp --RDR 2--		5	6 10 16	4.43 B	26
15					6	5 6 8	6.07 B	21
					7	5 8 15	6.31 B	23
20					8	5 11 12	6.23 B	20
					9	6 9 13	4.43 B	19
25					10	6 10 12	5.00 B	23
30					11	7 10 10	2.95 B	22
					12	7 7 11	3.08 B	21
35					13	6 8 10	3.12 B	18
40					14	4 5 6	3.53 B	21
45	596.4		Gray SILTY LOAM; wet --RDR 2--		15	5 7 12	2.21 B	22
	594.1		Dense, brown, medium to coarse SAND; wet to saturated --RDR 2--					
50					16	11 15 18	NP	15

GENERAL NOTES

Begin Drilling: **03-09-2021** Complete Drilling: **03-09-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **NC&EG** Logger: **M. Sadowski** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **44.50 ft**
At Completion of Drilling: **mud in borehole**
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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Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-01

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 640.88 ft
North: 1764736.17 ft
East: 1044039.14 ft
Station: 614+60.37
Offset: 57.14 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			55		17	15 15 16	NP	11
	584.1	Dense, brown, gravelly SANDY LOAM; saturated --RDR 2-- --%Gravel=29.6-- --%Sand=55.4-- --%Silt=12.8-- --%Clay=2.2-- --A-1-b (0)--	60		18	8 16 27	NP	21
			65		19	13 15 11	NP	16
	571.9	Medium dense, gray SILTY LOAM, trace gravel; wet --RDR 2-3--	70		20	9 9 9	NP	13
			75		21	8 9 11	NP	18
	564.1	Stiff to hard, gray SILTY CLAY LOAM to SILTY LOAM, trace to little gravel; damp to moist --RDR 2-3--	80		22	10 8 8	1.31 B	17
		--hard drilling from 85 feet-- --possible cobbles--	85		23	12 16 19	7.02 B	15
	550.9	Boring terminated at 90.00 ft	90		24	10 25 40	2.95 B	13
			95					
			100					

GENERAL NOTES

Begin Drilling: **03-09-2021** Complete Drilling: **03-09-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **NC&EG** Logger: **M. Sadowski** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **44.50 ft**
At Completion of Drilling: **mud in borehole**
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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Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-02

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 641.53 ft
North: 1764685.15 ft
East: 1044037.36 ft
Station: 614+56.55
Offset: 6.23 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	641.0	6-inch thick, black SILTY CLAY LOAM --TOPSOIL--						
		Very stiff to hard, brown SILTY CLAY, trace gravel; damp --FILL-- --RDR 2--			1	5 5 5	4.00 P	17
			5		2	5 6 7	5.33 B	21
		--L_L(%)=44, P_L(%)=19-- --%Gravel=1.1-- --%Sand=10.4-- --%Silt=53.3-- --%Clay=35.2-- --A-7-6 (23)--			3	3 4 6	2.46 B	27
			10		4	6 7 11	3.69 B	17
	631.0	Very stiff to hard, brown to gray SILTY CLAY, trace gravel; damp --RDR 2--			5	6 11 12	8.61 B	18
			15		6	6 12 11	6.21 B	21
					7	7 10 15	3.69 B	22
			20		8	6 10 14	6.56 B	21
					9	5 8 10	> 4.50 P	21
			25		10	6 7 12	5.33 B	22
			30		11	7 8 12	3.33 N/6	24
					12	5 6 9	2.54 B	23
	609.8	Loose, gray SILTY LOAM; wet --RDR 2--	35		13	2 2 3	0.08 B	22
	604.8	Very stiff, gray SILTY CLAY, trace gravel; damp --RDR 2--			14	5 6 10	3.03 B	19
	597.7	Medium dense, gray SILT; wet --RDR 2--	45		15	9 8 14	NP	22
	594.8	Very dense, gray, coarse SAND; damp --RDR 2--	50		16	28 43 32	NP	11

GENERAL NOTES

Begin Drilling: **04-20-2021** Complete Drilling: **04-20-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20CME55T[81%]**
Driller: **R&J** Logger: **I. Nenn** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **58.50 ft**
At Completion of Drilling: **mud in borehole**
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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Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-02

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 641.53 ft
North: 1764685.15 ft
East: 1044037.36 ft
Station: 614+56.55
Offset: 6.23 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	589.8	Dense, brown SANDY LOAM; wet --RDR 2--	55		17	11 16 16	NP	22
	584.8	Dense, gray coarse SAND; saturated --RDR 2--	60		18	12 17 21	NP	16
			65		19	18 15 18	NP	11
			70		20	13 23 13	NP	13
	569.8	Stiff, gray SILTY CLAY LOAM, trace gravel; moist --RDR 2--	75		21	9 8 11	1.23 B	17
	564.8	Medium dense, gray SILT; wet to saturated --RDR 2--	80		22	6 6 8	NP	26
	559.8	Stiff to hard, gray SILTY CLAY LOAM to SILTY LOAM, trace gravel; damp --RDR 2--	85		23	9 15 18	6.15 B	16
	551.5	Boring terminated at 90.00 ft	90		24	11 19 39	1.72 B	15
			95					
			100					

GENERAL NOTES

Begin Drilling: **04-20-2021** Complete Drilling: **04-20-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20CME55T[81%]**
Driller: **R&J** Logger: **I. Nenn** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **58.50 ft**
At Completion of Drilling: **mud in borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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

WANGENGINC 79011501.GPJ WANGENG.GDT 10/20/21

Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-03

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 643.51 ft
North: 1764616.64 ft
East: 1044033.20 ft
Station: 614+50.47
Offset: 62.88 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	642.0	18-inch thick ASPHALT --PAVEMENT--						
	641.8	Brown and gray SANDY GRAVEL; damp --FILL--			1	7 5 5	1.56 B	23
		Stiff to very stiff, gray, black and brown SILTY CLAY, trace gravel; damp			2	8 5 7	2.71 B	22
		--trace wood fragments-- --FILL-- --RDR 2--	5		3	5 4 4	1.25 P	19
			10		4	14 12 6	2.25 P	23
					5	4 5 5	1.48 B	27
	630.5	Very stiff to hard, gray and brown SILTY CLAY, trace gravel; damp --RDR 2--	15		6	5 8 16	6.64 B	19
					7	9 15 23	NR	
			20		8	5 10 12	5.00 B	21
					9	9 10 16	3.77 B	22
		--L_L(%)=42, P_L(%)=19-- --%Gravel=0.2-- --%Sand=1.6--	25		10	8 9 12	4.35 B	24
		--%Silt=56.9-- --%Clay=41.3-- --A-7-6 (24)--			11	5 10 15	5.33 B	24
		--sand seams; wet--			12	9 14 17	> 4.50 P	25
	614.0	Brown, fine SAND; saturated --RDR 2--	30					
	611.8	--slow hard drilling-- --possible cobbles-- Stiff to hard, brown to gray SILTY CLAY, trace gravel; damp to moist						
		--RDR 2-3--	35		13	5 6 11	1.80 B	20
			40		14	5 9 12	4.76 B	18
	596.8	Dense, gray SILT; wet --RDR 2--	45		15	3 6 9	2.05 B	22
			50		16	17 25 18	NP	16

GENERAL NOTES

Begin Drilling: **03-16-2021** Complete Drilling: **03-16-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **J&M** Logger: **M. Sadowski** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **29.50 ft**
At Completion of Drilling: **mud in borehole**
Time After Drilling: **48 hours**
Depth to Water: **22.00 ft**

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WANGENGINC 79011501.GPJ WANGENG.GDT 10/20/21

Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-03

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 643.51 ft
North: 1764616.64 ft
East: 1044033.20 ft
Station: 614+50.47
Offset: 62.88 RT

Elevation (ft)	Depth (ft)	SOIL AND ROCK DESCRIPTION	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
591.8		--rig chatter--					
		Dense to very dense, brown and gray, medium to coarse SAND, trace to little gravel; saturated					
		--RDR 2-3--					
	55			17	26 28 25	NP	16
	60			18	5 20 23	NP	12
		--sand caving in--					
	65			19	9 12 13	NP	15
		--sand caving in--					
	70			20	7 9 13	NP	21
		--sand caving in--					
	75			21	7 10 10	NP	17
566.8		Dense, gray SILT; wet to saturated					
		--RDR 2--					
	80			22	11 12 18	NP	19
562.0		--hard drilling--					
		Very stiff, gray SILTY CLAY LOAMto SILTY LOAM, little gravel; damp					
		--RDR 3--					
	85			23	13 13 14	3.50 P	17
557.5		--hard slow drilling; boulder--					
		Black GRANITE					
		--RUN 1: 87.5 to 88.0 feet--					
555.5		--Recovery = 100%--		24	CORE		
		--RQD= 100%--		25	50/5"	> 4.50 P	14
		Hard, gray SILTY CLAY LOAM to SILTY LOAM, some gravel;					
553.5	90	damp					
		--RDR 3-5--					
		Boring terminated at 90.00 ft					
	95						
	100						

GENERAL NOTES

Begin Drilling: **03-16-2021** Complete Drilling: **03-16-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **J&M** Logger: **M. Sadowski** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **29.50 ft**
At Completion of Drilling: **mud in borehole**
Time After Drilling: **48 hours**
Depth to Water: **22.00 ft**

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

Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-04

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 638.88 ft
North: 1764742.68 ft
East: 1044205.72 ft
Station: 616+27.08
Offset: 57.01 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	638.1	9-inch thick ASPHALT --PAVEMENT--						
	636.9	Gray and black SANDY GRAVEL; damp --AGGREGATE BASE--			1	26 14 4	NP	4
		Medium stiff to very stiff, brown and gray SILTY CLAY to SILTY CLAY LOAM, trace to little gravel; damp --FILL-- --RDR 2--	5		2	3 4 5	2.00 P	21
					3	4 7 8	1.80 B	16
			10		4	3 6 7	0.75 P	21
					5	3 3 5	2.05 B	28
		--brown, gray and black--	15		6	3 4 7	3.28 S	22
	623.4	Very stiff to hard, brown to gray SILTY CLAY, trace gravel; damp --RDR 2--			7	3 4 6	5.58 B	17
			20		8	6 11 13	7.05 B	19
					9	11 17 25	8.69 B	20
			25		10	8 16 21	7.87 B	20
			30		11	8 16 19	8.20 B	20
					12	7 10 13	6.56 B	20
			35		13	7 8 10	3.69 B	20
			40		14	4 7 9	3.28 B	22
	594.6	Medium dense, gray SILTY LOAM; moist to wet --RDR 2--	45		15	5 8 5	NP	23
	592.1	Medium dense to dense, brown and gray, fine to medium SAND to SANDY LOAM, trace gravel; wet to saturated --RDR 2--	50		16	8 15 18	NP	14

GENERAL NOTES

Begin Drilling: **03-08-2021** Complete Drilling: **03-09-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **NC&EG** Logger: **M. Sadowski** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **45.00 ft**
At Completion of Drilling: **mud in borehole**
Time After Drilling: **24 hours**
Depth to Water: **36.00 ft**

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

Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-04

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 638.88 ft
North: 1764742.68 ft
East: 1044205.72 ft
Station: 616+27.08
Offset: 57.01 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--%Gravel=8.5--						
		--%Sand=65.7--						
		--%Silt=23.1--	55		17	5 9 13	NP	20
		--%Clay=2.6--						
		--A-2-4 (0)--						
		--next drilling day observed cave-in at 56 feet--						
	582.1	Medium dense, brown and gray, medium to coarse SAND, trace gravel; wet to saturated						
		--RDR 2--	60		18	11 11 15	NP	13
			65		19	14 14 11	NP	16
			70		20	8 9 13	NP	16
	567.1	Gray SILTY LOAM; moist to wet --RDR 2-3--						
	564.6		75		21	12 12 13	NP	19
	563.9	Medium dense, gray SANDY						

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		LOAM; saturated						
		Boring terminated at 75.00 ft						
			80					
			85					
			90					
			95					
			100					

GENERAL NOTES

Begin Drilling: **03-08-2021** Complete Drilling: **03-09-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **NC&EG** Logger: **M. Sadowski** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **45.00 ft**
At Completion of Drilling: **mud in borehole**
Time After Drilling: **24 hours**
Depth to Water: **36.00 ft**

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

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Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-05

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 638.63 ft
North: 1764696.23 ft
East: 1044214.48 ft
Station: 616+33.98
Offset: 10.25 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	637.1	Very stiff (2.50P), black and brown SILTY CLAY LOAM, trace gravel; damp						
		--TOPSOIL--			1	4 4 4	3.25 P	20
		Stiff to very stiff, brown, gray and black SILTY CLAY, trace gravel; damp						
		--FILL--			2	3 5 6	3.69 B	18
		--RDR 2--	5					
					3	6 8 9	1.50 P	20
		--L_L(%)=39, P_L(%)=17--			4	3 4 6	2.21 B	17
		--%Gravel=2.0--						
		--%Sand=6.5--	10					
		--%Silt=54.4--						
		--%Clay=37.1--						
		--A-6 (20)--			5	4 5 5	2.54 B	17
					6	9 50/5"	2.05 B	21
	623.4		15					
		Soft, black and gray SILTY CLAY LOAM; damp						
		--BURIED TOPSOIL--			7	3 3 4	0.41 B	31
		--RDR 2--						
	620.6							
		Stiff to hard, brown to gray SILTY CLAY, trace to little gravel; damp						
		--RDR 2-3--			8	9 7 6	4.35 B	23
			20					
					9	9 12 22	8.04 B	19
		--hard drilling--						
		--possible cobbles--			10	10 16 23	7.22 B	19
			25					

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; possible cobbles--			11	9 9 16	7.38 B	20
			30		12	12 11 15	1.00 P	26
			35		13	6 7 12	3.94 B	19
			40		14	5 7 10	2.71 B	23
	596.9	Very stiff, gray CLAY; damp						
		--RDR 2--						
	594.1	Gray SILTY LOAM; moist	45		15	5 9 10	3.28 B	27
		--RDR 2--						
	591.9	Medium dense to dense, brown and gray, medium to coarse SAND, trace gravel; moist to saturated						
		--RDR 2--	50		16	22 24 14	NP	15

GENERAL NOTES

Begin Drilling: **04-20-2021** Complete Drilling: **04-20-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **R&J** Logger: **M. Sadowski** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **57.00 ft**
At Completion of Drilling: **mud in borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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

Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-05

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 638.63 ft
North: 1764696.23 ft
East: 1044214.48 ft
Station: 616+33.98
Offset: 10.25 LT

Depth (ft)	Elevation (ft)	Profile	SOIL AND ROCK DESCRIPTION	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	561.9		Dense, gray fine SAND; saturated					
			--RDR 2--					
55					17	14 23 20	NP	11
	556.9		--rig chatter at 81.5 feet-- --possible cobbles-- Hard, gray SILTY CLAY LOAM, trace gravel; damp					
			--RDR 2-3--					
60					18	14 12 13	NP	16
	551.9		Very dense, gray, Gravelly SILTY LOAM; damp					
			--RDR 3-4--					
65					19	14 12 11	NP	17
	548.6		Boring terminated at 90.00 ft					
70					20	10 12 11	NP	17
75					21	11 12 11	NP	21
80					22	19 20 21	NP	20
85					23	7 10 23	5.25 B	14
					24	50/3"	NP	11
90								
95								
100								

GENERAL NOTES

Begin Drilling: **04-20-2021** Complete Drilling: **04-20-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **R&J** Logger: **M. Sadowski** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **57.00 ft**
At Completion of Drilling: **mud in borehole**
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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Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-06

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 641.38 ft
North: 1764622.45 ft
East: 1044220.46 ft
Station: 616+37.02
Offset: 63.71 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	639.6	22-inch thick ASPHALT --PAVEMENT--						
		Stiff to hard, brown and gray SILTY CLAY, trace to little gravel; damp			1	4 5 8	3.53 B	17
		--FILL-- --RDR 2--	5		2	5 5 8	3.03 B	20
					3	6 4 6	1.64 B	21
			10		4	4 5 5	NR	
		--brown, gray and black from 11 feet and below--			5	4 5 5	3.77 B	21
			15		6	4 4 4	4.51 B	26
					7	4 5 13	3.61 B	26
	623.4	Stiff to hard, brown to gray SILTY CLAY to SILTY CLAY LOAM, trace gravel; damp to moist --RDR 2--	20		8	10 15 22	6.56 B	22
		--trace organic matter--			9	8 18 31	7.71 B	19
		--L_L(%)=38, P_L(%)=17-- --%Gravel=0.5-- --%Sand=3.8--	25		10	10 24 34	6.89 B	18
		--%Silt=53.2-- --%Clay=42.5-- --A-6 (21)--	30		11	6 15 17	5.58 B	20
					12	8 8 9	NR	
			35		13	5 7 10	1.25 P	23
			40		14	4 7 12	2.05 B	14
	594.6	Brown SILT; moist --RDR 3--	45		15	5 6 10	2.38 B	21
	592.2	Medium dense to dense, brown	50		16	10 17 29	NP	24

GENERAL NOTES

Begin Drilling: **03-18-2021** Complete Drilling: **03-18-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **J&M** Logger: **M. Ciapas** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **49.00 ft**
At Completion of Drilling: **mud in borehole**
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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Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-06

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 641.38 ft
North: 1764622.45 ft
East: 1044220.46 ft
Station: 616+37.02
Offset: 63.71 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		SAND; wet to saturated --RDR 2-3--	55		17	13 15 15	NP	14
	584.6	Medium dense, gray SILT; moist to wet --RDR 2--	60		18	7 8 9	NP	22
	579.6	Dense, gray Gravelly SAND; saturated --RDR 2--	65		19	12 15 16	NP	17
	574.6	Medium dense, gray, fine to coarse SAND; saturated --RDR 2--	70		20	8 8 11	NP	21
		--%Gravel=1.6-- --%Sand=88.5-- --%Silt=8.6--	75		21	8 11 11	NP	24
		--%Clay=1.3-- --A-3 (0)--						
	564.6	Medium dense, gray Gravelly SAND; saturated --RDR 2--	80		22	7 14 15	NP	11
	559.6	--cave-in while sampling-- Dense, gray SILT; wet --RDR 2--	85		23	18 17 18	NP	18
	554.6	Hard, gray SILTY CLAY LOAM to SILTY LOAM, trace gravel; damp --RDR 2--						
	551.4	Boring terminated at 90.00 ft	90		24	11 24 49	7.63 S	11
			95					
			100					

GENERAL NOTES

Begin Drilling: **03-18-2021** Complete Drilling: **03-18-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **J&M** Logger: **M. Ciapas** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **49.00 ft**
At Completion of Drilling: **mud in borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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

WANGENGINC 79011501.GPJ WANGENG.GDT 10/20/21

Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-07

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 621.60 ft
North: 1764756.83 ft
East: 1044111.77 ft
Station: 615+33.76
Offset: 74.89 LT

Depth (ft)	Elevation (ft)	Profile	SOIL AND ROCK DESCRIPTION	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
0	620.7		11-inch thick ASPHALT --PAVEMENT--					
0			Medium dense, gray SANDY GRAVEL; damp to saturated --FILL-- --RDR 2--		1	8 16 12	NP	8
5					2	7 8 10	NP	19
	616.1		Stiff to hard, brown to gray SILTY CLAY, trace gravel; damp --RDR 2-3--		3	5 9 13	3.61 B	22
10					4	5 20 12	3.28 B	22
			--rig chatter; possible cobbles-- --L_L(%)=34, P_L(%)=19-- --%Gravel=3.8-- --%Sand=5.7-- --%Silt=57.0-- --%Clay=33.5-- --A-6 (13)--		5	10 6 7	1.56 B	21
15					6	4 6 6	NR	
					7	4 7 12	4.84 B	19
20					8	8 5 9	2.62 B	20
					9	5 6 9	NR	
25					10	7 12 11	2.50 P	23
30	596.1		Loose, gray SILTY LOAM; saturated --RDR 2--		11	5 4 2	NP	25
	593.6		Medium dense to very dense, brown, medium to coarse SAND, trace gravel; moist --RDR 2--		12	15 24 31	NP	11
35					13	11 13 13	NP	13
40					14	8 11 15	NP	10
	579.9		Dense, brown SANDY GRAVEL; saturated --RDR 2-- --cave-in at 43.5 feet--		15	9 16 14	NP	11
45								
	574.9		Medium dense, brown to gray, fine to coarse SAND, little to some gravel; saturated --RDR 2--		16	10 12 13	NP	13
50								

GENERAL NOTES

Begin Drilling: **03-11-2021** Complete Drilling: **03-12-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **RH&JD** Logger: **E. Yim** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **3.50 ft**
At Completion of Drilling: **mud in borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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WANGENGINC 79011501.GPJ WANGENG.GDT 10/20/21

Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-07

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 621.60 ft
North: 1764756.83 ft
East: 1044111.77 ft
Station: 615+33.76
Offset: 74.89 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	567.9	Medium dense, gray SILTY LOAM; saturated --RDR 2--	55		17	14 11 12	NP	18
	562.9	Medium stiff, gray SILTY CLAY LOAM, trace gravel; damp --RDR 2--	60		18	9 6 9	0.82 B	14
	559.9	Hard, gray SILTY CLAY; damp --RDR 2--	65		19	14 18 23	> 4.50 P	21
	554.9	Very dense, gray SILTY LOAM; saturated --RDR 2-4--	70		20	15 28 36	NP	16
	548.0	--rig chatter at 73.5 feet, possible cobbles--	75		21	50/5"	NP	10
		Very dense, gray DOLOSTONE FRAGMENTS --RDR 3-4--						
	544.1	Strong, light grayish gray, fair to good quality, DOLOSTONE; closely spaced, slightly weathered, horizontal joints, with <0.05 inch opening, slightly rough walls, and no infill. --no water return after 78.5 feet-- --RUN 1: 77.5 to 87.5 feet-- --Recovery= 100%-- --RQD= 76%-- --Q_u= 8,046 psi--	80		22	CORE		
		--RUN 2: 87.5 to 88.5 feet-- --Recovery= 100%-- --RQD= 50%--	85		23	CORE		
	533.1	--material began to cave-in on top of barrel; could not complete core run-- Boring terminated at 88.50 ft	90					
			95					
			100					

GENERAL NOTES

Begin Drilling: **03-11-2021** Complete Drilling: **03-12-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **RH&JD** Logger: **E. Yim** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **3.50 ft**
At Completion of Drilling: **mud in borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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

WANGENGINC 79011501.GPJ WANGENG.GDT 10/20/21

Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-08

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 625.43 ft
North: 1764600.78 ft
East: 1044117.12 ft
Station: 615+32.90
Offset: 81.24 RT

Depth (ft)	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	624.6	10.5-inch thick ASPHALT --PAVEMENT--					
	624.3	3-inch thick, gray SANDY GRAVEL; damp --AGGREGATE BASE--					
		Stiff to hard, brown to gray SILTY CLAY, trace gravel; damp --RDR 2--					
				1	7 4 8	> 4.50 P	22
5				2	7 10 16	6.40 B	20
				3	6 9 14	7.87 B	20
10				4	6 9 14	5.66 B	21
				5	5 11 14	6.40 B	24
15				6	7 9 11	3.84 B	23
				7	3 5 7	1.64 B	21
20				8	4 5 7	2.46 B	22
				9	5 7 8	3.36 B	24
25				10	5 7 10	2.21 B	23
	597.4	Very dense, brown SILTY LOAM; wet to saturated --RDR 2--		11	6 8 8	2.30 B	24
30				12	15 21 32	NP	17
	593.7	Very dense, brown SAND to SANDY LOAM, little gravel; damp --RDR 2--					
35				13	17 32 32	NP	11
	588.7	Dense, brown to gray SILT; saturated --RDR 2--					
40				14	19 22 21	NP	28
	583.7	Medium dense to dense, brown to gray Gravelly SAND; wet to saturated --RDR 2--					
45		--next drilling day measured mud level at 45.0 feet before rock coring--		15	14 16 18	NP	16
50		--%Gravel=20.8-- --%Sand=66.3-- --%Silt=11.7--		16	14 12 12	NP	19

GENERAL NOTES

Begin Drilling: **03-24-2021** Complete Drilling: **03-25-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **RH&JD** Logger: **E. Yim** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **28.50 ft**
At Completion of Drilling: **mud in borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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WANGENGINC 79011501.GPJ WANGENG.GDT 10/20/21

Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-08

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 625.43 ft
North: 1764600.78 ft
East: 1044117.12 ft
Station: 615+32.90
Offset: 81.24 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--%Clay=1.1--						
		--A-1-b (0)--						
			55		17	13 11 12	NP	22
			60		18	17 19 18	NP	17
	563.7							
		Dense, gray SILTY LOAM, trace gravel; damp						
		--RDR 2--						
			65		19	10 14 19	NP	13
	558.7							
		Hard, gray SILTY CLAY LOAM, trace gravel; damp						
		--RDR 2--						
			70		20	13 19 27	5.41 B	15
	553.7							
		--hard slow drilling to 78.5 feet; possible boulder--						
		Gray Gravelly SILTY LOAM; damp						
		--WEATHERED BEDROCK--						
		--RDR 4-5--	75		21	CORE		
	546.9							
		Very strong, light grayish gray, good to excellent quality, DOLOSTONE; moderately to closely spaced, fresh, horizontal joints, with 0.05 - 0.2 inch opening, slicken to slightly rough walls, and 0 - 0.2 inch thick sand infill.	80			CORE		
		--no water return after 81.5 feet--						
		--RUN 1: 78.5 to 88.5 feet--			22			
		--Recovery= 100%--						
		--RQD= 96%--						
		--Q_u= 14,463 psi--	85					
		--RUN 2: 88.5 to 93.5 feet--				CORE		
		--Recovery= 98%--						
		--RQD= 88%--	90		23			
	531.9							
		Boring terminated at 93.50 ft	95					
			100					

GENERAL NOTES

Begin Drilling: **03-24-2021** Complete Drilling: **03-25-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **RH&JD** Logger: **E. Yim** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **28.50 ft**
At Completion of Drilling: **mud in borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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WANGENGINC 79011501.GPJ WANGENG.GDT 10/20/21

Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-09

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 621.80 ft
North: 1764757.43 ft
East: 1044142.41 ft
Station: 615+64.40
Offset: 74.27 LT

Depth (ft)	Elevation (ft)	Profile	SOIL AND ROCK DESCRIPTION	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
0	620.9		10.5-inch thick ASPHALT --PAVEMENT--					
			Medium dense, gray SANDY GRAVEL; damp --BASE COURSE--		1	9 7 3	NP	4
	618.8		Stiff to hard, brown to gray SILTY CLAY, trace gravel; damp --RDR 2--					
5					2	4 6 10	5.25 B	23
					3	5 9 16	> 4.50 P	23
10					4	4 10 15	6.56 B	21
					5	7 10 15	4.43 B	18
			--moist to wet--					
15					6	3 3 4	1.07 B	24
	606.3		Medium stiff, brown SILTY CLAY LOAM, trace gravel; moist to wet					
	605.1		Very stiff to hard, gray SILTY CLAY, trace gravel; damp --RDR 2--		7	4 5 11	0.74 B	15
20					8	4 6 10	2.87 B	22
					9	6 8 10	NA	25
25					10	5 7 9	2.05 B	23
	596.3		Medium dense, gray to brown SILTY LOAM; damp --RDR 2-- --%Gravel=0.0-- --%Sand=18.7-- --%Silt=78.4-- --%Clay=2.9-- --A-4 (0)--		11	10 11 9	NP	17
	592.8		--few clay lenses--		12	17 34 44	NP	10
30			Medium dense to very dense, brown Gravelly SAND; damp to saturated --RDR 2--					
35					13	11 14 13	NP	9
40					14	11 11 13	NP	13
45					15	13 15 16	NP	11
50					16	10 12 13	NP	15

GENERAL NOTES

Begin Drilling: **03-19-2021** Complete Drilling: **03-22-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **RH&AP** Logger: **E. Yim** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **4.00 ft**
At Completion of Drilling: **mud in borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-09

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 621.80 ft
North: 1764757.43 ft
East: 1044142.41 ft
Station: 615+64.40
Offset: 74.27 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	570.1	Medium dense to dense, gray, fine SAND to SANDY LOAM; saturated --RDR 2--	55		17	21 26 25	NP	22
	562.6	Medium dense, gray SILTY LOAM; saturated --RDR 2--	60		18	7 8 8	NP	21
	560.1	Very stiff (3.53B), gray SILTY CLAY LOAM to SILTY LOAM, trace gravel; damp --RDR 2--						
	557.8	Medium dense to very dense, gray SILTY LOAM, trace gravel; damp --RDR 2-4--	65		19	6 15 17	NP	13
	553.1	--slow hard drilling from 68.5 ft-- --WEATHERED BEDROCK-- --complications while coring; did not recover core--	70		20	50/3"	NP	15
					21	CORE		
	549.3	Boring terminated at 72.50 ft	75					

GENERAL NOTES

Begin Drilling: **03-19-2021** Complete Drilling: **03-22-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **RH&AP** Logger: **E. Yim** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **4.00 ft**
At Completion of Drilling: **mud in borehole**
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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Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-09B

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 621.72 ft
North: 1764767.20 ft
East: 1044142.33 ft
Station: 615+64.71
Offset: 84.04 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--Drilled without sampling to 73.5 feet--	5					
			10					
			15					
			20					
			25					

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			30					
			35					
			40					
			45					
			50					

GENERAL NOTES

Begin Drilling: **03-23-2021** Complete Drilling: **03-23-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **RH&JD** Logger: **E. Yim** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **NA**
At Completion of Drilling: **DRY**
Time After Drilling: **NA**
Depth to Water: **NA**

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Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-09B

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 621.72 ft
North: 1764767.20 ft
East: 1044142.33 ft
Station: 615+64.71
Offset: 84.04 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	548.2	Very dense, gray, Gravelly SILTY LOAM; moist	75		1	50/6"	NP	11
		--RDR 4--						

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	546.5	--rig chatter and slow drilling to 73.5 feet, possible cobbles/weathtered bedrock--	75					
	545.2	Possible WEATHERED BEDROCK						
		Strong, light grayish gray, fair quality, DOLOSTONE; closely spaced, slightly weathered, horizontal and oblique joints, with 0-0.2 inch opening, slightly rough walls, and no infill.	80		2	CORE		
		--RUN 1: 76.5 to 86.0 feet--						
		--Recovery = 98%--						
		--RQD= 68%--						
		--Q_u= 12,789 psi--						
		--no water return at 79 feet--	85					
		--gravel caving in borehole; could not core additional run--						
	535.7	Boring terminated at 86.00 ft	90					
			95					
			100					

GENERAL NOTES

Begin Drilling: **03-23-2021** Complete Drilling: **03-23-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **RH&JD** Logger: **E. Yim** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **NA**
At Completion of Drilling: **DRY**
Time After Drilling: **NA**
Depth to Water: **NA**

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

WANGENGINC 79011501.GPJ WANGENG.GDT 10/20/21

Wang Engineering
wangeng@wangeng.com
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

BORING LOG MLA-BSB-10

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 625.04 ft
North: 1764607.99 ft
East: 1044144.75 ft
Station: 615+60.79
Offset: 75.15 RT

Depth (ft)	Elevation (ft)	Profile	SOIL AND ROCK DESCRIPTION	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
0	624.2		10.5-inch thick ASPHALT --PAVEMENT--					
0	623.3		10.5-inch thick, medium dense, gray SANDY GRAVEL; damp --AGGREGATE BASE--					
0			Very stiff to hard, brown to gray SILTY CLAY, trace gravel; damp --RDR 2--					
					1	25 12 7	NP	5
					2	5 8 15	8.36 B	20
5								
					3	7 6 11	6.40 B	20
					4	4 8 13	7.13 B	20
10								
			--L_L(%)=36, P_L(%)=16-- --%Gravel=6.0-- --%Sand=7.1-- --%Silt=51.7-- --%Clay=35.2-- --A-6 (17)--		5	5 9 14	3.61 B	19
					6	6 7 10	3.94 B	23
15								
					7	5 6 8	2.21 B	19
					8	3 5 8	2.13 B	16
20								
					9	4 6 8	3.69 B	20
					10	4 6 7	3.20 B	21
25								
					11	5 6 8	3.03 B	21
					12	5 6 8	3.12 B	21
30			--continued drilling next drilling day; mud water level at 1 foot--					
	593.3		Very dense, brown, coarse to very coarse SAND, trace gravel; damp --RDR 2--		13	28 30 32	NP	8
35								
	586.0		Dense, redish brown fine SAND; damp --RDR 2--		14	13 17 22	NP	18
40								
	583.3		Medium dense to dense, brown, medium to very coarse SAND, trace gravel; damp to saturated --RDR 2--		15	18 19 18	NP	12
45								
					16	17 18 16	NP	15
50								

GENERAL NOTES

Begin Drilling: **03-12-2021** Complete Drilling: **03-18-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **JS&AP** Logger: **E. Yim** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: ▽ **44.50 ft**
At Completion of Drilling: ▼ **mud in borehole**
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: (630) 953-9938

BORING LOG MLA-BSB-10

WEI Job No.: 7901-15-01

Client: **TranSystems Corporation**
Project: **I-80 Reconstruction (Houbolt Road to Center Street)**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 625.04 ft
North: 1764607.99 ft
East: 1044144.75 ft
Station: 615+60.79
Offset: 75.15 RT

Elevation (ft)	Depth (ft)	SOIL AND ROCK DESCRIPTION	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
560.5		Dense to very dense, gray SILT to SILTY LOAM; damp to saturated					
	55			17	14 12 11	NP	24
		--few silt lenses--					
	60			18	20 20 22	NP	15
	65	--RDR 2--		19	19 15 18	NP	15
		--pebble in the spoon--		20	50/3"	NR	
	70						
	75	--hard drilling to 73.5 feet, rig chatter; possible cobbles--		21	18 45 50/4"	NP	13
548.5		Possible WEATHERED BEDROCK --rig chatter and slow drilling to 78.5 feet; possible cobbles--					
546.5	80	Strong, light bluish gray, fair quality, DOLOSTONE; closely spaced, slightly weathered, horizontal and vertical joints, with 0-0.2 inch opening, slightly rough to rough walls, and no infill. --no water return after 79.5 feet-- --RUN 1: 78.5 to 88.5 feet-- --Recovery = 100%-- --RQD= 57%-- --Q_u= 12,728 psi--		22	CORE		
	85						
	90	--RUN 2: 88.5 to 93.5 feet-- --Recovery = 96%-- --RQD= 58%--		23	CORE		
531.5		Boring terminated at 93.50 ft					
	95						
	100						

GENERAL NOTES

Begin Drilling: **03-12-2021** Complete Drilling: **03-18-2021**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20D50T [80%]**
Driller: **JS&AP** Logger: **E. Yim** Checked by: **C. Marin**
Drilling Method: **2.25" IDA HSA to 10 ft; mud rotary thereafter; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **44.50 ft**
At Completion of Drilling: **mud in borehole**
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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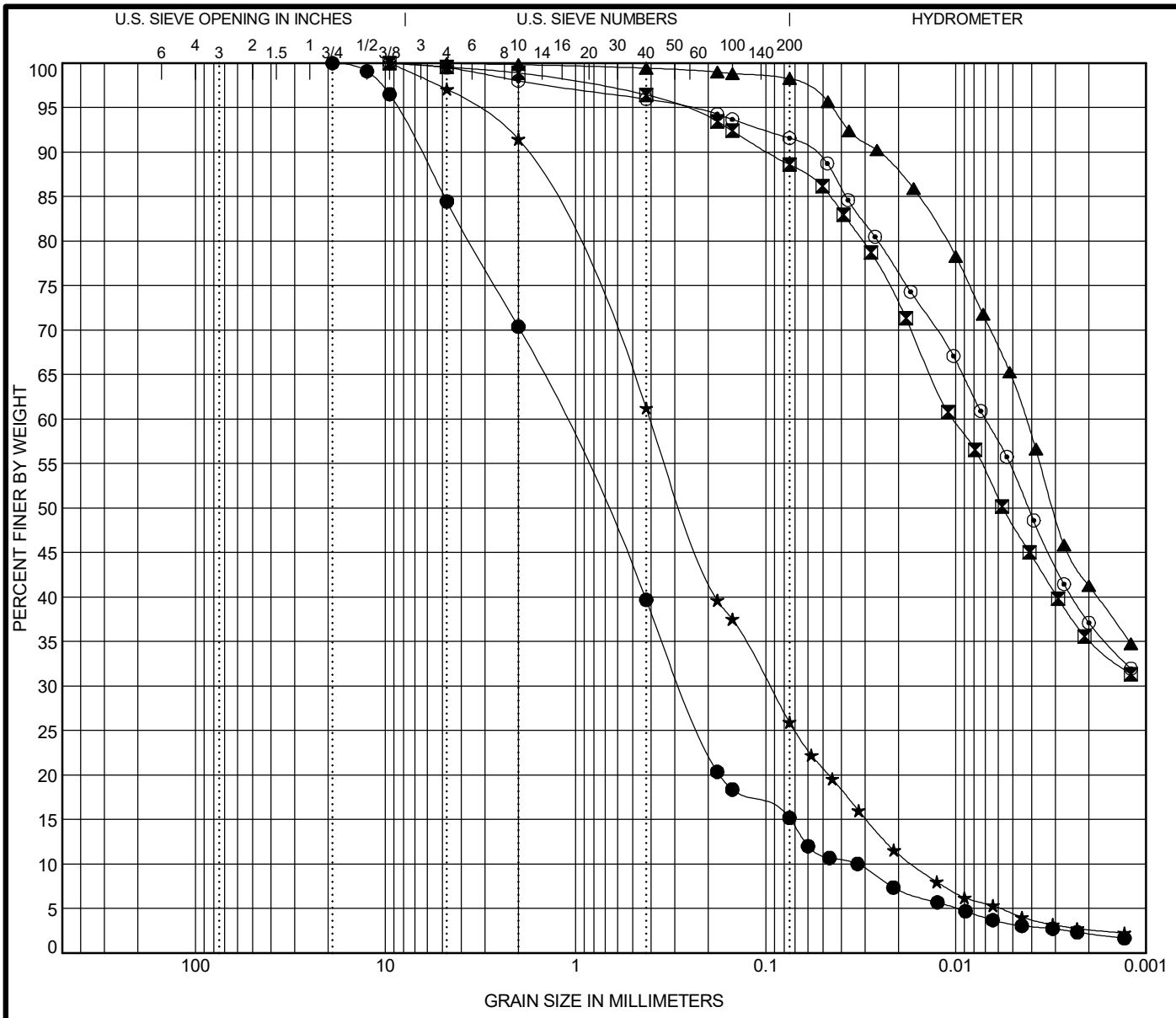
Lombard, Illinois 60148
Phone (630) 953-9928
www.wangeng.com

APPENDIX B



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

Specimen Identification		IDH Classification	LL	PL	PI	Cc	Cu
● MLA-BSB-01#18	58.5 ft	**Gravelly Sandy Loam**	**NP**	**NP**	**NP**	**1.96**	**36.08**
⊠ MLA-BSB-02#3	6.0 ft	**Silty Clay**	**44**	**19**	**25**		
▲ MLA-BSB-03#10	23.5 ft	**Silty Clay**	**42**	**19**	**23**		
★ MLA-BSB-04#17	53.5 ft	**Sandy Loam**	**NP**	**NP**	**NP**	**1.34**	**23.96**
⊙ MLA-BSB-05#4	8.5 ft	**Silty Clay**	**39**	**17**	**22**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● MLA-BSB-01#18	58.5 ft	**19**	**1.184**	**0.276**	**0.033**	**29.6**	**55.4**	**12.8**	**2.2**
⊠ MLA-BSB-02#3	6.0 ft	**9.5**	**0.01**			**1.1**	**10.4**	**53.3**	**35.2**
▲ MLA-BSB-03#10	23.5 ft	**4.75**	**0.004**			**0.2**	**1.6**	**56.9**	**41.3**
★ MLA-BSB-04#17	53.5 ft	**9.5**	**0.404**	**0.096**	**0.017**	**8.5**	**65.7**	**23.1**	**2.6**
⊙ MLA-BSB-05#4	8.5 ft	**9.5**	**0.007**			**2.0**	**6.5**	**54.4**	**37.1**

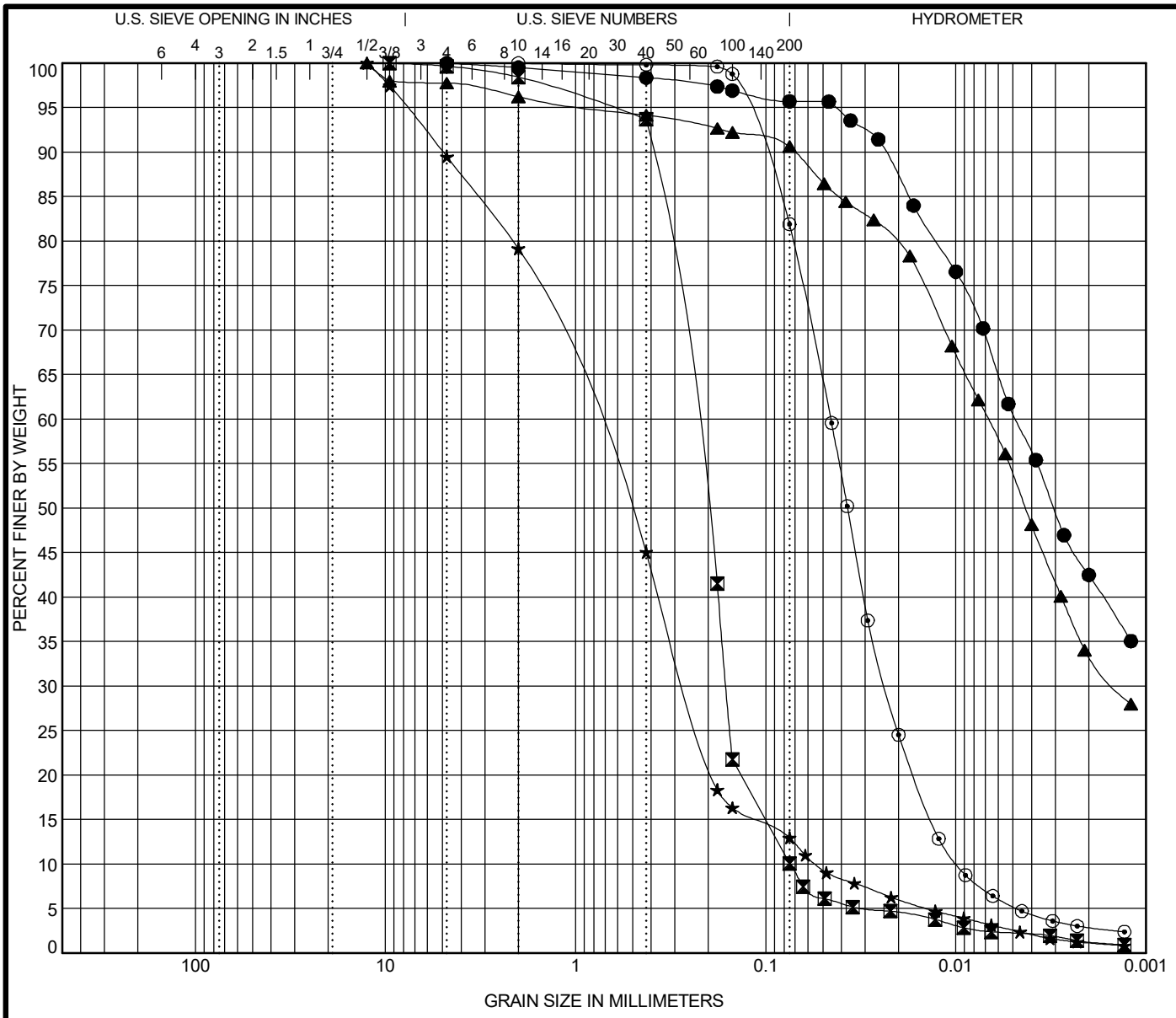
WEI SINCE 1982
Wang Engineering, Inc.
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

GRAIN SIZE DISTRIBUTION

Project: I-80 Reconstruction (Houbolt Road to Center Street)

Location: Will County, Illinois

Number: 7901-15-01



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

Specimen Identification		IDH Classification	LL	PL	PI	Cc	Cu
● MLA-BSB-06#10	23.5 ft	**Silty Clay**	**38**	**17**	**21**		
⊠ MLA-BSB-06#21	73.5 ft	**Sand**	**NP**	**NP**	**NP**	**1.44**	**3.27**
▲ MLA-BSB-07#5	11.0 ft	**Silty Clay**	**34**	**19**	**15**		
★ MLA-BSB-08#16	48.5 ft	**Gravelly Sand**	**NP**	**NP**	**NP**	**1.51**	**15.42**
⊙ MLA-BSB-09#11	26.0 ft	**Silty Loam**	**NP**	**NP**	**NP**	**1.23**	**4.63**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● MLA-BSB-06#10	23.5 ft	**4.75**	**0.005**			**0.5**	**3.8**	**53.2**	**42.5**
⊠ MLA-BSB-06#21	73.5 ft	**9.5**	**0.244**	**0.162**	**0.075**	**1.6**	**88.5**	**8.6**	**1.3**
▲ MLA-BSB-07#5	11.0 ft	**12.5**	**0.007**	**0.001**		**3.8**	**5.7**	**57.0**	**33.5**
★ MLA-BSB-08#16	48.5 ft	**12.5**	**0.838**	**0.262**	**0.054**	**20.8**	**66.3**	**11.7**	**1.1**
⊙ MLA-BSB-09#11	26.0 ft	**2**	**0.045**	**0.023**	**0.01**	**0.0**	**18.7**	**78.4**	**2.9**

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1145 N MAin Street
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Telephone: (630) 953-9928
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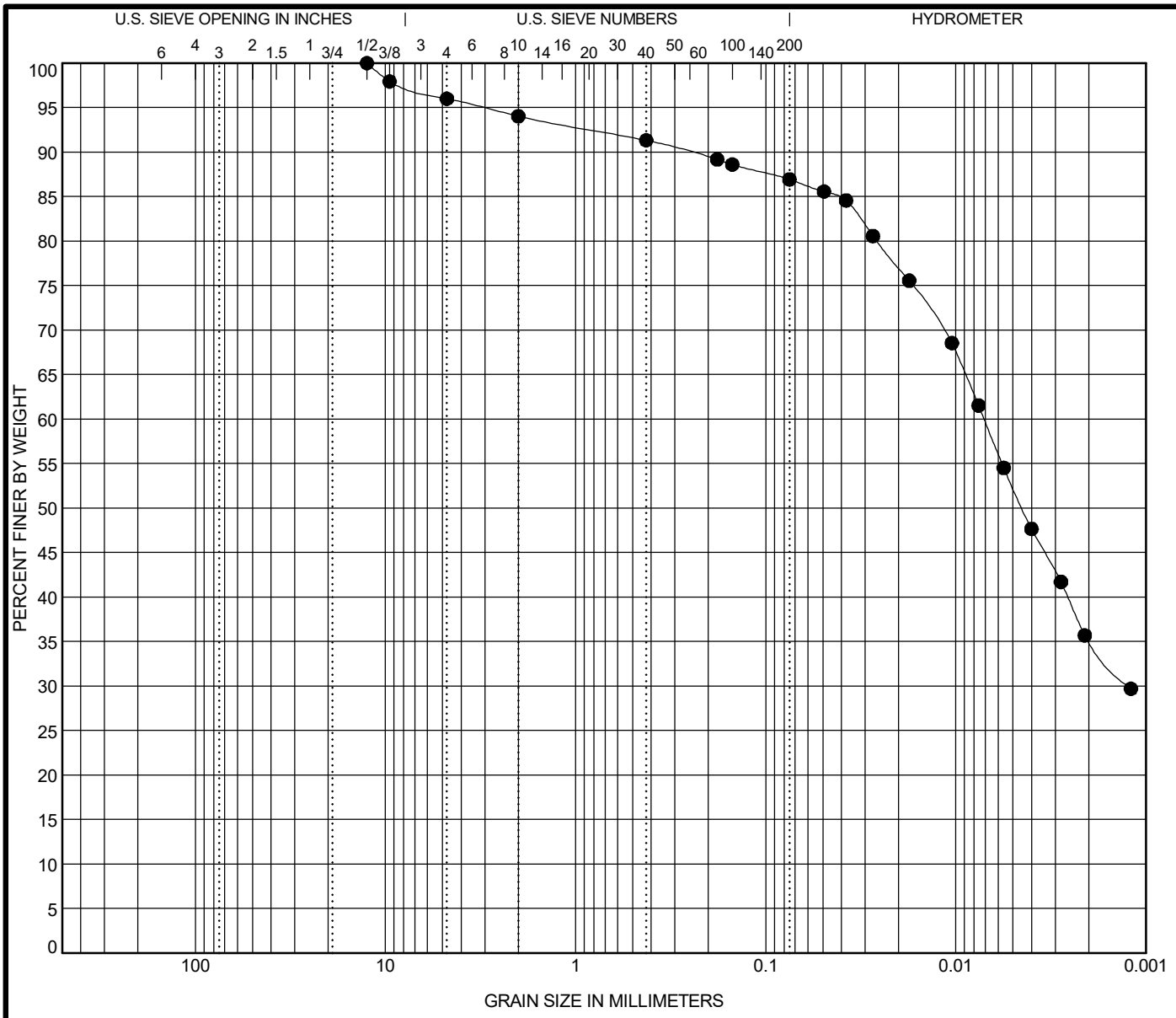
GRAIN SIZE DISTRIBUTION

Project: I-80 Reconstruction (Houbolt Road to Center Street)

Location: Will County, Illinois

Number: 7901-15-01



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

	Specimen Identification	IDH Classification	LL	PL	PI	Cc	Cu
●	**MLA-BSB-10#5 11.0 ft**	**Silty Clay**	**36**	**16**	**20**		

	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**MLA-BSB-10#5 11.0 ft**	**12.5**	**0.007**	**0.001**		**6.0**	**7.1**	**51.7**	**35.2**

Wang Engineering, Inc.
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
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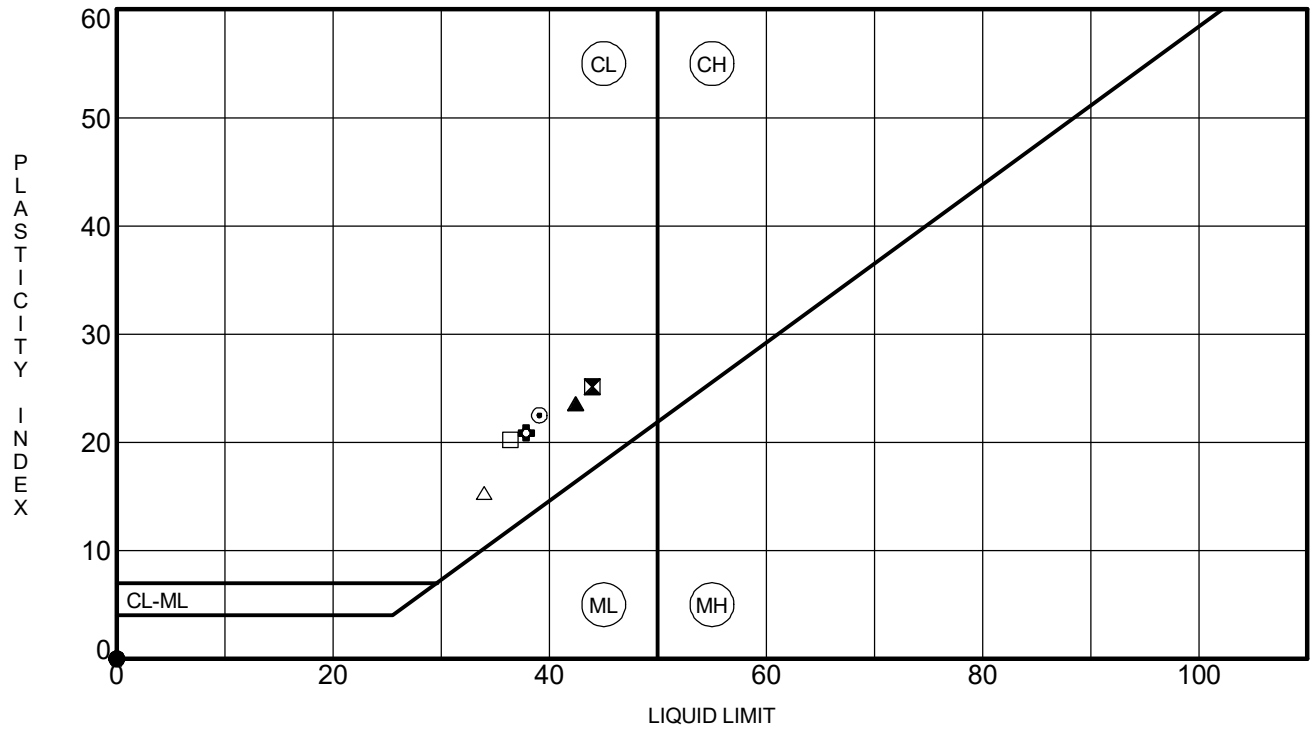
GRAIN SIZE DISTRIBUTION

Project: I-80 Reconstruction (Houbolt Road to Center Street)

Location: Will County, Illinois

Number: 7901-15-01



Specimen Identification			LL	PL	PI	Fines	IDH Classification
●	MLA-BSB-01#18	58.5 ft	NP	NP	NP	15	Gravelly Sandy Loam
⊠	MLA-BSB-02#3	6.0 ft	44	19	25	89	Silty Clay
▲	MLA-BSB-03#10	23.5 ft	42	19	23	98	Silty Clay
★	MLA-BSB-04#17	53.5 ft	NP	NP	NP	26	Sandy Loam
⊙	MLA-BSB-05#4	8.5 ft	39	17	22	92	Silty Clay
✿	MLA-BSB-06#10	23.5 ft	38	17	21	96	Silty Clay
○	MLA-BSB-06#21	73.5 ft	NP	NP	NP	10	Sand
△	MLA-BSB-07#5	11.0 ft	34	19	15	91	Silty Clay
⊗	MLA-BSB-08#16	48.5 ft	NP	NP	NP	13	Gravelly Sand
⊕	MLA-BSB-09#11	26.0 ft	NP	NP	NP	82	Silty Loam
□	MLA-BSB-10#5	11.0 ft	36	16	20	87	Silty Clay

WEI SINCE 1982
Wang Engineering, Inc.
1145 N MAin Street
Lombard, IL 60148
Telephone: (630) 953-9928
Fax: (630) 953-9938

ATTERBERG LIMITS' RESULTS

Project: I-80 Reconstruction (Houbolt Road to Center Street)

Location: Will County, Illinois

Number: 7901-15-01

Wang Engineering

Unconfined Compressive Strength of Intact Rock Core Specimens

Project: I-80

Client: Transystems

WEI Job No.: 7901-15-01

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							
MLA-BSB-07	1	78.0	WB West Pier	Dolostone	4.16	NA	2.03	26040	8045.6	3	5/14/21	MAC	3.23
MLA-BSB-08	1	78.5	EB west Pier	Dolostone	4.12	NA	2.04	47410	14462.5	3	5/14/21	MAC	3.28
MLA-BSB-09	1	78.0	WB East Pier	Dolostone	4.19	NA	2.04	41800	12788.7	3	5/14/21	MAC	3.27
MLA-BSB-10	1	79.0	EB East Pier	Dolostone	4.11	NA	2.05	41970	12728.2	3	5/14/21	MAC	3.30

*** 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: _____ 2-9-2022

Checked by: _____ 02/09/2022

WANG ENGINEERING, INC.
1145 N. Main Street, Lombard. IL 60148

Wang Engineering
1145 North Main Street
Lombard, Illinois 60148
Phone (630) 953-9928
www.wangeng.com

APPENDIX C

Run #1

0 6 inches

Boring MLA-BSB-07:
Run #1, 77.5 to 87.5 feet, RECOVERY=100%, RQD=76%

BEDROCK CORE: I-80 BRIDGE OVER MIDLAND AVENUE; I-80 RECONSTRUCTION FROM HOUBOLT RD TO W CENTER ST & LARKIN AVE INTERCHANGE; CONTRACT D-91-207-19, PTB 194/11, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	APPENDIX C-1	DRAWN BY: J. Bensen CHECKED BY: A. Hamad

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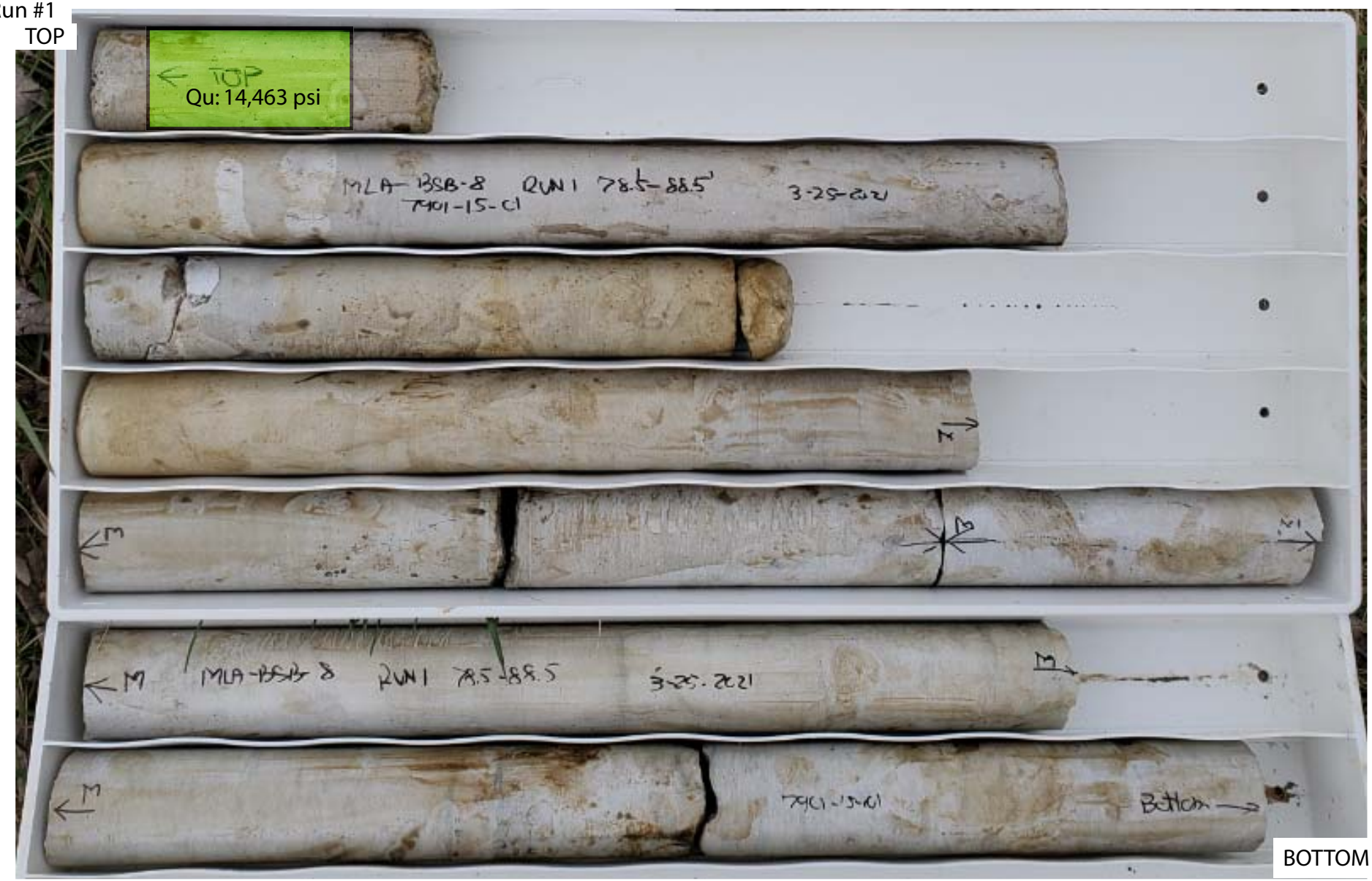
FOR TRANSYSTEMS | 7901-15-01

Run #1

TOP



0 6 inches

Boring MLA-BSB-08:
Run #1, 78.5 to 88.5 feet, RECOVERY=100%, RQD=96%

BEDROCK CORE: I-80 BRIDGE OVER MIDLAND AVENUE; I-80 RECONSTRUCTION FROM HOUBOLT RD TO W CENTER ST & LARKIN AVE INTERCHANGE; CONTRACT D-91-207-19, PTB 194/11, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	APPENDIX C-2	DRAWN BY: J. Bensen CHECKED BY: A. Hamad

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FOR TRANSYSTEMS | 7901-15-01

Run #2

0 6 inches

Boring MLA-BSB-08:
Run #2, 88.5 to 93.5 feet, RECOVERY=98%, RQD=88%

BEDROCK CORE: I-80 BRIDGE OVER MIDLAND AVENUE; I-80 RECONSTRUCTION FROM HOUBOLT RD TO W CENTER ST & LARKIN AVE INTERCHANGE; CONTRACT D-91-207-19, PTB 194/11, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	APPENDIX C-3	DRAWN BY: J. Bensen CHECKED BY: A. Hamad

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FOR TRANSYSTEMS | 7901-15-01

Run #1

0 6 inches

Boring MLA-BSB-09B:
Run #1, 76.5 to 86.0 feet, RECOVERY=98%, RQD=68%

BEDROCK CORE: I-80 BRIDGE OVER MIDLAND AVENUE; I-80 RECONSTRUCTION FROM HOUBOLT RD TO W CENTER ST & LARKIN AVE INTERCHANGE; CONTRACT D-91-207-19, PTB 194/11, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	APPENDIX C-4	DRAWN BY: J. Bensen CHECKED BY: A. Hamad

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Run #1

0 6 inches

Boring MLA-BSB-10:
Run #1, 78.5 to 88.5 feet, RECOVERY=100%, RQD=57%

BEDROCK CORE: I-80 BRIDGE OVER MIDLAND AVENUE; I-80 RECONSTRUCTION FROM HOUBOLT RD TO W CENTER ST & LARKIN AVE INTERCHANGE; CONTRACT D-91-207-19, PTB 194/11, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	APPENDIX C-5	DRAWN BY: J. Bensen CHECKED BY: A. Hamad

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FOR TRANSYSTEMS | 7901-15-01

Run #2

0 6 inches

Boring MLA-BSB-10:
Run #2, 88.5 to 93.5 feet, RECOVERY=96%, RQD=58%

BEDROCK CORE: I-80 BRIDGE OVER MIDLAND AVENUE; I-80 RECONSTRUCTION FROM HOUBOLT RD TO W CENTER ST & LARKIN AVE INTERCHANGE; CONTRACT D-91-207-19, PTB 194/11, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	APPENDIX C-6	DRAWN BY: J. Bensen CHECKED BY: A. Hamad

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1145 N. Main Street
Lombard, IL 60148
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FOR TRANSYSTEMS | 7901-15-01

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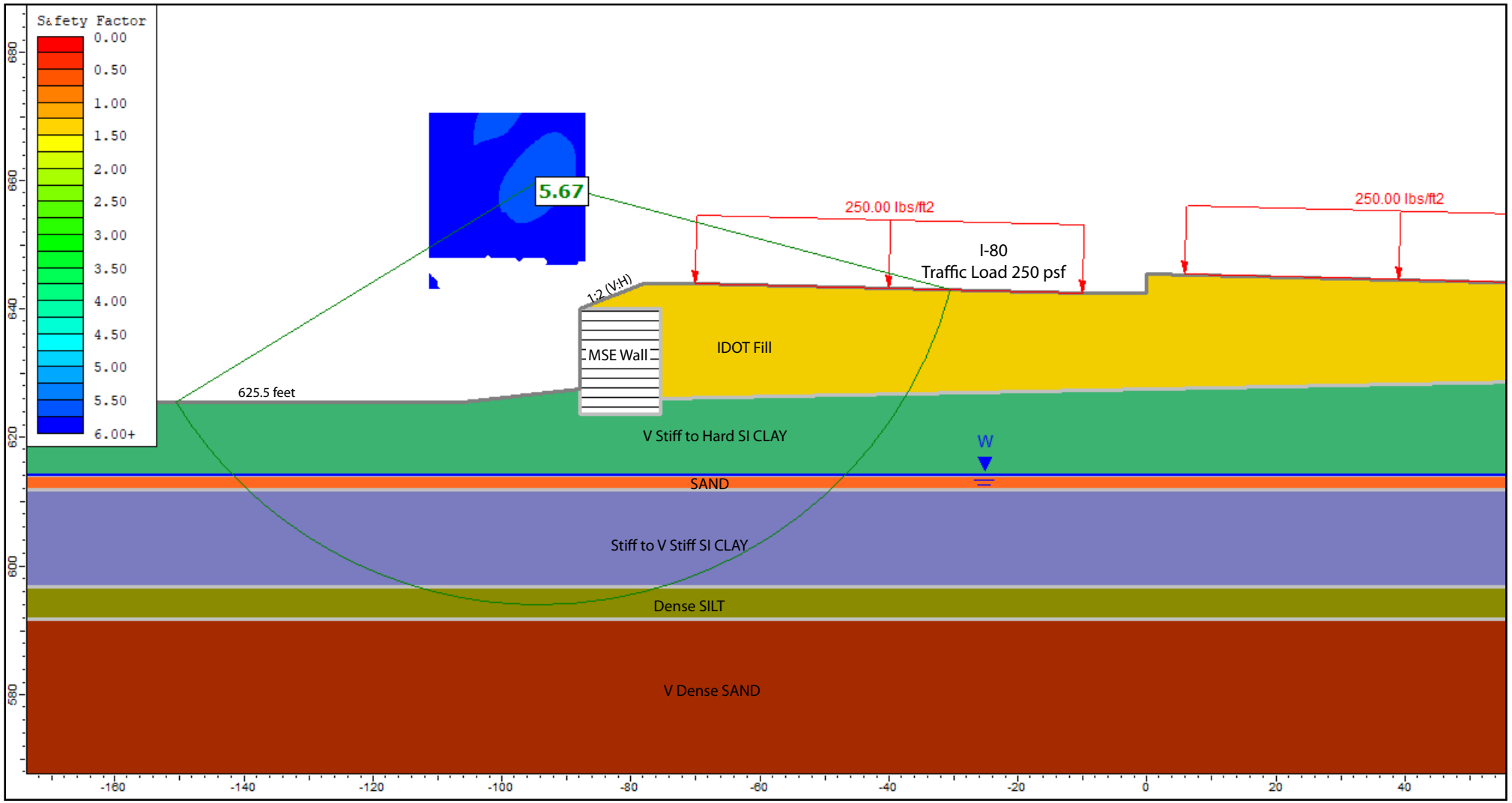
1145 North Main Street
Lombard, Illinois 60148
Phone (630) 953-9928
www.wangeng.com

APPENDIX D



Undrained Analysis, West Abutment Side Slope, Reference Borings: MLA-BSB-01 to MLA-BSB-03, and MLA-BSB-07

Layer ID	Description	Total Unit Weight (pcf)	Undrained Cohesion (psf)	Undrained Friction Angle (degrees)
1	IDOT Fill	120	1000	0
2	V Stiff to Hard SI CLAY	125	4000	0
3	SAND	120	0	30
4	Stiff to V Stiff SI CLAY	120	2400	0
5	Dense SILT	120	0	32
6	V Dense SAND	125	0	35

GLOBAL STABILITY: I-80 BRIDGE OVER MIDLAND AVENUE; I-80 RECONSTRUCTION FROM HOUBOLT ROAD TO WEST OF CENTER STREET AND LARKIN AVENUE INTERCHANGE, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL | APPENDIX D-1 | DRAWN BY: N. Balakumaran | CHECKED BY: A. Hamad

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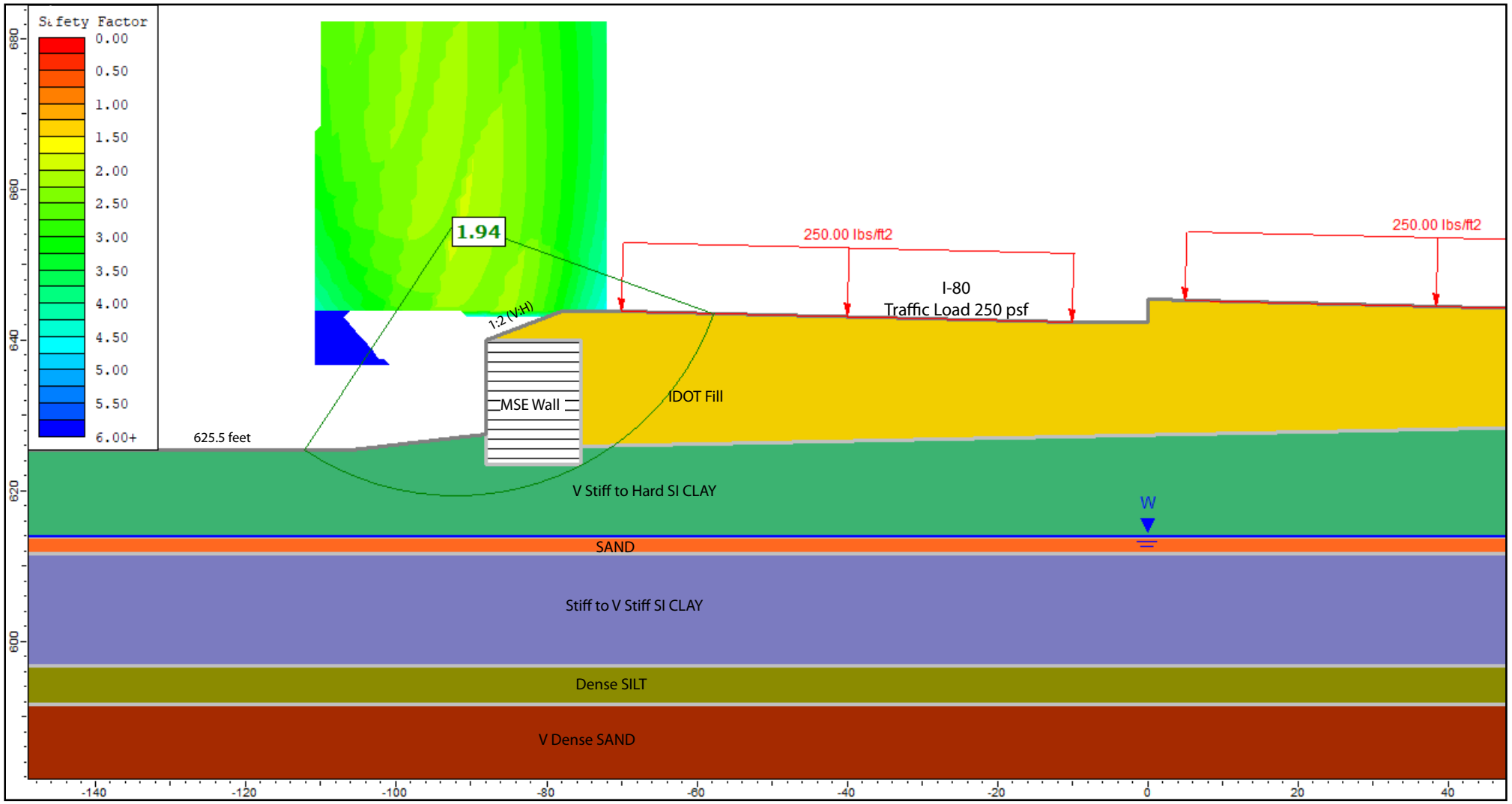
FOR TRANSYSTEMS CORPORATION | 7901-15-01



Drained Analysis, West Abutment Side Slope, Reference Borings: MLA-BSB-01 to MLA-BSB-03, and MLA-BSB-07

Layer ID	Description	Total Unit Weight (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
1	IDOT Fill	120	100	0
2	V Stiff to Hard SI CLAY	125	100	30
3	SAND	120	0	30
4	Stiff to V Stiff SI CLAY	120	100	30
5	Dense SILT	120	0	32
6	V Dense SAND	125	0	35

GLOBAL STABILITY: I-80 BRIDGE OVER MIDLAND AVENUE; I-80 RECONSTRUCTION FROM HOUBOLT ROAD TO WEST OF CENTER STREET AND LARKIN AVENUE INTERCHANGE, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL | APPENDIX D-2 | DRAWN BY: N. Balakumaran | CHECKED BY: A. Hamad

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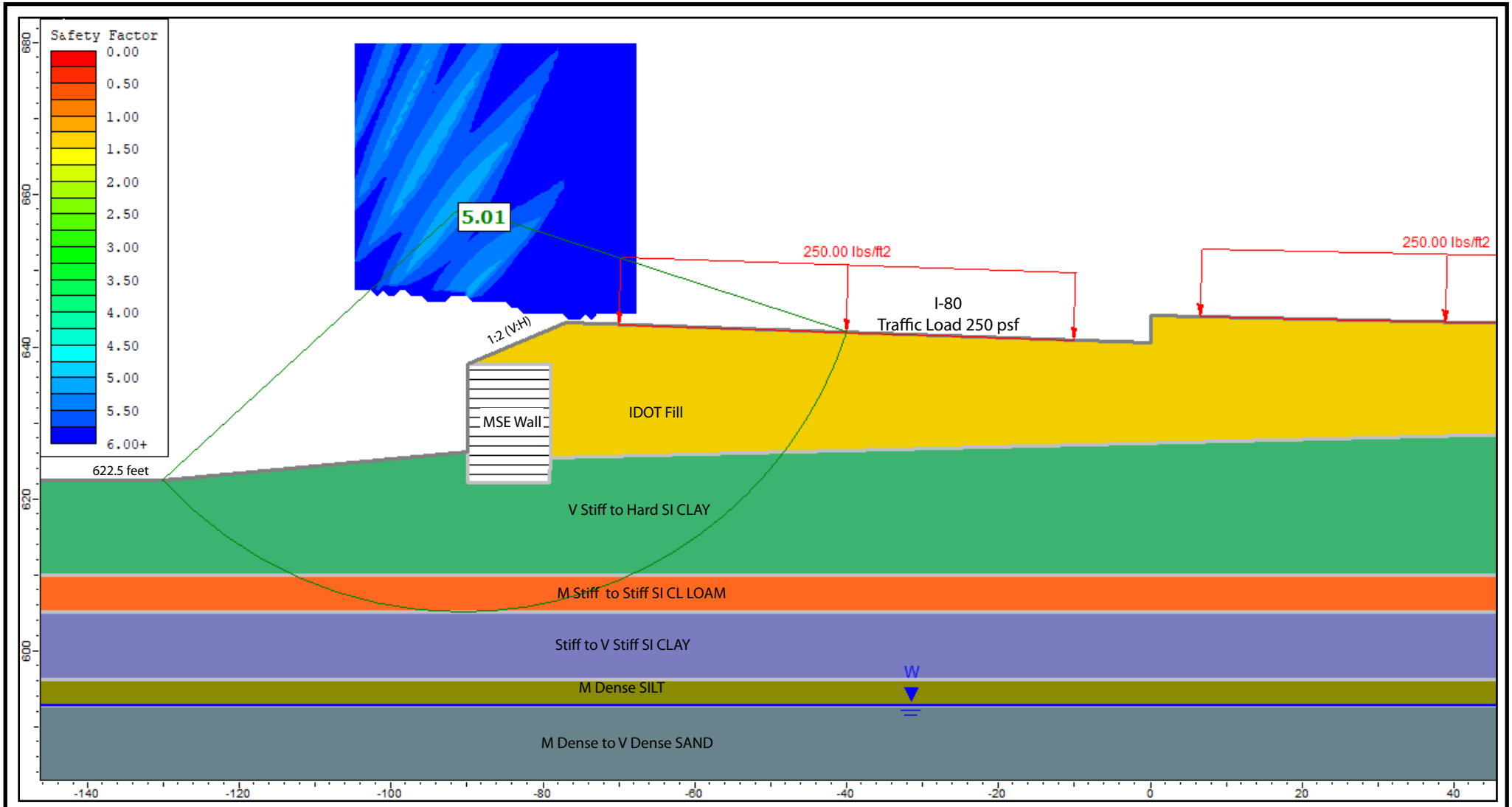
FOR TRANSYSTEMS CORPORATION | 7901-15-01



Undrained Analysis, East Abutment Side Slope, Reference Borings: MLA-BSB-04 to MLA-BSB-06, and MLA-BSB-09

Layer ID	Description	Total Unit Weight (pcf)	Undrained Cohesion (psf)	Undrained Friction Angle (degrees)
1	IDOT Fill	120	1000	0
2	V Stiff to Hard SI CLAY	125	4000	0
3	M Stiff to Stiff SI CL LOAM	115	1000	0
4	V Stiff SI CLAY	120	2900	0
5	M Dense SI LOAM	120	0	30
6	V Dense SAND	125	0	33

GLOBAL STABILITY: I-80 BRIDGE OVER MIDLAND AVENUE; I-80 RECONSTRUCTION FROM HOUBOLT ROAD TO WEST OF CENTER STREET AND LARKIN AVENUE INTERCHANGE, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL | APPENDIX D-3 | DRAWN BY: N. Balakumaran | CHECKED BY: A. Hamad

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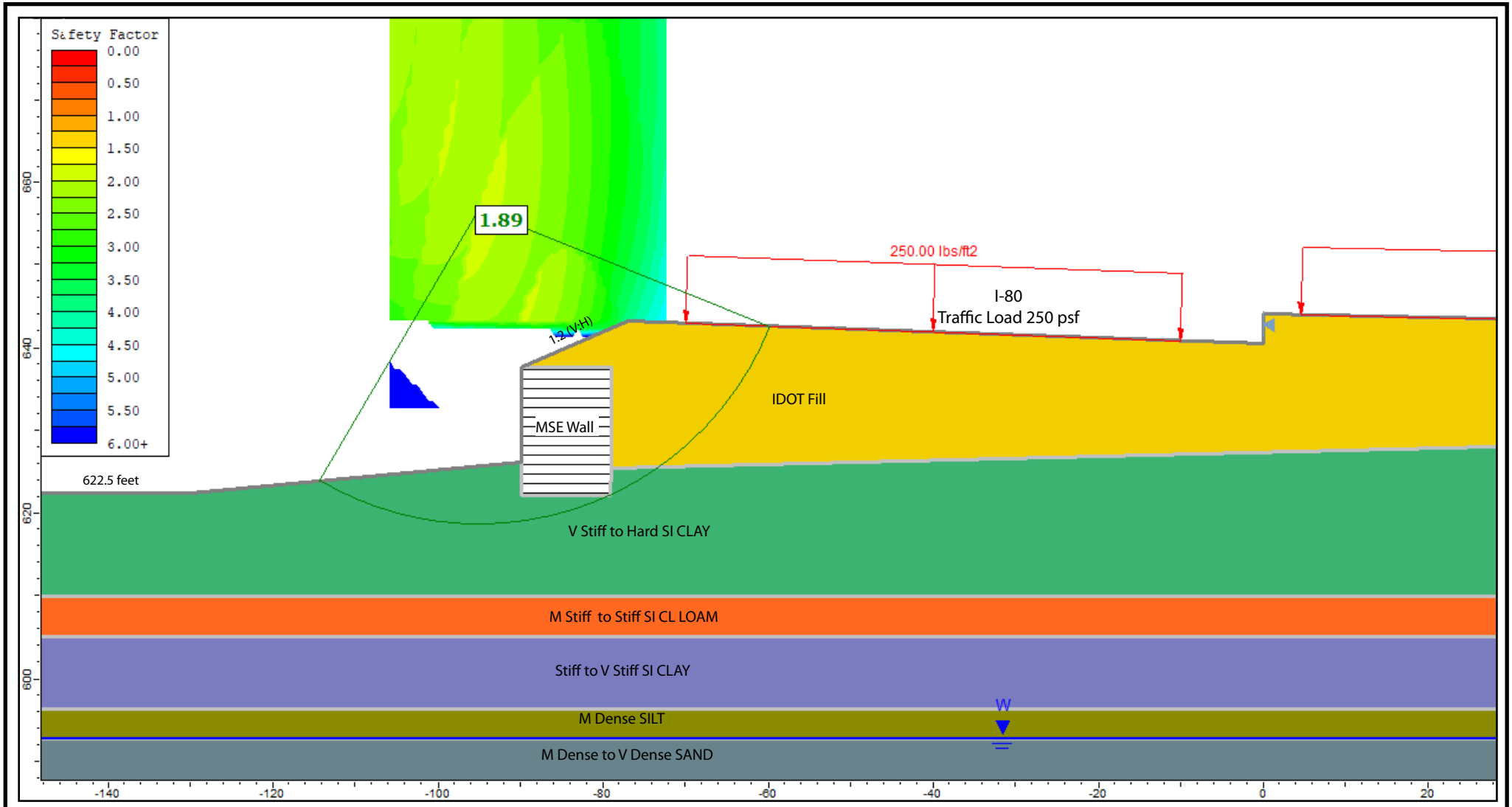
FOR TRANSYSTEMS CORPORATION | 7901-15-01



Drained Analysis, East Abutment Side Slope, Reference Borings: MLA-BSB-04 to MLA-BSB-06, and MLA-BSB-09

Layer ID	Description	Total Unit Weight (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
1	IDOT Fill	120	100	0
2	V Stiff to Hard SI CLAY	125	100	0
3	M Stiff to Stiff SI CL LOAM	115	0	28
4	V Stiff SI CLAY	120	100	30
5	M Dense SI LOAM	120	0	30
6	M Dense to V Dense SAND	125	0	33

GLOBAL STABILITY: I-80 BRIDGE OVER MIDLAND AVENUE; I-80 RECONSTRUCTION FROM HOUBOLT ROAD TO WEST OF CENTER STREET AND LARKIN AVENUE INTERCHANGE, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL | APPENDIX D-4 | DRAWN BY: N. Balakumaran | CHECKED BY: A. Hamad

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

FOR TRANSYSTEMS CORPORATION | 7901-15-01

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1145 North Main Street
Lombard, Illinois 60148
Phone (630) 953-9928
www.wangeng.com

APPENDIX E

Benchmark: Set cut square in south face of south pier foundation for sign "Exit 130 B Larkin Avenue North 1/2 mile" on the north side of westbound I-80, approximately 250' east of Midland Avenue; Elev.=633.455.

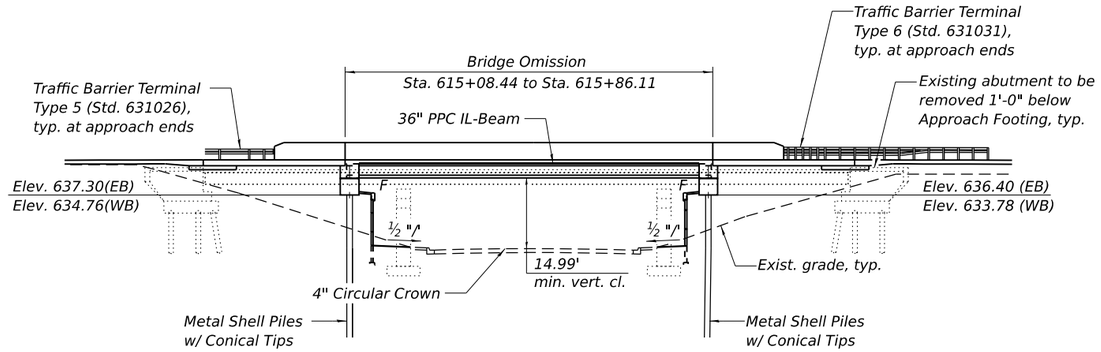
Existing Structure: S.N. 099-0050 and S.N. 099-0051. Built in 1963 as F.A.I. Rte. 80, Project I-80-4(20)132, Section 99-2HB-4 at Sta. 323+96.74. Existing dual structures each consist of a three-span reinf. concrete deck on steel WF beams supported by cast-in-place reinforced concrete stub abutments. The bridge measures 138'-8 1/8" back to back abutments, 44'-0" out to out width with a skew of 00°-56'-06". Structure to be removed and replaced.

Traffic Control: Traffic to be maintained using staged construction. The road shall remain open to at least two lanes of traffic in each direction at all times.

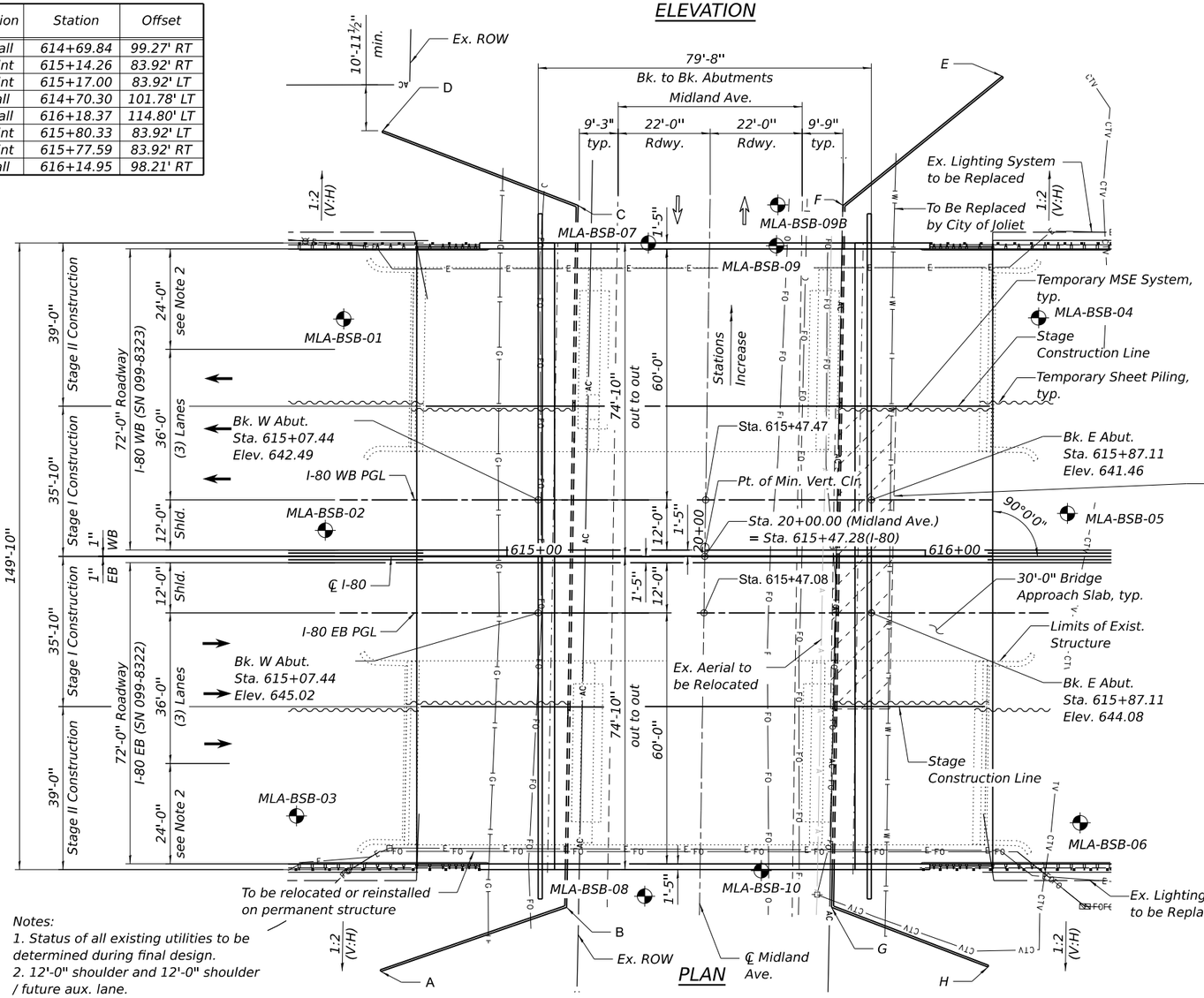
No salvage.

TABLE 1 - MSE WALL LAYOUT

Wall Location	Description	Station	Offset
A	Start Wall	614+69.84	99.27' RT
B	Kink Point	615+14.26	83.92' RT
C	Kink Point	615+17.00	83.92' LT
D	End Wall	614+70.30	101.78' LT
E	Start Wall	616+18.37	114.80' LT
F	Kink Point	615+80.33	83.92' LT
G	Kink Point	615+77.59	83.92' RT
H	End Wall	616+14.95	98.21' RT



ELEVATION



PLAN

HIGHWAY CLASSIFICAION

FAI Rte. 80 - I-80
Functional Class: Interstate
ADT: 83,640 (2017); 118,200(2040)
ADTT: 18,828 (2017); 26,607 (2040)
DHV: 11,820 (2040)
Design Speed: 70 m.p.h.
Posted Speed: 65 m.p.h.
Two-Way Traffic
Directional Distribution: 50:50

FAU 0337 - Midland Ave.
Functional Class: Major Collector
ADT: 3,750 (2019); 7,000 (2040)
ADTT: 75 (2019); 140 (2040)
DHV: 700 (2040)
Design Speed: 30 m.p.h.
Posted Speed: 25 m.p.h.
Two-Way Traffic
Directional Distribution: 50:50

DESIGN SPECIFICATIONS

2020 AASHTO LRFD Bridge Design Specifications, 9th Edition

DESIGN STRESSES

FILED UNITS

f'c = 4,000 psi (Superstructure)
f'c = 3,500 psi (Substructure)
fy = 60,000 psi (Reinforcement)

PRECAST PRESTRESSED UNITS

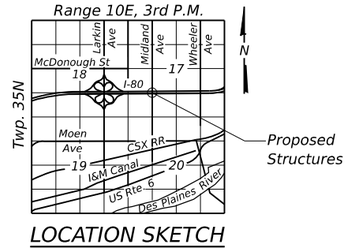
f'c = 8,500 psi
f'ci = 6,500 psi
fpu = 270,000 psi (0.6" ∅ low lax. strands)
fpbt = 202,300 psi (0.6" ∅ low lax. strands)

LOADING HL-93

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

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (SD1) = 0.096g
Design Spectral Acceleration at 0.2 sec. (SDS) = 0.168g
Soil Site Class = D



LOCATION SKETCH

LEGEND

- Exist. Aerial Electric
- Exist. Fiber Optic Cable
- Exist. Electric
- Exist. Cable TV
- Exist. Water
- Exist. Gas
- Exist. Telephone
- Exist. ROW
- Soil Boring Location

Notes:
1. Status of all existing utilities to be determined during final design.
2. 12'-0" shoulder and 12'-0" shoulder / future aux. lane.

GENERAL PLAN AND ELEVATION
I-80 OVER MIDLAND AVENUE
F.A.I. RTE. 80 - SEC. FAI 80 22 BR
WILL COUNTY
STATION 615+47.28
S.N. 099-8322 (E.B.)
S.N. 099-8323 (W.B.)

TranSystems

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		CHECKED - AMD		REVISED -	
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PLOT DATE = 7/28/2022		CHECKED - AMD		REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET 1 OF 4 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-80	FAI 80 22 BR	WILL		
		CONTRACT NO. 62R89		
	ILLINOIS	FED. AID PROJECT		

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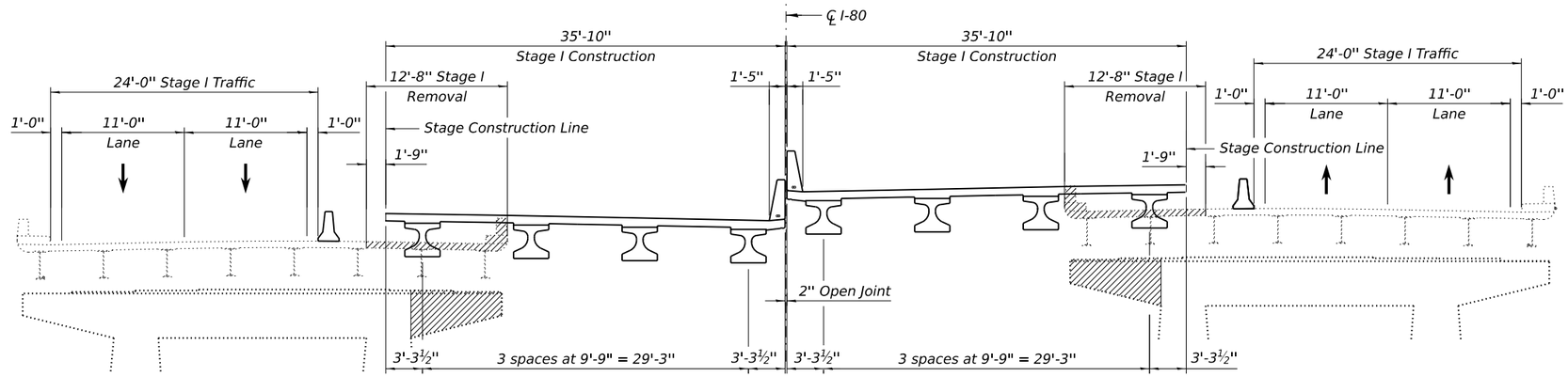
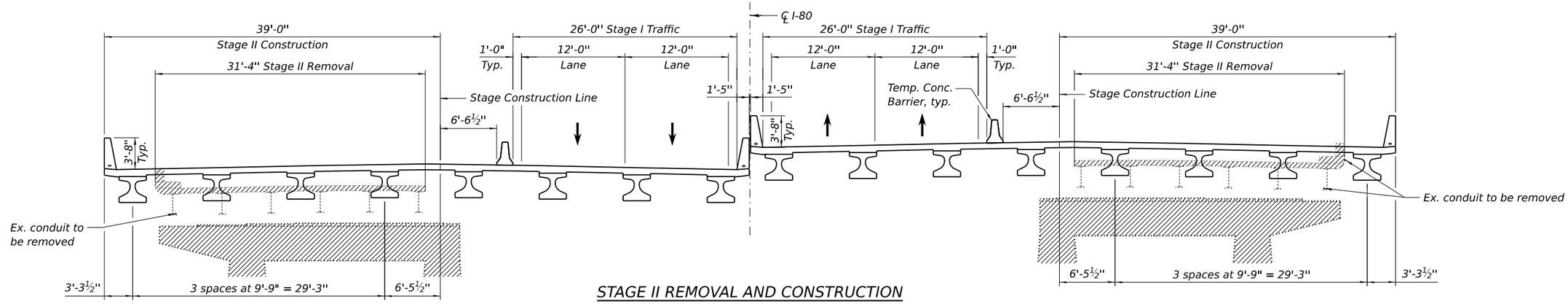


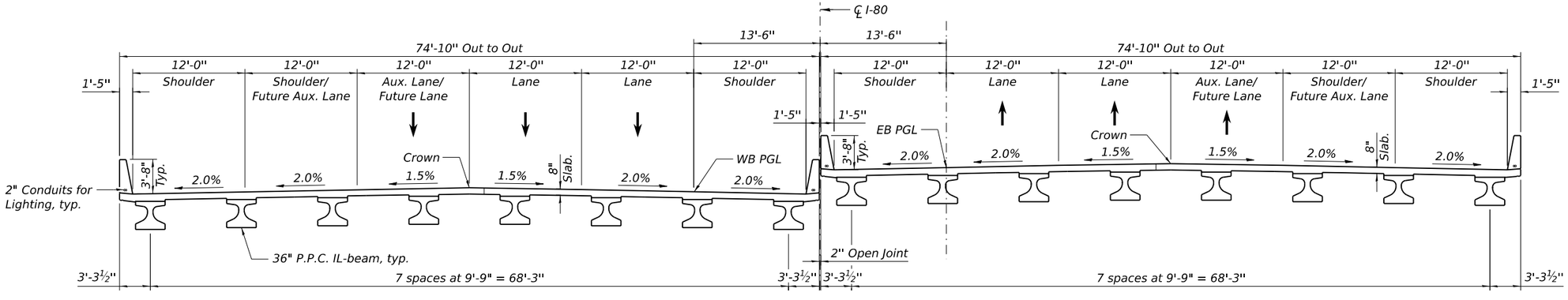
STAGE I REMOVAL AND CONSTRUCTION

(Looking East)



STAGE II REMOVAL AND CONSTRUCTION

(Looking East)



FINAL CROSS SECTION

(Looking East)

STAGING & DETAILS
I-80 OVER MIDLAND AVENUE
F.A.I. RTE. 80 - SEC. FAI 80 22 BR
WILL COUNTY
STATION 615+47.28
S.N. 099-8322 (E.B.)
S.N. 099-8323 (W.B.)

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TranSystems

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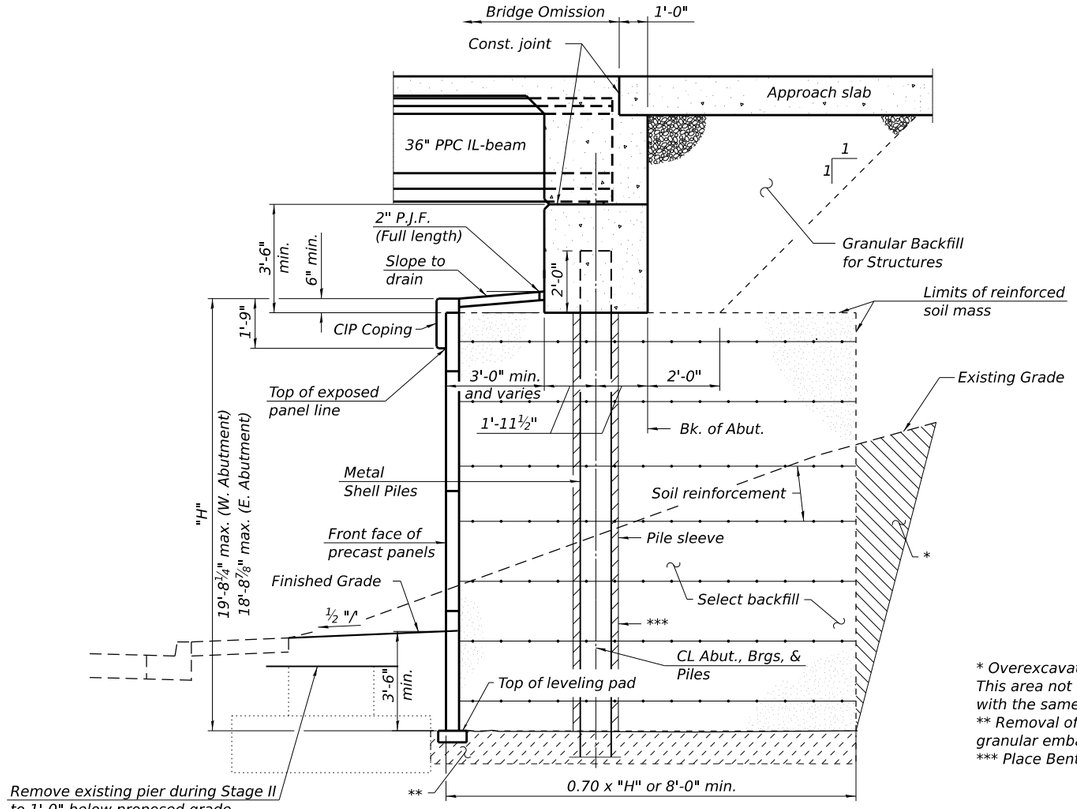
PLOT DATE = 7/28/2022		CHECKED - AMD	REVISED -		

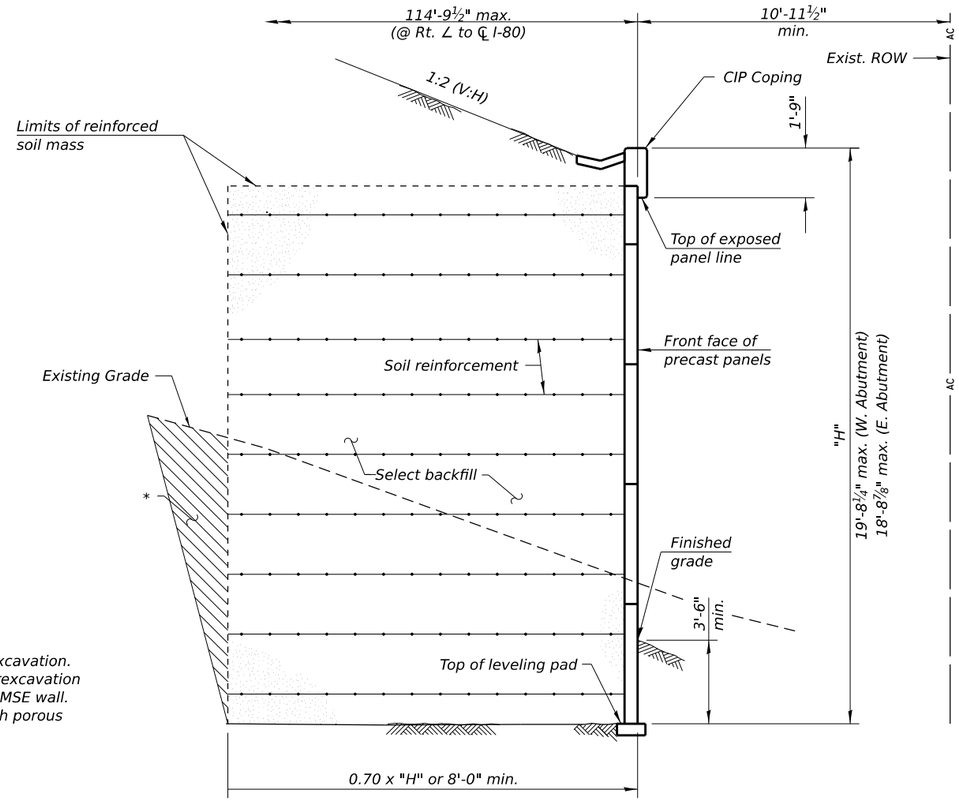
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-80	FAI 80 22 BR	WILL		
		CONTRACT NO. 62R89		
	ILLINOIS	FED. AID PROJECT		



SECTION THRU ABUTMENT

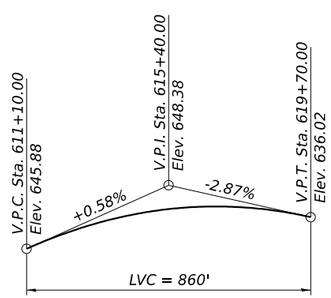
(Horiz. dim. @ Rt. ∠'s)

* Overexcavation beyond the limits of structure excavation. This area not measured for payment. Backfill overexcavation with the same material used for select fill used in MSE wall.
** Removal of unsuitable material and replace with porous granular embankment.
*** Place Bentonite between pile sleeve and pile.

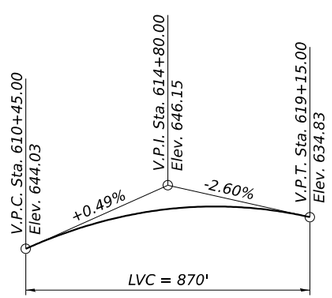


SECTION THRU MSE WALL

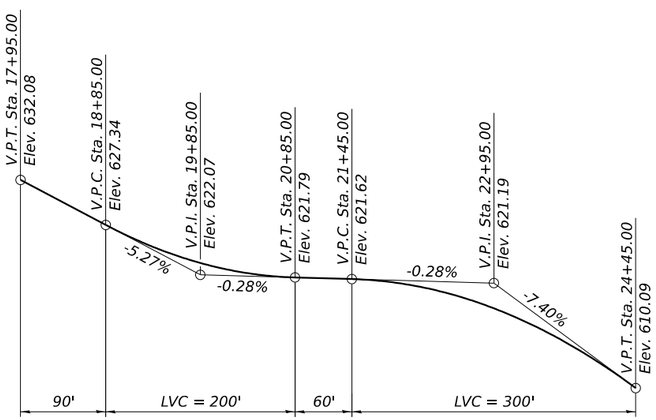
(Horiz. dim. @ Rt. ∠'s)



PROFILE GRADE F.A.I. 80 (E.B.)



PROFILE GRADE F.A.I. 80 (W.B.)



EXISTING PROFILE GRADE MIDLAND AVENUE

(Best-fit profile based on survey information along ℄ Midland Ave.)

SECTION THRU ABUTMENT AND DETAILS
I-80 OVER MIDLAND AVENUE
F.A.I. RTE. 80 - SEC. FAI 80 22 BR
WILL COUNTY
STATION 615+47.28
S.N. 099-8322 (E.B.)
S.N. 099-8323 (W.B.)

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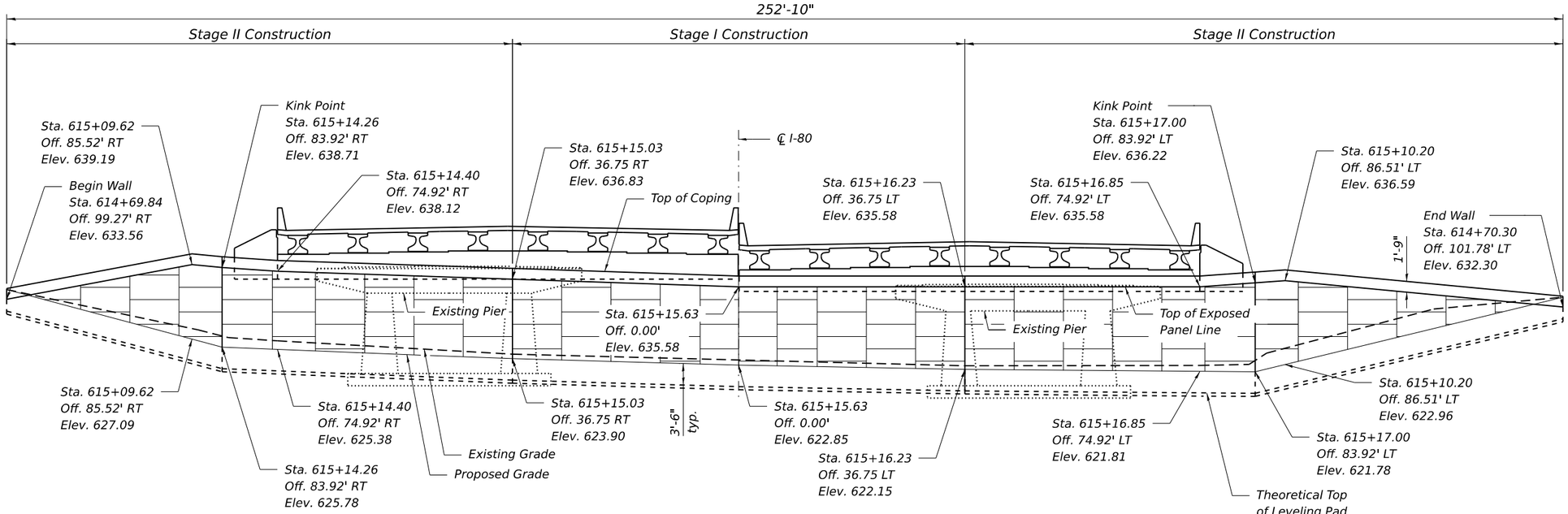
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

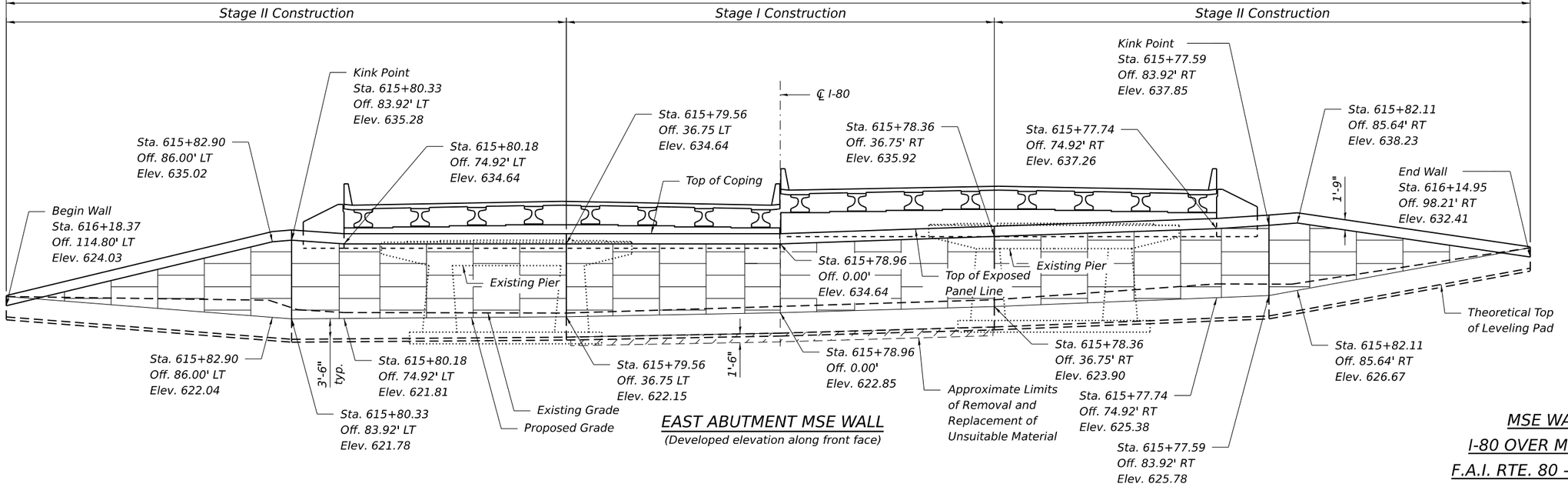
SHEET 3 OF 4 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-80	FAI 80 22 BR	WILL		
		CONTRACT NO. 62R89		
	ILLINOIS	FED. AID PROJECT		



WEST ABUTMENT MSE WALL

(Developed elevation along front face)



EAST ABUTMENT MSE WALL

(Developed elevation along front face)

LEGEND

Removal of Unsuitable Material
Replace with Porous Granular Embankment

Note:
Wall offsets measured from ℄ I-80 to Front Face of precast panels.

MSE WALL DETAILS
I-80 OVER MIDLAND AVENUE
F.A.I. RTE. 80 - SEC. FAI 80 22 BR
WILL COUNTY
STATION 615+47.28
S.N. 099-8322 (E.B.)
S.N. 099-8323 (W.B.)

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PLOT DATE = 7/28/2022	CHECKED - AMD	REVISED -			

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-80	FAI 80 22 BR	WILL		
		CONTRACT NO. 62R89		
	ILLINOIS	FED. AID PROJECT		

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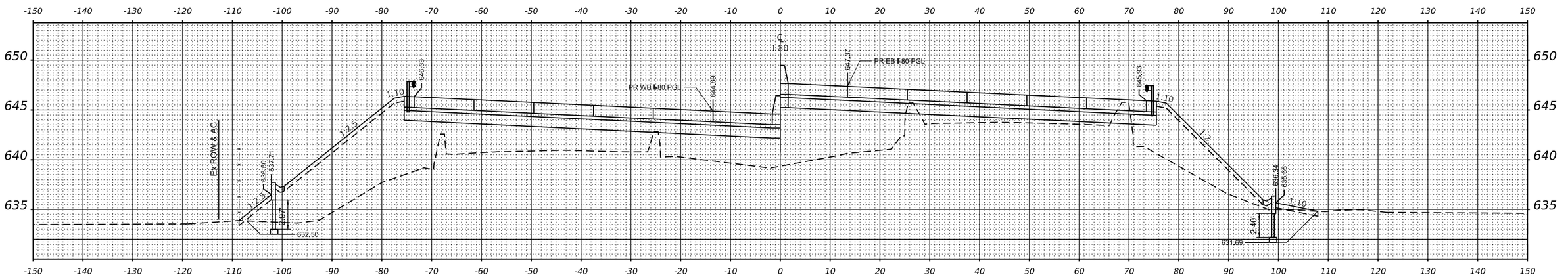
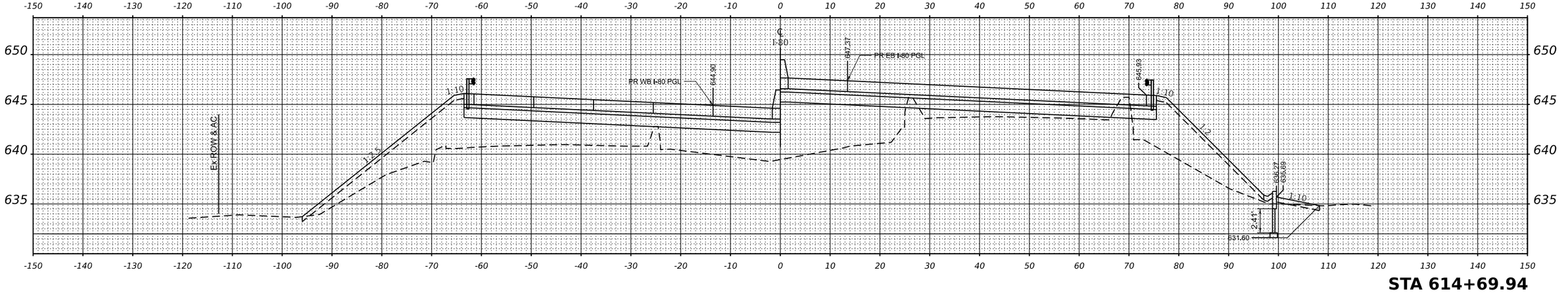
APPENDIX F



STA 614+70.38



STA 614+69.94

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

I-80 OVER MIDLAND AVENUE
END OF RETAINING WALLS - WEST APPROACH

SCALE:10H:5V | SHEET 1 OF 3 SHEETS | STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		COOK	3	1
		CONTRACT NO. ML-3		
	ILLINOIS	FED. AID PROJECT		

ORIGINAL SURVEY | FINAL SURVEY
NOTE BOOK
NO.
BY | DATE
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED

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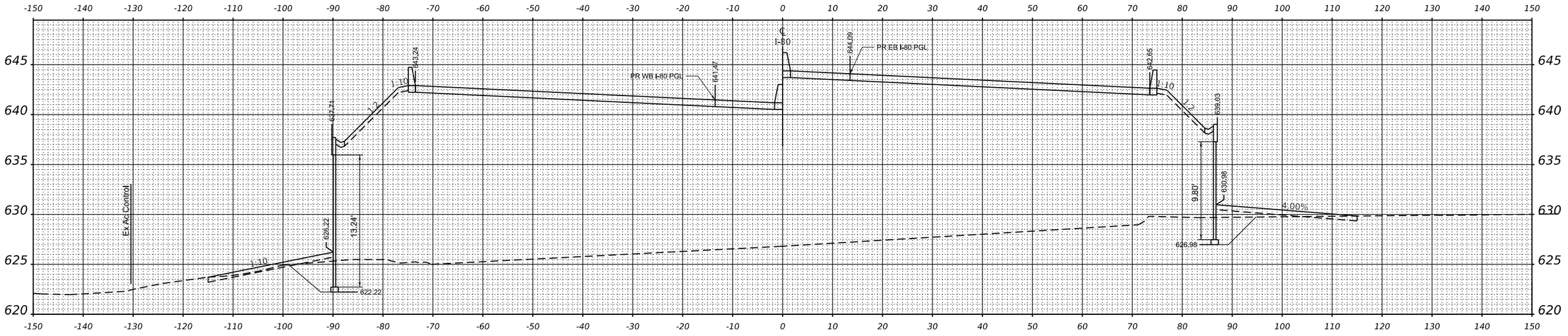
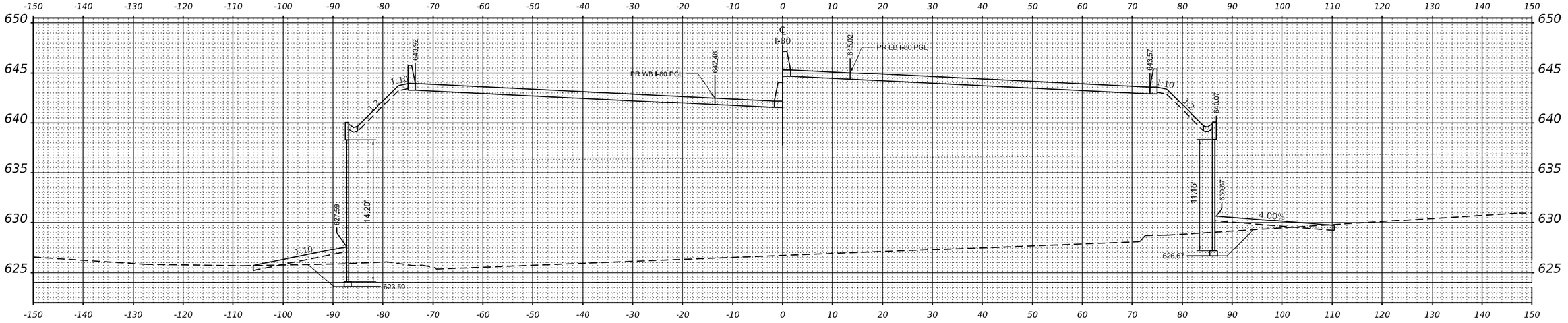


STA 615+86.38



STA 615+08.46

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PLOT DATE = 1/17/2022	DATE -	REVISED -	

I-80 OVER MIDLAND AVENUE
EAST AND WEST ABUTMENTS

SCALE:10H:5V | SHEET 2 OF 3 SHEETS | STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		COOK	3	2
		CONTRACT NO. ML-3		
		ILLINOIS	FED. AID PROJECT	

FINAL SURVEY — NOTE BOOK — NO. — SURVEYED — PLOTTED — TEMPLATE — AREAS — AREAS CHECKED — BY — DATE

ORIGINAL SURVEY — NOTE BOOK — NO. — SURVEYED — PLOTTED — TEMPLATE — AREAS — AREAS CHECKED — BY — DATE

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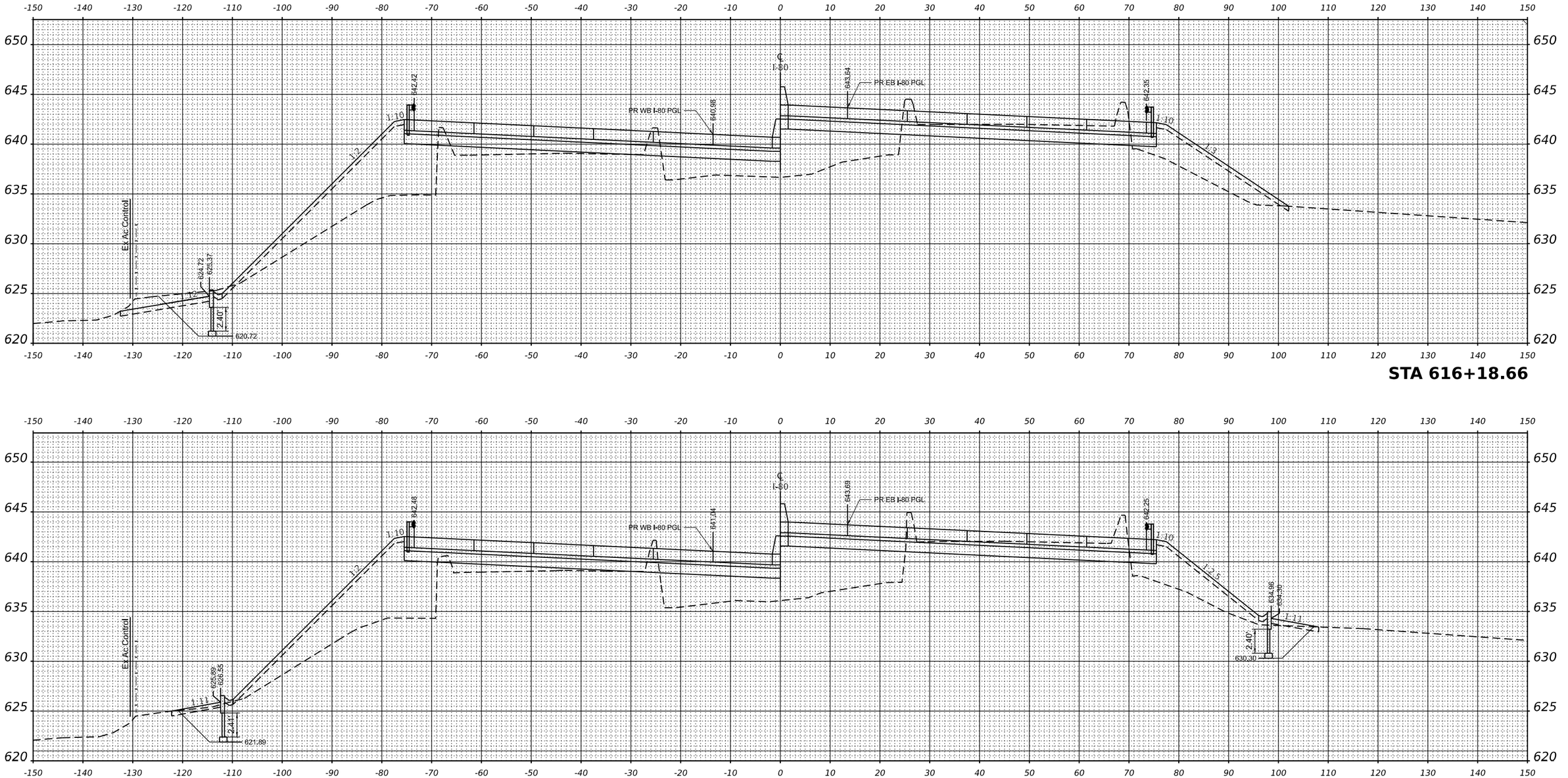

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

I-80 OVER MIDLAND AVENUE
END OF RETAINING WALLS - EAST APPROACH

SCALE:10H:5V | SHEET 3 OF 3 SHEETS | STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		COOK	3	3
		CONTRACT NO. ML-3		
	ILLINOIS	FED. AID PROJECT		

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