STRUCTURE GEOTECHNICAL REPORT

Retaining Wall 4

Structure No. 099-W804

South of Interstate 80 EB and East of Rowell Avenue

IDOT Job D-91-061-09 (PTB 152, Item 004)

Joliet, Will County, Illinois

Submitted to:

HBP Illinois Partners, JV
c/o HNTB
One South Wacker Drive
Suite 900
Chicago, Illinois 60606

Prepared by:

Geo Services, Inc.
805 Amherst Court
Suite 204
Naperville, Illinois 60565
(630) 305-9186

GSI Job No. 13125

Revised: July 16, 2020

Geo Services, Inc.
Geotechnical, Environmental and Civil Engineering
An MBE - DBE Firm

April 8, 2020
Revised July 16, 2020

HBP Illinois Partners, JV
One South Wacker Drive, Suite 900
Chicago, Illinois 60606

Attn: Mr. Dan Filice, P.E., S.E.
Bowman, Barrett, and Associates, Inc.

Job No. 13125

Re: Structure Geotechnical Report
Retaining Wall 4 – Structure No. 099-W804
South of Interstate 80 (EB) and East of Rowell Avenue
Joliet, Will County, Illinois
IDOT Job Number: D-91-061-09 (PTB 152, Item 004)

Dear Mr. Filice:

The following report presents the geotechnical analysis and recommendations for Retaining Wall 4 – Structure No. 099-W804 to be constructed south of Interstate 80 and east of Rowell Avenue. A total of three (3) soil borings (RW-29 to RW-31) were completed. Copies of the boring logs along with a boring location plan are included in this report.

If there are any questions regarding the information submitted herein, please do not hesitate to contact us.

Very truly yours,

GEO SERVICES, Inc.

LICENSED PROFESSIONAL ENGINEER
MADHUSUDHANA RAO KARRI
062.071352
STATE OF ILLINOIS

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enc.

TABLE OF CONTENTS

SECTION 01: INTRODUCTION

This report presents the results of the geotechnical investigation for Retaining Wall 4 to be located to the south of Interstate 80 (Eastbound) and east of Rowell Avenue in Joliet, Will County, Illinois. The results of the three (3) soil borings (RW-29 through RW-31) completed by Geo Services, along with a site location map and boring location plan, are included with this report.

Boring locations were selected by Geo Services, Inc. and were reviewed and approved by HBP Illinois Partners, JV. Boring locations were located in the field by Geo Services, Inc. (GSI) personnel after review of accessibility and utility locations. Estimated elevations of the as-drilled borings were taken from the topographic and cross-section drawings provided by HBP. The as-drilled locations for the borings are shown on the Soil Boring Plan included in the Appendix.

This report includes descriptions of soil and groundwater conditions, recommendations pertaining to the design and construction of the retaining wall.

SECTION 02: PROJECT DESCRIPTION

As part of the I-80 Improvements project, (IDOT Job D-91-061-09), a retaining wall is proposed to retain the widening alignment near the southeast corner of Rowell Avenue and I-80. The new retaining wall will have a total length of approximately 100 feet extending from approximate Station 765+62.14 to about 766+62.14 along the proposed widening alignment. Based on the TSL plans available to us, the estimated top of leveling pad elevations will range approximately between 608.5 to 622.0 feet. The retaining wall will have a maximum wall height of less than 16’-7”.

SECTION 03: SUBSURFACE INVESTIGATION PROCEDURES

The borings were performed in March 2020 with a truck-mounted drilling rig and were advanced by means of hollow stem auger techniques. Representative soil samples were obtained by using split spoon sampling procedures in accordance with AASHTO Method T-206. Samples obtained in the field were returned to our laboratory for further examination and testing.

Split spoon sampling involves driving a 2.0-inch outside diameter split-barrel sampler into the soil with a 140-pound weight falling freely through a distance of 30 inches. Blow counts are recorded at 6" intervals and the blow counts are shown on the boring logs. The number of blows required to advance the sampler the last 12 inches is termed the

Standard Penetration Resistance (N). The N value is an indication of the relative density of the soil.

SECTION 04: LAB TESTING PROGRAM

The test procedures were performed in accordance with test procedures discussed in the IDOT Geotechnical Manual. All split-spoon samples obtained from the drilling operation were visually classified in the field.

The soil testing program included performing water content tests of the non-cohesive samples recovered. The test was performed upon representative portions of the samples obtained in the field.

The results of the laboratory testing, along with visual classifications of the materials based upon both the Illinois textural classification and the AASHTO Soil Classification System, are indicated on the boring logs.

SECTION 05: SUBSURFACE CONDITIONS

The following sections provide general descriptions of the typical soil profiles encountered in the area of the proposed retaining wall. Specific soil conditions can be found in the boring logs located in the Appendix section of the report.

Approximately 12 inches of asphalt over 24 inches of medium dense crushed stone aggregate was encountered at the surface of the borings. Existing fill materials primarily consisting of clay loam were encountered to depths of about 20 ½ to 28 feet below grades. Below the fill, native soils consisting primarily of very loose to medium dense sand with varying amounts of clay were encountered to depths of about 37 feet. Below this, medium dense to dense sand with varying amounts of silt and gravel was encountered to the boring termination depths of about 40 feet.

SECTION 06: WATER TABLE CONDITIONS

Borings were observed during and after the completion of drilling for the presence and level of water. Water was not observed in the borings at these times. Although within borings RW-29 and RW-30, water was observed at depths of about 2½ feet below grades, this water level is likely to be a result of perched condition within the granular pavement materials. Therefore, the long-term groundwater level can be assumed at the interface of cohesive fill materials and granular native soils at approximate elevation of 595 to 605 feet or at least at a depth of about 20 feet below existing grade. Fluctuations in the amount of water accumulated and in the hydrostatic water table can be anticipated depending on variations in precipitation and surface runoff.

SECTION 07: ANALYSES

Mining Activity

According to readily available ISGS sources, The Illinois Coal Mine Maps for Will County indicate that an underground industrial mine and surrounding buffer region have taken place approximately 1½ miles west of the project site vicinity. It is assumed that potential undermining exists at the locations of the industrial mining operations.

Settlement

Based on the preliminary information provided, we understand that approximately 10 feet of new embankment fill will be required for the proposed widening. Due to the weight of the new fill, settlements on the order of less than 1 inch are estimated. Differential settlements on the order of ½ to 2/3 of total settlement are anticipated.

Slope Stability

For preliminary global slope stability calculations, a mechanically stabilized earth (MSE) retaining wall type with a height of approximately 16'-7" was used in our analysis. The wall foundations are anticipated to be supported on stiff clay loam soils at a depth of at least 3.5 feet. A slope stability program (STABL V3.0) was used to calculate factors of safety (FOS) at a typical cross-section at approximate Station 765+95 along the proposed wall alignment. A traffic surcharge load of 250 psf was considered. We calculated a Factor of Safety (FOS) of 2.0 for undrained (short-term) condition and a FOS of 1.5 for the drained (long-term) conditions, which satisfies the Factor of Safety requirement (FOS ≥ 1.5) per IDOT slope stability criteria. No slope stability issues were identified.

SECTION 08: FOUNDATION RECOMMENDATIONS

Recommended Wall Type Options

Based on the soil conditions encountered within our borings as shown on the logs, and the proposed wall/ site geometry (fill area), recommended wall types include cast-in-place or precast concrete (gravity/ non-gravity type) walls supported on shallow spread footing foundations or Mechanically Stabilized Earth (MSE) walls.

The most appropriate retaining wall type will depend on factors such as site geometry (existing/proposed slopes, wall heights), existing site conditions, as well as cost-

effectiveness, constructability, and schedule. The following provides a general discussion of soil conditions as they relate to the retaining wall construction.

Shallow Foundation Recommendations

Based on the TSL plans and cross-sections available, the top of leveling pad elevation was estimated approximately as 608.5 to 622.0 feet. The top of leveling pad elevation should be at least 3.5 feet below the finished grade elevation for frost protection. Based on this, the proposed wall footing foundations are expected to be supported on native stiff clay loam fill materials. A summary of the bearing analyses for different wall types is provided in the following table.

Table 2 – Shallow Foundation Design Parameters

Foundation - Wall Type	Top of Leveling Pad Elevation (feet)	Anticipated Bearing Material	Estimated Bearing Resistance (psf)	
			Allowable[1]	Factored[2]
Spread Footings - Concrete Walls	610	Stiff Clay	2,300	3,850
MSE Wall	610	Stiff Clay	2,300	4,500

1. Factor of Safety of 3.0 was used to calculate the Allowable Bearing as per ASD method.
2. Factored Bearing Resistance is computed for a resistance factor of 0.55 for gravity or semi-gravity walls and a factor of 0.65 can be used for MSE type walls as per LRFD Table 11.5.7.1.

We recommend using a resistance factor against sliding of 1.0 for MSE walls as per LRFD Table 11.5.7.1 and 0.85 for cast in-place concrete on clay and 0.50 for passive earth pressure component against sliding resistance as per LRFD Table 10.5.5.2.2-1.

If materials with less than adequate bearing strength are noted at the foundation level during footing construction, the weaker material encountered at the base of the footings should be undercut to reach suitable soil, and the undercut area filled with structural fill rockfill or crushed aggregate materials. Significant undercuts are not anticipated at the foundation bearing elevations based on the soils encountered in the borings. However, since the soils encountered at the anticipated bearing elevation in all the three borings consisted of fill materials, we recommend assuming 10% of the shallow foundations to require at least 12 inches of nominal depth of undercut for budgeting purposes to account for variability of fill and/or any unsuitable soils.

Subgrade soils at the foundation bearing elevations should be verified in the field at the time of construction by an experienced Geotechnical Engineer or their representative. Actual extents of any remedial treatments shall be determined at that time. If soils with less than adequate bearing strength are noted at the foundation level during footing foundation construction, the weaker soils should be undercut to reach suitable bearing

materials and the undercut area backfilled with lean concrete. Structural fill used to support footings shall be extended at least 12 inches beyond the proposed footing limits and then 1 foot horizontally for each 1 foot of fill placed below the base of the footing. Any new structural fill shall consist of inorganic material and free of debris. Suitable fill materials include crushed granular materials meeting the gradation requirements of IDOT CA-1, CA-6, or CA-7.

Structural fill shall be placed in loose lifts having a maximum of 8 inches in thickness. For IDOT CA-6 type fill, the material should be compacted to a minimum of 95% of the maximum dry density obtained in accordance with modified Proctor method (ASTM D-1557). The moisture content of the fill shall be within +/- 2% of the optimum moisture content. IDOT CA-1 and CA-7 type materials can be compacted by placing in lifts and rolling with a smooth drum vibratory compactor or thoroughly tamping with the bucket of a backhoe.

Embankment fill behind the retaining wall should be placed in compliance with Section 205 of the IDOT Standard Specifications for Road and Bridge Construction. Backfill behind the wall should consist of a compacted, free-draining granular material.

A proper drainage system should be designed and provided behind cantilever wall (or MSE and gravity wall, if used) design. The chosen retaining wall type should be designed by an Illinois licensed Structural Engineer.

SECTION 09: CONSTRUCTION CONSIDERATIONS

Excavations in excess of 4 feet shall have side-slopes in accordance with OSHA safety standards and requirements. Movement of adjacent soils near the edge of and into excavation areas should be prevented.

Any temporary soil retention system shall be designed by the Contractor (or as directed by the Engineer) as specified in IDOT GBSP 44. Allowances should be made for any surcharge loads adjacent to the excavation areas. The information provided below should not be interpreted to mean that Geo Services Inc. is assuming responsibility for construction site safety or the contractor's activities. Construction site safety is the sole responsibility of the contractor, who should also be solely responsible for the means, methods, and sequencing of construction operations.

The OSHA Occupational Safety and Health Standards-Excavations classify soils into three basic types (Type A, B, and C). Depending upon the soil type, OSHA requirements for temporary excavation slopes range from 3/4H to 1V (horizontal to vertical) for Type A soils, 1H to 1V for Type B soils, and 1-1/2H to 1V for Type C soils. Per OSHA, any excavation extending to a depth of more than 20 feet shall be designed by a licensed professional engineer.

Based upon the subsurface conditions encountered at the boring locations, the

excavations should be expected to extend through predominately stiff to very stiff cohesive soils (embankment fill). The cohesive fill material sampled in the borings typically exhibited unconfined compressive strengths in excess of 0.5 tsf. Cohesive soils having unconfined compressive strengths greater than 0.5 tsf but less than 1.5 tsf classify as Type B soils according to OSHA regulations. Considerations should be given to the allowable construction easement when developing the excavation plan. Particular caution should be exercised if excavations are performed near existing utility lines. Existing backfill for utility lines is often poorly compacted and the limits of the old excavation form a ready failure surface. The OSHA trench safety guidelines for adequate side slopes based on the soil types may not apply in these situations.

According to IDOT Standard Construction Specifications, all new embankments to be placed on existing slopes, 3H:1V or steeper, must be keyed to the existing slopes by stepping and benching to avoid future sliding of the new embankments over the existing slopes.

SECTION 10: GENERAL QUALIFICATIONS

The analysis and recommendations presented in this report are based upon the data obtained from the soil borings performed at the indicated locations and from any other information discussed in this report. This report does not reflect any variations that may occur between borings or across the site. In addition, the soil samples cannot be relied on to accurately reflect the strata variations that usually exist between sampling locations. The nature and extent of such variations may not become evident until construction. If variations appear evident, it will be necessary to reevaluate the recommendations of the report. In addition, it is recommended that Geo Services Inc. be retained to perform construction observation and thereby provide a complete professional geotechnical engineering service through the observational method.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No other warranties, either expressed or implied, are intended or made. In the event that any changes in the nature, design or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing by the geotechnical engineer. Also note that Geo Services Inc. is not responsible for any claims, damages, or liability associated with any other party's interpretation of this report's subsurface data or reuse of the report's subsurface data or engineering analyses without the express written authorization of Geo Services Inc.

APPENDIX A

GENERAL NOTES

GENERAL NOTES

CLASSIFICATION

American Association of State Highway & Transportation Officials (AASHTO) System used for soil classification.

Cohesionless Soils

Relative Density	No. of Blows per foot N
Very Loose	0 to 4
Loose	4 to 10
Medium Dense	10 to 30
Dense	30 to 50
Very Dense	Over 50

Cohesive Soils

Consistency	Unconfined Compressive Strength - qu (tsf)
Very Soft	Less than 0.25
Soft	0.25 - 0.5
Medium Stiff	0.5 - 1.0
Stiff	1.0 - 2.0
Very Stiff	2.0 - 4.0
Hard	Over 4.0

TERMINOLOGY

Streaks are considered to be paper thick. **Lenses** are considered to be less than 2 inches thick. **Layers** are considered to be less than 6 inches thick. **Stratum** are considered to be greater than 6 inches thick.

DRILLING AND SAMPLING SYMBOLS

SS:	Split Spoon 1-3/8" I.D., 2" O.D.	HS:	Housel Sampler
ST:	Shelby Tube 2" O.D., except where noted	WS:	Wash Sample
AS:	Auger Sample	FT:	Fish Tail
DB:	Diamond Bit - NX: BX: AX	RB:	Rock Bit
CB:	Carboloy Bit - NX: BX: AX	WO:	Wash Out
OS:	Osterberg Sampler		

Standard "N" Penetration: Blows per foot of a 140 lb. hammer falling 30" on a 2" O.D. Split Spoon

WATER LEVEL MEASUREMENT SYMBOLS

WL:	Water	WD:	While Drilling
WCI:	Wet Cave In	BCR:	Before Casing Removal
DCI:	Dry Cave In	ACR:	After Casing Removal
WS:	While sampling	AB:	After Boring

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable ground water levels. In impervious soils, the accurate determination of ground water elevations is not possible in even several days observation, and additional evidence on ground water elevations must be sought.

APPENDIX B

BORING LOCATION PLAN AND PROFILE

PLAN
SURVEYED
PLOTTED
DRAWN CHECKED
ALIGNMENT CHECKED
RT. OF WAY CHECKED
CADD FILE NAME
NOTE BOOK
NO.
BY
DATE

PROFILE
SURVEYED
PLOTTED
DRAWN CHECKED
BAL. NOTED
STRUCTURE NOTATNS CHKD
NOTE BOOK
NO.
BY
DATE

PILE
BILLBOARDS
TREES
SCRUB
POOL
SIGN
MB'S
WCL RAILROAD
34KV AERIAL
12KV AERIAL
WB I-80
EB I-80
℄ I-80
760+00
765+00
770+00
RW-29
RW-30
RW-31
WALL 4
N

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(630) 355-2838

USER NAME =	DESIGNED - RWC	REVISED -
	DRAWN - RWC	REVISED -
PLOT SCALE =	CHECKED - AJP	REVISED -
PLOT DATE =	DATE - 4/4/2020	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

INTERSTATE I-80 PHASE 2
RETAINING WALL 4 I-80 EB EAST SIDE OF ROWELL ST BRIDGE
SOIL BORING PLAN

SCALE: 1"=50' | SHEET NO. 1 OF 1 SHEETS | STA. - | TO STA. -

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
80		WILL	-	-
IDOT JOB No. D-91-061-09				
ILLINOIS FED. AID PROJECT				

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PLAN
SURVEYED
PLOTTED
DRAWN
CHECKED
R.O.W. CHECKED
CADD FILE NAME
NOTE BOOK
NO.
BY
DATE

PROFILE
SURVEYED
PLOTTED
DRAWN
CHECKED
BAL. NOTED
STRUCTURE NO
TATHS CHKD
NOTE BOOK
NO.
BY
DATE

635 630 625 620 615 610 605 600 595 590 585 580 575 570 565 560

RW-29
765+65
60.4' Right
623.1

	N	Qu	W%
PAVEMENT			
CRUSHED STONE	19		3
	15	4.5P	16
	22	4.5P	16
CLAY LOAM (FILL)	17	2.0P	24
	11	2.5P	21
	9	1.0P	26
	17	2.5P	26
	15	1.3B	22
	16	3.0P	19
	26	1.3B	23
	16	1.5P	26
	7		18
SAND			
	7		16
SILTY SAND & GRAVEL	31		11

EOB

RW-30
766+33
61.9' Right
624.5

	N	Qu	W%
PAVEMENT			
CRUSHED STONE	14		8
	17	1.3B	21
	17	2.5B	18
CLAY LOAM (FILL)	12	1.8B	20
	10	1.5P	23
	23	1.3B	18
	19	4.5P	19
	17	1.6B	20
	7		27
SANDY CLAY LOAM	1		25
	6		17
SAND	8		18
	6		19
SAND & GRAVEL	33		7

EOB

RW-31
767+01
62.1' Right
626.2

	N	Qu	W%
PAVEMENT			
CRUSHED STONE	18		4
	11	1.0B	21
CLAY LOAM (FILL)	23	2.6B	15
	15	2.6B	17
COBBLES 2"			10
	19	2.5P	17
CLAY LOAM (FILL)	21		22
	17	2.0P	20
	17		15
SAND	15		11
	11		15
	12		14
	10		14
SAND & GRAVEL	28		14

EOB

LEGEND

N-VALUE

BORING NUMBER
STATION
OFFSET
ELEVATION

N	Qu	W%
10	2.5P	22
9	NP	7
16	1.5B	14
27	-	12

EOB

SOIL STRENGTH (TSF)
B-BULGE
S-SHEAR
P-POCKET PENETROMETER

MOISTURE CONTENT (%)
NR=NO RECOVERY

GROUNDWATER ELEVATION
▼ FIRST ENCOUNTER
▽ AT COMPLETION
▽ 24 HRS WATER LEVEL

EOB=END OF BORING

759+00 760+00 761+00 762+00 763+00 764+00 765+00 766+00 767+00 768+00 769+00 770+00 771+00 772+00 773+00

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USER NAME =	DESIGNED - RWC	REVISED -	
	DRAWN - RWC	REVISED -	
PLOT SCALE =	CHECKED - AJP	REVISED -	
PLOT DATE =	DATE - 4/4/2020	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

INTERSTATE I-80 PHASE 2
RETAINING WALL 4 I-80 EB EAST SIDE OF ROWELL ST BRIDGE
SOIL BORING PLAN

SCALE: 1"=50'H 1"=5'V | SHEET NO. 1 OF 1 SHEETS | STA. - | TO STA. -

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
80		WILL	-	-
IDOT JOB No. D-91-061-09				
ILLINOIS FED. AID PROJECT				

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APPENDIX C

BORING LOGS

Geo Services, Inc.
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(630) 355-2818

SOIL BORING LOG

GSI Job No. 13125

Page 1 **of** 1

Date 3/16/20

ROUTE F.A.I RTE. 80 **DESCRIPTION** I-80 Phase II (Near Term) **LOGGED BY** TZ

SECTION 2013-008B & 2013-009B **LOCATION** SW 1/4, **SEC.** 14, **TWP.** T35N, **RNG.** R10E, 3rd **PM**

COUNTY Will **DRILLING METHOD** Hollow Stem Auger/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. _____
Station _____

BORING NO. RW-29
Station 765+65
Offset 60.40ft Right
Ground Surface Elev. 623.07 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter 620.6 ft ▼
Upon Completion n/a ft
After _____ **Hrs.** _____ ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
12.0" ASPHALT			
622.07			
CRUSHED ASPHALT & STONE-medium dense	18		
	9		3
▼	10		
620.07			
CLAY LOAM-brown & gray spotted black-stiff to hard (Fill)	9		
	7	4.5	16
-5	8	P	
	6		
	9	4.5	16
	13	P	
	4		
	7	2.0	24
-10	10	P	
	4		
	5	2.5	21
	6	P	
	3		
	4	1.0	26
-15	5	P	
	7		
	8	2.5	26
	9	P	
	5		
	7	1.3	22
-20	8	B	

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
CLAY LOAM-brown & gray spotted black-stiff to hard (Fill) *(continued)*	5		
	6	3.0	19
	10	P	
	9		
	15	1.3	23
-25	11	B	
	6		
	7	1.5	26
	9	P	
595.07			
SAND-brown-loose	3		
	3		18
-30	4		
	3		
	3		16
-35	4		
586.07			
SILTY SAND & GRAVEL-brown-dense	14		
End Of Boring @ -40.0'. Boring backfilled with cuttings.	15		11
583.07 -40	16		

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206), GP-Geoprobe Hand Auger
BBS, from 137 (Rev. 8-99)

Z:\PROJECTS\2013\13125 HNTB, I-80 PHASE II (NEAR TERM)\13125 BORING LOGS\13125_LOG.GPJ 4/3/20

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SOIL BORING LOG

GSI Job No. 13125

Date 3/16/20

ROUTE F.A.I RTE. 80 **DESCRIPTION** I-80 Phase II (Near Term) **LOGGED BY** TZ

SECTION 2013-008B & 2013-009B **LOCATION** SW 1/4, **SEC.** 14, **TWP.** T35N, **RNG.** R10E, 3rd **PM**

COUNTY Will **DRILLING METHOD** Hollow Stem Auger/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO.
Station

BORING NO. RW-30
Station 766+33
Offset 61.90ft Right
Ground Surface Elev. 624.53 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter 622.0 ft ▼
Upon Completion n/a ft
After ____ **Hrs.** ____ ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
12.0" ASPHALT			
623.53			
CRUSHED ASPHALT & STONE-medium dense (Fill)	5		
	6		8
▼	8		
621.53			
CLAY LOAM-brown-stiff to hard (Fill)	4		
	7	1.3	21
-5	10	B	
	5		
	6	2.5	18
	11	B	
	5		
	5	1.8	20
-10	7	B	
	4		
	4	1.5	23
	6	P	
	7		
	9	1.3	18
-15	14	B	
	6		
	7	4.5	19
	12	P	
	5		
	6	1.6	20
-20	11	B	
604.03			
SANDY CLAY LOAM-brown-very loose to loose	2		
	3		27
	4		
	0		
	0		25
-25	1		
599.03			
SAND-brown-loose	2		
	2		17
	4		
	2		
	4		18
-30	4		
	3		
	3		19
-35	3		
587.53			
SAND & GRAVEL-brown-dense	12		
	15		7
End Of Boring @ -40.0'. Boring backfilled with cuttings.	18		
584.53	-40		

Z:\PROJECTS\2013\13125 HNTB, I-80 PHASE II (NEAR TERM)\13125 BORING LOGS\13125_LOG.GPJ 4/3/20

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206), GP-Geoprobe Hand Auger
BBS, from 137 (Rev. 8-99)

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SOIL BORING LOG

GSI Job No. 13125

Page 1 **of** 1

Date 3/17/20

ROUTE F.A.I RTE. 80 **DESCRIPTION** I-80 Phase II (Near Term) **LOGGED BY** TZ

SECTION 2013-008B & 2013-009B **LOCATION** SW 1/4, **SEC.** 14, **TWP.** T35N, **RNG.** R10E, 3rd **PM**

COUNTY Will **DRILLING METHOD** Hollow Stem Auger/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO.
Station

BORING NO. RW-31
Station 767+01
Offset 62.10ft Right
Ground Surface Elev. 626.19 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter Dry to 10.0' ft
Upon Completion n/a ft
After ____ **Hrs.** ____ ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				12.0" ASPHALT
625.19				
	11			CRUSHED STONE-medium dense
	12		4	
	6			
623.19				
	4			CLAY LOAM-brown-stiff to very stiff
	5	1.0	21	
-5	6	B		
	7			
	10	2.6	15	
	13	B		
	5			
	7	2.6	17	
-10	8	B		
615.69				
	50/2"			COBBLES or BOULDERS-very dense
			10	
613.19				
	6			CLAY LOAM-brown-very stiff (Apparent Fill)
	8	2.5	17	
-15	11	P		
	8			
	9		22	
	12			
	6			
	8	2.0	20	
-20	9	P		
605.69				SAND-brown-medium dense
	9			
	9		15	
	8			
	6			
	7		11	
-25	8			
	5			
	5		15	
	6			
	5			
	6		14	
-30	6			
	4			
	5		14	
-35	5			
589.19				
	16			SAND & GRAVEL-brown-medium dense
	18		14	End Of Boring @ -40.0'. Boring backfilled with cuttings.
586.19 -40	10			

Z:\PROJECTS\2013\13125 HNTB, I-80 PHASE II (NEAR TERM)\13125 BORING LOGS\13125_LOG.GPJ 4/3/20

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206), GP-Geoprobe Hand Auger
BBS, from 137 (Rev. 8-99)

APPENDIX D

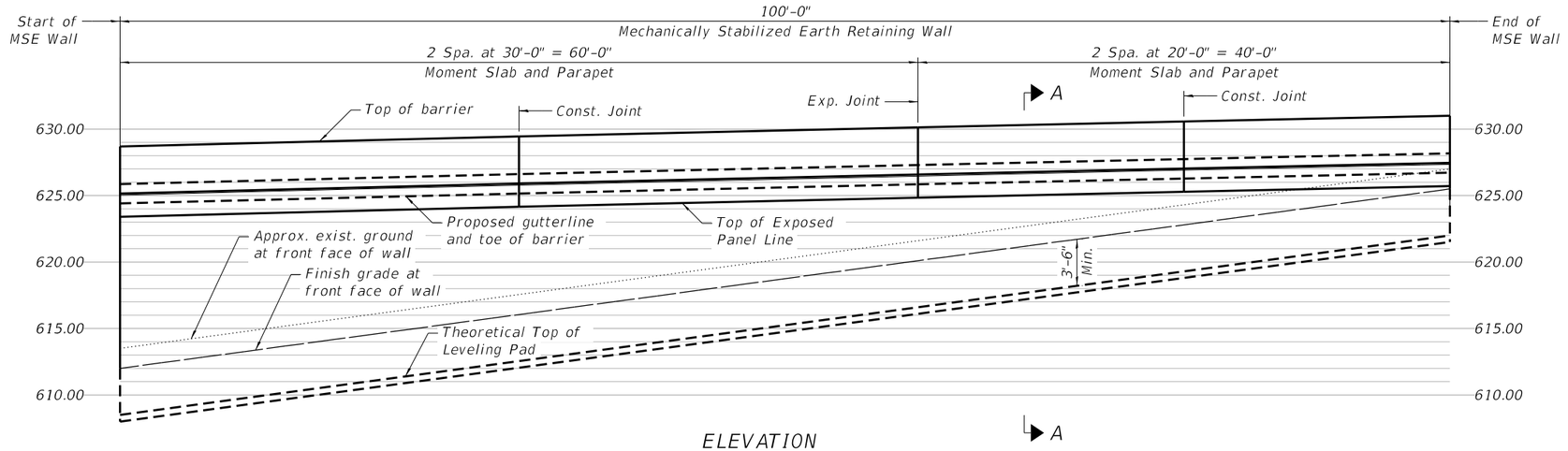
CROSS SECTION OF RETAINING WALL 4

Bench Mark: Chiseled "X" on the east step of the southeast wingwall of WB I-80, Elev. 624.41.

Existing Structure: None

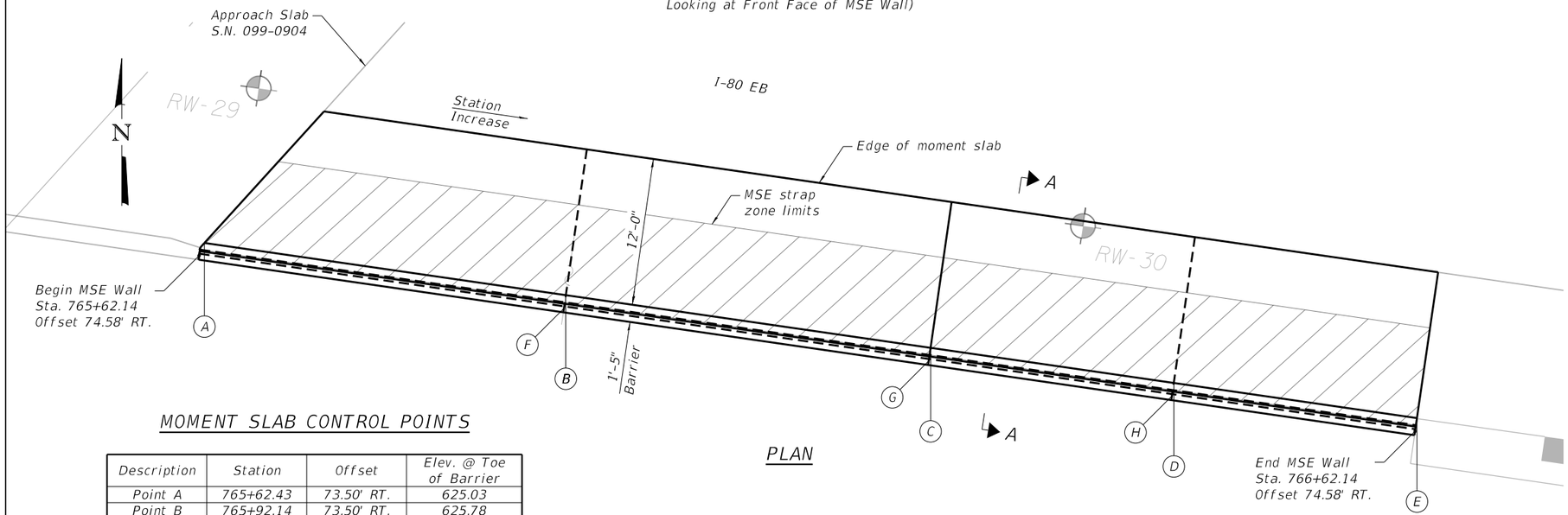
Staged construction shall be utilized to maintain traffic during construction.

No salvage.



ELEVATION

(Shown along Front Face of MSE Wall, Looking at Front Face of MSE Wall)



PLAN

MOMENT SLAB CONTROL POINTS

Description	Station	Offset	Elev. @ Toe of Barrier
Point A	765+62.43	73.50' RT.	625.03
Point B	765+92.14	73.50' RT.	625.78
Point C	766+22.14	73.50' RT.	626.47
Point D	766+42.14	73.50' RT.	626.91
Point E	766+62.14	73.50' RT.	627.34

MSE WALL CONTROL POINTS

Description	Station	Offset	T/ Exposed Panel Line	Finished Grade
Start	765+62.14	74.58' RT.	623.42	612.00
Point F	765+92.14	74.58' RT.	624.16	616.05
Point G	766+22.14	74.58' RT.	624.85	620.10
Point H	766+42.14	74.58' RT.	625.29	622.80
End	766+62.14	74.58' RT.	625.72	625.50

Notes:

1. Geotechnical information can be found in "Structure Geotechnical Report, Retaining Wall 4" dated April 8, 2020.
2. See Sheet 2 for Section A-A.
3. Offsets are measured from ℄ I-80 to front face of MSE wall panels for MSE Wall Control Points.
4. Offsets are measured from ℄ I-80 to the toe of the barrier for Moment Slab Control Points.

HIGHWAY CLASSIFICATION

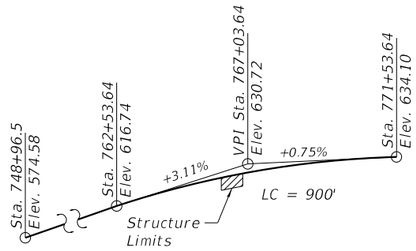
F.A.I. Rte. 80 EB
Functional Class: Interstate
ADT: 40,137 (2017); 62,317 (2040)
ADTT: 10,717 (2017); 16,639 (2040)
DHV: 3,161 (2017)
Design Speed: 60 m.p.h.
Posted Speed: 55 m.p.h.
One-Way Traffic

DESIGN SPECIFICATIONS

2017 AASHTO LRFD Bridge Design Specifications, 8th Edition

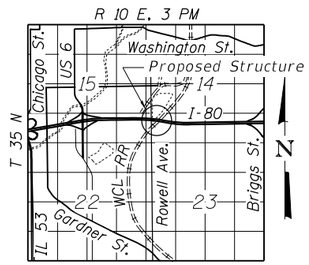
DESIGN STRESSES

FIELD UNITS
f'c = 4,000 psi (Moment Slab and Parapet)
fy = 60,000 psi (Reinforcement)
PRECAST UNITS
f'c = 4,500 psi (Precast Panels)



PROFILE GRADE PROP. I-80

(Along EB P.G.L.)



LOCATION SKETCH

GENERAL PLAN AND ELEVATION
F.A.I. RTE 80 - SECTION 2013-008B
WILL COUNTY
STATION 765+62.14 TO 766+62.14
STRUCTURE NO. 099-W804

FILE NAME:
7/6/2020 11:31:35 AM

DB STERLIN CONSULTANTS, INC.
123 N. WACKER DRIVE SUITE 2000
CHICAGO, ILLINOIS 60606
TEL: (312)857-1006 FAX: (312)857-1056

USER NAME =	DESIGNED - JMM	REVISED -	
	CHECKED - RVS	REVISED -	
PLOT SCALE =	DRAWN - JSK	REVISED -	
PLOT DATE = 04/24/2020	CHECKED - RVS	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET 1 OF 2 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
80	2013-008B	WILL	2	1
		CONTRACT NO. 60W34		
	ILLINOIS	FED. AID PROJECT		

POTENTIAL NOISE WALL LOCATION

628.55
628.74
628.26
1.54%
4.00%
1:3
EX R/W
EX 30'

624.68
625.16
4.00%

767+00.00 R 3
B/L = PR I-80

767+00.00

624.16
4.00%
3:1
2:1

765+94.38 R 3
B/L = PR I-80
EAST ABUTMENT
SKEWED SECTION

765+94.38

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

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

FILE NAME = dl4631 4-sht-ILR-I80-XSect.dgn	USER NAME = dkangrga	DESIGNED - BAJ	REVISED -
		DRAWN - BAJ	REVISED -
	PLOT SCALE = 20.0000 ' / in.	CHECKED - MAM	REVISED -
	PLOT DATE = 1/9/2020	DATE - 10/11/2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

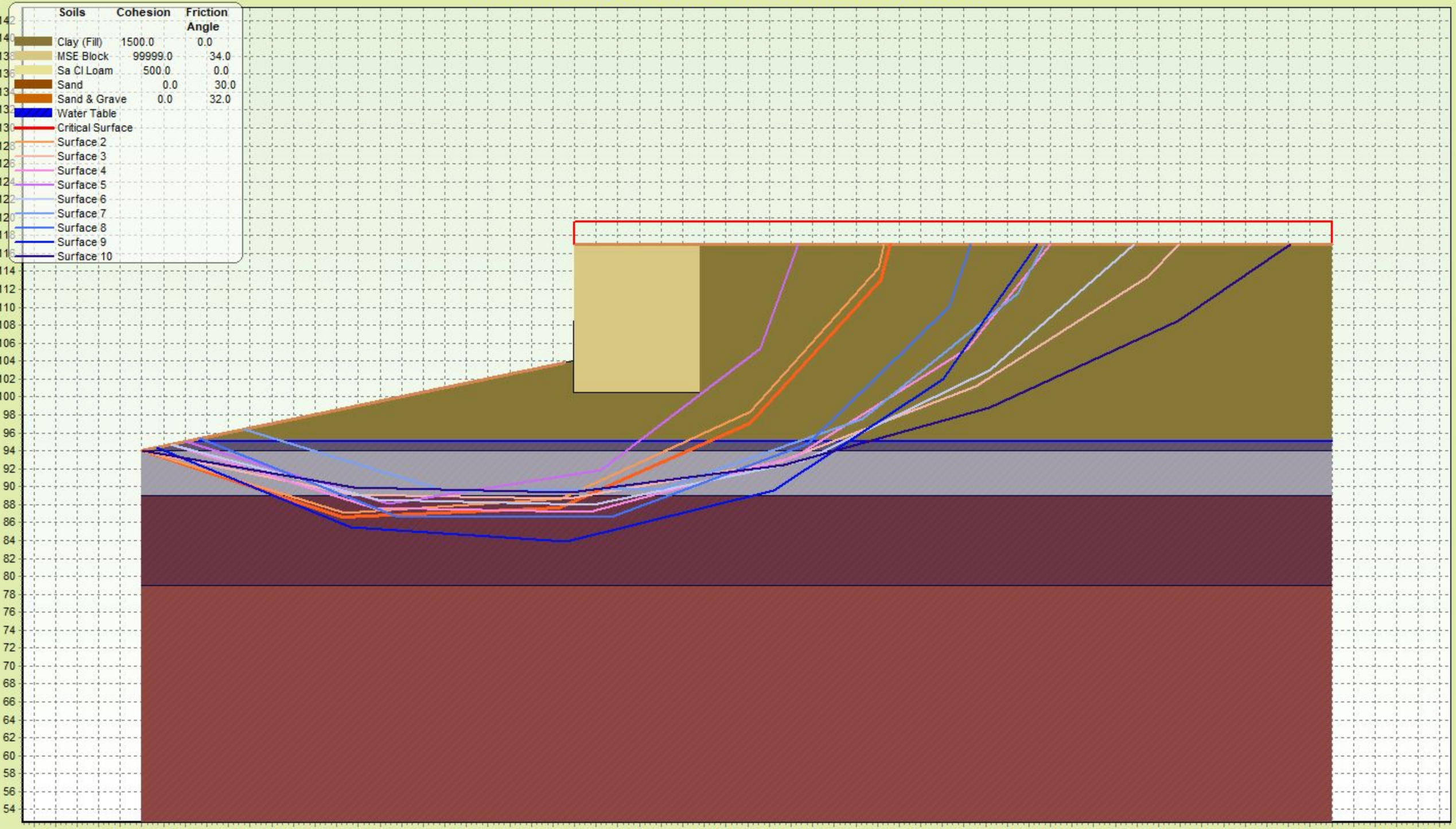
ILR – I-80 FROM RIDGE ROAD TO US ROUTE 30
I-80 PROPOSED CROSS SECTIONS

SCALE: 10 H : 5 V | SHEET 274 OF 352 SHEETS | STA. 765+94.38 TO STA. 767+00.00

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
			352	274
		CONTRACT NO.		
	ILLINOIS	FED. AID PROJECT		

Problem: Retaining Wall 4 - UNDRAINED - FS Min- Bishop = 1.959

Soils	Cohesion	Friction Angle
Clay (Fill)	1500.0	0.0
MSE Block	99999.0	34.0
Sa Cl Loam	500.0	0.0
Sand	0.0	30.0
Sand & Grave	0.0	32.0
Water Table		
Critical Surface		
Surface 2		
Surface 3		
Surface 4		
Surface 5		
Surface 6		
Surface 7		
Surface 8		
Surface 9		
Surface 10		



Problem: Retaining Wall 4 - DRAINED - FS Min- Bishop = 1.509

Soils	Cohesion	Friction Angle
Clay (Fill)	75.0	28.0
MSE Block	999999.0	34.0
Sa Cl Loam	0.0	29.0
Sand	0.0	30.0
Sand & Grave	0.0	32.0

Water Table
Critical Surface
Surface 2
Surface 3
Surface 4
Surface 5
Surface 6
Surface 7
Surface 8
Surface 9
Surface 10

142 140 138 136 134 132 130 128 126 124 122 120 118 116 114 112 110 108 106 104 102 100 98 96 94 92 90 88 86 84 82 80 78 76 74 72 70 68 66 64 62 60 58 56 54

100 102 104 106 108 110 112 114 116 118 120 122 124 126 128 130 132 134 136 138 140 142 144 146 148 150 152 154 156 158 160 162 164 166 168 170 172 174 176 178 180 182 184 186 188 190 192 194 196 198 200 202 204 206 208 210 212 214 216 218 220 222 224 226 228 230

(Scale in Feet)

ILLINOIS STATE GEOLOGICAL SURVEY
PRAIRIE RESEARCH INSTITUTE

ILLINOIS
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

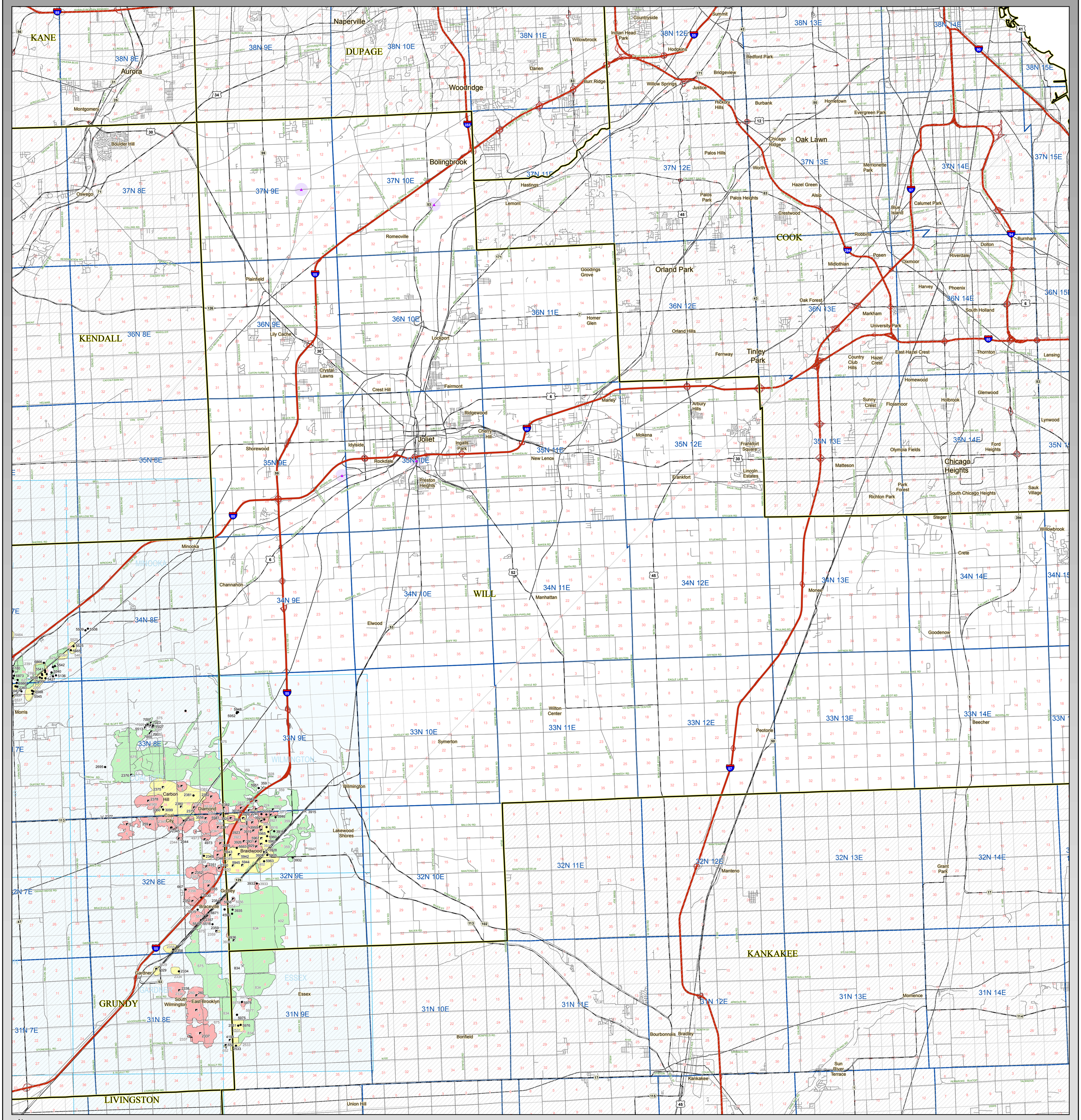
For further information contact:
Prairie Research Institute
Illinois State Geological Survey
University of Illinois at Urbana-Champaign
615 East Peabody Drive
Champaign, Illinois 61820-6964
(217) 333-4747
http://www.isgs.illinois.edu

Coal Mines and Underground Industrial Mines
WILL
County

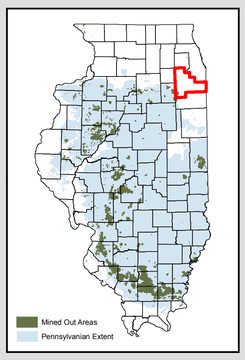
County Coal Map Series
ISGS Coal Section
Map construction: July 20, 2011

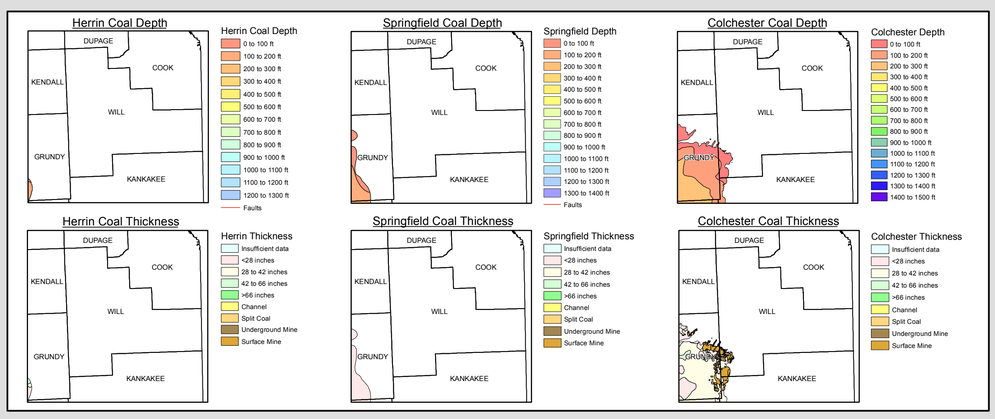
This product is under review and may not meet the standards of the Illinois State Geological Survey.

County coal maps and select quadrangle maps available as downloadable PDF files at:
http://www.isgs.illinois.edu/maps-data-pub/coal-maps/county-index.shtml



N
0 1:100,000 3
Miles





- County
- Township
- Section
- Quadrangle study (Available on Website)
- Coal mine - active
- Underground coal mine - abandoned
- Surface coal mine - abandoned
- Indefinite underground coal mine boundary - abandoned
- Underground industrial mine and surrounding buffer region
- 951, 951 Coal mine index number (polygon label, point label)
- Opening type unknown
- Uncertain location
- Active surface tipple
- Abandoned surface tipple
- Active shaft
- Abandoned shaft
- Active slope
- Abandoned slope
- Active drift
- Abandoned drift
- Underground industrial mine entrance or general location

Map Explanation

This map accompanies the coal mines directory for this county. Please consult the directory for an explanation of the coal mine information shown on this map. Buffer regions for industrial mineral mines were incorporated into this map due to limited information regarding these mines. The size of the buffer region is dependent on the uncertainty or inaccuracy of the mine location. For more information regarding industrial mineral mines please contact the ISGS Industrial Minerals Section.

The maps and digital files used for this study were compiled from data obtained from a variety of public and private sources and have varying degrees of completeness and accuracy. They present reasonable interpretations of the geology of the area and are based on available data. These data were compiled and digitized at a scale of 1:62,500. Locations of some features may be offset by 500 feet or more due to errors in the original source maps, the compilation process, digitizing, or a combination of these factors.

These data are not intended for use in site-specific screening or decision-making. Data included in this map are suitable for use at a scale of 1:100,000.

Disclaimer

The Illinois State Geological Survey and the University of Illinois make no guarantee, expressed or implied, regarding the correctness of the interpretations presented in this data set and accept no liability for the consequences of decisions made by others on the basis of the information presented here.