



# Illinois Department of Transportation

## Memorandum

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To: Fawad Aqueel                      Attn: Kenneth Park  
Suleyman Tulgar

From: Stephen Jones                      By: Giancarlo Gierbolini

Subject: Roadway Geotechnical Report\*

Date: April 10, 2024

A handwritten signature in blue ink, appearing to read 'G. Gierbolini'.

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\*Route: FAI 80 (Interstate Route 80)  
Location: At Larkin Avenue  
Section: FAI 80 21 Structure 4  
County: Will  
Contract: 62R25

The IDOT District One Geotechnical Unit has reviewed the Roadway Geotechnical Report (RGR) prepared by Wang Engineering, Inc. dated October 24, 2023 for the above-referenced project. The report provides geotechnical recommendations for the proposed improvements to Interstate Route 80 (I-80) at the interchange with Larkin Avenue in Will County.

The proposed improvements include the reconstruction and realignment of the access ramps at the interchange of I-80 and Larkin Avenue. The existing clover leaf style ramps will be removed and new ramps will be constructed in each quadrant, which will require embankment fills up to 11 feet and cuts up to 7 feet.

After reviewing the RGR, the report is approved with the following comments. A revised geotechnical report is not required.

1. The report recommends using an estimated topsoil stripping depth of 6 inches. The actual removal depth and the quantity of topsoil removal should be verified in the field. We recommend that all of the topsoil that is stripped be stockpiled, sorted, and reused for the proposed landscaping improvements. The pay item for this is **TOPSOIL EXCAVATION AND PLACEMENT (CU YD)**. We recommend that a plan note containing the stockpiling information be included in the contract documents.

April 10, 2024

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2. We agree with the recommendation for pipe underdrains in Section 5.5 of the report, however, pipe underdrains for interstate routes should be 6 inch diameter.

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

Cc: IDOT Soil Inspector

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**ROADWAY GEOTECHNICAL REPORT  
INTERSTATE 80 IMPROVEMENTS  
LARKIN AVENUE INTERCHANGE  
CONTRACT 62R25  
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**

**Original Report: October 27, 2022  
Revised Report: October 24, 2023**

**Technical Report Documentation Page**

<b>1. Title and Subtitle</b> Roadway Geotechnical Report Interstate 80 Improvements Larkin Avenue Interchange - Contract 62R25 Will County, Illinois		<b>2. Original Date:</b> October 27, 2022 <b>Revised Date:</b> October 24, 2023
		<b>3. Report Type</b> <input type="checkbox"/> SGR <input checked="" type="checkbox"/> RGR <input checked="" type="checkbox"/> Draft <input type="checkbox"/> Final <input type="checkbox"/> Revised
<b>4. Route / Section / County/ District/ Region</b> F.A.I 80 / NA / Will / 1 / 1		<b>5. IDOT Project No. /Contract No.</b> D-91-207-19/ 62R25
<b>6. PTB / Item No.</b> 194/011	<b>7. Existing Structure Number(s)</b> NA	<b>8. Proposed Structure Number(s)</b> NA
<b>9. Prepared by</b> Wang Engineering, Inc. 1145 N Main Street Lombard, IL 60148	<b>Contributor(s)</b> Author: Nesam Balakumaran, PE Jessica Bensen, PG QC/QA: Corina T. Farez, PE, PG PM: Andri Kurnia, PE	<b>Contact</b> (630) 480-5545 <a href="mailto:akurnia@wangeng.com">akurnia@wangeng.com</a>
<b>10. Prepared for</b> TranSystems Corporation 1475 East Woodfield Road, Suite 600 Schaumburg, IL 60173	<b>Design Engineer</b> Jennifer Golemba, PE	<b>Contact</b> (847) 407-5252 <a href="mailto:jmgolemba@transystems.com">jmgolemba@transystems.com</a>
<b>11. Abstract</b> The proposed improvements include realignment and reconstruction of Interstate 80/Larkin Avenue interchange ramps. The proposed ramp realignments will require new embankment fill up to 11 feet and new cut up to 7 feet.  At the surface, the borings encountered 3 to 15 inches of silty clay to sandy loam topsoil. The recommended topsoil thickness to be stripped is 6 inches. The future subgrade soils will consist of the existing very stiff to hard silty clay to silty clay loam or new compacted fill. With only 19% of the borings encountered groundwater and its deep seated. Shallower groundwater was observed as perched in granular layers between 4 and 8 feet below ground surface.  The subgrade soils will generally provide a stable working platform for the placement of fill and pavement construction. However, a subgrade treatment may be required at the Ramp C improvement section.  For a mechanistic pavement design, the pavement sections should be designed using an SSR of POOR. For an AASHTO pavement design, the pavement sections should be designed using an IBR of 2.  We estimate the embankment will have adequate factors of safety against slope instability and foundation soil settlement will be 1 inch or less. A shrinkage factor of 15% should be used to measure borrowed and furnished excavation quantities.		
<b>12. Path to archived file</b>  N:\_WANGLegacy\SHARED\Netprojects\79011501\Reports\RGRs\Larkin_62R25\RPT_Wang_NSB_79011501_I80-LarkinInterchange_V02_20231024.doc		

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**EXHIBITS**

- 1. SITE LOCATION MAP*
- 2-1. SITE PEDOLOGICAL MAP*
- 2-2.and 2-3 SITE PEDOLOGICAL TABLE*
- 3. SITE AND REGIONAL GEOLOGY MAP*
- 4. SUBGRADE SUPORT RATING CHART*

**APPENDIX A**

- BORING LOGS*

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- LABORATORY TEST RESULTS*

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- IDOT BMPR 507A AND 508A FORMS*

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**ROADWAY GEOTECHNICAL REPORT  
INTERSTATE 80 IMPROVEMENTS  
LARKIN AVENUE INTERCHANGE  
CONTRACT 62R25  
WILL COUNTY, ILLINOIS  
FOR  
TRANSYSTEMS**

## **1.0 INTRODUCTION**

This report presents the results of our subsurface investigation, laboratory testing, and geotechnical evaluations and recommendations in support of the roadway improvements proposed along Interstate 80 (I-80) from Houbolt Road to west of Center Street in Will County, Illinois. This section of the I-80 is included in Contract 62R25 as Larkin Interchange. A *Site Location Map* is presented as Exhibit 1.

Wang Engineering, Inc. (Wang) understands the proposed improvements include realignment and reconstruction of I-80/Larkin Avenue Interchange ramps going to and coming from I-80 and are as follows.

- Ramp A, Station 904+54.82 to Station 916+59.05;
- Ramp AA, Station 957+00.00 to Station 961+90.13;
- Ramp B, Station 1109+75.00 to Station 1120+46.63;
- Ramp C, Station 704+48.73 to Station 717+54.85;
- Ramp CC, Station 758+75.34 to Station 761+73.13;
- Ramp D, Station 807+15.00 to Station 818+30.41.

The purpose of our investigation was to characterize the pavement, subgrade, and groundwater conditions; perform geotechnical engineering analyses; and provide geotechnical recommendations for the design and construction of the proposed roadway mainline widening. The results of geotechnical investigation, laboratory testing, and geotechnical evaluations and recommendations for West mainline (contract 62R27), East Mainline (contract 62R89), and Wheeler Road (contract 62R30) are addressed in separate Roadway Geotechnical Reports (RGRs).

## **2.0 GEOLOGICAL SETTING**

The project area extends through western Will County, Illinois. On the USGS *Plainfield and Joliet 7.5 Minute Series Quadrangle* maps, the project is within SE ¼ of Section 18 and NE ¼ of Section 19, Tier 35N, Range 10E of the Joliet Township of the Third Principal Meridian.

The following review of published geologic data, with emphasis on factors that might influence the design and construction of the proposed engineering works, is meant to place the project area within a geological framework and confirm the dependability and consistency of the subsurface investigation results. For the study of the regional geologic framework, Wang considered northeastern Illinois in general and Will County in particular.

### **2.1 Physiography**

The project area is located within the western part of the Wheaton Morainal Country physiographic subsection of the Great Lake Section (Leighton et al. 1948). The project area is dominated by the Rockdale Moraine, it is characterized by morainic topography with series of broad parallel morainic ridges, elongated hills, mounds, basins, sags and valleys. The surface elevation along the project alignments ranges from 640 feet along Ramp C and 625 feet along I-80 west of Ramp D.

### **2.2 Pedological Features**

After the Wisconsin glaciation, several types of soils developed through weathering of glacial sediments. In Will County, the soil types were surveyed by the USDA (2022). A summary of the USDA soil types present within the project area, including their relevant geotechnical index properties and suitability as subgrade and road fill are shown in Exhibits 2-1 and 2-2. The soil information provided by USDA is meant to be used as a general reference in the absence of a site-specific investigation. In this instance, our findings regarding soil features affecting suitability for highway and street construction are not necessarily in agreement with the information presented in the exhibits.

### **2.3 Surficial Cover**

The surficial cover is the result of Wisconsin-age glacial activity. The glacial deposits were emplaced during pulsating advances and retreats of an ice-sheet lobe responsible for the formation of end moraines and associated low-relief till and lake plains (Hansel and Johnson 1996). Along the project area, the drift thickness varies about 75 feet thick. Predominantly the drift is dominated by silty clay diamicton of the Yorkville Member of the Lemont Formation resting over sand and gravel



outwash of the Henry Formation unconformably resting over bedrock. Exhibit 3 illustrates the *Site and Regional Geology*.

The Yorkville Member of the Lemont Formation, up to 35-foot thick, consists of yellowish brown to gray silty clay to silty clay loam diamicton that contains lenses of gravel, sand, silt, and clay (Hansel and Johnson 1996, Caron 2017). The Henry Formation consists of stratified sand and gravel outwash with thicknesses of about 5 to 40 feet (Caron 2017).

From a geotechnical viewpoint, the Yorkville Member is characterized by low to moderate plasticity, high strength, and low to moderate moisture content (Bauer et al. 1991).

## **2.4 Bedrock**

Within the project limits, the surficial cover rests unconformably on top of Silurian-age bedrock that dips eastward. The top of the bedrock lies around 75 feet below the ground surface (bgs). The bedrock is Silurian-age dolostone (Kolata 2005), slightly to highly weathered.

Structurally, the site is located on the eastern flank of the Wisconsin Arch. The northwest to southeast trending inactive Sandwich Fault Zone is about 5 miles southwest of the project.

## **2.5 Climatological Data**

The subsurface investigation was performed from May 8 to 24 of 2022. To assess the possible effects of temperature and precipitation on water table data and soil moisture, the climatic conditions for the investigation period and three months prior to the start of the investigation are summarized graphically in Figures 1 and 2. The precipitation and temperature data for the investigation period are compared against thirty-year monthly data (1991 to 2020) in box-and-whiskers format to show deviations from “normal” climate conditions during the current investigation. Local climate data were obtained from the O’Hare Station (NCDC 2022).

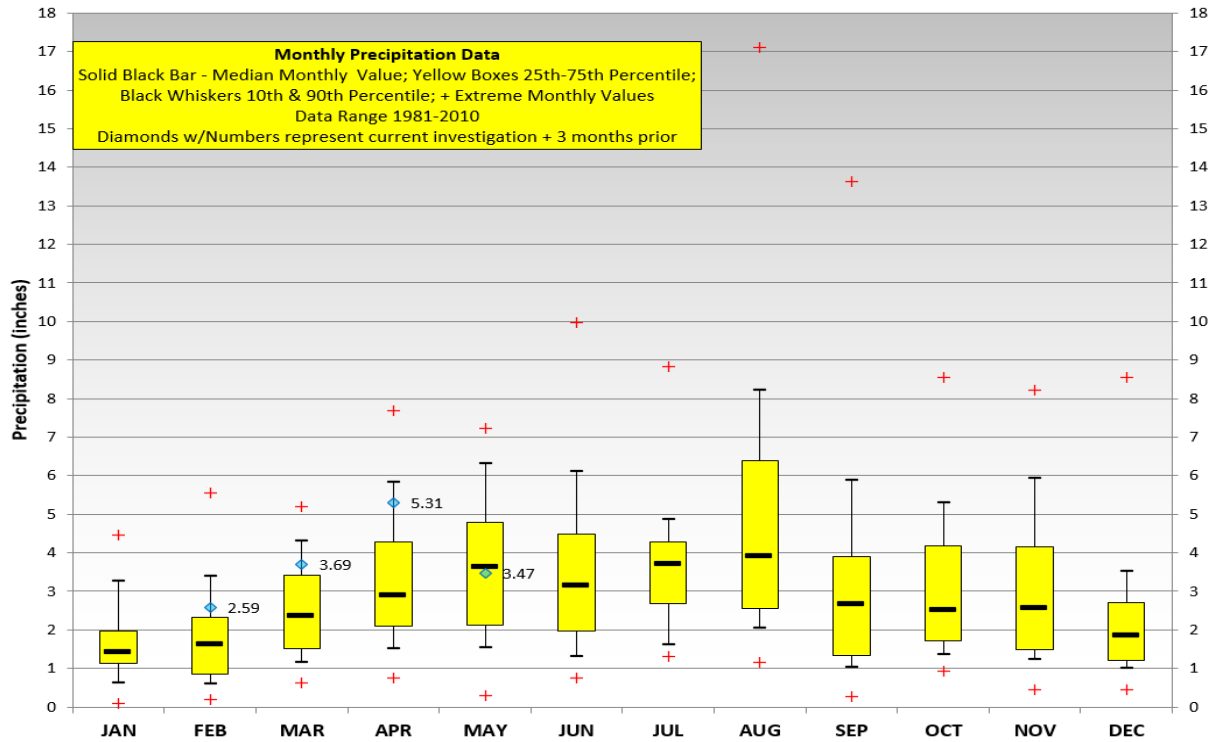


Figure 1: Monthly Precipitation Data for 2022

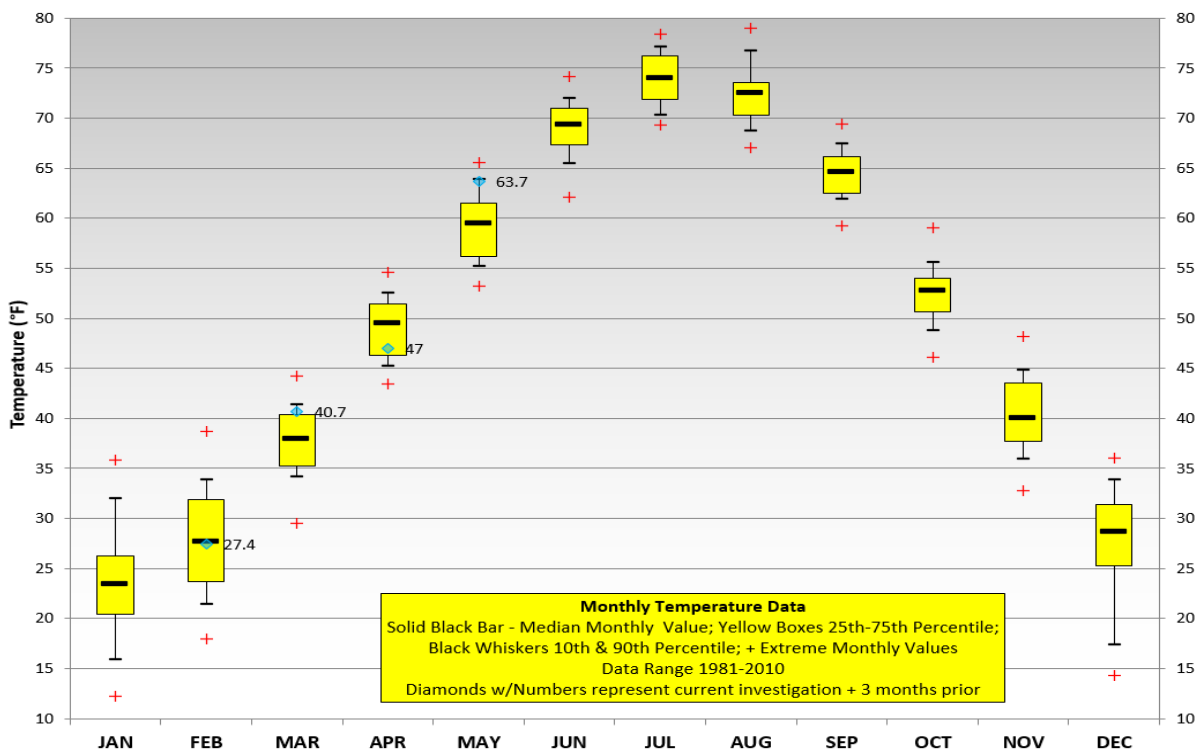


Figure 2: Monthly Temperature Data for 2022

The deviations from the historical 30-year climate data show the investigation period was characterized in general by above average precipitations from February to April and average in May 2022. High temperatures were recorded in March and May 2022, and average to below average temperatures were recorded in February and April 2022. Observations of perched water within the granular fill may have been influenced by these climate factors.

### 3.0 METHODS OF INVESTIGATION

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

#### 3.1 Field Investigation

The subsurface investigation along I-80/Larkin Avenue interchange ramps consisted of subgrade borings (SGB) drilled along each of the six ramp alignments (LR). To supplement the subsurface data, we considered for our analysis subgrade borings performed on the I-80 eastbound (EB) and westbound (WB) roadway pavements. The borings were drilled by Wang in May of 2022 from surface elevations of 625.4 to 640.2 feet and advanced to depths of 10.0 to 25.0 feet bgs. A summary of soil borings, ground surface elevations, and termination depths is provided in Table 1.

Table 1: Soil Boring Summary

Larkin Ramp Alignments	Alignment Limits (Station to Station)	Reference Borings IDs	Ground Surface Elevations (feet)	Termination Depths (feet)
Ramp A	904+54.82 to 916+59.05	LR-A-SGB-01 to LR-A-SGB-07	626.7 to 634.5	25
Ramp AA	957+00.00 to 961+90.13	LR-AA-SGB-01, LR-AA-SGB-02, and EB-SGB-29	629.6 to 634.5	10 to 11
Ramp B	1109+75.00 to 1120+46.63	LR-B-SGB-01 to LR-B-SGB-04, and EB-SGB-31	633.1 to 638.0	10 to 15
Ramp C	704+48.73 to 717+54.85	LR-C-SGB-01 to LR-C-SGB-04, and WB-SGB-32	634.3 to 640.2	10 to 15
Ramp CC	758+75.34 to 761+73.13	LR-CC-SGB-01 and WB-SGB-30	633.1 to 633.8	11 to 15
Ramp D	807+15.00 to 818+30.41	LR-D-SGB-01 to LR-D-SGB-04, and WB-SGB-28	625.4 to 635.1	10 to 20

The as-drilled northing and easting coordinates were surveyed by Wang with a mapping-grade GPS unit, whereas the stations, offsets, and elevations were provided by TranSystems. Boring location data are presented in the *Boring Logs* (Appendix A) and the as-drilled locations are shown in the *Boring Location Plans and Profiles* (Appendix F).

Geoprobe, ATV-, and truck-mounted drilling rigs equipped with hollow stem augers were used to advance and maintain open boreholes. Soil sampling was performed according to AASHTO T206, "*Penetration Test and Split Barrel Sampling of Soils.*" The soil was sampled continuously in the top 10.0 feet, and then sampled at 2.5-foot intervals thereafter. Soil samples collected from each sampling interval were placed in sealed jars and transported to the laboratory for further examination and laboratory testing.

Field boring logs, prepared and maintained by a Wang field geologist, included lithological descriptions, visual-manual soil classifications, results of Rimac and/or pocket penetrometer unconfined compressive strength tests, and results of Standard Penetration Tests (SPT) recorded as blows per 6 inches of penetration. The N-values shown in the *Boring Location Plans and Soil Profiles* (Appendix F) are the sum of the second and third set of blows per 6 inches of penetration.

Groundwater levels were measured while drilling and at the completion of each boring. For safety considerations each borehole was backfilled upon completion with soil cuttings and bentonite chips and the pavement surface was restored as close as possible to the original condition.

### **3.2 Laboratory Testing**

The soil samples were tested in the laboratory for moisture content (T265). Atterberg limits (T89 and T90), particle size analysis (T88), and organic content by loss on ignition (T267) tests were performed on select samples. Field visual descriptions of the soil samples were verified in the laboratory and the soils were classified according to the IDH and AASHTO Soil Classification Systems. The laboratory test results are shown in the *Boring Logs* (Appendix A), in the *Laboratory Test Results* (Appendix B), in the *IDOT Forms* (Appendix C), and in the *Boring Location Plans and Soil Profile* (Appendix E).

## **4.0 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 *Boring Location Plans and Soil*

*Profile* (Appendix F). Please note that the strata contact lines shown on the logs and profiles represent approximate boundaries between soil types. The actual transition between soil types in the field may be gradual in horizontal and vertical directions.

#### 4.1 Surface Characterization

The proposed improvement will include realignment and reconstruction of existing ramps. Most of the borings were drilled through grassy area within the right-of-way (ROW). Topsoil thicknesses are summarized in Table 2.

Table 2: Summary of Topsoil Thickness

Ramp Alignment	Number of Measurements	Topsoil Thickness Range (inches)	Average Thickness (inches)
Ramp A	4	3 to 6	5
Ramp AA	1	6	6
Ramp B	4	4 to 7	6
Ramp C	4	4 to 6	5
Ramp CC	1	6	6
Ramp D	4	6 to 15	10

Borings LR-A-SGB-06 and LA-A-SGB-07 were drilled on the Frontage Road and revealed pavement structure consisting of 6 and 7 inches of asphalt over 5 and 11 inches of gravelly sand base course.

#### 4.2 Subgrade Conditions

Beneath the surface, in descending order, the lithologic succession encountered includes: 1) man-made ground (fill); 2) medium stiff to hard silty clay, clay, silty clay loam to silty loam; and 3) medium dense to dense sand, silt to silty loam. The following section presents the subgrade conditions encountered along the ramp alignments.

##### 1) *Man-made ground (fill)*

Beneath the surface, the borings encountered mainly cohesive fill along I-80. The cohesive fill

generally consists of stiff to hard silty clay, clay loam to silty clay loam with unconfined compressive strength ( $Q_u$ ) values of 1.8 to 6.2 tsf with an average of 3.2 tsf, and moisture content values of 16 to 29% with an average of 19%. Laboratory index testing shows a liquid limit ( $L_L$ ) value of 53% and a plastic limit ( $P_L$ ) value of 15%. The soil belongs primarily to the A-7-6 group in accordance with AASHTO.

Table 3: Summary of Unit 1 Properties

Ramp Alignment	$Q_u$	SPT N-values	Moisture Content	Liquid Limit	Plastic Limit
	Min-Max/Avg. (tsf)	Min-Max/Avg. (blows per foot)	Min-Max/Avg (%)	Min-Max (%)	Min-Max (%)
Ramp A	2.3-6.2/3.9	4-17/9	12-19/16	NA	NA
Ramp AA	2.0	10	23	NA	NA
Ramp B	2.2	6	24	NA	NA
Ramp C	1.8-2.8/2.3	6-8/7	20-28/24	53	12
Ramp CC	NA	NA	NA	NA	NA
Ramp D	3.8	17	16	NA	NA

NA = not available

Beneath the fill, at 5.5 bgs, Boring LR-A-SGB-04 encountered 30 inches of black silty clay with a  $Q_u$  value of 1.5 tsf and a moisture content of 30%. An organic content of this sample was 4.6%.

2) *Stiff to hard silty clay, clay, silty clay loam to silty loam diamicton*

Below the surface, fill, or buried topsoil, at elevations of 621.2 to 639.8 feet (0.3 to 8.8 feet bgs), the borings advanced through stiff to hard silty clay, clay, silty clay loam to silty loam diamicton. This unit makes up most of the of subgrade. Throughout this unit, occasional silt and sand lenses were encountered. The unit is characterized by  $Q_u$  values of 0.9 to 10.1 tsf averaging 4.4 tsf, SPT N-values of 4 to 48 blows per foot averaging 15 blows per foot, and moisture content values of 14 to 29% averaging 19%.

Table 4: Summary of Unit 2 Properties

Ramp Alignment	Q <sub>u</sub>	SPT N-values	Moisture Content	Liquid Limit	Plasticity Index
	Min-Max/Avg.	Min-Max/Avg.	Min-Max/Avg	Min-Max	Min-Max
	(tsf)	(blows per foot)	(%)	(%)	(%)
Ramp A	1.2-10.1/4.5	4-21/11	14-28/21	43	26
Ramp AA	1.3-8.6/5.0	6-36/17	15-25/18	32	16
Ramp B	1.1-8.5/4.0	5-32/14	15-29/20	23	7
Ramp C	1.1-8.5/4.6	7-48/19	15-24/17	25	8
Ramp CC	1.7-8.2/5.0	10-46/22	14-21/17	28	11
Ramp D	0.9-8.5/4.0	6-35/16	14-26/19	50	33

3) *Medium dense to dense sand, silt to silty loam*

Below Unit 2, at elevations of 618.6 to 629.5 feet (5 to 14 feet bgs), borings encountered 0.8 to 1.5 feet of medium dense to dense sand, silt to silty loam. The unit is characterized by SPT N-values of 11 to 35 blows per foot averaging 20 blows per foot, and moisture content values of 11 to 22% averaging 18%.

Table 5: Summary of Unit 3 Properties

Ramp Alignment	SPT N-values	Moisture Content
	Min-Max/Avg.	Min-Max/Avg
	(blows per foot)	(%)
Ramp A	NA	NA
Ramp AA	13	18
Ramp B	17-22/20	21-22/22
Ramp C	NA	NA
Ramp CC	NA	NA
Ramp D	35	11

### 4.3 Groundwater Conditions

Groundwater was recorded during and upon completion of drilling. The groundwater was encountered in 19% of the roadway borings, perched within granular lenses, along Ramps A, B, and D. However, it should be noted that groundwater levels might change with seasonal rainfall patterns or may be influenced by local site conditions. A groundwater data summary is presented in Table 7.

Table 6: Summary of Groundwater Measurements

Ramp Alignment	Groundwater measurements No <sup>1</sup> ./out of <sup>2</sup>	Groundwater while drilling (feet)		Groundwater after drilling (feet)	
		Depth	Elevation	Depth	Elevation
		min-max	min-max	min-max	min-max
Ramp A	1/5	6.0	628.5	NA	NA
Ramp AA	0/3	NA	NA	NA	NA
Ramp B	3/6	4.0-14.2	619.3-634.0	15	618.0-618.9
Ramp C	0/6	NA	NA	NA	NA
Ramp CC	0/2	NA	NA	NA	NA
Ramp D	1/6	8.0	627.1	20.0	615.1

<sup>1</sup>No = number of borings that encountered groundwater; <sup>2</sup> total number of borings drilled along the alignment

### 5.0 ANALYSIS AND RECOMMENDATIONS

According to the plan and profile drawings and cross-section drawings provided by TranSystems, Wang understands the following improvements are proposed at I-80/Larkin Avenue interchange ramps:

- Ramp A realignment and reconstruction from Station 904+54.82 to Station 916+59.05 which includes up to 11 feet of new fill and up to 5 feet deep cut;
- Ramp AA realignment from Station 957+00 to Station 961+90 including up to 2 feet deep cut;
- Ramp B realignment from Station 1109+75.51 to Station 1120+46.63 which includes up to 5 feet deep cut;



- Ramp C realignment from Station 704+48.73 to Station 717+54.95 including up to 6 feet deep cut;
- Ramp CC realignment from Station 758+75.34 to Station 761+73.13 and will require up to 4 feet of new fill placed on the existing ditch; and
- Ramp D realignment from Station 807+15.19 to Station 818+30.41 which includes up to 6 feet of new fill and up to 7 feet deep cut for ditch.

## 5.1 Site Preparation

For the proposed realignment and reconstruction of the interchange ramps, it is recommended that any topsoil and existing pavement be stripped within the limits of the improvements. For estimating purposes, the topsoil thickness to be stripped is 6 inches. As per IDOT District One, a shrinkage factor of 15% should be used to measure borrowed and furnished excavation quantities.

After stripping, the stability of the exposed subgrade should be observed for the presence of any unsuitable and/or unstable soils to determine if remedial treatment is necessary. The prepared subgrade should be proofrolled to check for rutting and subgrade deformation. Using a static or dynamic cone penetrometer, any unstable and/or unsuitable soils revealed during proofrolling should be tested and evaluated according to the IDOT *Subgrade Stability Manual* (IDOT 2005). The side slopes along the right and left offsets should be benched to accommodate the new embankment fill. We recommend including the IDOT District One benching detail (Appendix F) in the contract plans.

## 5.2 Subgrade Treatment Recommendations

Based on the results of our investigation, the subgrade will consist of very stiff to hard silty clay to silty clay loam natural ground or new fill. The proposed pavement structure will be mostly supported on nature ground or new fill.

The soil borings indicate the proposed subgrade generally consists of soils with  $Q_u$  values greater than 1.0 tsf, moisture contents of less than 25%, and  $L_L$  values below 50%. Overall, the subgrade soils will provide a stable working platform for the construction of the new pavement structure and the aggregate base. However, Borings LR-C-SGB-01 and LR-C-SGB-02 along Ramp C (Station 714+30 to Station 717+54) revealed soil with moisture content values of 28 and 29% and  $Q_u$  values of 1.8 and 2.5 tsf and we recommend soil inspector to pay special attention to these areas and make a decision in the field.

The actual need for removal and replacement of unstable and/or unsuitable soils should be determined in the field at the time of construction. The subgrade should be proofrolled and tested as outlined in Section 5.1. If low strength and/or high moisture soils are encountered during construction, they should be removed to a minimum depth of 6 inches and replaced with compacted fill.

*As per IDOT District One, we recommend that a plan quantity of Aggregate Subgrade Improvement (CU YD) equal to 25% of the planned full depth pavement area assuming a thickness of 12 inches should be added for estimating purposes. This material should be used to replace any unsuitable soils below the bottom of the improved subgrade layer that are encountered in the field during construction. The actual need for removal and replacement with Aggregate Subgrade Improvement should be determined in the field at the time of construction by the Geotechnical Engineer or soils inspector. All potentially unstable soils should be tested with a cone penetrometer and treated in accordance with Article 301.04 of the SSRBC and the undercut guidelines in the IDOT Subgrade Stability Manual. Any material not needed for undercut replacement at the time of construction should be deleted from the contract with no extra compensation to the contractor.*

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

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

The replacement material for unsuitable soils removal should be in accordance with the IDOT Bureau of Design and Environment (BDE), Aggregate Subgrade Improvement Special Provision (April 1, 2022).

*As per IDOT District One, we also recommend including a plan quantity of geotechnical fabric for ground stabilization (SQ YD) equal to at least 25% of the planned pavement area. We recommend placing geotextile fabric at the base of undercut areas where low strength subgrade soils are*

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

Any highly moist soils, if not otherwise unsuitable or unstable, encountered within the exposed roadway subgrade should be disked or tilled, dried, and compacted before placing the new pavement structure.

The frost depth for pavement design in northern Illinois could be expected to range from 45 to 60 inches (IDOT 2020). Within the frost susceptible depths, most of the samples tested in the laboratory had plasticity indices (PI) of 13 to 38. In our opinion, the soils will exhibit low to moderate frost susceptibility. Adequate drainage will suffice to alleviate frost heave.

### **5.3 Pavement Design Recommendations**

For a Mechanistic Pavement Design (MPD), IDOT rates the subgrade using the Subgrade Support Rating (SSR). Laboratory testing on representative samples of the subgrade soil shows SSR ratings of POOR to FAIR (Exhibit 4). Considering the worst subgrade conditions and unknown new fill type, we recommend an SSR of POOR be used for the purpose of pavement design. Pavement structure conforming to IDOT's MPD requires a minimum of 12 inches of improved subgrade below the design pavement structure to ensure stability during construction and long-term pavement performance (IDOT 2020).

For an AASHTO pavement design, the subgrade soil support is characterized using the Illinois Bearing Ratio (IBR). Based on soil tests and classifications of A-6 and A-7-6, we recommend that the pavement be designed based on an IBR value of 2 (IDOT 2020).

### **5.4 Embankment and cut sections**

Based on the cross-sections drawings, the proposed I-80/Larkin Avenue ramps realignment will have embankment cuts or fill placed on the native ground or existing embankment and ditch slopes. The slope will be graded mainly at 1:2 to 1:3 (V: H). We have evaluated the potential long-term settlement and global slope stability at critical sections along the proposed improvements.

#### 5.4.1 Settlement

In general, we do not anticipate excessive settlement. We performed settlement analysis at selected sections with the highest fill and lower soil strength. Settlement estimates have been made based on correlations to measured index properties obtained from the laboratory tests (Appendix B). Settlement evaluations are summarized and presented in Table 7.

Table 7: Summary of Estimated Consolidation Settlements

Alignment	Approximate Station	New Fill Height (feet)	Reference Boring(s)	Estimated Settlement (inches)
Ramp A	916+00	11.3	LR-A-SGB-04	1.00
Ramp D	809+00	4.0	LR-D-SGB-01	0.53

#### 5.4.2 Global Stability

The proposed embankment fill and cut side slopes will be graded mainly at 1:2 to 1:6 (V: H). The global stability at a critical section was analyzed at Ramp A Station 916+00 and Ramp D Stations 809+50 and 814+00 based on the soil information from the nearest borings. The analysis shows the factors of safety (FOS) meet IDOT’s minimum requirement of 1.7 for cuts and 1.5 for new fills. Slope stability analyses results are included in Appendix D.

### 5.5 Roadway Drainage

The proposed subgrade and pavement should have proper surface grading to prevent the pooling of water. The soils encountered beneath the proposed subgrade will exhibit poor to fair drainage characteristics. The fill material to be placed for reconstruction will likely be cohesive and will also exhibit poor drainage characteristics. We recommend installing longitudinal pipe underdrains under the edge of new pavement section, and transverse pipe underdrains at the low points in the profile, spaced 300 feet on either side of the low point, and at the base of any undercuts. For transverse underdrains at the low points where the distance to the previous or the following high point is greater than 600 feet, we recommend two transverse underdrains to be placed at 300 feet interval on either side. The pipe underdrains should be 4 inches in diameter and should be installed per Article 601 in the IDOT *Standard Specifications* (IDOT 2022) and consist of Type 2 underdrains (Adopted 1, 2022).

## **6.0 CONSTRUCTION CONSIDERATIONS**

### **6.1 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. Excavations should be sloped at no steeper than 1:2 (V:H) for cohesive soils and 1:2.5 (V:H) for granular soils.

We do not anticipate the need for special dewatering systems. However, during and immediately following periods of heavy precipitation, the excavations may encounter perched groundwater within any granular layers interbedded within the cohesive layers. Therefore, the Contractor should ensure proper surface grading to prevent pooling of water and run-off into open excavations. Any water allowed to enter excavations should immediately be removed via sump-pump.

### **6.2 Filling and Backfilling**

Fill material used for replacement of any unstable and/or unsuitable soils encountered during construction should be pre-approved by the Engineer. The fill material should be free of organic matter and debris and should be placed in lifts compacted in accordance with Section 205, *Embankment* (IDOT 2022). For new fill to be placed on existing slopes, we recommend benching the slopes according to IDOT embankment construction details.

### **6.3 Reuse of Materials**

Site soils may be reused as embankment fill if testing shows it conforms to the following criteria: a)  $L_L$  less than 50%; b) PI value of more than 12%; c) maximum dry density greater than 90 pcf according to AASHTO T99; and d) organic content less than 10%. The soils should be removed, brought to within  $\pm 2\%$  of the optimum moisture content and recompacted according to Section 205, *Embankment* (IDOT 2022).

### **6.4 Earthwork Operations**

The required earthwork can be accomplished with conventional construction equipment. Moisture and traffic will cause deterioration of the 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 avoid 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.

## **7.0 QUALIFICATIONS**

The analyses and recommendations in this report are based upon data obtained from the borings drilled at the locations shown on the *Boring Logs* (Appendix A) and in the *Boring Location Plans and Soil Profiles* (Appendix E). 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 proposed improvements are planned, we should be timely informed so that our recommendations can be adjusted accordingly.

It has been a pleasure to assist TranSystems 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.

Andri A Kurnia, P.E.  
Senior Engineer

Jessica Bensen, P.G.  
Senior Staff Geologist

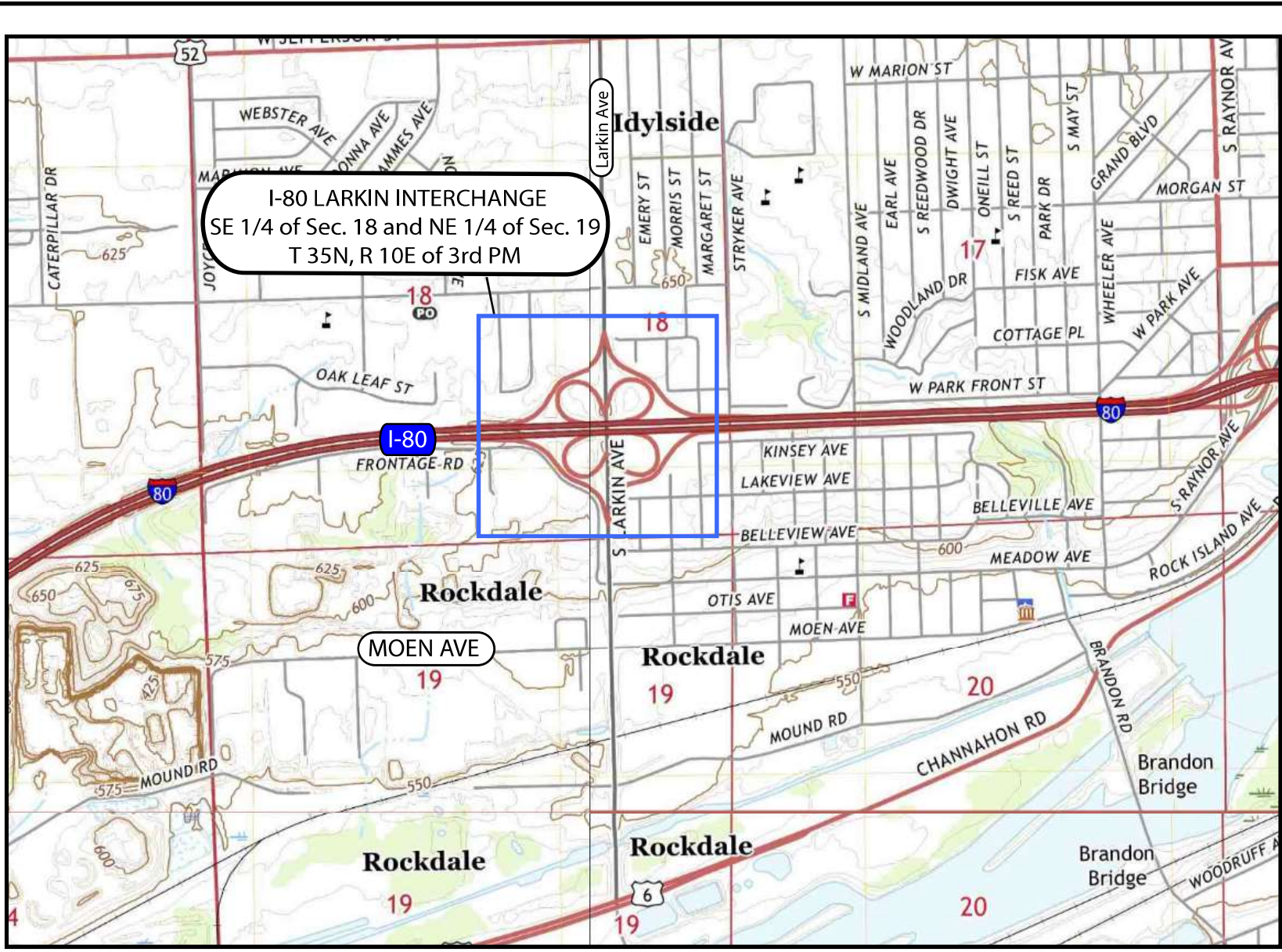
Corina T Farez, P.E., P.G.  
QA/QC Reviewer

## ***REFERENCES***

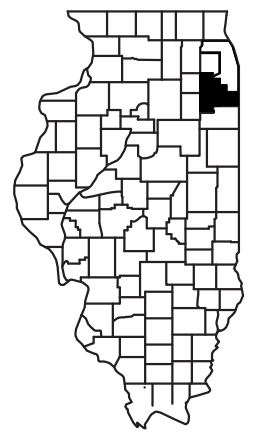
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## **EXHIBITS**

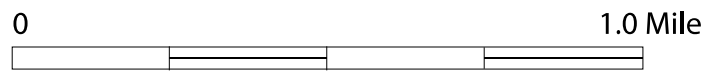




I-80 LARKIN INTERCHANGE  
 SE 1/4 of Sec. 18 and NE 1/4 of Sec. 19  
 T 35N, R 10E of 3rd PM



Will County

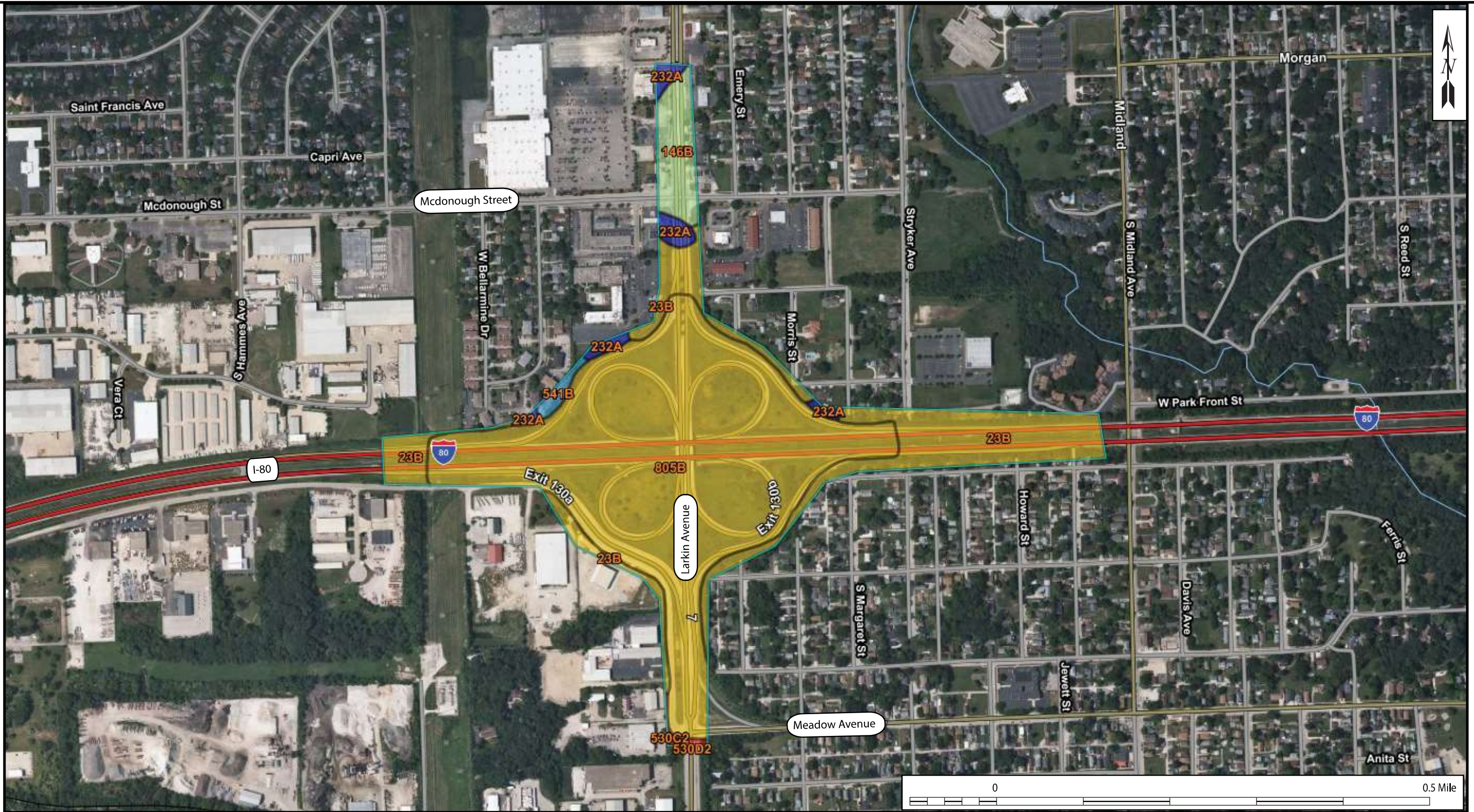


SITE LOCATION MAP: I-80 RECONSTRUCTION; LARKIN AVENUE INTERCHANGE,  
 CONTRACT 62R25; WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	<b>EXHIBIT 1</b>	DRAWN BY: N. Karahalios CHECKED BY: A. Kurnia
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 <b>Wang Engineering</b>	1145 N. Main Street Lombard, IL 60148 www.wangeng.com
	FOR TRANSYSTEMS CORPORATION

7901-15-01



**Organic Matter Soil Rating**

- |   |  |
|---|--|
| <span style="color: red;">■</span> ≤ 0.82                   | <span style="color: lightblue;">■</span> > 1.50 and ≤ 2.10     |
| <span style="color: yellow;">■</span> > 0.82 and ≤ 1.27     | <span style="color: blue;">■</span> > 2.10 and ≤ 3.82          |
| <span style="color: lightgreen;">■</span> > 1.27 and ≤ 1.50 | <span style="color: gray;">■</span> Not rated or not available |

SITE PEDOLOGICAL MAP: I-80 RECONSTRUCTION; LARKIN AVENUE INTERCHANGE, CONTRACT 62R25; WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL      **EXHIBIT 2-1**      DRAWN BY: J. Bensen  
 CHECKED BY: A. Kurnia

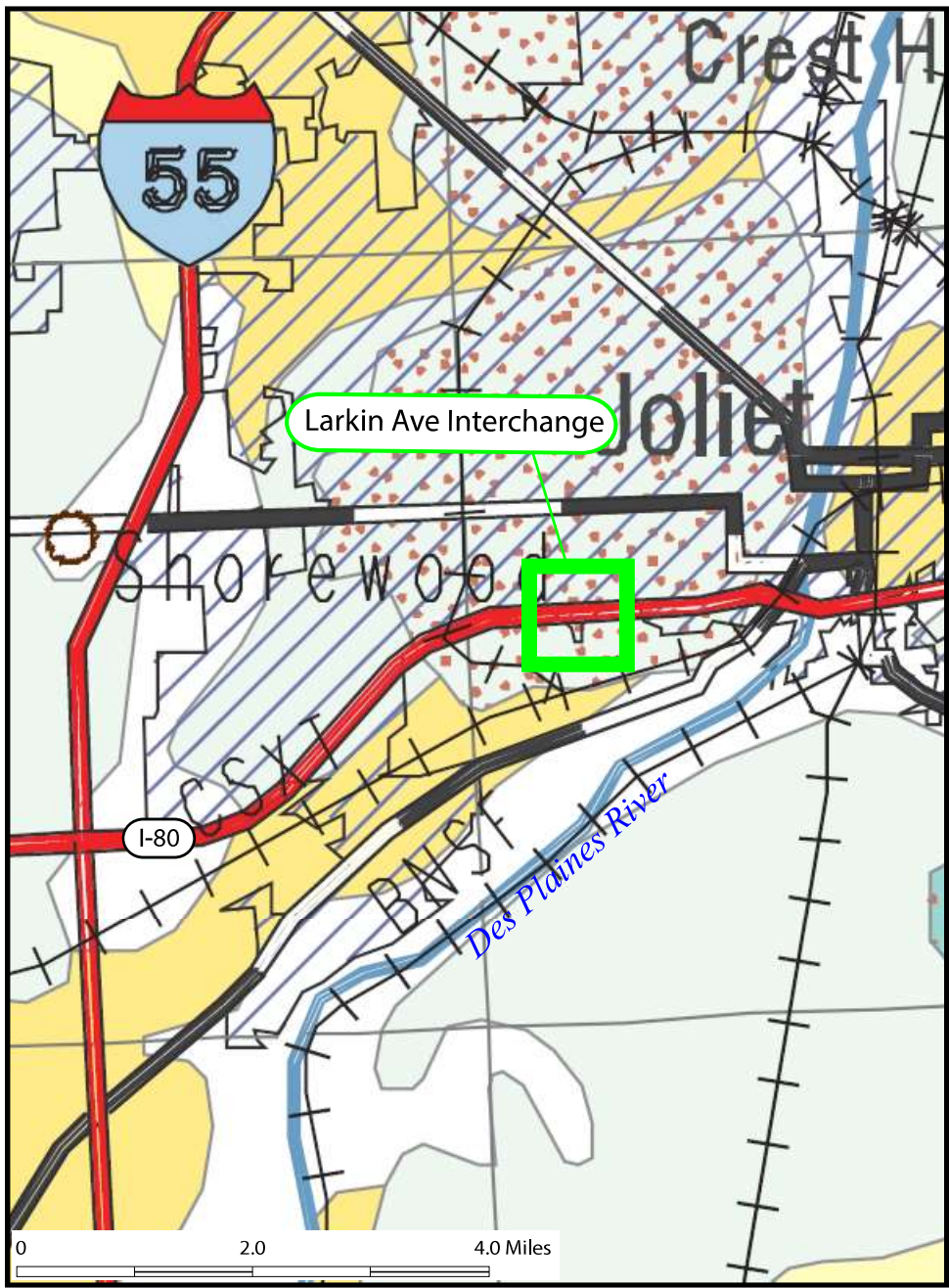
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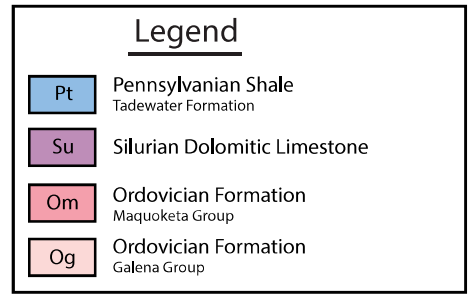
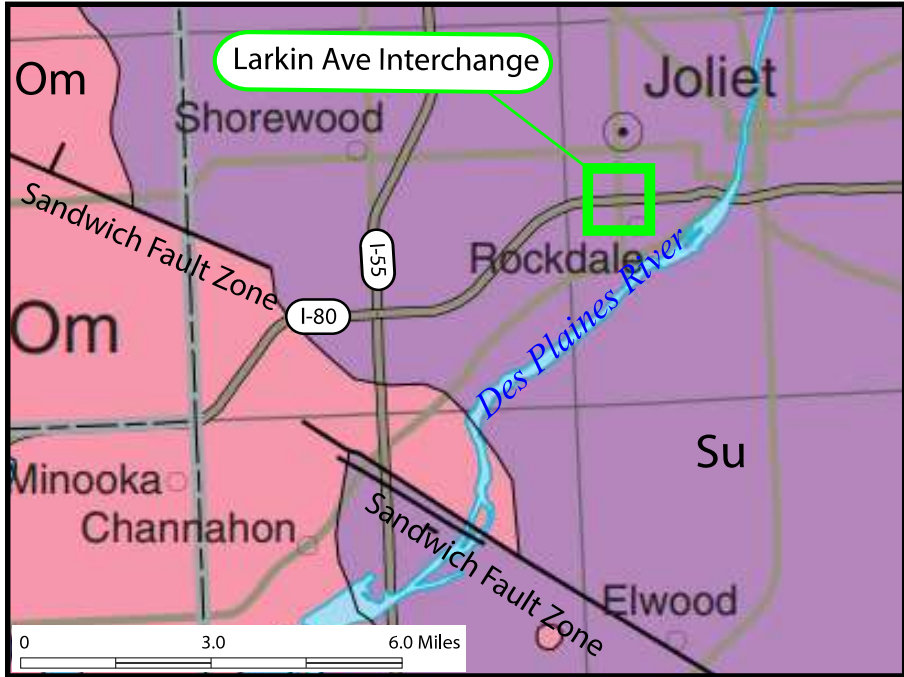
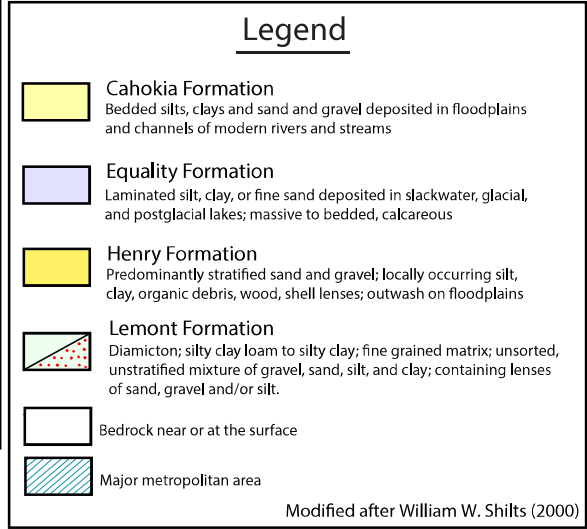
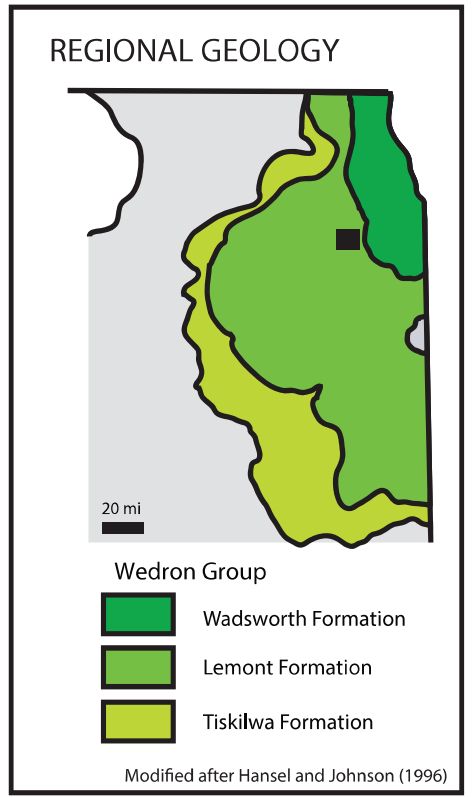
Map unit symbol and soil name	Depth	USDA texture	Classification	Pct Fragments		Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Organic matter	Liquid limit	Plasticity index	Erosion factors			Potential as a source of roadfill	Local Roads and Streets	Shallow Excavations
				AASHTO	>10 inches									3-10 inches	Kw	Kf			
	In			L-R-H	L-R-H	Pct	Pct	Pct	g/cc	micro m/sec	Pct	L-R-H	L-R-H						
<b>23B—Blount silt loam, Lake Michigan Lobe, 2 to 4 percent slopes</b>																			
Blount, lake michigan lobe	0-6	Silt loam	A-6, A-7-6	0-0-0	0-1-3	5-12-20	53-66-77	18-22-27	1.25-1.35-1.45	4.23-9.17-14.11	2.0-2.5-3.0	31-37-43	11-14-18	0.37	0.37	3	Poor, Low strength, Wetness, Dusty, Shrink-swell	Very limited; Frost action, Low strength, Depth to saturated zone, Ponding, Shrink-swell	Very limited; Depth to saturated zone, Dusty, Unstable excavation walls, Ponding, Too clayey
	6-10	Silt loam	A-4, A-6	0-0-0	0-1-3	5-12-20	53-67-80	15-21-27	1.30-1.40-1.55	4.23-9.17-14.11	0.2-0.6-1.0	25-32-39	9-14-19	0.55	0.55				
	10-28	silty clay loam, silty clay, clay loam	A-7-6	0-1-1	0-1-3	5-15-25	27-43-60	35-42-48	1.40-1.50-1.55	0.42-2.33-4.23	0.2-0.6-1.0	44-51-58	25-30-35	0.32	0.32				
	28-34	silty clay loam, clay loam, silty clay	A-6, A-7-6	0-1-1	0-3-4	5-15-25	30-49-68	27-36-45	1.50-1.55-1.70	0.42-0.92-1.41	0.0-0.3-0.5	37-46-55	19-26-32	0.37	0.37				
	34-60	silty clay loam	A-6, A-7-6	0-1-1	0-2-4	5-15-20	40-55-68	27-30-40	1.60-1.75-1.90	0.42-0.92-1.41	0.0-0.3-0.5	35-39-49	18-21-28	0.43	0.43				
<b>146B—Elliott silt loam, 2 to 4 percent slopes</b>																			
Elliott	0-9	Silt loam	A-6, A-7-6	0-0-0	0-0-0	2-10-15	58-65-76	22-25-27	1.30-1.40-1.45	4.23-9.17-14.11	3.0-4.3-5.0	38-44-47	15-17-18	0.32	0.32	3	Poor, Low strength, Wetness, Dusty	Very limited; Frost action, Low strength, Depth to saturated zone, Ponding, Shrink-swell	Very limited; Depth to saturated zone, Dusty, Unstable excavation walls, Ponding, Too clayey
	9-13	Silty clay loam	A-7-6	0-0-0	0-0-0	2-8-15	50-62-71	27-30-35	1.25-1.35-1.45	4.23-9.17-14.11	2.5-3.3-4.0	41-46-53	18-21-24	0.28	0.28				
	13-17	silty clay loam, silty clay	A-7-6	0-0-0	0-0-0	2-7-15	40-51-61	37-42-49	1.35-1.45-1.55	1.41-2.82-4.23	0.5-1.0-1.6	46-52-60	26-30-35	0.32	0.32				
	17-35	silty clay, silty clay loam	A-6, A-7-6	0-0-0	0-0-1	2-10-20	40-55-65	27-35-45	1.45-1.55-1.75	0.42-1.41-4.23	0.1-0.4-0.8	34-43-55	17-24-32	0.43	0.43				
	35-60	silty clay loam	A-6, A-7-6	0-0-0	0-0-2	3-10-20	42-60-70	27-30-38	1.65-1.75-1.85	0.42-0.92-1.41	0.0-0.2-0.5	34-38-46	16-19-26	0.49	0.49				
<b>232A—Ashkum silty clay loam, 0 to 2 percent slopes</b>																			
Ashkum, drained	0-12	Silty clay loam	A-7-5, A-7-6	0-0-0	0-0-0	1-8-15	45-55-64	35-37-40	1.20-1.35-1.45	1.41-2.82-4.23	3.0-5.0-8.0	51-58-67	25-26-28	0.20	0.20	5	Poor, Wetness, Low strength, Shrink-swell, Dusty	Very limited; Ponding, Depth to saturated zone, Shrink-swell, Frost action, Low strength	Very limited; Dusty, Unstable excavation walls, Ponding, Depth to saturated zone, Too clayey
	12-29	Silty clay loam, silty clay	A-7-6	0-0-0	0-0-0	2-8-15	43-51-63	35-41-42	1.30-1.40-1.50	1.41-2.82-4.23	0.5-1.3-2.5	46-54-58	25-30-30	0.32	0.32				
	29-54	Silty clay loam, silty clay	A-6, A-7-6	0-0-0	0-0-1	5-9-20	40-58-65	30-33-42	1.50-1.60-1.70	1.41-2.82-4.23	0.1-0.3-1.0	39-43-53	21-23-30	0.43	0.43				
	54-60	Silty clay loam	A-6, A-7-6	0-0-0	0-0-1	5-9-20	45-61-68	27-30-35	1.55-1.65-1.75	1.41-2.82-4.23	0.0-0.3-1.0	37-41-47	19-21-25	0.43	0.43				
<b>530C2—Ozaukee silt loam, 4 to 6 percent slopes, eroded</b>																			
Ozaukee, eroded	0-7	Silt loam	A-6, A-7-6	0-0-0	0-0-1	5-12-22	53-66-75	18-22-27	1.30-1.43-1.55	4.23-9.17-14.11	1.0-1.7-2.5	30-35-42	12-14-18	0.43	0.43	3	Fair, Low strength, Dusty, Wetness	Somewhat limited; Frost action, Low strength	Somewhat limited; Depth to saturated zone, Dusty, Unstable excavation walls, Too clayey
	7-26	silty clay loam, clay, silty clay	A-6, A-7-6	0-0-1	0-1-4	5-11-18	34-48-58	35-41-50	1.45-1.55-1.65	0.42-2.33-4.23	0.2-0.5-0.9	31-38-48	15-19-25	0.32	0.32				
	26-37	silty clay loam, silty clay	A-6	0-1-2	0-1-5	5-12-20	40-52-64	29-36-42	1.55-1.65-1.70	0.42-0.92-1.41	0.1-0.3-0.6	24-31-37	11-15-19	0.37	0.37				
	37-60	silty clay loam, clay loam	A-4, A-6	0-1-2	0-2-7	7-14-23	50-55-64	27-31-35	1.60-1.70-1.85	0.42-0.75-1.41	0.0-0.2-0.5	21-26-30	9-12-14	0.43	0.43				
<b>530D2—Ozaukee silt loam, 6 to 12 percent slopes, eroded</b>																			
Ozaukee, eroded	0-7	Silt loam	A-6, A-7-6	0-0-0	0-0-1	7-14-23	52-65-73	18-21-27	1.30-1.45-1.55	4.23-9.17-14.11	1.0-1.7-2.5	30-35-42	12-15-19	0.43	0.43	3	Fair, Low strength, Wetness, Dusty	Somewhat limited; Frost action, Low strength, Slope, Depth to saturated zone	Somewhat limited; Depth to saturated zone, Dusty, Unstable excavation walls, Slope, Too clayey
	7-11	Silty clay loam, silt loam	A-6, A-7-6	0-0-0	0-0-1	5-10-18	50-59-69	24-31-34	1.40-1.50-1.60	4.23-9.17-14.11	0.3-0.6-1.0	34-41-45	16-21-24	0.43	0.43				
	11-27	Silty clay, silty clay loam, clay	A-6, A-7-6	0-0-1	0-1-4	5-11-18	34-48-58	35-41-50	1.45-1.55-1.65	0.42-2.33-4.23	0.2-0.5-0.9	30-38-52	15-19-26	0.32	0.32				
	27-32	silty clay loam, silty clay	A-6	0-1-2	0-1-5	5-12-20	40-52-64	29-36-42	1.55-1.65-1.70	0.42-0.92-1.41	0.1-0.3-0.6	24-31-37	11-15-19	0.37	0.37				
	32-60	Clay loam, silty clay loam	A-4, A-6	0-1-2	0-2-7	7-14-23	50-55-64	27-31-35	1.65-1.75-1.85	0.42-0.75-1.41	0.0-0.2-0.5	21-26-31	9-12-15	0.43	0.43				
<b>541B—Graymont silt loam, 2 to 5 percent slopes</b>																			
Graymont	0-12	Silt loam	A-6, A-7-6	0-0-0	0-0-0	1-5-10	63-70-77	22-25-27	1.24-1.35-1.45	4.23-9.17-14.11	3.0-4.0-5.0	39-44-48	15-17-18	0.28	0.28	5	Poor, Low strength, Dusty, Shrink-swell, Wetness	Very limited; Frost action, Low strength, Shrink-swell, Ponding, Depth to saturated zone	Somewhat limited; Dusty, Unstable excavation walls, Depth to saturated zone
	12-33	Silt loam, silty clay loam	A-6, A-7-6	0-0-0	0-0-0	1-5-10	55-64-74	25-31-35	1.25-1.30-1.45	4.23-9.17-14.11	0.2-1.1-2.0	35-43-49	17-22-25	0.43	0.43				
	33-38	Silt loam, silty clay loam	A-6, A-7-6	0-0-0	0-0-3	10-15-20	40-54-68	22-31-40	1.50-1.60-1.78	0.42-2.33-4.23	0.1-0.3-0.5	32-41-51	15-22-29	0.43	0.43				
	38-60	Silty clay loam, silt loam	A-6, A-7-6	0-0-0	0-1-4	10-15-20	46-56-66	24-29-34	1.55-1.65-1.82	0.42-0.92-1.41	0.0-0.3-0.5	33-39-45	15-20-24	0.49	0.49				
<b>805B—Orthents, clayey, undulating</b>																			
Orthents, clayey, undulating	0-7	Silty clay	A-7-6	0-0-0	0-1-3	2-8-20	40-48-58	40-44-55	1.50-1.58-1.65	0.42-0.92-1.41	0.5-1.3-2.0	50-56-68	29-32-40	0.32	0.32	2	Poor; Low strength, Shrink-swell, Dusty, Wetness	Very limited; Frost action, Low strength, Ponding, Shrink-swell, Depth to saturated zone	Somewhat limited; Depth to saturated zone, Dusty, Unstable excavation walls, Too clayey
	7-60	Silty clay, silty clay loam	A-7-6	0-0-0	0-1-2	2-11-30	10-41-60	35-48-60	1.60-1.75-1.90	0.14-0.28-0.42	0.2-0.6-1.0	46-58-70	25-35-44	0.32	0.32				

Source: USDA, Natural Resources Conservation Service; Web Soil Survey  
Soil Survey Area: Will County, Illinois  
Survey Area Data: Version 16, Aug 31, 2021

SITE PEDOLOGICAL MAP: I-80 RECONSTRUCTION; LARKIN AVENUE INTERCHANGE, CONTRACT 62R25; WILL COUNTY, ILLINOIS		
SCALE: GRAPHICAL	<b>EXHIBIT 2-2</b>	DRAWN BY: J. Bensen CHECKED BY: A. Kurnia
		1145 N. Main Street Lombard, IL 60148 www.wangeng.com
FOR TRANSYSTEMS CORPORATION		7901-15-01



Modified after William W. Shilts (2000)



SITE AND REGIONAL GEOLOGY: I-80 RECONSTRUCTION; LARKIN AVENUE INTERCHANGE, CONTRACT 62R25; WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	<b>EXHIBIT 3</b>	DRAWN BY: J. Bensen CHECKED BY: A. Kurria
------------------	------------------	--

**Wang Engineering**

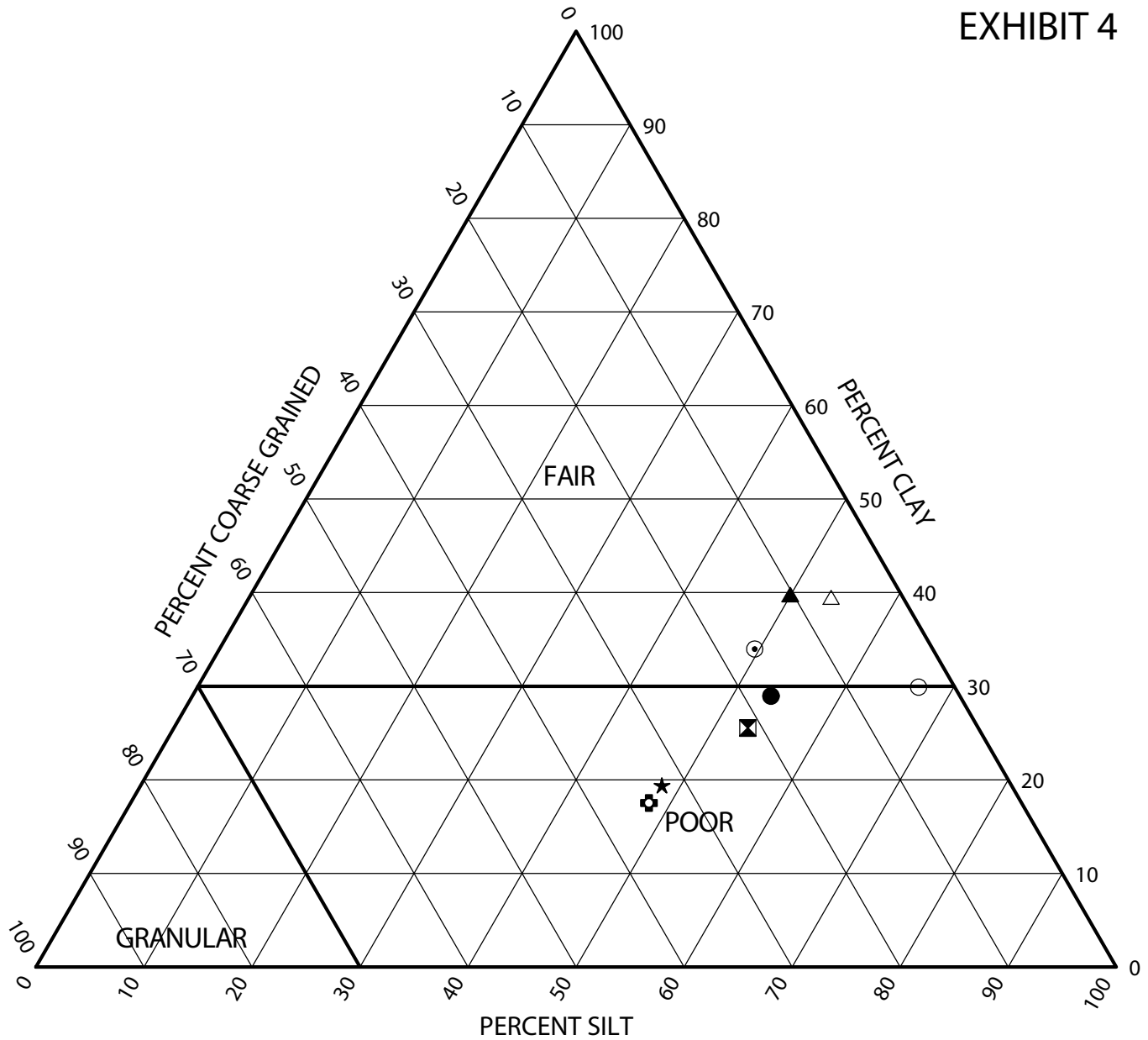
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www.wangeng.com

FOR TRANSYSTEMS CORPORATION

7901-15-01

Modified after Dennis R. Kolata (2005)

# EXHIBIT 4



Sample	Depth (ft)	Coarse (%)	Silt (%)	Clay (%)	Classification		
					IL DOT	AASHTO	RATING
● EB-SGB-29#3	5.0	17.5	53.6	29.0	Silty Clay Loam	A-6 (8)	POOR
▣ AA-SGB-01#2	2.0	21.3	53.1	25.5	Silty Clay Loam	A-6 (11)	POOR
▲ R-A-SGB-04#6	11.0	10.3	49.9	39.8	Silty Clay	A-7-6 (24)	FAIR
★ R-B-SGB-01#2	2.0	32.4	48.2	19.4	Silty Clay Loam	A-4 (2)	POOR
⊖ CC-SGB-01#2	2.0	16.5	49.5	34.0	Silty Clay	A-6 (8)	FAIR
⊞ R-C-SGB-02#3	4.0	34.5	48.0	17.5	Silty Loam	A-4 (3)	POOR
⊕ R-D-SGB-01#2	2.0	3.3	66.7	29.9	Silty Clay	A-7-6 (34)	POOR
△ WB-SGB-32#2	3.0	6.7	53.9	39.5	Silty Clay	A-7-6 (37)	FAIR

WEI SSR 79011501.GPJ WANGENG.GDT 10/10/22



Wang Engineering, Inc.  
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**Subgrade Support Rating Chart**  
 Project: I-80 Reconstruction (Houbolt Rd to Center St)  
 Location: Will County, Illinois  
 Number: 7901-15-01

## **APPENDIX A**



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# BORING LOG LR-AA-SGB-01

WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 634.54 ft  
 North: 1764087.96 ft  
 East: 1041184.09 ft  
 Station: 955+47.77  
 Offset: 20.63 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	634.0	6-inch thick, very stiff (3.00P), black SILTY CLAY LOAM, trace gravel; damp --TOPSOIL--	3		1	3	4.35	17									
		Stiff to hard, brown SILTY CLAY LOAM, trace gravel; damp --RDR 2-- --L <sub>L</sub> (%)=32, P <sub>L</sub> (%)=16-- --%Gravel=4.1-- --%Sand=17.2-- --%Silt=53.1-- --%Clay=25.5-- --A-6 (11)--	4		2	4											
	629.5	Medium dense, brown SILTY LOAM, trace gravel; moist --RDR 2--	5		3	7	1.31	18									
	628.7	Hard, brown SILTY CLAY, trace gravel; damp --RDR 2--	8		4	9	8.53	15									
			11		5	15											
			15														
	624.5	Boring terminated at 10.00 ft	10			4	7.13	18									
			10			6											
						10											
						14											

### GENERAL NOTES

Begin Drilling **05-17-2022** Complete Drilling **05-17-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **D25 ATV [93%]**  
 Driller **RR&JD** Logger **D. You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  **DRY**  
 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.



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# BORING LOG LR-AA-SGB-02

WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 629.61 ft  
 North: 1764326.70 ft  
 East: 1041033.39 ft  
 Station: 959+10.51  
 Offset: 14.91 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	629.4	Tan GRAVEL --SHOULDER--				2											
	628.1	Stiff, black and brown SILTY CLAY, trace gravel; damp --FILL--			1	5 5 4	1.97 B	23									
		Very stiff to hard, brown to gray SILTY CLAY to SILTY CLAY LOAM, trace gravel; damp --RDR 2-3--			2	6 6 7 9	5.33 B	16									
		--rig chatter; slow drilling-- --possible cobbles--	5		3	6 9 11 14	8.61 B	18									
		--rig chatter; slow drilling--			4	10 13 23	3.25 P	18									
					5	50/4"											
						4 11 15 21	5.90 B	20									
	619.6	Boring terminated at 10.00 ft	10														
			15														
			20														

### GENERAL NOTES

Begin Drilling **05-17-2022** Complete Drilling **05-17-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **D25 ATV [93%]**  
 Driller **RR&JD** Logger **D. You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  **DRY**  
 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.





# BORING LOG LR-A-SGB-01

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**WEI Job No.: 7901-15-01**  
 Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 626.71 ft  
 North: 1764447.64 ft  
 East: 1040607.13 ft  
 Station: 906+30.20  
 Offset: 30.47 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)		
	626.2	6-inch thick, dark brown SILTY CLAY LOAM, trace gravel; damp			1	3 3 3 4	3.50 P	12		601.7	Boring terminated at 25.00 ft --RDR 2--								
	625.0	--TOPSOIL-- Very stiff, brown CLAY LOAM, trace gravel; damp			2	3 5 7 7	10.09 S	14						10	3 4 5	3.94 B	22		
		--FILL-- Hard, brown to gray SILTY CLAY to SILTY CLAY LOAM, trace gravel; damp			3	3 4 5 6	5.90 B	17						25	2 3 4	3.12 B	23		
					4	6 8 11 7	7.46 B	18											
					5	4 5 7 7	4.84 B	19											
				10		4 5 5	4.51 B	21											
	613.7	Very stiff, gray SILTY CLAY to CLAY, trace gravel; damp			7	2 3 3	3.46 B	24											
		--RDR 2-3--			8	5 4 6	2.95 B	22											
		--rig chatter--			9	3 3 4	2.79 B	22											

WANGENGINC 79011501.GPJ WANGENG.GDT 10/10/22

### GENERAL NOTES

Begin Drilling **05-20-2022** Complete Drilling **05-20-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **21GeoA[96%]**  
 Driller **RR&JD** Logger **D.You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  $\nabla$  **DRY**  
 At Completion of Drilling  $\nabla$  **DRY**  
 Time After Drilling **NA**  
 Depth to Water  $\nabla$  **NA**

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



# BORING LOG LR-A-SGB-02

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WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 627.96 ft  
 North: 1764356.57 ft  
 East: 1040805.86 ft  
 Station: 908+36.94  
 Offset: 33.94 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	627.5	5-inch thick, black SILTY CLAY LOAM, trace gravel; damp --TOPSOIL--			1	4 5 5	6.48 S	14									
	626.1	Hard, brown SILTY CLAY LOAM, trace gravel; damp --RDR 2--			2	3 5 6	6.89 S	15						10	3 5 6	2.87 B	22
	624.1	Hard, brown SILTY LOAM to SILTY CLAY LOAM, trace gravel; damp --RDR 2--			3	4 5 8 11	9.02 B	18		603.0		25		11	4 6 8	5.08 B	21
		Very stiff to hard, brown to gray SILTY CLAY, trace to little gravel; damp --RDR 2--	5		4	7 9 11 11	9.58 B	16		Boring terminated at 25.00 ft							
			10		5	3 4 8 10	6.89 S	21									
					6	6 7 8	5.49 B	20									
			15		7	3 4 8	3.12 B	20									
					8	3 4 5	3.12 B	21									
			20		9	3 3 5	2.21 B	20									

### GENERAL NOTES

Begin Drilling **05-20-2022** Complete Drilling **05-20-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **21GeoA[96%]**  
 Driller **RR&JD** Logger **D.You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  **DRY**  
 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.



# BORING LOG LR-A-SGB-03

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WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 632.62 ft  
 North: 1764130.83 ft  
 East: 1040998.64 ft  
 Station: 911+27.33  
 Offset: 30.91 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)		
	632.43	43-inch thick, black SILTY CLAY LOAM, trace gravel; damp --TOPSOIL-- Very stiff to hard, brown to gray SILTY CLAY, trace gravel; damp to moist --RDR 2--			1	2 1 3 4	2.62 S	28											
					2	2 2 4 4	2.46 B	21						10	3 3 5	1.15 B	23		
			5		3	3 4 5 5	5.99 B	16		607.6		25		11	3 4 6	2.71 B	19		
					4	3 6 6 8	6.48 B	17											
			10		5	5 5 9 10	6.89 B	22											
					6	7 8 10	6.07 B	22											
			15		7	3 3 5	3.28 B	22											
					8	3 3 5	2.87 B	23											
			20		9	3 3 5	2.79 B	23											

GENERAL NOTES				WATER LEVEL DATA			
Begin Drilling	05-20-2022	Complete Drilling	05-20-2022	While Drilling	▽	DRY	
Drilling Contractor	Wang Testing Services	Drill Rig	21GeoA[96%]	At Completion of Drilling	▼	DRY	
Driller	RR&JD	Logger	D.You	Time After Drilling	NA		
Drilling Method	2.25" IDA HSA; boring backfilled upon completion			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 10/10/22



# BORING LOG LR-A-SGB-04

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WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 634.54 ft  
 North: 1763971.26 ft  
 East: 1041441.22 ft  
 Station: 916+27.82  
 Offset: 30.88 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	634.15	15-inch thick, black SILTY CLAY LOAM, trace gravel; damp --TOPSOIL--			1	3 3 3	2.75 P	17									
		Very stiff, brown SILTY CLAY to SILTY CLAY LOAM, trace to little gravel; damp to moist --FILL-- --RDR 2--			2	4 3 3 3	3.25 P	15						10	3 4 7	2.79 B	21
					3	2 2 2 3	2.25 P	18		609.5		25		11	3 3 5	2.13 B	22
	629.0	--wet spoon recovery; possible sand-- Stiff, black SILTY CLAY, trace gravel; wet --BURIED TOPSOIL--			4	0 0 0 4	1.50 P	30			Boring terminated at 25.00 ft						
	626.5	Very stiff to hard, greenish brown to gray SILTY CLAY, trace gravel; damp to moist --RDR 2--			5	0 2 3 3	2.46 P	26									
		--L <sub>L</sub> (%)=43, P <sub>L</sub> (%)=17-- --%Gravel=0.8-- --%Sand=9.5-- --%Silt=49.9-- --%Clay=39.8-- --A-7-6 (24)--			6	2 2 3	2.75 P	28									
					7	5 8 11	8.36 B	21									
					8	4 5 7	3.94 B	22									
					9	3 3 5	5.00 B	23									

### GENERAL NOTES

Begin Drilling **05-20-2022** Complete Drilling **05-20-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **21GeoA[96%]**  
 Driller **RR&JD** Logger **D.You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  **6.00 ft**  
 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.

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# BORING LOG LR-A-SGB-05

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WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 631.35 ft  
 North: 1764088.96 ft  
 East: 1040918.07 ft  
 Station: 911+09.87  
 Offset: 58.23 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	630.9	6-inch thick ASPHALT --PAVEMENT--															
	629.9	Brown GRAVELLY SAND; damp --BASE COURSE--			1	4 4 4 5	2.75 P	19						10	6 7 10	4.10 B	19
	628.9	Very stiff, brown SILTY CLAY, trace gravel; damp --FILL--			2	4 3 4 4	3.71 B	24						11	5 6 8	4.84 B	21
		Stiff to very stiff, brown and gray SILTY CLAY, trace gravel; damp --RDR 2--	5		3	3 3 5 5	1.97 B	22		606.4	Boring terminated at 25.00 ft	25					
					4	3 4 4 6	1.72 B	28									
			10		5	5 7 10 12	2.79 B	24				30					
					6	4 7 8	3.36 B	19									
			15		7	6 9 9	2.38 B	17				35					
	615.9	Stiff to hard, gray SILTY CLAY to CLAY; damp --RDR 2--			8	3 4 5	1.80 B	22									
					9	4 4 8	2.12 B	21				40					

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### GENERAL NOTES

### WATER LEVEL DATA

Begin Drilling **05-18-2022** Complete Drilling **05-18-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **17B57T [91%]**  
 Driller **RR&JD** Logger **D. You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

While Drilling  **DRY**  
 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.



# BORING LOG LR-A-SGB-06

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WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 631.30 ft  
 North: 1763934.01 ft  
 East: 1041134.69 ft  
 Station: 913+37.71  
 Offset: 70.19 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	
	630.7	7-inch thick ASPHALT --PAVEMENT--																
	630.3	5-inch thick, brown GRAVELLY SAND --BASE COURSE--			1	3 4 4 5	4.43 B	17						10	3 5 7	3.03 B	18	
		Hard, brown CLAY LOAM to SILTY CLAY LOAM, trace to little gravel; damp --FILL-- --RDR 2--			2	6 4 6 7	NP	19						11	3 6 6	2.71 B	16	
			5							606.3		25						
					3	6 6 10 10	5.41 B	18			Boring terminated at 25.00 ft							
					4	4 7 10 13	6.15 B	19										
	622.5	Hard, brown to gray SILTY CLAY, trace gravel; damp --RDR 2--			5	6 8 13 16	5.49 B	21				30						
					6	5 7 10	4.92 B	24										
					7	4 7 9	4.38 B	25				35						
	615.8	Stiff to very stiff, gray SILTY CLAY to CLAY, trace gravel; damp --RDR 2--			8	4 6 8	1.97 B	24										
					9	3 5 7	1.72 B	22				40						

### GENERAL NOTES

Begin Drilling **05-18-2022** Complete Drilling **05-18-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **17B57T [91%]**  
 Driller **RR&JD** Logger **D. You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  **DRY**  
 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 10/10/22



# BORING LOG LR-A-SGB-07

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WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 629.77 ft  
 North: 1763766.69 ft  
 East: 1041370.36 ft  
 Station: 915+48.87  
 Offset: 232.46 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	629.1	8-inch thick ASPHALT															
	628.8	--PAVEMENT--															
		4-inch thick, brown GRAVELLY SAND			1	3 3 6 8	3.61 B	23						10	4 7 9	5.33 B	17
		--BASE COURSE--															
		Stiff to hard, brown and gray SILTY CLAY to SILTY CLAY LOAM, trace gravel; damp			2	5 7 9 12	6.15 B	15						11	4 4 7	1.89 B	14
		--RDR 2-3--															
			5							604.8		25					
					3	5 7 9 13	8.61 B	15			Boring terminated at 25.00 ft						
		--rig chatter--															
		--gravel lens; damp--			4	6 9 13 17	7.59 B	19									
					5	7 10 15 19	9.35 B	19									
			10														
					6	7 11 14	10.25 B	19									
					7	7 9 13	6.89 B	18									
			15														
					8	5 8 11	5.99 B	20									
					9	6 8 13	5.17 B	19									
			20														

### GENERAL NOTES

Begin Drilling **05-18-2022** Complete Drilling **05-18-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **17B57T [91%]**  
 Driller **RR&JD** Logger **D. You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

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

WANGENGINC 79011501.GPJ WANGENG.GDT 10/10/22



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# BORING LOG LR-B-SGB-01

WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 633.92 ft  
 North: 1764013.62 ft  
 East: 1041728.91 ft  
 Station: 1110+87.01  
 Offset: 14.23 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	633.64	64-inch thick, very stiff (2.75P), black SILTY CLAY LOAM, little gravel; damp --TOPSOIL--			1	4 4 5 5	2.13 B	21									
		Very stiff to hard, brown to gray SILTY CLAY LOAM, trace to little gravel; damp to moist --RDR 2-3-- --L <sub>i</sub> (%)=23, P <sub>L</sub> (%)=16-- --%Gravel=7.0-- --%Sand=25.4-- --%Silt=48.2-- --%Clay=19.4-- --A-4 (2)--			2	4 5 7 6	2.46 B	24									
					3	3 3 3 5	2.30 B	27									
					4	6 7 7 7	3.36 B	23									
		--slow drilling--			5	2 4 7 11	3.94 B	22									
					6	10 15 17	5.17 B	23									
	619.8	Medium dense, gray SILTY LOAM; saturated			7	5 10 12	NP	22									
	618.9	--RDR 2-- Boring terminated at 15.00 ft															

### GENERAL NOTES

Begin Drilling **05-17-2022** Complete Drilling **05-17-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **D25 ATV [93%]**  
 Driller **RR&JD** Logger **D. You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  $\nabla$  **14.20 ft**  
 At Completion of Drilling  $\blacktriangledown$  **15.00 ft**  
 Time After Drilling **NA**  
 Depth to Water  $\blacktriangledown$  **NA**

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





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# BORING LOG LR-B-SGB-02

WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 634.04 ft  
 North: 1764113.25 ft  
 East: 1041842.36 ft  
 Station: 1112+37.90  
 Offset: 19.71 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	633.5	6-inch thick, medium stiff (0.50P), black SILTY CLAY LOAM, trace gravel; moist --TOPSOIL--	1		1	2 2 3 5	1.48 B	29									
		Stiff to hard, dark brown to gray SILTY CLAY to SILTY CLAY LOAM, trace to little gravel; damp to moist --RDR 2-3--	2		2	4 5 6 7	1.31 B	18									
			5		3	5 5 6 9	4.92 B	18									
					4	7 9 11 14	7.22 B	15									
		--slow drilling--			5	6 10 14 16	8.53 B	16									
		--2-inch thick gravel lens; damp-- --rig chatter--			6	10 9 11	2.87 B	17									
					7	4 7 9	3.69 B	21									
	619.0	Boring terminated at 15.00 ft	15														

### GENERAL NOTES

Begin Drilling **05-17-2022** Complete Drilling **05-17-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **D25 ATV [93%]**  
 Driller **RR&JD** Logger **D. You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  **DRY**  
 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.



# BORING LOG LR-B-SGB-03

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WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 633.05 ft  
 North: 1764234.45 ft  
 East: 1042017.01 ft  
 Station: 1114+49.85  
 Offset: 3.22 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	632.5	7-inch thick, stiff (1.89B), black SILTY CLAY LOAM, trace gravel; moist			1	2 3 3 5	2.21 B	24									
	631.3	--TOPSOIL-- Very stiff, brown SILTY CLAY, trace gravel; moist			2	3 4 5 6	2.79 B	18									
		--FILL-- Stiff to hard, brown to gray SILTY CLAY to SILTY CLAY LOAM, trace gravel; damp to moist			3	8 6 7 9	4.10 B	18									
		--RDR 2-3-- --rig chatter; slow drilling--			4	8 9 9 8	4.76 B	16									
					5	9 6 9 8	2.62 B	18									
					6	4 6 8	4.18 B	22									
	619.3	--Qu: 1.39B-- Medium dense, gray SILTY LOAM; saturated			7	4 6 11	NP	21									
	618.0	--RDR 2-- Boring terminated at 15.00 ft															

### GENERAL NOTES

Begin Drilling **05-17-2022** Complete Drilling **05-17-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **D25 ATV [93%]**  
 Driller **RR&JD** Logger **D. You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  $\nabla$  **13.75 ft**  
 At Completion of Drilling  $\blacktriangledown$  **15.00 ft**  
 Time After Drilling **NA**  
 Depth to Water  $\nabla$  **NA**

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



# BORING LOG LR-B-SGB-04

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WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 635.50 ft  
 North: 1764368.16 ft  
 East: 1042168.63 ft  
 Station: 1116+57.74  
 Offset: 6.04 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	635.0	6-inch thick, black SILTY CLAY; damp															
		--TOPSOIL--			1	4 4 4 6	2.21 B	24									
		Stiff to hard, brown and gray SILTY CLAY to SILTY CLAY LOAM, trace gravel; damp to moist			2	3 4 5 7	1.07 B	18									
		--RDR 2--			3	5 6 6 11	4.84 B	16									
			5		4	5 6 9 8	5.33 B	17									
	627.5	Very stiff to hard, gray CLAY; damp			5	6 9 9 8	6.72 B	20									
		--RDR 2--			6	5 6 7	2.46 B	22									
		--slow drilling--	10		7	4 5 6	2.59 B	21									
	620.5	Boring terminated at 15.00 ft	15														

### GENERAL NOTES

Begin Drilling **05-13-2022** Complete Drilling **05-13-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **D25 ATV [93%]**  
 Driller **K&J** Logger **M. Sadowski** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  **DRY**  
 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.

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# BORING LOG LR-CC-SGB-01

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WEI Job No.: 7901-15-01

Client **TranSystems Corporation**

Project **I-80 Reconstruction (Houbolt Rd to Center St)**

Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 633.80 ft  
 North: 1764801.44 ft  
 East: 1041925.29 ft  
 Station: 759+37.49  
 Offset: 12.81 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	633.3	6-inch thick, medium stiff (0.98B), black SILTY CLAY LOAM, trace gravel; damp --TOPSOIL--			1	1 4 6 6	2.75 P	16									
		Very stiff to hard, brown to gray SILTY CLAY, trace gravel; damp --RDR 2-3-- --L <sub>v</sub> (%)=28, P <sub>L</sub> (%)=17-- --%Gravel=2.4-- --%Sand=14.1-- --%Silt=49.5-- --%Clay=34.0-- --A-6 (8)--			2	9 7 8 9	6.48 B	15									
					3	5 7 8 11	6.72 B	17									
					4	7 12 18 8	5.00 B	20									
		--rig chatter--			5	7 9 11 14	3.94 B	21									
					6	6 7 9	4.02 B	18									
					7	8 10 11	5.33 B	18									
	618.8	Boring terminated at 15.00 ft	15														

### GENERAL NOTES

Begin Drilling **05-16-2022** Complete Drilling **05-16-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **D25 ATV [93%]**  
 Driller **RR&CB** Logger **D. You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  **DRY**  
 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.



# BORING LOG LR-C-SGB-01

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**WEI Job No.: 7901-15-01**

Datum: NAVD 88  
 Elevation: 640.23 ft  
 North: 1765225.23 ft  
 East: 1041532.79 ft  
 Station: 717+18.11  
 Offset: 57.04 RT

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)		
	639.7	6-inch thick, dark brown SILTY CLAY LOAM, trace gravel; damp --TOPSOIL-- Stiff to very stiff, brown SILTY CLAY, trace gravel and slag fragments; damp --FILL-- --RDR 2-- Stiff to hard, brown SILTY CLAY, trace gravel; damp to moist --RDR 2-- Boring terminated at 15.00 ft			1	3 3 3 6	2.75 P	20											
						2	4 4 4 6	1.75 P	28										
	636.4					3	3 3 4 5	1.07 B	23										
						4	7 11 9 9	5.08 B	18										
						5	8 10 13 16	6.81 B	16										
						6	10 25 23	5.82 S	17										
						7	9 11 14	8.53 B	15										
	625.2																		

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GENERAL NOTES				WATER LEVEL DATA			
Begin Drilling	05-16-2022	Complete Drilling	05-16-2022	While Drilling	▽	DRY	
Drilling Contractor	Wang Testing Services	Drill Rig	D25 ATV [93%]	At Completion of Drilling	▼	DRY	
Driller	RR&CB	Logger	D. You	Time After Drilling	NA		
Drilling Method	2.25" IDA HSA; boring backfilled upon completion			Depth to Water	▼	NA	
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# BORING LOG LR-C-SGB-02

WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 639.28 ft  
 North: 1765146.86 ft  
 East: 1041713.31 ft  
 Station: 715+40.62  
 Offset: 28.46 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	
	638.94	4-inch thick, stiff, dark brown SILTY CLAY LOAM, trace gravel; damp --TOPSOIL--	0		1	3 4 3 3	1.75 P	23										
		Stiff to very stiff, brown CLAY to SILTY CLAY, trace gravel; damp --RDR 2--	1		2	4 4 5 6	2.46 B	29										
	635.8	Medium stiff to stiff, brown SILTY CLAY LOAM to SILTY LOAM, trace to little gravel; moist to wet --RDR 2-- --L <sub>L</sub> (%)=25, P <sub>L</sub> (%)=17-- --%Gravel=9.8-- --%Sand=24.7-- --%Silt=48.0-- --%Clay=17.5-- --A-4 (3)--	2		3	4 4 4 7	1.07 B	17										
		Very stiff to hard, brown to gray SILTY CLAY, trace gravel; damp to moist --RDR 2--	3		4	5 7 8 11	0.66 B	17										
	631.8		4		5	3 6 9 14	3.94 B	17										
			5		6	6 10 14	4.59 B	16										
			6		7	6 9 11	3.53 B	17										
	624.3	Boring terminated at 15.00 ft	15															

### GENERAL NOTES

Begin Drilling **05-16-2022** Complete Drilling **05-16-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **D25 ATV [93%]**  
 Driller **RR&CB** Logger **D. You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  **DRY**  
 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.



# BORING LOG LR-C-SGB-03

Datum: NAVD 88  
 Elevation: 640.20 ft  
 North: 1765119.16 ft  
 East: 1041925.67 ft  
 Station: 713+18.21  
 Offset: 5.37 RT

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WEI Job No.: 7901-15-01  
 Client: **TranSystems Corporation**  
 Project: **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location: **Will County, Illinois**

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)			
	639.8	5-inch thick, stiff, dark brown SILTY CLAY LOAM, trace gravel; damp  --TOPSOIL--		1	4 4 6 7	3.44 B	15													
		Very stiff to hard, brown SILTY CLAY, trace gravel; damp  --RDR 2-3--		2	5 7 8 10	3.36 B	16													
	5			3	5 6 8 9	5.08 B	17													
				4	8 10 14 15	8.12 B	17													
				5	5 9 13 17	5.41 B	17													
	10		--rig chatter--	6	7 9 14	6.45 B	17													
				7	8 12 16	6.40 B	18													
	15	625.2	Boring terminated at 15.00 ft																	
	<b>GENERAL NOTES</b>										<b>WATER LEVEL DATA</b>									
	Begin Drilling <b>05-16-2022</b> Complete Drilling <b>05-16-2022</b>										While Drilling    ▽ <b>DRY</b>									
	Drilling Contractor <b>Wang Testing Services</b> Drill Rig <b>D25 ATV [93%]</b>										At Completion of Drilling    ▼ <b>DRY</b>									
	Driller <b>RR&amp;CB</b> Logger <b>D. You</b> Checked by <b>J. Bensen</b>										Time After Drilling <b>NA</b>									
	Drilling Method <b>2.25" IDA HSA; boring backfilled upon completion</b>										Depth to Water    ▼ <b>NA</b>									
	The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.																			

WANGENG INC 79011501.GPJ WANGENG.GDT 10/10/22



# BORING LOG LR-C-SGB-04

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WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 635.36 ft  
 North: 1764840.22 ft  
 East: 1042101.54 ft  
 Station: 709+92.92  
 Offset: 62.13 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
Profile	634.9	5-inch thick, medium stiff (0.75P), dark brown SILTY CLAY LOAM, trace gravel; damp  --TOPSOIL--  Stiff to hard, brown SILTY CLAY, trace gravel; damp --RDR 2-3--   --rig chatter--   --rig chatter--   --4-inch thick, tan gravel lens; damp--							Profile								
			1	2 4 4 5	1.50 P	17											
			2	4 4 6 5	2.05 B	24											
			3	5 6 6 7	2.62 B	17											
			4	6 7 10 11	6.40 B	17											
			5	5 8 11 14	5.90 B	20											
			6	6 11 12	5.49 B	15											
			7	9 9 9	3.00 P	19											
			15	Boring terminated at 15.00 ft													

**GENERAL NOTES**

**WATER LEVEL DATA**

Begin Drilling **05-16-2022** Complete Drilling **05-16-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **D25 ATV [93%]**  
 Driller **RR&CB** Logger **D. You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

While Drilling  **DRY**  
 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.

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# BORING LOG LR-D-SGB-01

WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 635.13 ft  
 North: 1765124.18 ft  
 East: 1041208.10 ft  
 Station: 808+99.63  
 Offset: 22.03 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	634.4	9-inch thick, soft (0.49B), black SILTY CLAY LOAM, little gravel; damp			1	7 5 5 8	0.90 B	26									
	634.1	--TOPSOIL-- 3-inch thick, black and gray SANDY GRAVEL; damp			2	4 4 3 2	1.48 B	26									
		Medium stiff to hard, brown to gray SILTY CLAY, trace to little gravel; damp			3	3 3 4 7	2.21 B	16									
		--RDR 2-3-- --L <sub>i</sub> (%)=50, P <sub>L</sub> (%)=17-- --%Gravel=0.3-- --%Sand=3.0-- --%Silt=66.7-- --%Clay=29.9-- --A-7-6 (34)--			4	6 15 16 15	4.76 B	17									
		--wet spoon recovery; possible sand lens--			5	5 5 5 5	1.75 P	19									
					6	5 6 9	3.61 B	17									
					7	5 8 8	3.28 B	21									
					8	5 8 8	3.12 B	23									
	617.1	Stiff, gray CLAY; damp			9	3 3 5	1.23 B	24									
	615.1	--RDR 2--															
		Boring terminated at 20.00 ft															

## GENERAL NOTES

## WATER LEVEL DATA

Begin Drilling **05-11-2022** Complete Drilling **05-11-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **20D25A [83%]**  
 Driller **K&J** Logger **M. Sadowski** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

While Drilling  $\nabla$  **8.00 ft**  
 At Completion of Drilling  $\nabla$  **20.00 ft**  
 Time After Drilling **NA**  
 Depth to Water  $\nabla$  **NA**

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

WANGENGINC 79011501.GPJ WANGENG.GDT 10/10/22



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# BORING LOG LR-D-SGB-02

WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 634.07 ft  
 North: 1764985.89 ft  
 East: 1041030.89 ft  
 Station: 811+23.83  
 Offset: 5.89 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	632.6	Stiff, black SILTY CLAY; damp --TOPSOIL--			1	3 4 5 8	1.50 P	23									
		Very stiff to hard, brown to gray SILTY CLAY; damp --RDR 2--			2	3 3 3 8	2.21 B	22									
			5		3	2 4 6 6	2.62 B	20									
					4	4 7 8 8	5.00 B	19									
					5	5 6 13 12	5.00 B	20									
			10		6	8 14 13	4.26 B	20									
	620.1	Dense, gray SILTY LOAM, little gravel; damp --RDR 2--			7	5 17 18	NP	11									
	618.6	Very stiff, gray SILTY CLAY; damp --RDR 2--			8	8 10 10	2.95 B	19									
	614.1		20		9	6 8 8	2.62 B	19									
Boring terminated at 20.00 ft																	

### GENERAL NOTES

Begin Drilling **05-11-2022** Complete Drilling **05-11-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **20D25A [83%]**  
 Driller **K&J** Logger **M. Sadowski** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  **DRY**  
 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 10/10/22



# BORING LOG LR-D-SGB-03

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WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 631.51 ft  
 North: 1764859.77 ft  
 East: 1040899.90 ft  
 Station: 813+05.58  
 Offset: 11.69 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	630.8	9-inch thick, stiff (1.00P), black SILTY CLAY; damp --TOPSOIL--			1	3 4 4 8	2.13 B	17									
		Very stiff to hard, brown to gray SILTY CLAY, trace gravel; damp --RDR 2-3--			2	5 7 7 10	6.64 B	15									
			5		3	4 13 18 13	2.25 P	16									
					4	6 10 10 8	5.00 B	18									
		--slow drilling--			5	5 7 8 15	4.51 B	21									
			10		6	8 9 7	2.25 P	21									
	618.5	Stiff to very stiff, gray CLAY; damp --RDR 2--			7	5 6 9	3.36 B	22									
			15		8	7 9 10	2.05 B	19									
					9	3 4 7	1.89 B	22									
	611.5	Boring terminated at 20.00 ft	20														

### GENERAL NOTES

### WATER LEVEL DATA

Begin Drilling **05-11-2022** Complete Drilling **05-11-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **20D25A [83%]**  
 Driller **K&J** Logger **M. Sadowski** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

While Drilling  **DRY**  
 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 10/10/22



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# BORING LOG LR-D-SGB-04

WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 628.16 ft  
 North: 1764718.33 ft  
 East: 1040719.98 ft  
 Station: 815+35.81  
 Offset: 15.20 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	627.7	6-inch thick, black SILTY CLAY; damp			1	6 8 9	3.75 P	16									
	626.4	Very stiff, brown, gray and black SILTY CLAY, trace gravel; damp			2	9 15 20 22	7.13 B	14									
		Very stiff to hard, brown and gray SILTY CLAY; damp			3	9 13 13 12	4.92 B	15									
					4	8 9 11 12	3.50 P	15									
					5	12 12 14 11	8.53 B	17									
	617.7	Stiff to hard, gray CLAY; damp			6	6 10 14	5.08 B	19									
					7	7 9 11	5.17 B	19									
					8	6 6 7	2.62 B	20									
					9	7 7 8	1.97 B	22									
	608.2	Boring terminated at 20.00 ft															

### GENERAL NOTES

Begin Drilling **05-13-2022** Complete Drilling **05-13-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **D25 ATV [93%]**  
 Driller **K&J** Logger **M. Sadowski** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  **DRY**  
 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 10/10/22



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# BORING LOG EB-SGB-29

WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 631.86 ft  
 North: 1764492.74 ft  
 East: 1041398.33 ft  
 Station: 588+11.96  
 Offset: 80.86 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	631.0	10-inch thick ASPHALT --PAVEMENT--															
	630.2	10-inch thick, black ASPHALT grinds; reclaimed pavement; damp --FILL--			1	9 13 9 5	NP	7									
	628.1	Medium dense, brown and gray SANDY LOAM, little to some gravel; damp to moist --FILL-- --RDR 2-3--			2	17 9 10 11	4.26 B	12									
		Very stiff to hard, brown SILTY CLAY LOAM, trace gravel; moist --RDR 2-3-- --L <sub>L</sub> (%)=26, P <sub>L</sub> (%)=13-- --%Gravel=2.2-- --%Sand=15.2-- --%Silt=53.6-- --%Clay=29.0-- --A-6 (8)--			3	13 16 19 16	3.69 B	13									
					4	8 7 8 11	4.18 B	13									
					5	6 7 9 9	3.12 B	13									
	620.9	Boring terminated at 11.00 ft															

### GENERAL NOTES

Begin Drilling **05-02-2022** Complete Drilling **05-02-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **20CME55T[81%]**  
 Driller **JS&AG** Logger **A. Scifers** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

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

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# BORING LOG EB-SGB-31

WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 638.01 ft  
 North: 1764528.86 ft  
 East: 1042587.72 ft  
 Station: 600+01.84  
 Offset: 92.17 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	637.4	7-inch thick, stiff (1.50P), black SILTY CLAY LOAM, trace gravel; damp to moist			1	2 2 1 1	NP	10									
	636.5	--TOPSOIL--															
		Very loose, tan SANDY GRAVEL; damp to moist			2	7 2 2 2	1.15 B	25									
	634.3	Stiff, black and dark brown SILTY CLAY, trace gravel; moist															
		--RDR 2--															
		Hard, brown SILTY CLAY LOAM to SILTY LOAM, little gravel; damp to wet	5		3	1 2 4 5	5.00 B	16									
	632.5	--RDR 2--															
		Hard, brown SILTY CLAY LOAM, trace gravel; damp			4	3 5 6 7	6.72 B	16									
		--RDR 2--															
					5	2 6 7 11	7.30 B	16									
	628.0	Boring terminated at 10.00 ft	10														

### GENERAL NOTES

Begin Drilling **05-23-2022** Complete Drilling **05-23-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **21GeoA[96%]**  
 Driller **RR&AP** Logger **D. You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  $\nabla$  **4.00 ft**  
 At Completion of Drilling  $\nabla$  **DRY**  
 Time After Drilling **NA**  
 Depth to Water  $\nabla$  **NA**

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# BORING LOG EB-SGB-32

WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 642.88 ft  
 North: 1764570.33 ft  
 East: 1043195.67 ft  
 Station: 606+10.96  
 Offset: 74.96 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	642.0	10-inch thick ASPHALT --PAVEMENT--															
	640.9	Medium dense, black ASPHALT grinds; reclaimed pavement; damp --FILL--			1	23 8 11 7	NP	1									
		Medium stiff to very stiff, brown and gray SILTY CLAY to SILTY CLAY LOAM, trace to little gravel; moist --FILL-- --RDR 2--			2	5 5 7 7	2.30 B	22									
					3	10 14 14 20	1.23 B	20									
					4	10 5 4 8	2.30 B	24									
					5	9 8 8 8	0.57 B	34									
	632.0	Hard, black SILTY CLAY --Buried TOPSOIL--			6	5 8 10 12	4.35 B	15									
	629.9	Hard, brown and black SILTY CLAY, trace gravel; moist --RDR 2--															
		Boring terminated at 13.00 ft															

### GENERAL NOTES

Begin Drilling **05-02-2022** Complete Drilling **05-02-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **20CME55T[81%]**  
 Driller **JS&AG** Logger **A. Scifers** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

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

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# BORING LOG WB-SGB-28

WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 625.36 ft  
 North: 1764618.22 ft  
 East: 1040278.78 ft  
 Station: 577+02.28  
 Offset: 84.27 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	624.9	6-inch thick, stiff (1.00P), black SILTY CLAY LOAM; moist				2											
	624.4	--TOPSOIL--			1	2	0.25	29									
	623.6	6-inch thick, tan SANDY GRAVEL; moist				1	P										
		--AGGREGATE--				2											
		Soft, brown SILTY CLAY, trace gravel; moist			2	5	3.94	16									
		--FILL--				4	B										
		Very stiff to hard, brown SILTY CLAY, trace gravel; damp				6											
		--RDR 2--				6											
			5		3	3	5.72	17									
						6	B										
						6											
						7											
						10	7.13	18									
						10	B										
						7											
						7											
						7											
	615.4	Boring terminated at 10.00 ft	10		5	2	7.95	17									
						4	B										
						6											
						7											

### GENERAL NOTES

Begin Drilling **05-23-2022** Complete Drilling **05-23-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **21GeoA[96%]**  
 Driller **RR&AP** Logger **D. You** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

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

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# BORING LOG WB-SGB-29

WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 629.30 ft  
 North: 1764614.58 ft  
 East: 1040884.87 ft  
 Station: 583+03.76  
 Offset: 61.35 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		13-inch thick ASPHALT --PAVEMENT--															
	628.2																
	628.0	3-inch thick GRAVEL --AGGREGATE BASE--			1	17 8 6 8	5.49 B	15									
		Stiff to hard, brown SILTY CLAY, trace gravel; moist --RDR 2--			2	4 7 6 9	1.50 P	15									
			5		3	11 11 14 13	4.35 B	16									
					4	5 5 7 8	2.13 B	17									
			10		5	4 5 8 9	4.51 B	18									
	618.3	Boring terminated at 11.00 ft															
			15														
			20														

### GENERAL NOTES

Begin Drilling **05-08-2022** Complete Drilling **05-08-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **20D50T [80%]**  
 Driller **JS&AE** Logger **A. Scifers** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

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

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# BORING LOG WB-SGB-30

WEI Job No.: 7901-15-01

Client **TranSystems Corporation**  
 Project **I-80 Reconstruction (Houbolt Rd to Center St)**  
 Location **Will County, Illinois**

Datum: NAVD 88  
 Elevation: 633.11 ft  
 North: 1764654.23 ft  
 East: 1041556.87 ft  
 Station: 589+76.81  
 Offset: 74.19 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	632.1	12-inch thick ASPHALT --PAVEMENT--															
		Medium dense, black ASPHALT grinds; reclaimed pavement; dry --FILL--			1	16 11 8 10	NP	1									
	629.6	Stiff to hard, brown SILTY CLAY to SILTY CLAY LOAM, trace gravel; moist --RDR 2--			2	6 8 13 13	8.20 B	15									
					3	17 19 27 24	5.74 B	17									
					4	8 10 14 18	1.72 B	14									
					5	7 10 11 15	4.84 B	16									
	622.1	Boring terminated at 11.00 ft															

### GENERAL NOTES

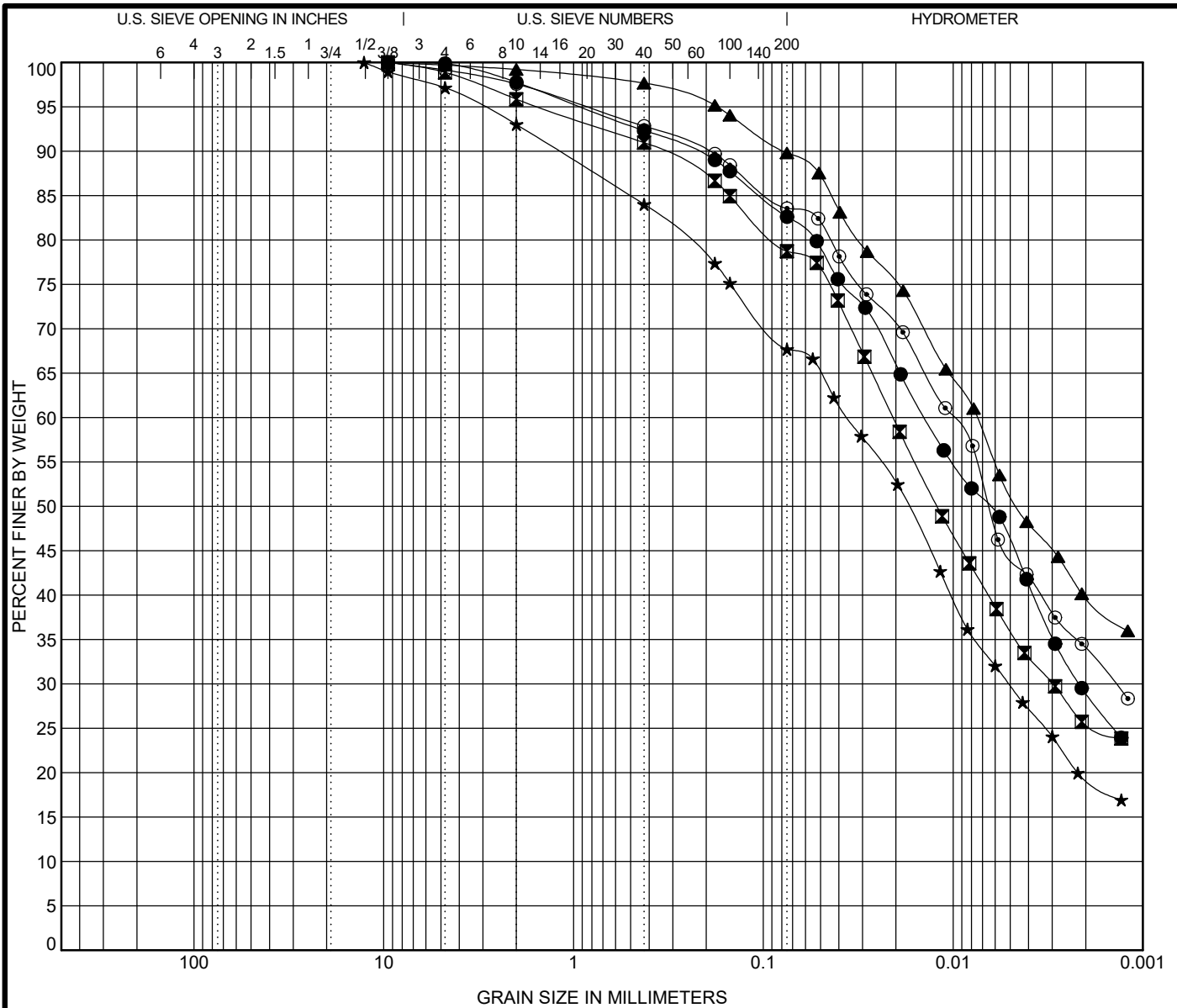
Begin Drilling **05-08-2022** Complete Drilling **05-08-2022**  
 Drilling Contractor **Wang Testing Services** Drill Rig **20D50T [80%]**  
 Driller **JS&AE** Logger **A. Scifers** Checked by **J. Bensen**  
 Drilling Method **2.25" IDA HSA; boring backfilled upon completion**

### WATER LEVEL DATA

While Drilling  $\nabla$  **DRY**  
 At Completion of Drilling  $\nabla$  **DRY**  
 Time After Drilling **NA**  
 Depth to Water  $\nabla$  **NA**

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

## **APPENDIX B**



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

Specimen Identification	IDH Classification	LL	PL	PI	Cc	Cu
● EB-SGB-29#3 5.0 ft	Silty Clay Loam	26	13	13		
☒ LR-AA-SGB-01#2 2.0 ft	Silty Clay Loam	32	16	16		
▲ LR-A-SGB-04#6 11.0 ft	Silty Clay	43	17	26		
★ LR-B-SGB-01#2 2.0 ft	Silty Clay Loam	23	16	7		
⊙ LR-CC-SGB-01#2 2.0 ft	Silty Clay	28	17	11		

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● EB-SGB-29#3 5.0 ft	9.5	0.014	0.002		2.2	15.2	53.6	29.0
☒ LR-AA-SGB-01#2 2.0 ft	9.5	0.021	0.003		4.1	17.2	53.1	25.5
▲ LR-A-SGB-04#6 11.0 ft	9.5	0.007			0.8	9.5	49.9	39.8
★ LR-B-SGB-01#2 2.0 ft	12.7	0.036	0.005		7.0	25.4	48.2	19.4
⊙ LR-CC-SGB-01#2 2.0 ft	9.5	0.01	0.001		2.4	14.1	49.5	34.0

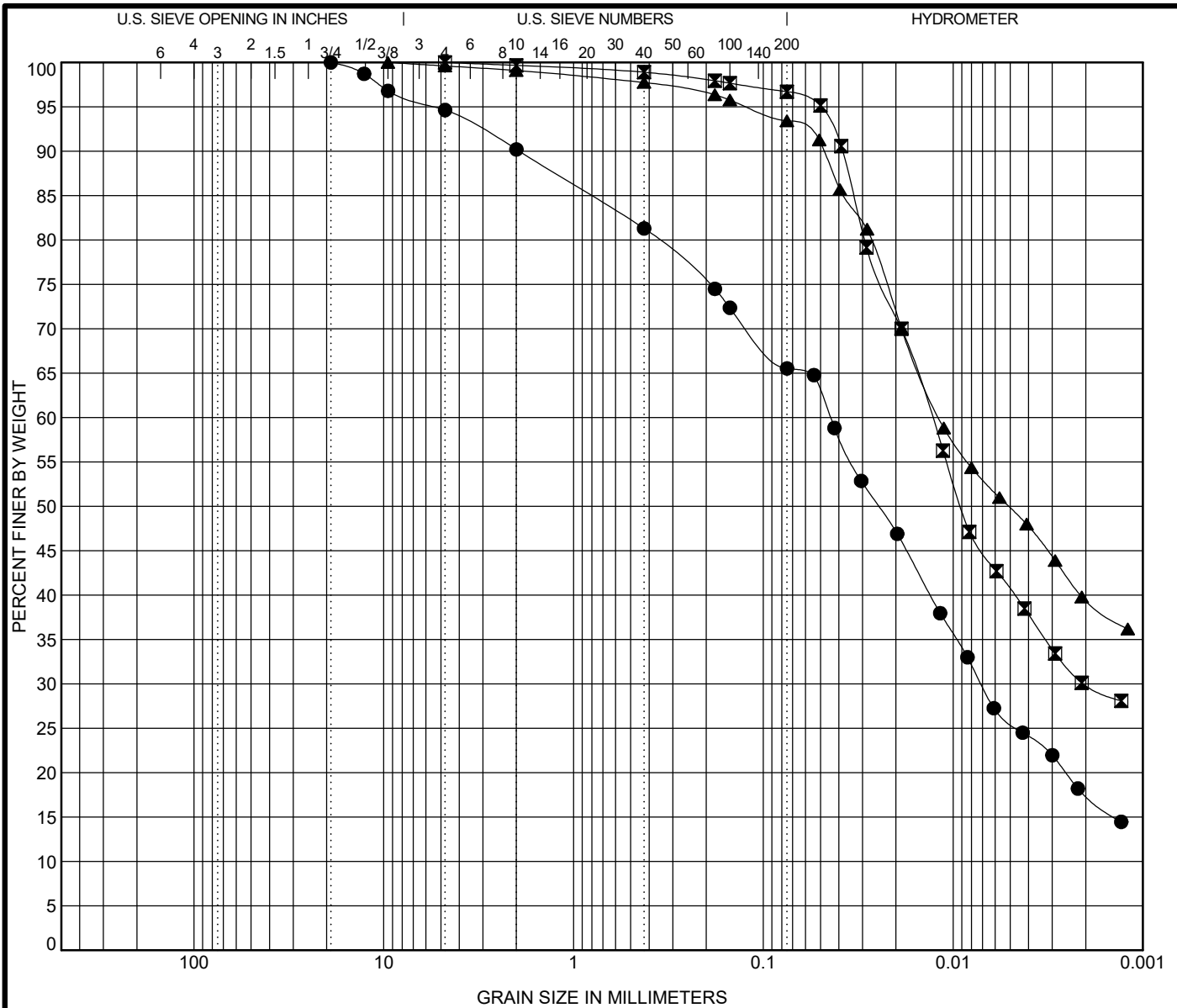
WEI GRAIN SIZE IDH 79011501.GPJ US LAB.GDT 10/10/22



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### GRAIN SIZE DISTRIBUTION

Project: I-80 Reconstruction (Houbolt Rd to Center St)  
 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
● LR-C-SGB-02#3 4.0 ft	<b>Silty Loam</b>	<b>25</b>	<b>17</b>	<b>8</b>		
☒ LR-D-SGB-01#2 2.0 ft	<b>Silty Clay</b>	<b>50</b>	<b>17</b>	<b>33</b>		
▲ WB-SGB-32#2 3.0 ft	<b>Silty Clay</b>	<b>53</b>	<b>15</b>	<b>38</b>		

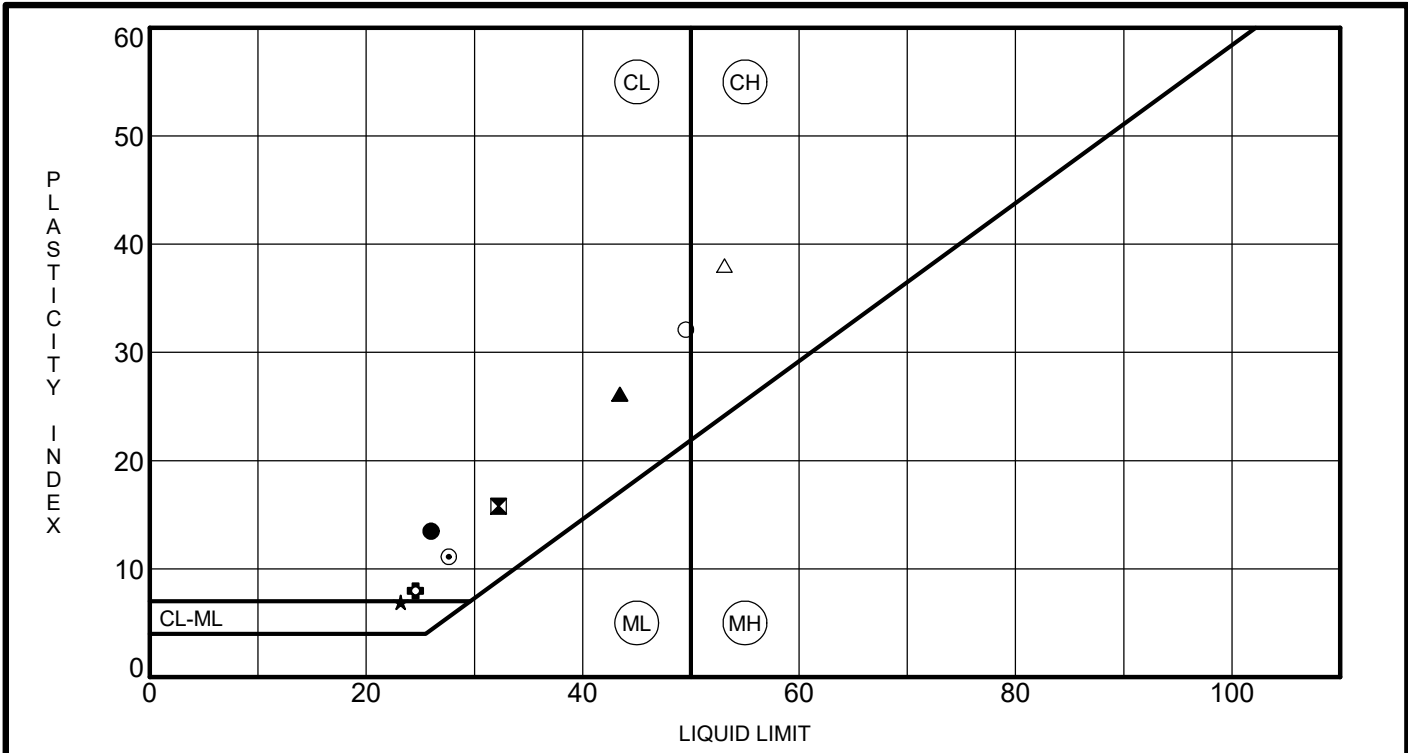
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● LR-C-SGB-02#3 4.0 ft	<b>19</b>	<b>0.044</b>	<b>0.007</b>		<b>9.8</b>	<b>24.7</b>	<b>48.0</b>	<b>17.5</b>
☒ LR-D-SGB-01#2 2.0 ft	<b>4.75</b>	<b>0.013</b>	<b>0.002</b>		<b>0.3</b>	<b>3.0</b>	<b>66.7</b>	<b>29.9</b>
▲ WB-SGB-32#2 3.0 ft	<b>9.5</b>	<b>0.012</b>			<b>0.9</b>	<b>5.7</b>	<b>53.9</b>	<b>39.5</b>



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**GRAIN SIZE DISTRIBUTION**  
 Project: I-80 Reconstruction (Houbolt Rd to Center St)  
 Location: Will County, Illinois  
 Number: 7901-15-01

WEI GRAIN SIZE IDH 79011501.GPJ US LAB.GDT 10/10/22



Specimen Identification	LL	PL	PI	Fines	IDH Classification
● EB-SGB-29#3 5.0 ft	26	13	13	83	Silty Clay Loam
⊠ LR-AA-SGB-01#2 2.0 ft	32	16	16	79	Silty Clay Loam
▲ LR-A-SGB-04#6 11.0 ft	43	17	26	90	Silty Clay
★ LR-B-SGB-01#2 2.0 ft	23	16	7	68	Silty Clay Loam
⊙ LR-CC-SGB-01#2 2.0 ft	28	17	11	84	Silty Clay
⊕ LR-C-SGB-02#3 4.0 ft	25	17	8	66	Silty Loam
○ LR-D-SGB-01#2 2.0 ft	50	17	33	97	Silty Clay
△ WB-SGB-32#2 3.0 ft	53	15	38	93	Silty Clay

WEI ATTERBERG LIMITS IDH 79011501.GPJ US LAB.GDT 10/10/22



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**ATTERBERG LIMITS' RESULTS**

Project: I-80 Reconstruction (Houbolt Rd to Center St)  
 Location: Will County, Illinois  
 Number: 7901-15-01

**ORGANIC CONTENT in SOILS by LOSS on IGNITION**  
 ASTM D 2974, Method C

<b>Client:</b> TranSystems	<b>Analyst Name:</b> L. Varzaru
<b>Project:</b> I-80	<b>Date Received:</b> 5/20/2022
<b>WEI Job:</b> KE225089/7901-15-01	<b>Date Tested:</b> 9/30/2022
<b>Type/Condition:</b> SS	
<b>Testing Furnace Temp °C.:</b> 440	

<b>Sample No./ Depth</b>	<b>LR-A-SGB-04 SS#4 (6-8ft.)</b>				
<b>Wet Soil + Tare</b>	81.65				
<b>Dry Soil + Tare</b>	72.86				
<b>Tare Mass</b>	43.74				
<b>w (%)</b>	30				
<b>Dry Soil + Tare</b>	72.86				
<b>Ash+ Tare</b>	71.53				
<b>Tare Mass</b>	43.74				
<b>Ash Content (%)</b>	95				
<b>Organic Content (%)</b>	4.6				

Prepared By: \_\_\_\_\_

Reviewed By: \_\_\_\_\_

## **APPENDIX C**



**SOIL TEST DATA**

**ROUTE**  
I-80 Reconstruction

**PROJECT**  
7901-15-01/ KE225089

**SECTION**  
I-80 / Larkin Avenue Interchange Ramps

**COUNTY**  
Will

Lab. No.	LR-AA-SGB-01 No.2	LR-A-SGB-04 No.6	LR-B-SGB-01 No.2	LR-CC-SGB-01 No.2	LR-C-SGB-02 No.3	LR-D-SGB-01 No.2
Station (ft)	955+47.77	916+27.82	1110+87.01	759+37.49	715+40.62	808+99.63
Offset (ft)	20.63 RT	30.88 RT	14.23 LT	12.81 RT	28.46 LT	22.03 LT
Depth (ft)	2.0	11.0	2.0	2.0	4.0	2.0
AASHTO M 145 Classification and Group Index	A-6 (11)	A-7-6 (24)	A-4 (2)	A-6 (8)	A-4 (3)	A-7-6 (34)
Illinois Textural Classification (Illinois Method)	Silty Clay	Silty Clay	Silty Clay Loam	Silty Clay	Silty Loam	Silty Clay
Gradation--Passing 1" Sieve %					100.0	
--" 3/4" Sieve %						
--" 1/2" Sieve %	100.0	100.0	100.0	100.0	98.7	
--" No.4 Sieve %	98.9	99.7	97.1	99.1	94.6	100.0
--" No.10 Sieve %	95.9	99.2	93.0	97.6	90.2	99.7
--" No.40 Sieve %	91.0	97.7	84.0	92.8	81.3	98.9
--" No.100 Sieve %	85.0	94.0	75.1	88.4	72.4	97.7
--" No.200 Sieve %	78.7	89.7	67.6	83.5	65.5	96.7
Sand % (AASHTO T 88)	17.2	9.5	25.4	14.1	24.7	3.0
Silt % (AASHTO T 88)	53.1	49.9	48.2	49.5	48.0	66.7
Clay % (AASHTO T 88)	25.5	39.8	19.4	34.0	17.5	29.9
Liquid limit % (AASHTO T 89)	32	43	23	28	25	50
Plasticity index % (AASHTO T 90)	16	26	7	11	8	32
IBR % (Illinois Method)						
Standard Dry Density % (AASHTO T 99)						
Optimum Moisture % (AASHTO T 99)						
Subgrade Support Rating	POOR	FAIR	POOR	FAIR	POOR	POOR
Insitu Moisture % (AASHTO T 99)	25	28	24	15	17	26

**SOIL TEST DATA****SECTION**

I-80 / Larkin Avenue Interchange Ramps

Lab. No.	EB-SGB-29 No.3	WB-SGB-32 No.2
Station (ft)	588+11.96	601+11.31
Offset (ft)	80.86 RT	55.46 LT
Depth (ft)	5.0	3.0
AASHTO M 145 Classification and Group Index	A-6 (8)	A-7-6 (37)
Illinois Textural Classification (Illinois Method)	Silty Clay Loam	Silty Clay
Gradation--Passing 1" Sieve %		
--" 3/4" Sieve %		
--" 1/2" Sieve %		
--" No.4 Sieve %	99.9	99.6
--" No.10 Sieve %	97.8	99.1
--" No.40 Sieve %	92.3	97.7
--" No.100 Sieve %	87.7	95.8
--" No.200 Sieve %	82.5	93.3
Sand % (AASHTO T 88)	15.2	5.7
Silt % (AASHTO T 88)	53.6	53.9
Clay % (AASHTO T 88)	29.0	39.5
Liquid limit % (AASHTO T 89)	26	53
Plasticity index % (AASHTO T 90)	13	38
IBR % (Illinois Method)		
Standard Dry Density % (AASHTO T 99)		
Optimum Moisture % (AASHTO T 99)		
Subgrade Support Rating	POOR	FAIR
Insitu Moisture % (AASHTO T 99)	13	23



State Job Number: 7901-15-01 Project: I-80 Reconstruction Route: I-80

Section: 62R25 City or County: Will Date: 10/14/2022

ADT: \_\_\_\_\_ Year: \_\_\_\_\_ Design Period: \_\_\_\_\_ Class Highway: \_\_\_\_\_

Passenger Cars Per Day: \_\_\_\_\_ Trucks S.U. Per Day: \_\_\_\_\_ Trucks M.U. Per Day: \_\_\_\_\_

Pavement Structure: \_\_\_\_\_

Type Surface Course: \_\_\_\_\_ Thickness: \_\_\_\_\_

Type Base Course: \_\_\_\_\_ Thickness: \_\_\_\_\_

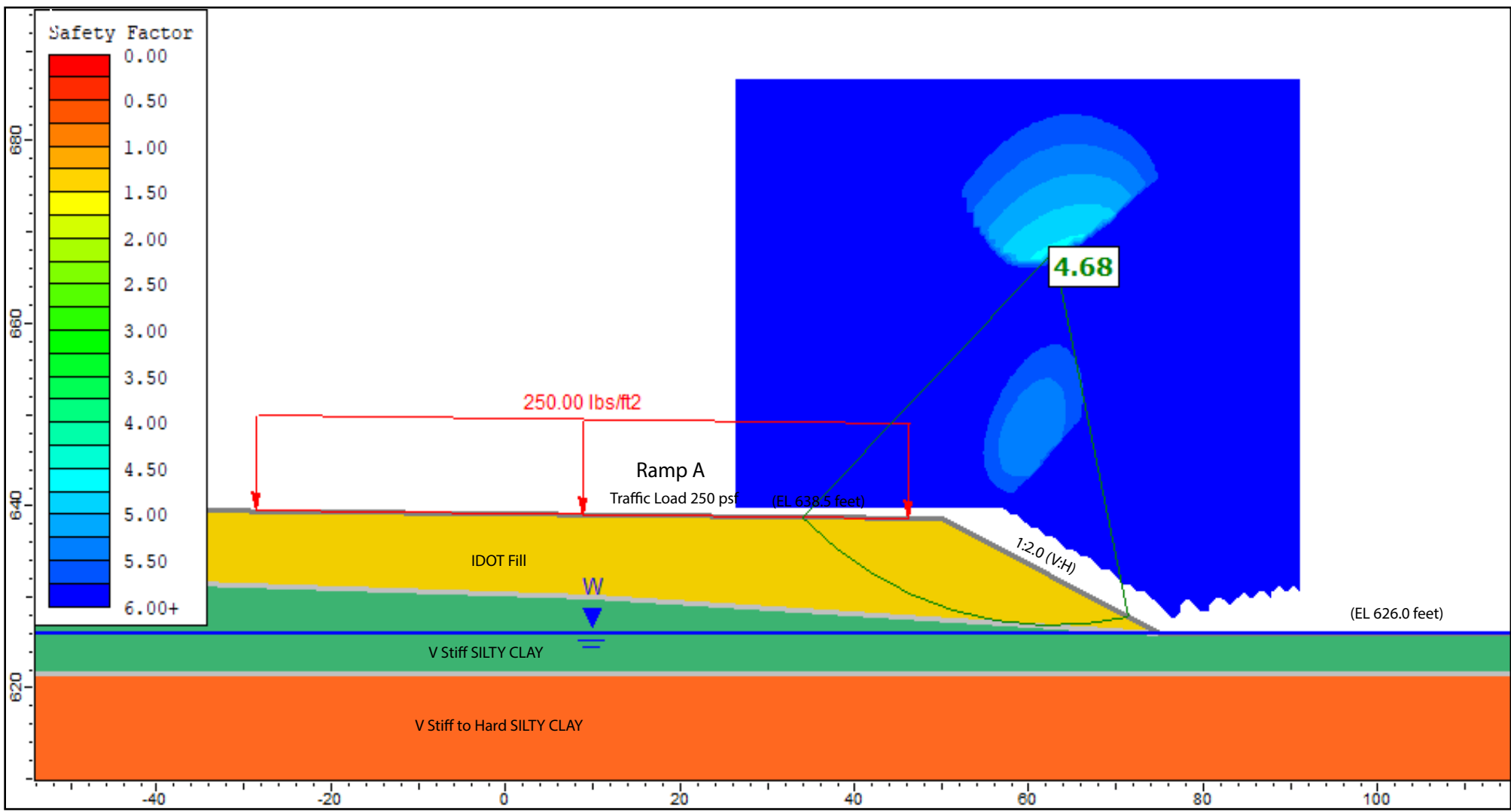
Type Subbase Material: \_\_\_\_\_ Thickness: \_\_\_\_\_

Sta. to Sta.	+ to +	+ to +	+ to +	+ to +
*Sta. of Test	955+47.77			
*Drainage Class	Poor			
*Ave. Frost Penetration	45 to 60 in.			
Illinois Textural Classification	Silty Clay			
Classification and Group Index (AASHTO M 145)	A-6 (11)			
*Percent Silt (AASHTO T 88)	53.1			
*Illinois Bearing Ratio (%)				
Std. Dry Density (IL Mod. AASHTO T 99)				
Optimum Moisture (IL Mod AASHTO T 99)				

\* Indicates worst condition within the above station limits.

Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## **APPENDIX D**



Undrained Analysis, Larkin Ramp A, Station 916+00, Ref Boring: LR-A-SGB-04

Layer ID	Description	Total Unit Weight (pcf)	Undrained Cohesion (psf)	Undrained Friction Angle (degrees)
1	IDOT FILL	120	1000	0
2	V Stiff SI Clay	120	2600	0
3	V Stiff to Hard SILTY CLAY	120	3000	0

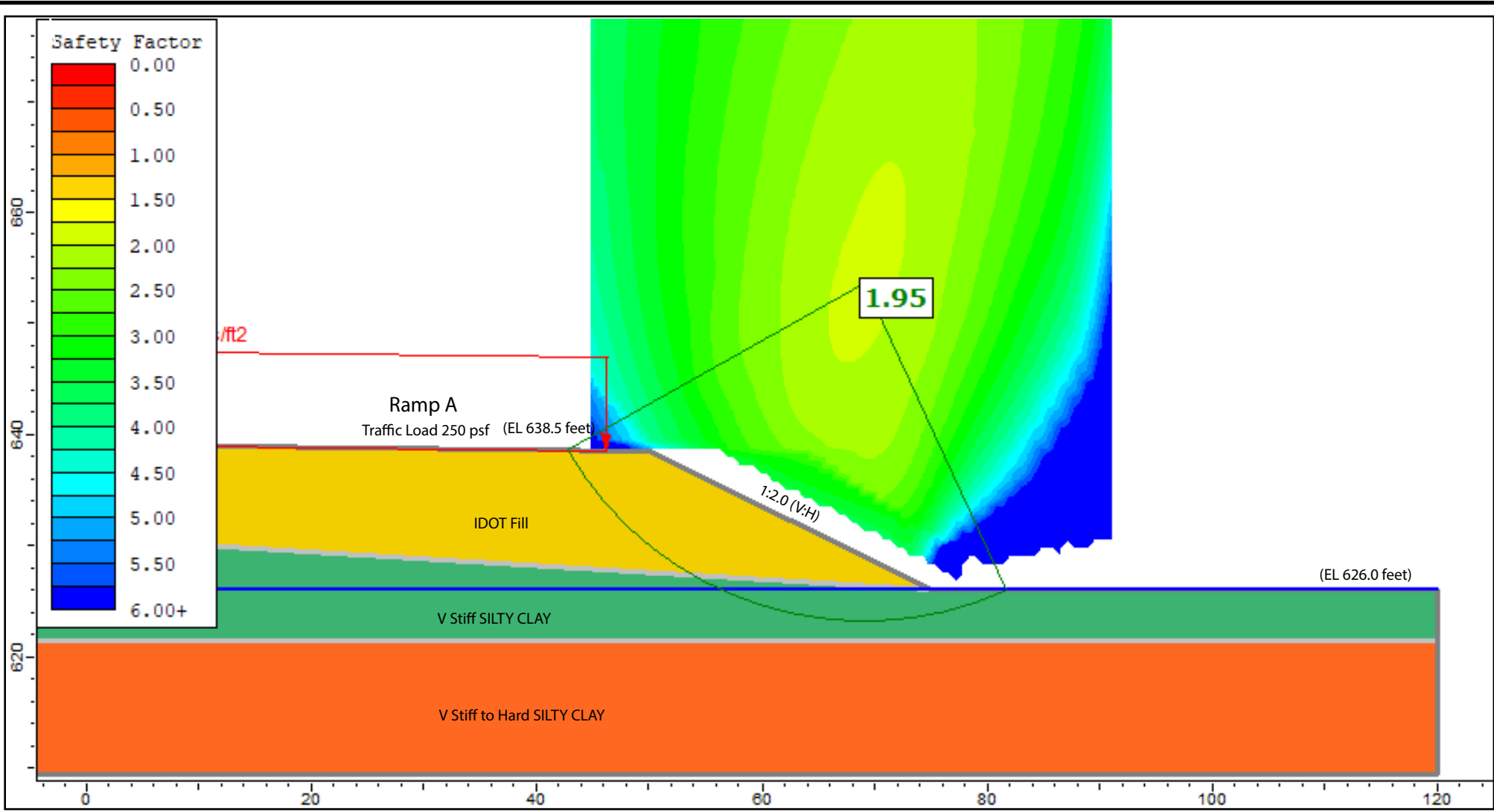
GLOBAL STABILITY: I-80 RECONSTRUCTION; LARKIN INTERCHANGE RAMPS, WILL COUNTY, ILLINOIS

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



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

FOR TRANSYSTEMS CORPORATION | 7901-15-01



Drained Analysis, Larkin Ramp A, Station 916+00, Ref Boring: LR-A-SGB-04

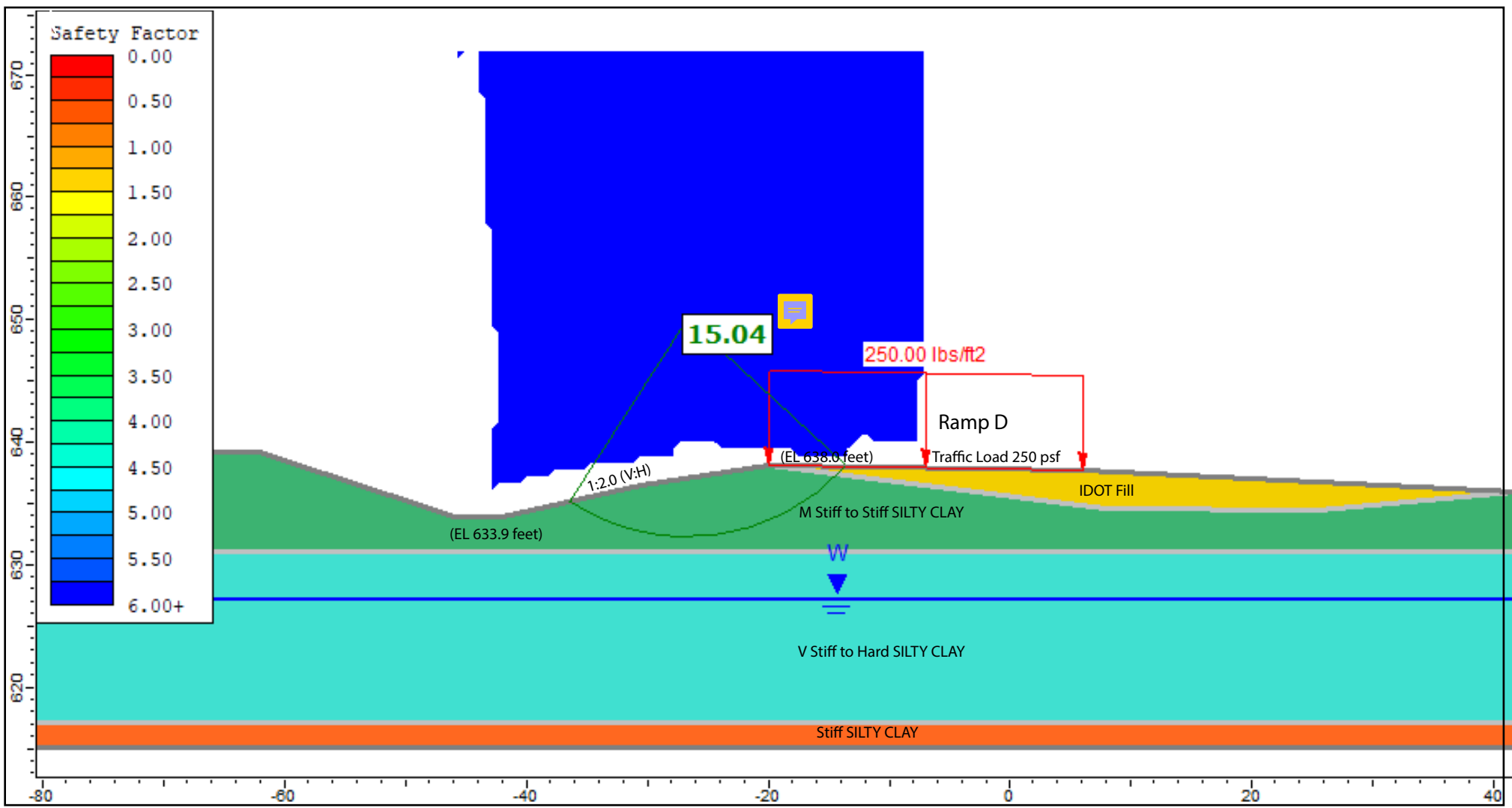
Layer ID	Description	Total Unit Weight (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
1	IDOT FILL	120	100	30
2	V Stiff SI Clay	120	100	30
3	V Stiff to Hard SILTY CLAY	120	100	30

GLOBAL STABILITY: I-80 RECONSTRUCTION; LARKIN INTERCHANGE RAMPS, WILL COUNTY, ILLINOIS

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

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Undrained Analysis, Larkin Ramp D, Station 809+00, Ref Boring: LR-D-SGB-01

Layer ID	Description	Total Unit Weight (pcf)	Undrained Cohesion (psf)	Undrained Friction Angle (degrees)
1	IDOT FILL	120	1000	0
2	V Stiff SI Clay	120	1200	0
3	V Stiff to Hard SILTY CLAY	120	2800	0
4	Stiff SILTY CLAY	120	1200	0

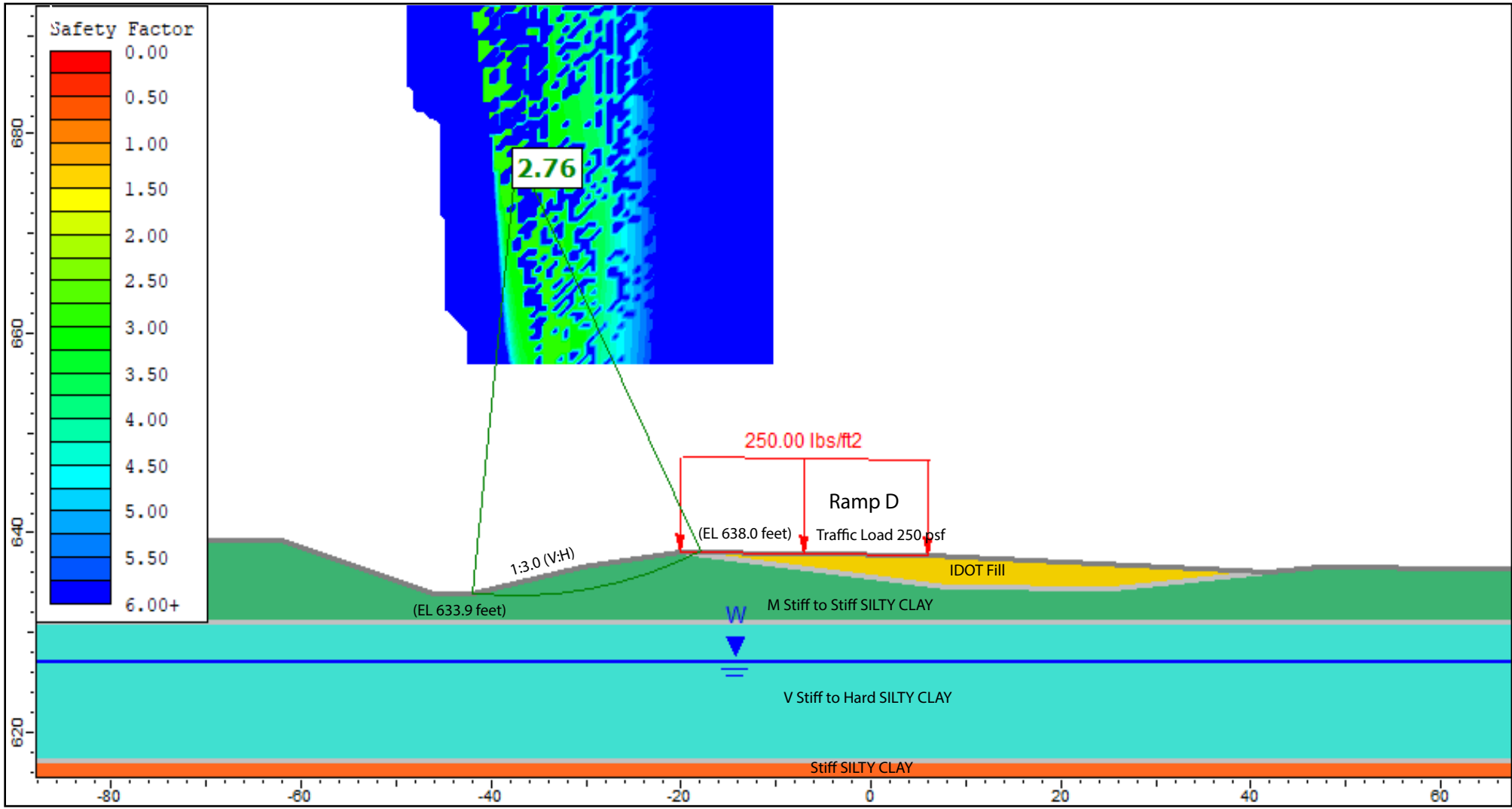
GLOBAL STABILITY: I-80 RECONSTRUCTION; LARKIN INTERCHANGE RAMP, WILL COUNTY, ILLINOIS

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



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Drained Analysis, Larkin Ramp D, Station 809+00, Ref Boring: LR-D-SGB-01

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

GLOBAL STABILITY: I-80 RECONSTRUCTION; LARKIN INTERCHANGE RAMPS, WILL COUNTY, ILLINOIS

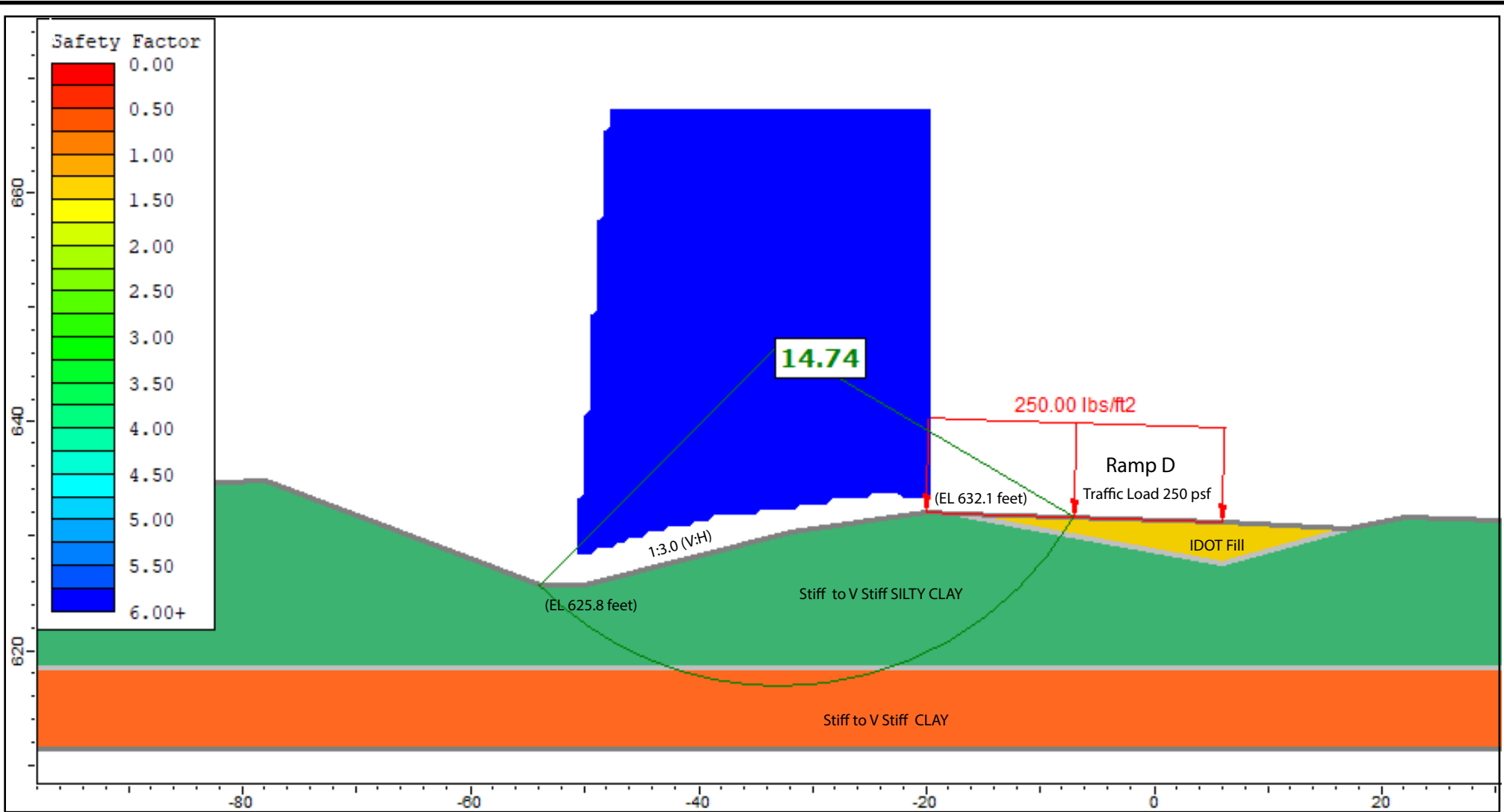
SCALE: GRAPHICAL | APPENDIX D-4 | DRAWN BY: N.Balakumaran  
CHECKED BY: A. Kurnia



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Undrained Analysis, Larkin Ramp D, Station 814+00, Ref Boring: LR-D-SGB-03

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	120	2200	0
3	Stiff to V Stiff CLAY	120	2400	0
4				

GLOBAL STABILITY: I-80 RECONSTRUCTION; LARKIN INTERCHANGE RAMPS, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL

APPENDIX D-5

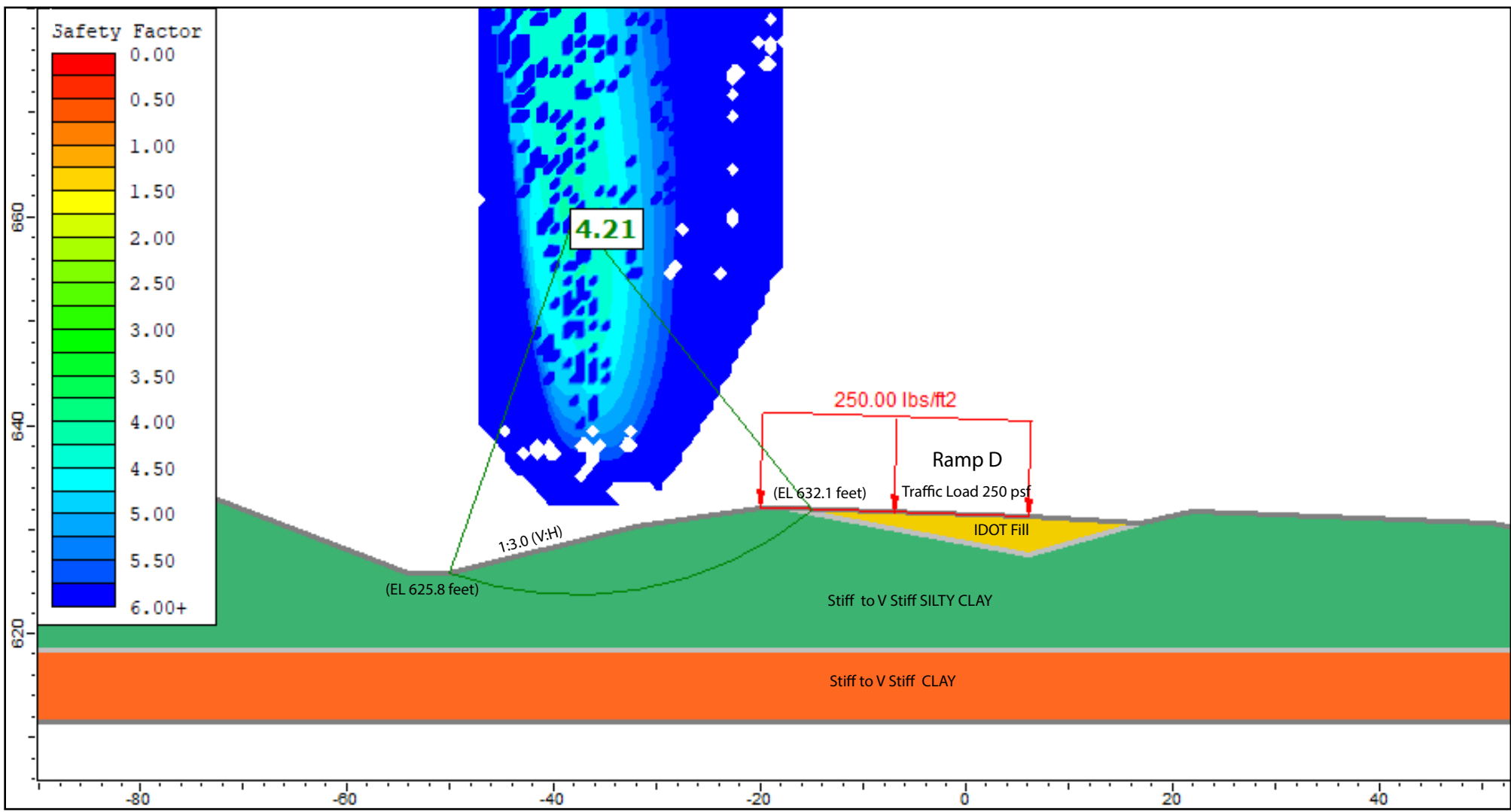
DRAWN BY: N.Balakumaran  
CHECKED BY: A. Kurnia



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7901-15-01



Drained Analysis, Larkin Ramp D, Station 814+00, Ref Boring: LR-D-SGB-03

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

GLOBAL STABILITY: I-80 RECONSTRUCTION; LARKIN INTERCHANGE RAMPS, WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	APPENDIX D-6	DRAWN BY: N.Balakumaran CHECKED BY: A. Kurnia
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7901-15-01

## **APPENDIX E**

APPENDIX E  
BORING LOCATION PLANS  
AND SOIL PROFILES

ROADWAY GEOTECHNICAL REPORT

I-80 IMPROVEMENTS  
LARKIN AVENUE INTERCHANGE  
CONTRACT 62R25  
WILL COUNTY, ILLINOIS

FOR  
FOR TRANSYSTEMS CORPORATION  
1475 EAST WOODFIELD ROAD, SUITE 600  
SCHAUMBURG, IL 60173

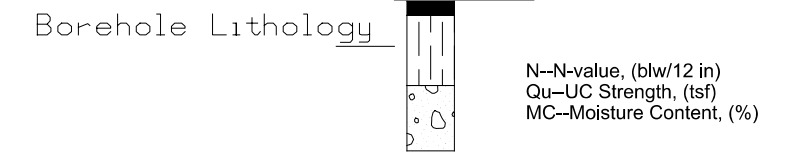
PREPARED BY  
WANG ENGINEERING  
1145 NORTH MAIN STREET  
LOMBARD, IL 60148

OCTOBER 6, 2022  
WANG PROJECT 7901-15-01

LEGEND:



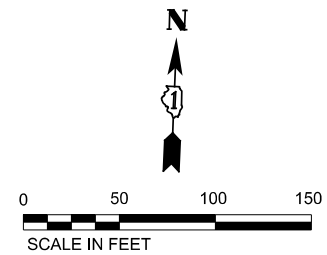
WB-SGB-01                      Borehole Number  
580.10 ft,                      Elevation  
415+30.58; 57.07 LT                      Station, offset



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

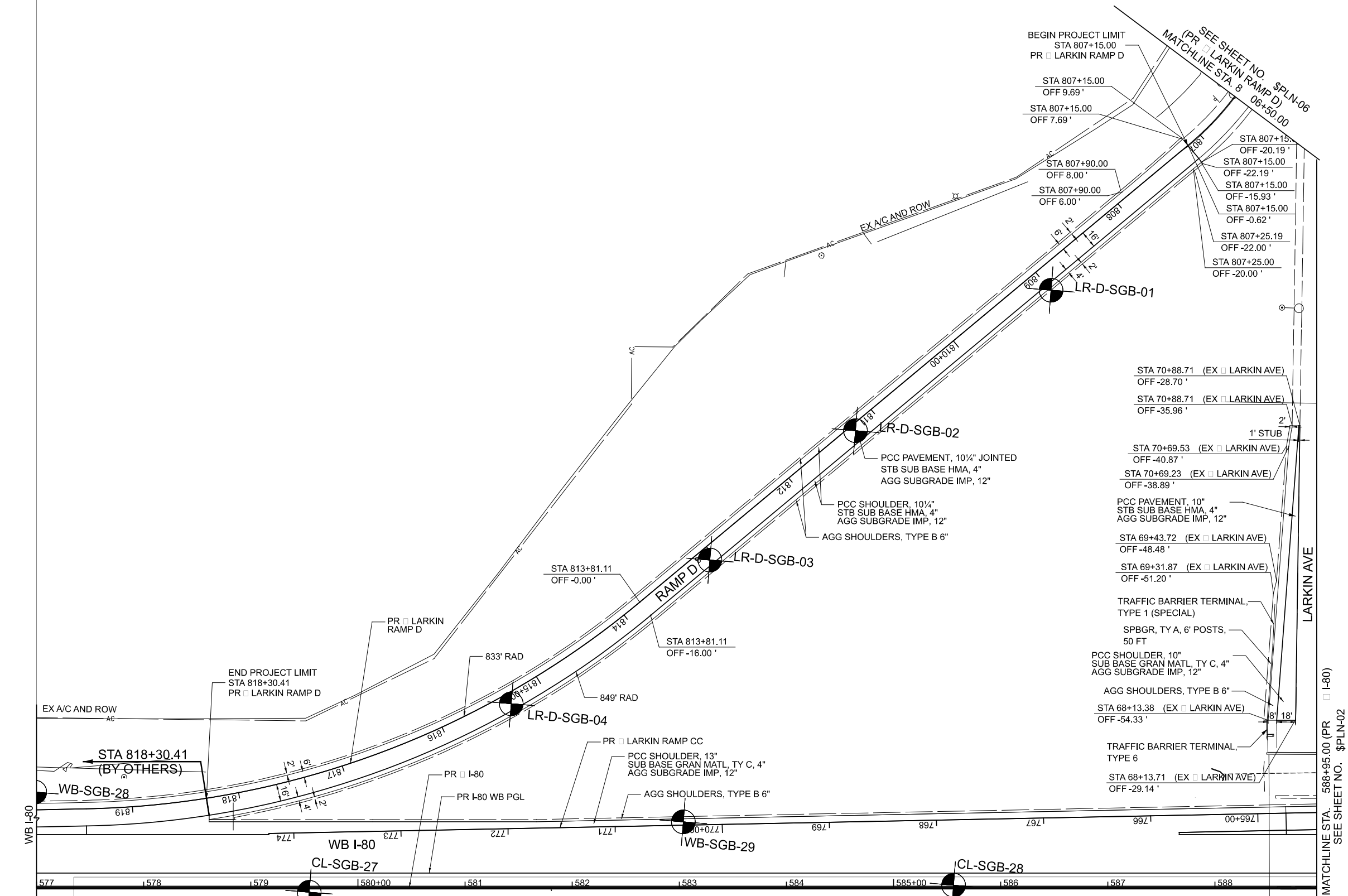
Lithology Graphics

- Topsoil
- IDH Sand, Sandy Loam
- IDH Clay
- Gravelly sand, sandy gravel
- IDH Loam
- IDH Clay Loam
- IDH Silt, Silty Loam
- Pavement
- IDH Silty Clay, Silty Clay Loam
- Crushed stone

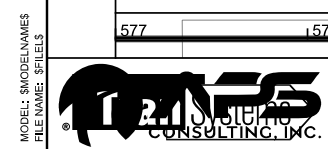
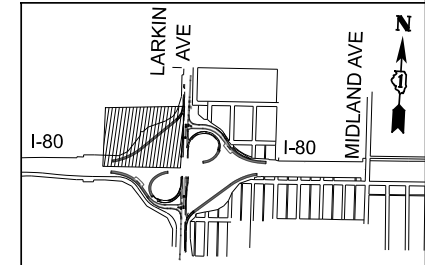


**NOTES:**

1. SEE ALIGNMENT AND TIES SHEETS FOR CURVE DATA.
2. ALL STATION AND OFFSET MEASURED FROM PR CL I-80 UNLESS OTHERWISE NOTES.



**KEY PLAN**

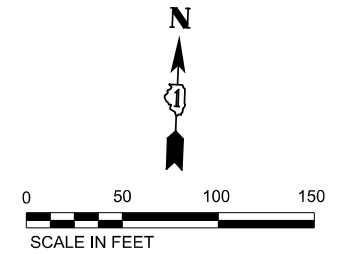


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	DATE - ####	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

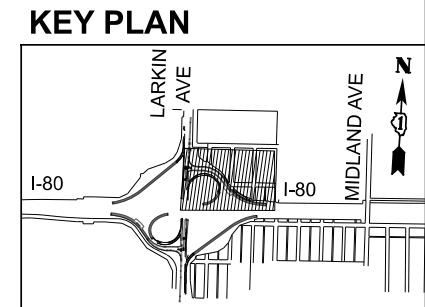
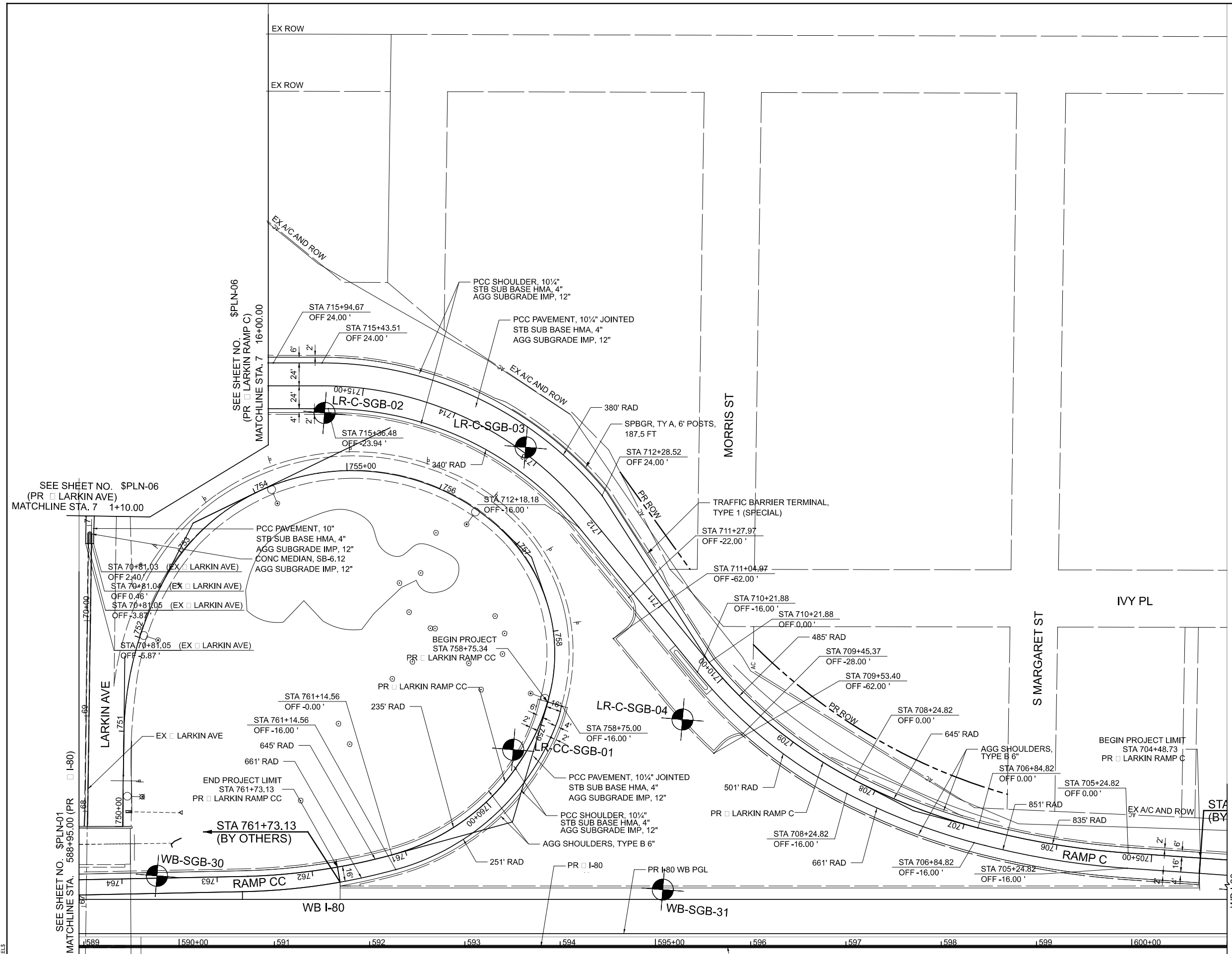
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SHEET \$PLN-01OF \$PLN-01 SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-80	\$SNUM	\$COUNTY	\$TOT	\$PLN-01
CONTRACT NO. \$CNUM				
ILLINOIS FED. AID PROJECT				



**NOTES:**

1. SEE ALIGNMENT AND TIES SHEETS FOR CURVE DATA.
2. ALL STATION AND OFFSET MEASUREDD FROM PR CL I-80 UNLESS OTHERWISE NOTES.



MODEL: S:\MODELS\FILES  
FILE NAME: SFILES



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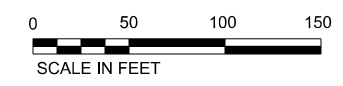
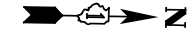
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

\$PLN-02-L1

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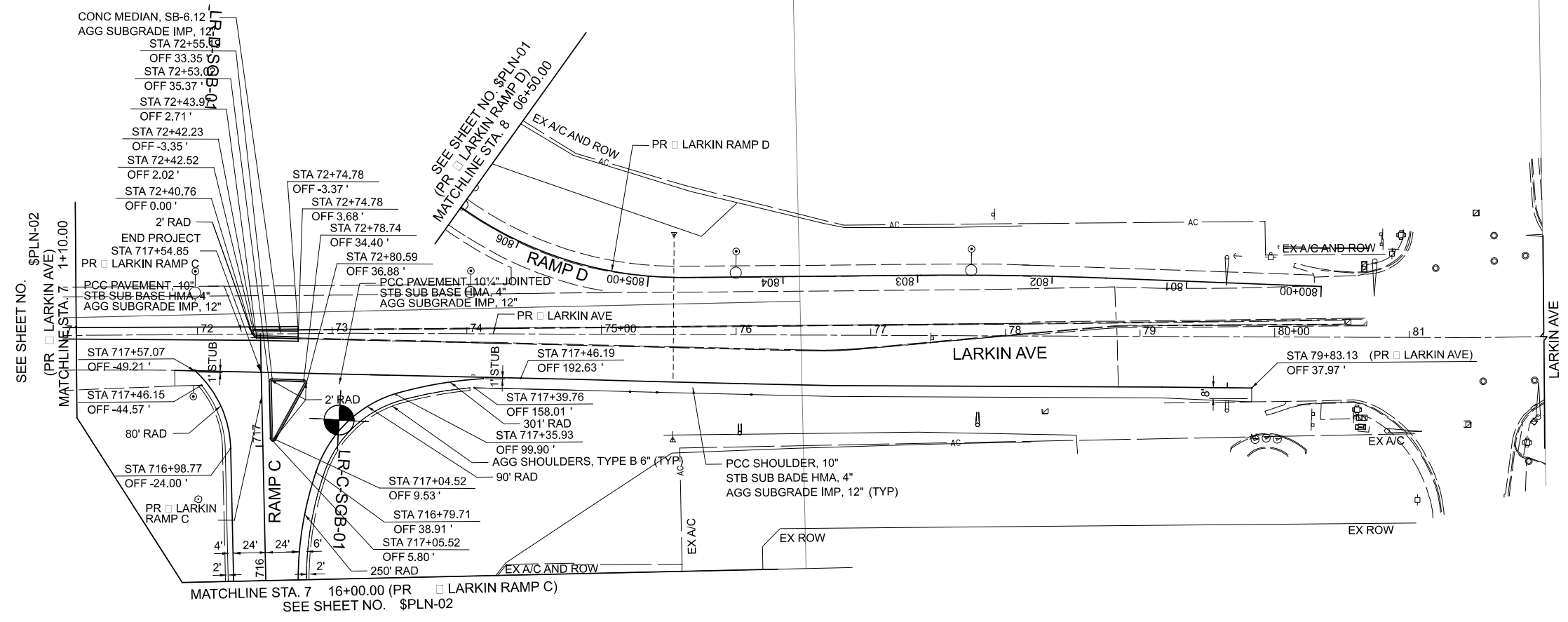
SHEET \$PLN-020F \$PLN-02 SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. \$CNUM				
ILLINOIS FED. AID PROJECT				

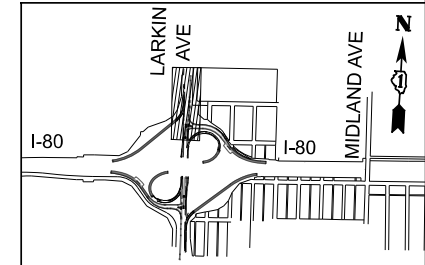


**NOTES:**

- 1. SEE ALIGNMENT AND TIES SHEETS FOR CURVE DATA.
- 2. ALL STATION AND OFFSET MEASUREDD FROM PR CL I-80 UNLESS OTHERWISE NOTES.



**KEY PLAN**



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FILENAME: \$FILES



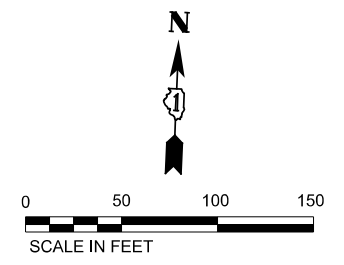
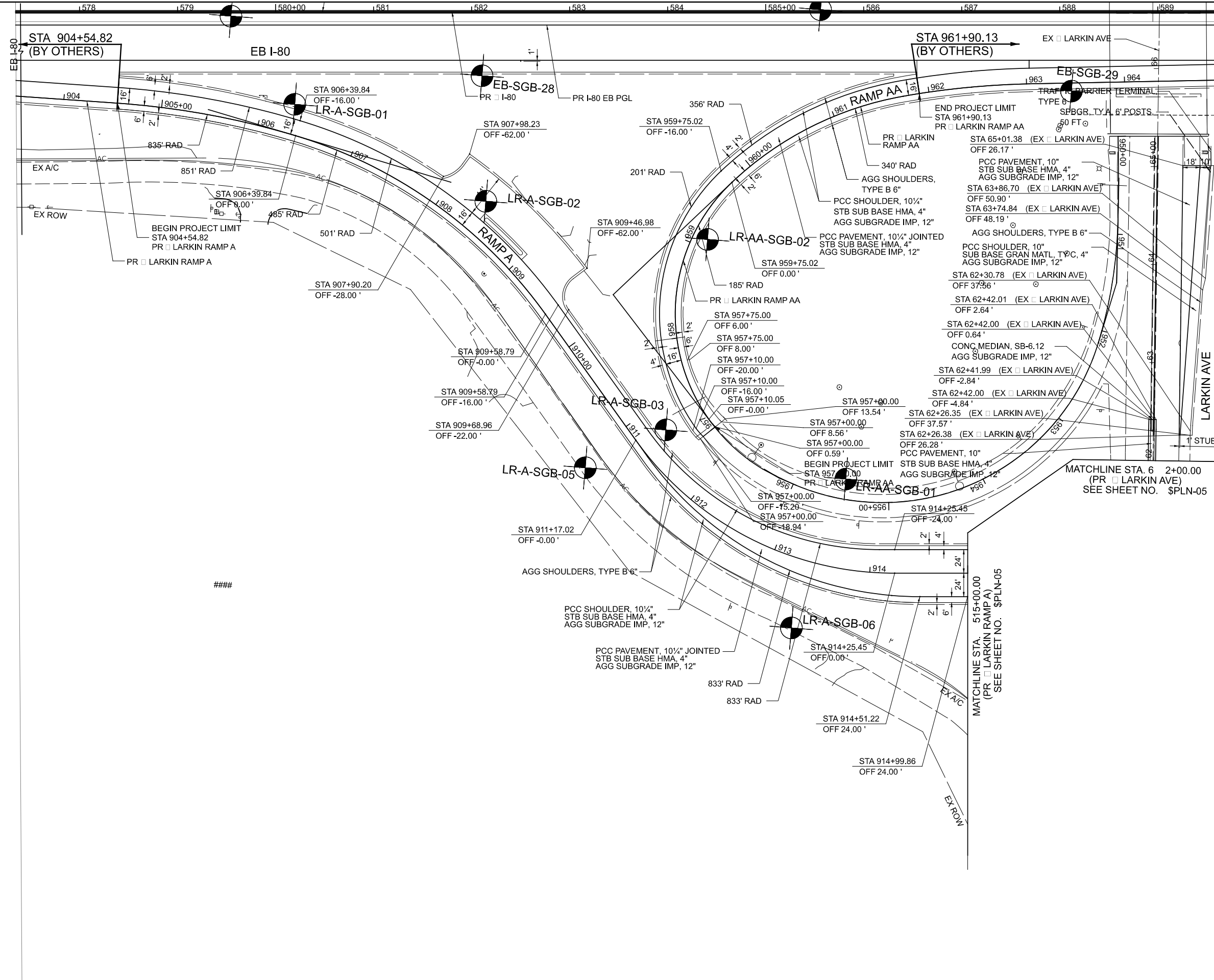
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PLOT DATE = \$DATES	DATE - #####	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

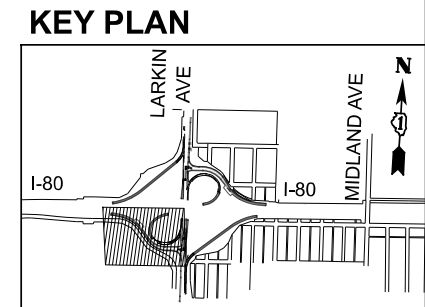
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SCALE: 1"=50'      SHEET \$PLN-06OF \$PLN-06 SHEETS      STA.      TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-80	\$SNUM	\$COUNTY	\$TOT	\$PLN-06
CONTRACT NO. \$CNUM				
ILLINOIS FED. AID PROJECT				



- NOTES:**
1. SEE ALIGNMENT AND TIES SHEETS FOR CURVE DATA.
  2. ALL STATION AND OFFSET MEASUREDD FROM PR CL I-80 UNLESS OTHERWISE NOTES.



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DRAWN -	REVISIED -	
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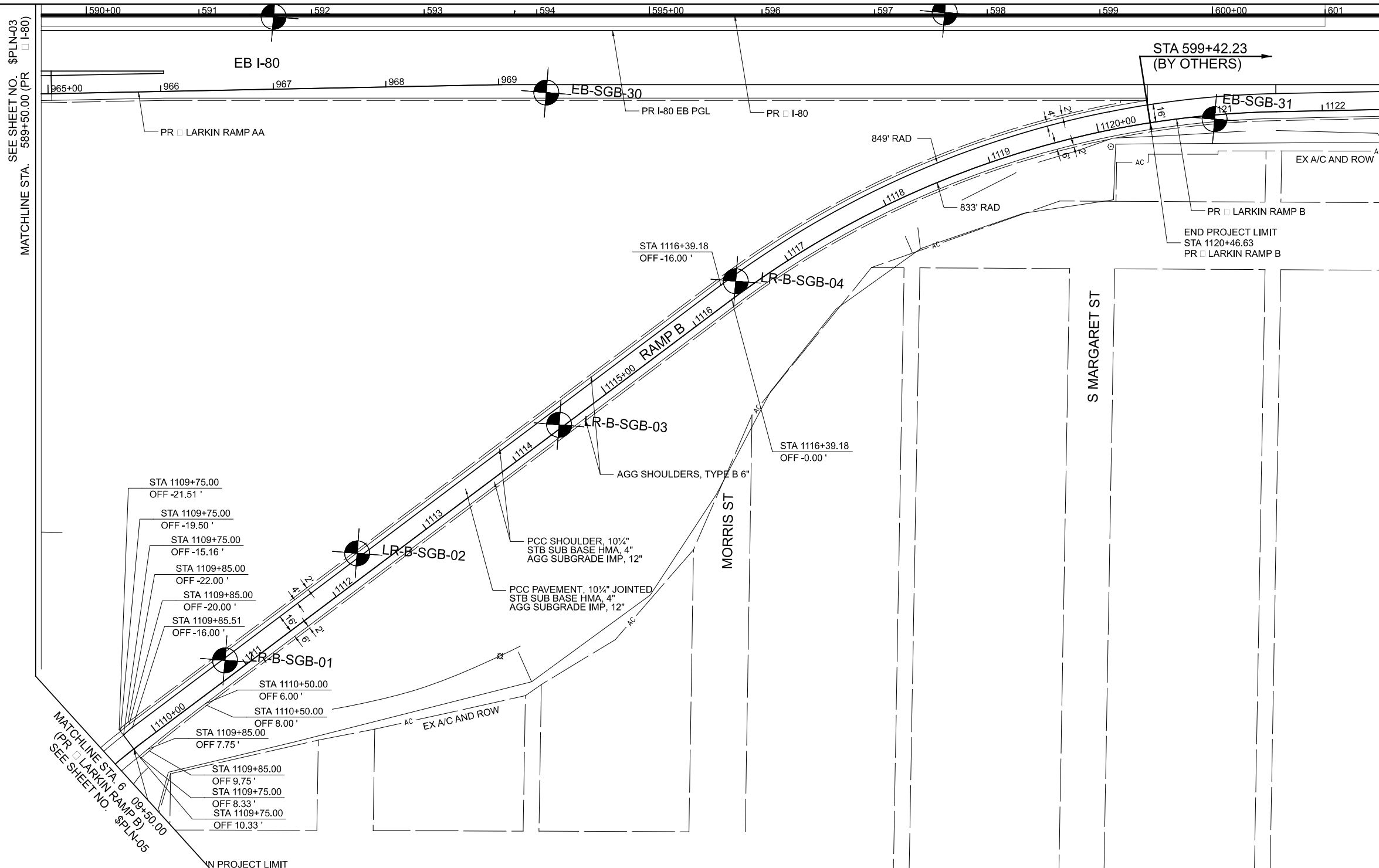
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

\$PLN-03-L1

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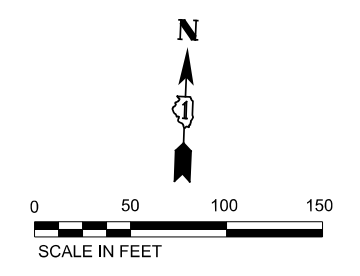
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-80	\$SNUM	\$COUNTY	\$TOT	\$PLN-03
CONTRACT NO. \$CNUM				
ILLINOIS FED. AID PROJECT				



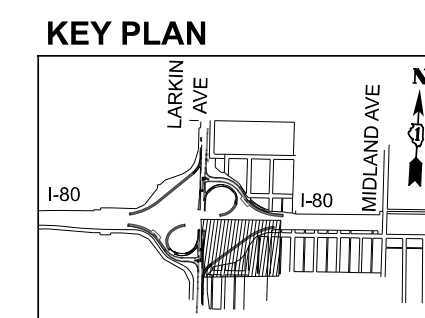


SEE SHEET NO. \$PLN-03  
MATCHLINE STA. 589+50.00 (PR I-80)

MATCHLINE STA. 6 09+50.00  
(PR LARKIN RAMP B)  
SEE SHEET NO. \$PLN-05



- NOTES:**
1. SEE ALIGNMENT AND TIES SHEETS FOR CURVE DATA.
  2. ALL STATION AND OFFSET MEASUREDD FROM PR CL I-80 UNLESS OTHERWISE NOTES.



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DRAWN -	REVISED -	
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

\$PLN-04-L1

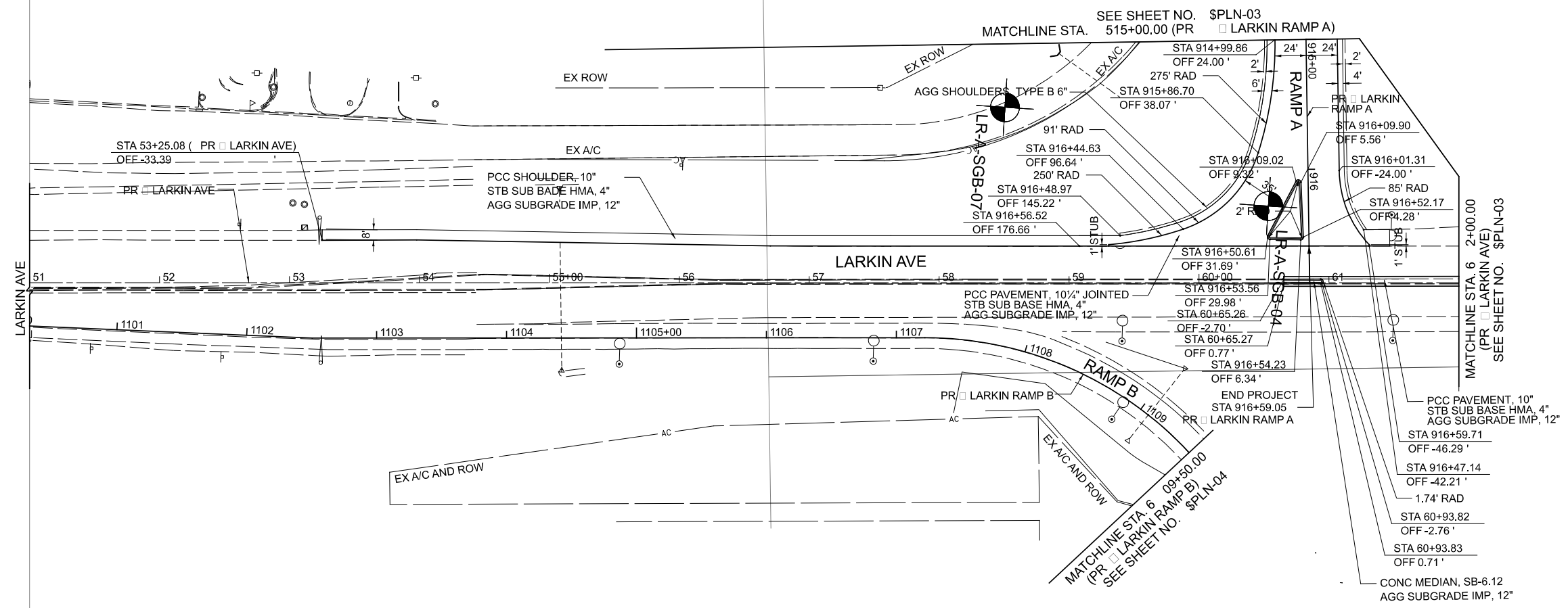
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F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. \$CNUM				
ILLINOIS FED. AID PROJECT				

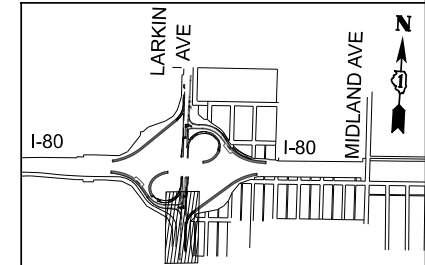


**NOTES:**

1. SEE ALIGNMENT AND TIES SHEETS FOR CURVE DATA.
2. ALL STATION AND OFFSET MEASURED FROM PR CL I-80 UNLESS OTHERWISE NOTES.



**KEY PLAN**



MODEL, MODELNAMES, FILENAMES, SHEETS



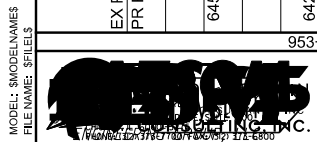
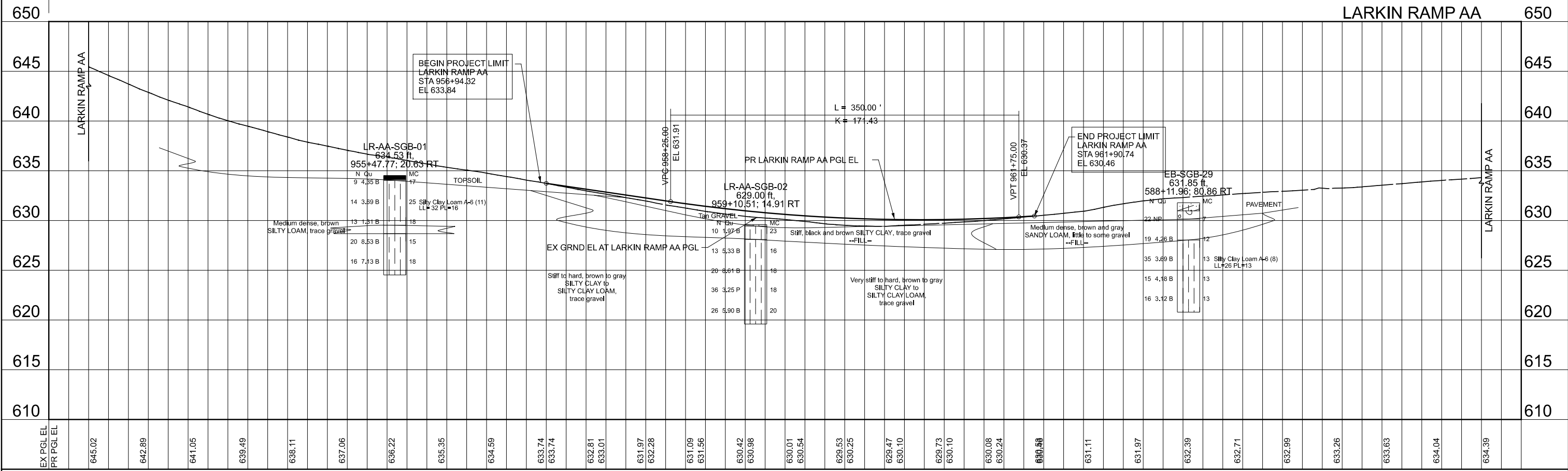
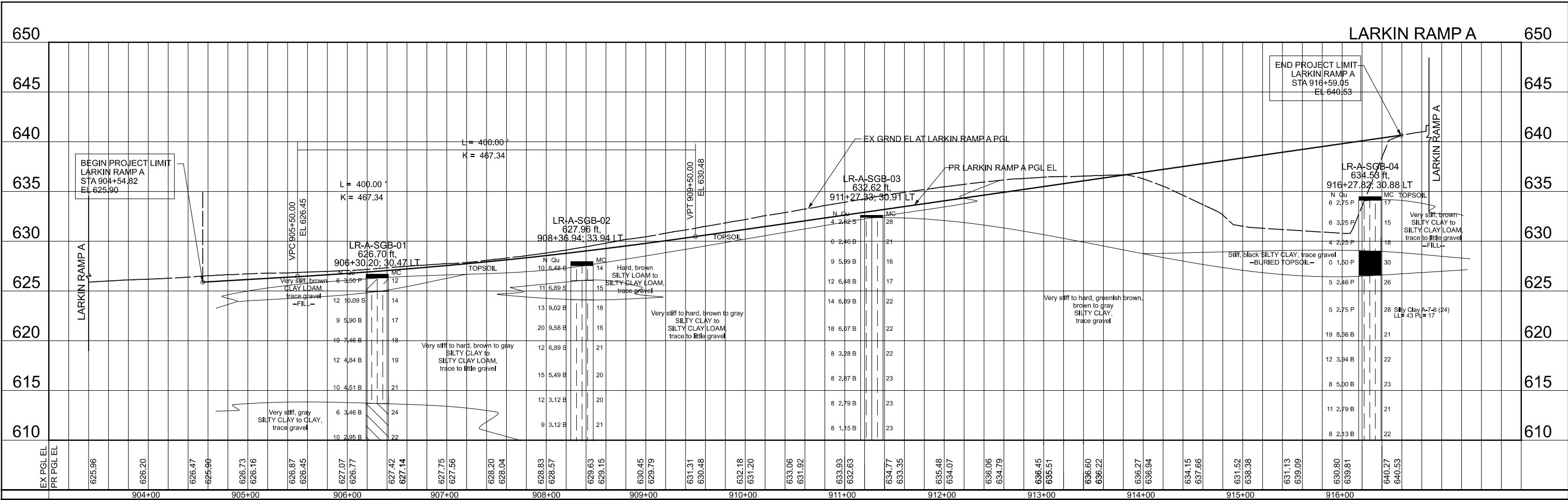
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DRAWN -	REVISED -	
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**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**\$PLN-05-L1**

SCALE: 1"=50'      SHEET \$PLN-05OF \$PLN-05 SHEETS      STA.      TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-80	\$SNUM	\$COUNTY	\$TOT	\$PLN-05
CONTRACT NO. \$CNUM				
ILLINOIS FED. AID PROJECT				



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DRAWN = \$PRF-01-DR	CHECKED - \$PRF-01-CH	REVISED -
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PLOT DATE = \$DATES		

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

<b>\$PRF-01-L1</b>	
SCALE: HORIZ: 1"=50'	SHEET \$PRF-01OF \$PRF-01SHEETS
VERT: 1"=5'	STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-80	\$SNUM	\$COUNTY	\$TOT	\$PRF-01
CONTRACT NO. \$CNUM			ILLINOIS FED. AID PROJECT	

655

LARKIN RAMP B

655

650

650

645

645

640

640

635

635

630

630

625

625

620

620

615

615

BEGIN PROJECT LIMIT  
LARKIN RAMP B  
STA 1109+75.51  
EL 635.53

END PROJECT LIMIT  
LARKIN RAMP B  
STA 1120+46.63  
EL 636.97

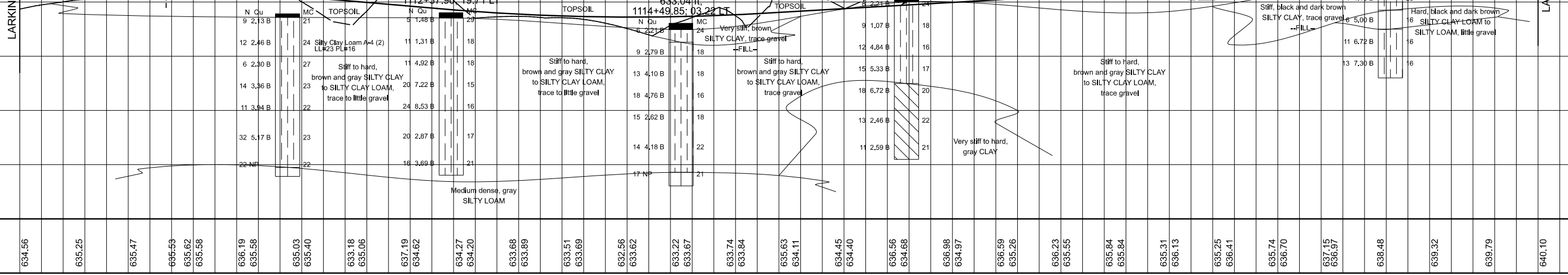
LR-B-SGB-01  
638.92 ft.  
1110+87.84; 14.23 LT

LR-B-SGB-02  
634.04 ft.  
1112+37.98; 19.71 LT

LR-B-SGB-03  
633.04 ft.  
1114+49.85; 03.22 LT

LR-B-SGB-04  
635.30 ft.  
1116+57.74; 06.04 LT

EB-SGB-31  
638.01 ft.  
600+01.84; 92.17 RT



660

LARKIN RAMP C

660

655

655

650

650

645

645

640

640

635

635

630

630

625

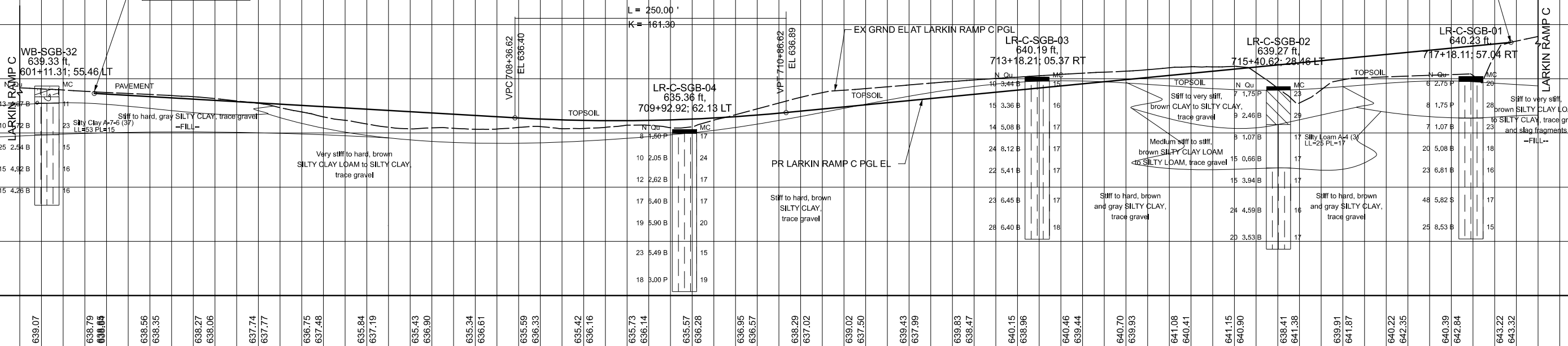
625

620

620

BEGIN PROJECT LIMIT  
LARKIN RAMP C  
STA 704+48.73  
EL 638.64

END PROJECT LIMIT  
LARKIN RAMP C  
STA 717+54.95  
EL 643.32



MODEL: MODELNAMES  
FILENAMES: SHEETS

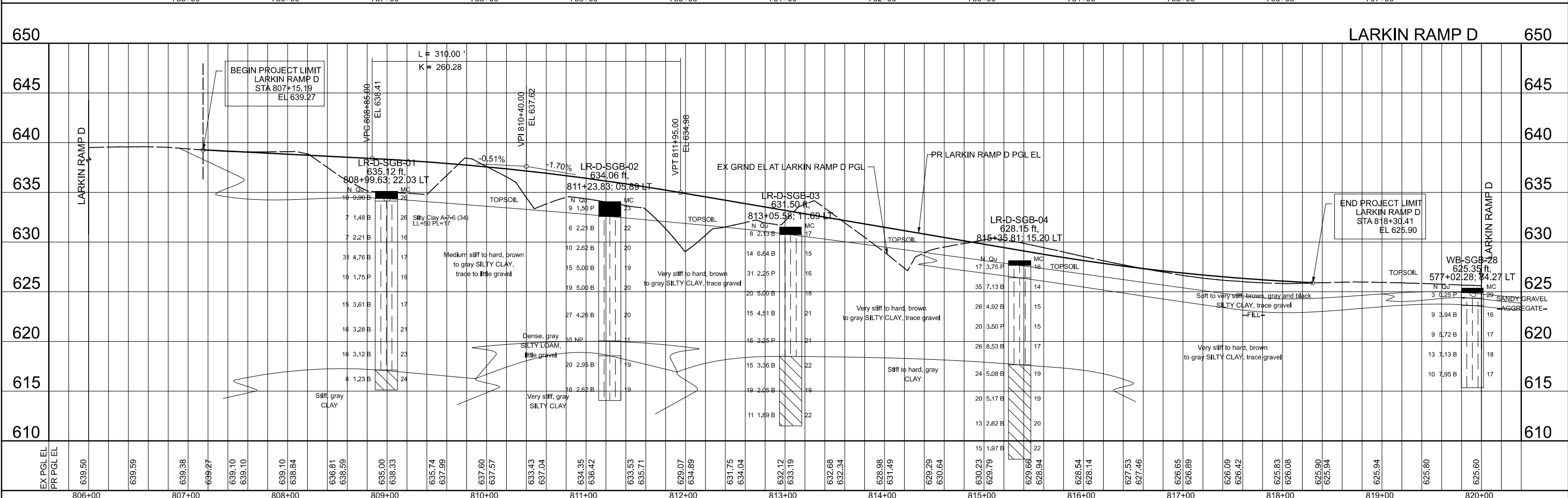
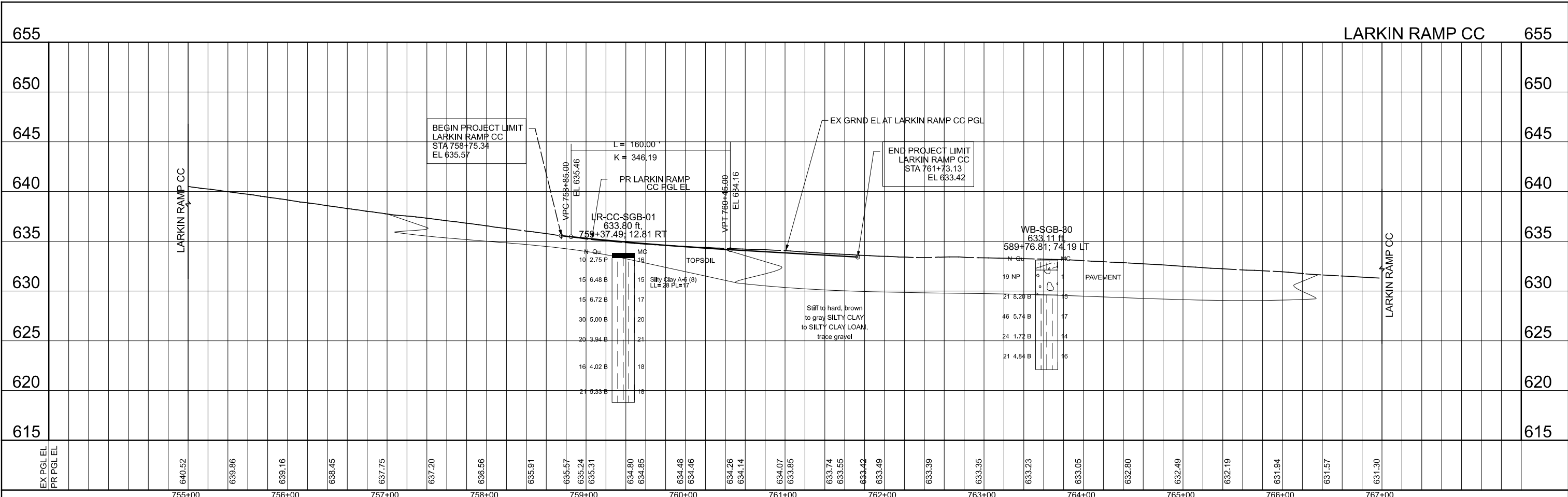


USER NAME = \$USERS	DESIGNED - \$PRF-02-DE	REVISED -
PLOT SCALE = \$SCALES	DRAWN - \$PRF-02-DR	REVISED -
PLOT DATE = \$DATES	CHECKED - \$PRF-02-CH	REVISED -
	DATE - \$DATE	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

\$PRF-02-L1  
SCALE: HORIZ: 1"=50'  
VERT: 1"=5'  
SHEET \$PRF-02OF \$PRF-02SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-80	SSNUM	COUNTY	\$TOT	\$PRF-02
CONTRACT NO. SCNUM			ILLINOIS FED. AID PROJECT	

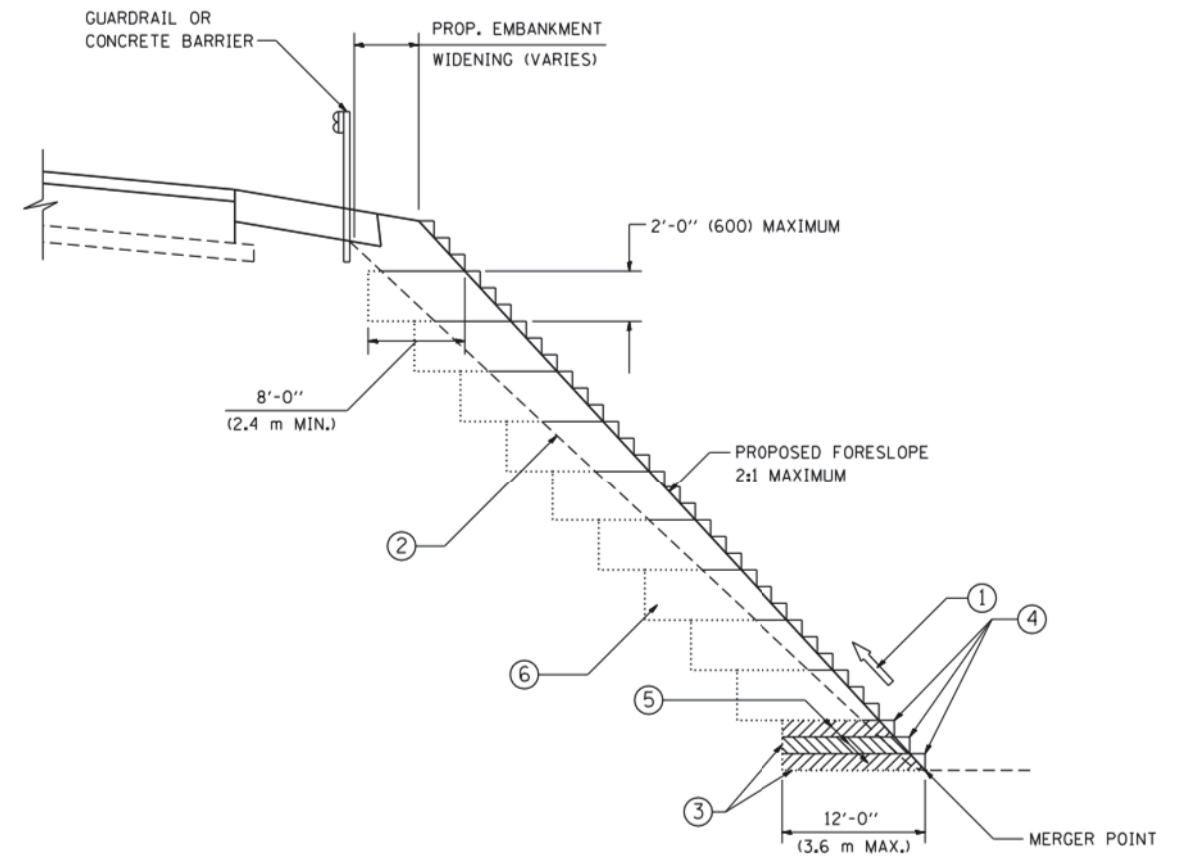


MODEL MODEL NAMES FILE NAMES SHEETS

	USER NAME = \$USERS	DESIGNED - \$PRF-03-DE	REVISED -	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>  <b>\$PRF-03-L1</b>	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	PLOT SCALE = \$SCALE\$	CHECKED - \$PRF-03-CH	REVISED -		I-80	\$SNUM	COUNTY	\$TOT	\$PRF-03
	PLOT DATE = \$DATES	DATE - \$DATE	REVISED -		SCALE: HORIZ: 1"=50'		SHEET \$PRF-03OF \$PRF-03SHEETS		STA.

ILLINOIS FED. AID PROJECT CONTRACT NO. \$CNUM

## **APPENDIX F**



TYPICAL BENCHING DETAIL  
FOR EMBANKMENT

NOTES:

- ① CONSTRUCT SUCCEEDING BENCH CUTS AND EMBANKMENT PLACEMENT AND COMPACTION FROM BOTTOM TO TOP IN STAIRSTEP FASHION.
- ② EXISTING FORESLOPE PREPARED IN ACCORDANCE WITH ARTICLE 205.03 OF THE STANDARD SPECIFICATIONS.
- ③ BENCH CUT EXISTING SLOPE TYPICAL FOR EACH STEP.
- ④ TRIM TO FINAL SLOPE.
- ⑤ EQUAL 8-INCH (200) LIFTS OF EMBANKMENT COMPACTED IN ACCORDANCE WITH ARTICLE 205.05 OF THE STANDARD SPECIFICATIONS.
- ⑥ EXCAVATION OF BENCH CUTS WITHIN EXISTING EMBANKMENT WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC METER OR CUBIC YARD FOR "EARTH EXCAVATION". THIS PRICE WILL INCLUDE ALL LABOR AND MATERIAL, NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- ⑦ SLOPES SHALL BE BENCHED ACCORDING TO THIS DETAIL WHEN THE SLOPE IS STEEPER THAN 4:1 AND THE HEIGHT IS GREATER THAN 5' (1.5 m).

ALL DIMENSIONS ARE IN INCHES (MILLIMETERS)  
UNLESS OTHERWISE SHOWN.

FILE NAME *	USER NAME = goglianobt	DESIGNED -	REVISED -
W:\diststd\22x34\bd51.dgn		DRAWN - CADD	REVISED -
	PLOT SCALE = 50.0000' / IN.	CHECKED - S.E.B.	REVISED -
	PLOT DATE = 1/4/2008	DATE - 06-16-04	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

<b>BENCHING DETAIL FOR EMBANKMENT WIDENING</b>	
SCALE: NONE	SHEET NO. 1 OF 1 SHEETS
STA.	TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
326	105-N-2(15)	MCHENRY	473	380
<b>BD-51</b>			CONTRACT NO. 62B43	
FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT				