ROADWAY GEOTECHNICAL REPORT

ILLINOIS 178 OVER THE ILLINOIS RIVER

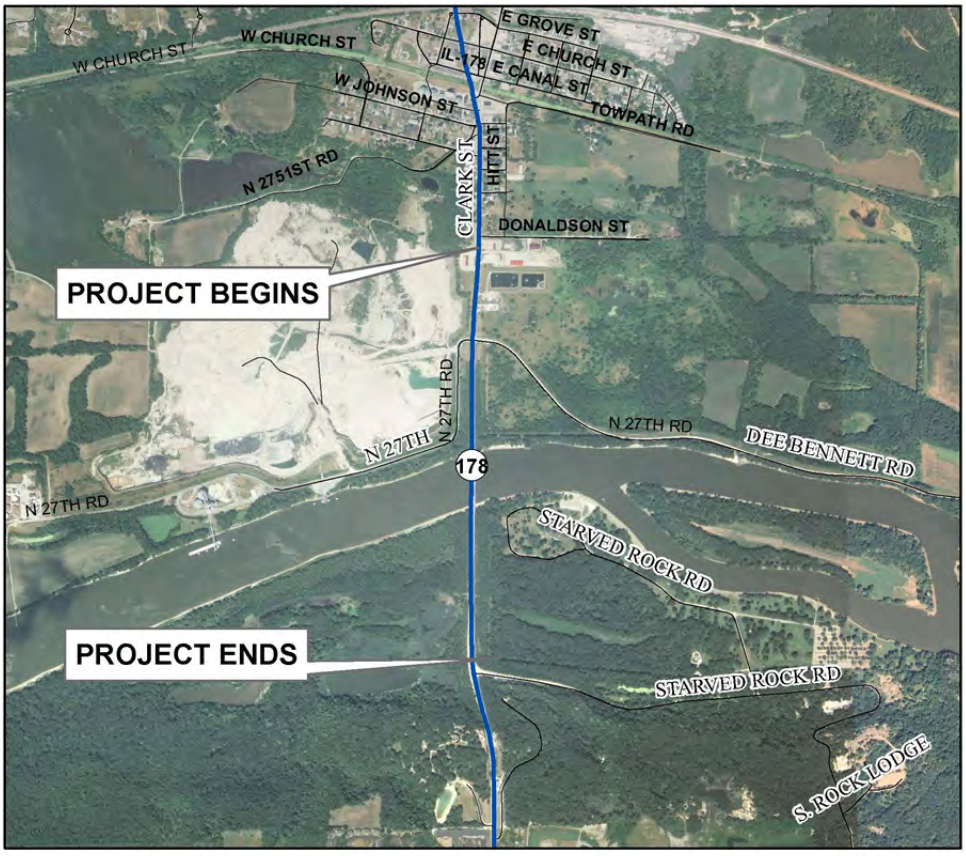
FAS (1279)

Section (1) BR & I

P-93-035-01

Contract 66992

LaSalle County



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August 31, 2013

Contents

List of Appendices

I. GENERAL INFORMATION

A. Project Description and Location

The proposed improvement includes the following:

- Reconstruction and realignment of IL 178 from STA 3+72.69 to STA 51+30.00;
- Reconstruction of Dee Bennett Road from STA 28+00.00 to STA 32+65.00;
- Replacement of SN 050-0088, which carries IL 178 over the Illinois River.

The proposed improvement to IL 178 will provide a two lane typical section with shoulder, open ditch drainage, and a shared use path.

The proposed embankment centerline will be realigned up to 50 feet east of the existing centerline and the proposed profile will be approximately 7 feet higher than the existing embankment profile. Embankment will be up to 50 feet high in some areas and over 300 feet wide.

The project is located on IL 178 over the Illinois River in Deer Park and Utica Townships and Sections 16, 17, 20, and 21 of T33N, R2E, 3rd Principal Meridian, LaSalle County, Illinois.

B. Proposed Pavement Design

The IL 178 proposed typical section has not been finalized at this time, but is expected to consist of jointed Portland Cement Concrete Pavement with Subbase Granular Material, Type A as the subbase material.

Proposed typical sections are included in Appendix A.

Proposed plan and profile sheets, including the soil profile, are included in Appendix B.

C. Soils

The existing embankment generally consists of silty clay loam, sandy loam, or sand. Where there is currently no embankment, the soils generally consist of silty clay loam or topsoil with bedrock close to the surface.

D. Geology

The bedrock underlying this project is from the Ordovician System. The bedrock surface was encountered at elevations ranging from 450.3 to 461.1 along the north approach embankment and from 432.9 to 450.9 along the south approach embankment. Bedrock was encountered in soil borings throughout the construction area. Based on the most recent plans and cross sections, the bedrock is not anticipated to impact the construction of ditches, culverts, or other underground facilities. However, if significant changes are

made to the underground facilities, the bedrock should be evaluated to determine any impact on construction.

II. SOIL INVESTIGATIONS

A. Field Investigation

Roadway borings were conducted in April, October, and December of 2012. The year 2012 had precipitation which was significantly below the historical average, based on precipitation data for Ottawa, Illinois. See Table 1 for complete precipitation data.

Month	Actual	Historical Average
January 212	1.10	1.48
February 2012	1.20	1.43
March 2012	1.44	2.46
April 2012	1.19	3.22
May 2012	0.93	4.11
June 2012	2.25	3.98
July 2012	1.84	3.85
August 2012	3.05	3.89
September 2012	2.30	3.26
October 2012	3.23	2.80
November 2012	0.88	3.11
December 2012	1.36	2.13
Total	20.77	35.72

Table 1: Precipitation data for Ottawa, Illinois (National Weather Service)

A subsurface investigation was executed to determine the depth and characteristics of the soils along the proposed improvement. Various methods were used to determine soil conditions, as shown in Table 2. In addition, a consultant (Wang Engineering) was utilized to perform some soil borings in locations that could not be accessed with IDOT's truck mounted equipment. Rock cores were obtained at selected locations. The locations of all the soil borings are shown in Appendix B.

Station	Boring Number	Offset	Sample Method	Rock Core	Rock Encountered	Depth to Rock	Rock Elevation	Drilled By
06+00 (Exist)	8	24 FT LT	PUSH	NO	YES	5.0	459.6	IDOT
09+00 (Exist)	7	25 FT LT	PUSH	NO	YES	4.5	459.7	IDOT
12+00 (Exist)	6	26 FT LT	PUSH	NO	YES	3.5	461.1	IDOT
15+00 (Exist)	5	50 FT LT	PUSH	NO	YES	2.0	458.2	IDOT
18+00 (Exist)	4	85 FT LT	PUSH	NO	YES	4.0	454.6	IDOT
20+06 (Prop)	SB-03	65 FT LT	HSA	NO	YES	3.5	453.7	WANG
21+00 (Exist)	3	15 FT LT	HSA	NO	NO			IDOT
22+03 (Prop)	SB-04	71 FT LT	HSA	NO	YES	4.5	451.9	WANG
23+05 (Exist)	2 (North Abut)	7 FT LT	HSA	NO	YES	50.0	448.3	IDOT
23+55 (Prop)	SB-05	74 FT LT	HSA	YES	YES	5.0	451.0	WANG
27+28 (Prop)	SB-06	4 FT LT	MUD ROTARY	YES	YES	2.0	430.9	WANG
31+49 (Prop)	SB-07	35 FT LT	MUD ROTARY	YES	YES	4.0	432.9	WANG
35+02 (Prop)	SB-08	88 FT LT	HSA	YES	YES	1.5	450.9	WANG
35+39 (Exist)	1 (South Abut)	7 FT LT	HSA	NO	YES	50.5	448.5	WANG
36+98 (Prop)	SB-09	134 FT LT	HSA	NO	YES	7.5	441.9	WANG
39+03 (Prop)	SB-10	134 FT LT	HSA	NO	YES	10.0	438.9	WANG
41+00 (Exist)	2	15 FT LT	HSA	NO	NO			IDOT
47+00 (Exist)	1	28 FT LT	PUSH	NO	NO			IDOT

Table 2: Boring Locations and Top of Rock Elevations

The soil boring logs and rock core logs are included in Appendix C and D, respectively. The boring logs include soil borings for the structure carrying IL 178 over the Illinois River (SN 050-0080).

The samples were logged for soil type and the unconfined compressive strength was determined with a pocket penetrometer or Rimac. In addition, samples were taken to the laboratory to determine the moisture content, grain size, and Atterberg Limits.

B. Laboratory Testing and Classification of Soils

Laboratory testing consisted of Atterberg Limit determination and grain size analysis. Moisture contents were also determined and are indicated on the boring logs. The soil samples were classified in accordance with the IDOT textural classification chart and the AASHTO engineering designations with group indices were determined. The grain size distribution with Atterberg Limits and the IDH Textural Classification Chart are included in Appendix E and F, respectively.

C. Old Plans

The original construction plans indicate unsuitable material from STA 34+25 to STA 37+75 and from STA 45+80 to STA 49+50. The plans indicate this material was removed and replaced under the proposed embankment, however the removal and replacement did not extend all the way to the toe of the slope. Based on the old plans, it is likely that portions of the existing embankment near the toe were constructed on the unsuitable material. Recommendations for removal of unsuitable material are provided in Section III of this report.

III. ANALYSIS AND RECOMMENDATIONS

A. Embankment

The existing soils are generally expected to be suitable for embankment construction after removal of topsoil, roots, and organic materials. However, south of the Illinois River some unsuitable material is anticipated.

The material to be used for the embankments is not known at this time, however the following requirements must be met:

1. Moisture content shall be between 80% and 110% of the proctor optimum moisture determined by Illinois Modified AASHTO T 99.
2. Immediate bearing value greater than 4.0
3. Liquid limit less than 50
4. Plasticity index greater than 12.0
5. Silt and fine sand content less than 65%

Material not meeting requirements 3, 4, or 5 above shall be restricted to the core of the embankment and must be covered with a minimum of thirty-six inches of material meeting these requirements. In addition, if a granular material is used to construct the embankment, drainage such as underdrains, must be included to prevent excessive water from being held within the granular material.

A special provision for embankment is included in Appendix G.

B. Frost Susceptible Soils

The soils within the proposed improvement were checked for their potential to be frost susceptible using the criteria outlined in the Department's 1999 Geotechnical Manual (PI less than 12 and silt and fine sand content greater than 65%). One soil sample meets the Department's criteria for being frost susceptible. This soil was located at STA 18+00 and will be buried under the new embankment so it is not a concern in regard to frost susceptibility.

C. Soil Support Rating and Illinois Bearing Ratio

For the purpose of pavement design, a Soil Support Rating of poor is recommended. The SSR charts with data points plotted are in Appendix H. Although some of the points fall into the fair category, the quality of the proposed embankment material is unknown at this time, therefore a Soil Support Rating of poor for the new embankment is recommended.

Based on Table 4 – 1 of the 1999 Geotechnical Manual, the Illinois Bearing Ratio for the project soils is 3.

D. Improved Subgrade Layer

An improved subgrade consisting of 12 inches of Subbase Granular Material Type A is proposed for this project. During construction the District Geotechnical Engineer should be contacted to inspect the subgrade and determine if additional depth of improved subgrade is warranted.

Other methods of constructing an improved subgrade, such as soil stabilization with lime, fly ash, or cement, are possible for this project, however these options have not been studied in detail. If further analysis of these options is desired, please contact the District Geotechnical Engineer.

E. Subgrade replacement

The soil borings do not indicate the need for any subgrade replacement in addition to the 12 inches of subbase granular material proposed in the typical sections.

F. Settlement

The soils were reviewed for their potential for excessive settlement. North of the Illinois River, high unconfined compressive strengths and low moisture contents of the soils indicate excessive settlement is not expected. South of the Illinois River, soft material was located at the toe of the proposed slope. Based on the limits of unsuitable material identified in the old plans and the soils identified in SB-09 and SB-10, the plans should include removal and disposal of unsuitable material from STA 35+00 to STA 40+00.

This work should extend from 5 feet inside the toe of the existing slope to 5 feet past the toe of the proposed slope and to the top of the underlying bedrock. Rock Fill according to the District 3 special provision should be used to replace the unsuitable material from the top of rock to elevation 450.0 feet, then embankment construction can proceed with approved embankment material.

G. Slope Stability

Slope stability analyses for the east slope were performed at STA 23+00 and STA 35+00. The required factor of safety (FOS) is 1.5 for embankment fill sections. In order to achieve the required FOS when using 1:2 (V:H) slopes, a 15 foot wide berm needs to be constructed approximately halfway up the embankment slope. In addition, south of the Illinois River soft soils were encountered near the toe of the existing slope. This material must be removed and replaced as discussed in Section F.

A field inspection of the existing slopes found the presence of a geotechnical reinforcement along the slopes, which would indicate previous problems or concerns with stability or erosion of the existing slopes, which are shorter and flatter than the proposed slopes.

Table 3 summarizes the results of the slope stability analysis. Complete diagrams of each scenario are included in Appendix I.

A diagram showing the proposed benching detail is included in Appendix J.

LOCATION	SLOPE CONFIGUATION	CONDITION	FOS
STA 23+00	1:2 SLOPE; NO BENCH	UNDRAINED	1.37
STA 23+00	1:2 SLOPE; NO BENCH	DRAINED	1.25
STA 23+00	1:2 SLOPE; 15 FT BENCH	UNDRAINED	1.56
STA 23+00	1:2 SLOPE; 15 FT BENCH	DRAINED	1.38
STA 35+00	1:2 SLOPE; NO BENCH	UNDRAINED	1.38
STA 35+00	1:2 SLOPE; NO BENCH	DRAINED	1.20
STA 35+00	1:2 SLOPE; 15 FT BENCH	UNDRAINED	1.51
STA 35+00	1:2 SLOPE; 15 FT BENCH	DRAINED	1.30

Table 3: Slope Stability Results.

The west slope was checked for slope stability and was found to be acceptable.

H. Surface Drainage

Constructing curb and gutter at the edge of pavement would help to minimize surface erosion of the slopes and minimize future slope maintenance issues by controlling stormwater runoff.

I. Construction Staging

The north approach embankment can be constructed by using temporary pavement to shift traffic to the east, allowing room to construct a 1:3 (V:H) temporary slope between the proposed embankment and the existing embankment.

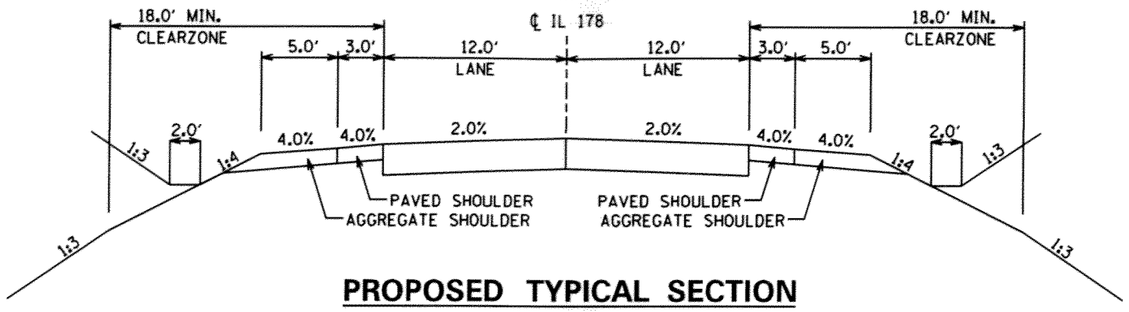
The south approach embankment features a change in the profile grade within the footprint of the existing roadway. This will likely require the use of a temporary mechanically stabilized earth (MSE) wall to facilitate staging during construction. Based on a preliminary analysis at STA 44+00, a temporary MSE wall is feasible at this location.

IV. FURTHER INFORMATION

If there are any questions about this report or any additional information is required, please contact the District Geotechnical Engineer.

APPENDIX A

ILLINOIS 178 – PROPOSED TYPICAL SECTIONS



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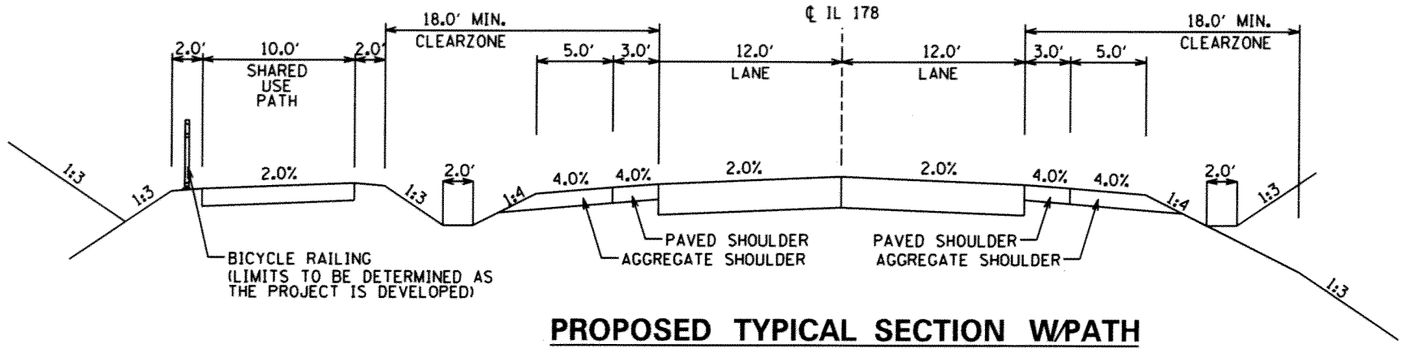

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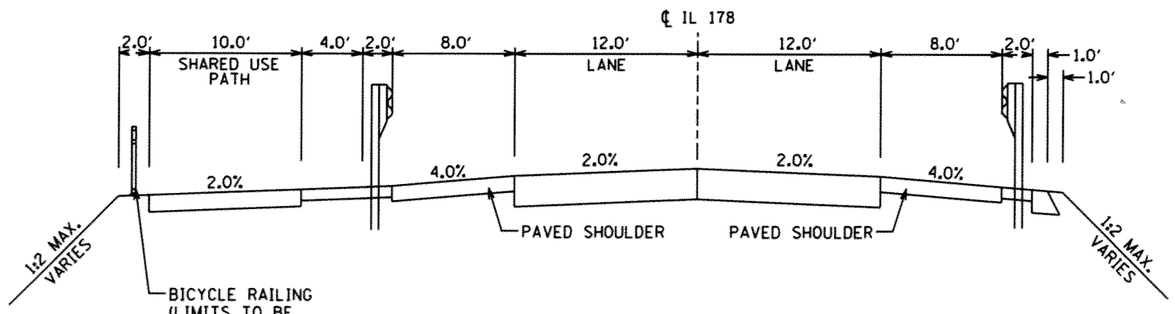
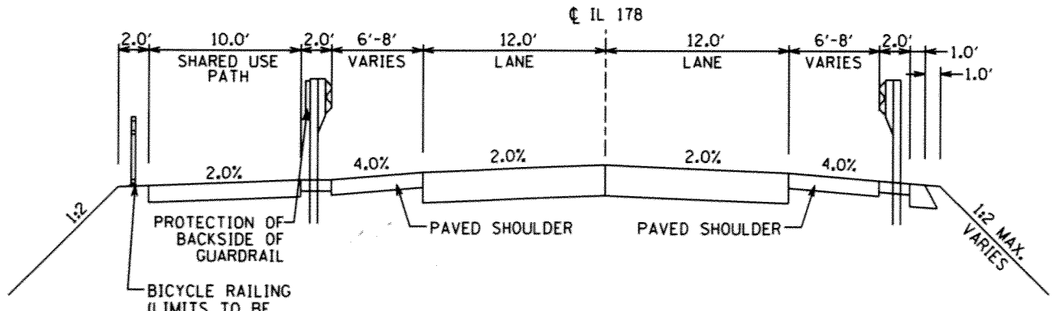


PROPOSED TYPICAL SECTION W/PATH

(GUARDRAIL FILL SECTION LOOKING SOUTH)



PROPOSED TYPICAL SECTION W/PATH

(APPROACH TO BRIDGE LOOKING SOUTH)

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2015	4,350	420	4%	4%
2025	4,700	454	4%	4%
2035	5,800	560	4%	4%

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ILLINOIS 178
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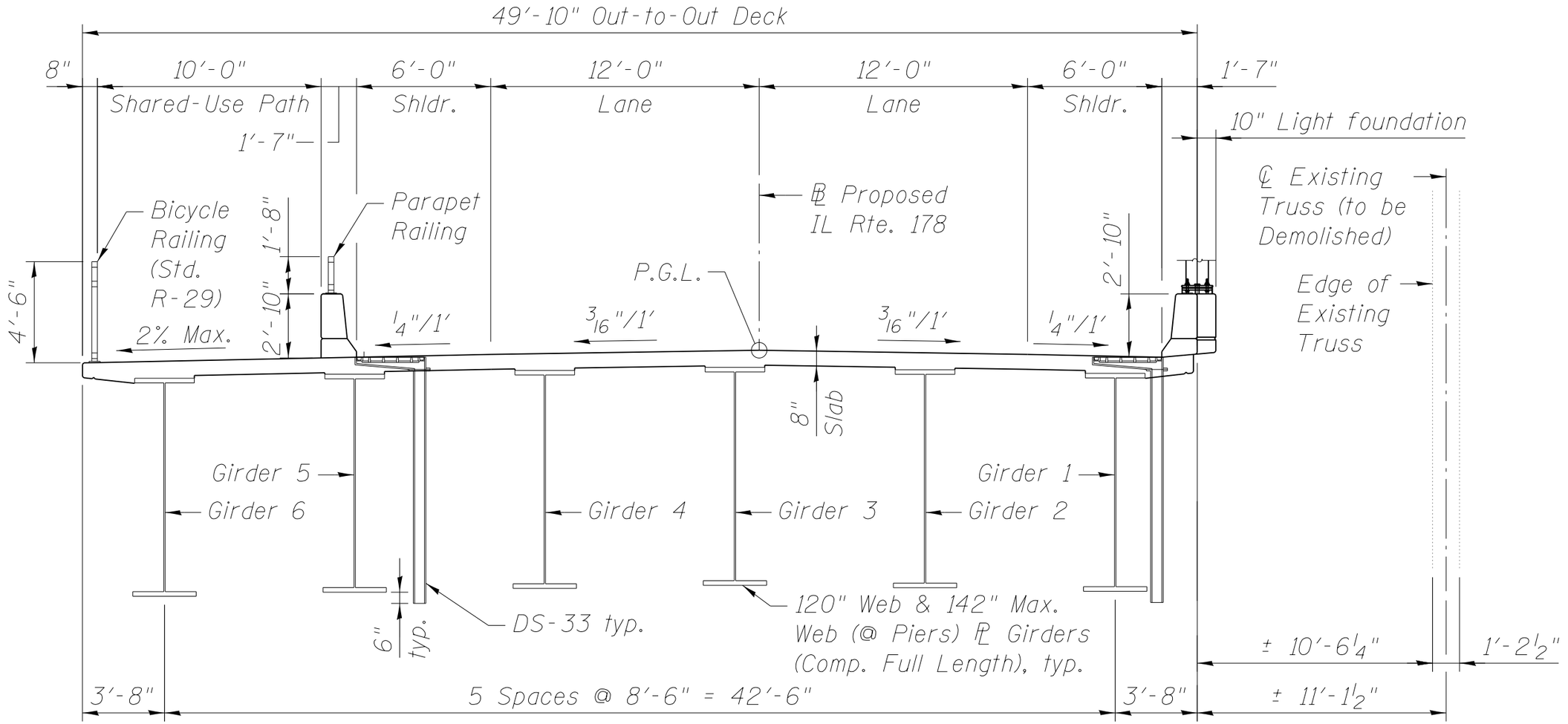

PROPOSED BRIDGE SECTION

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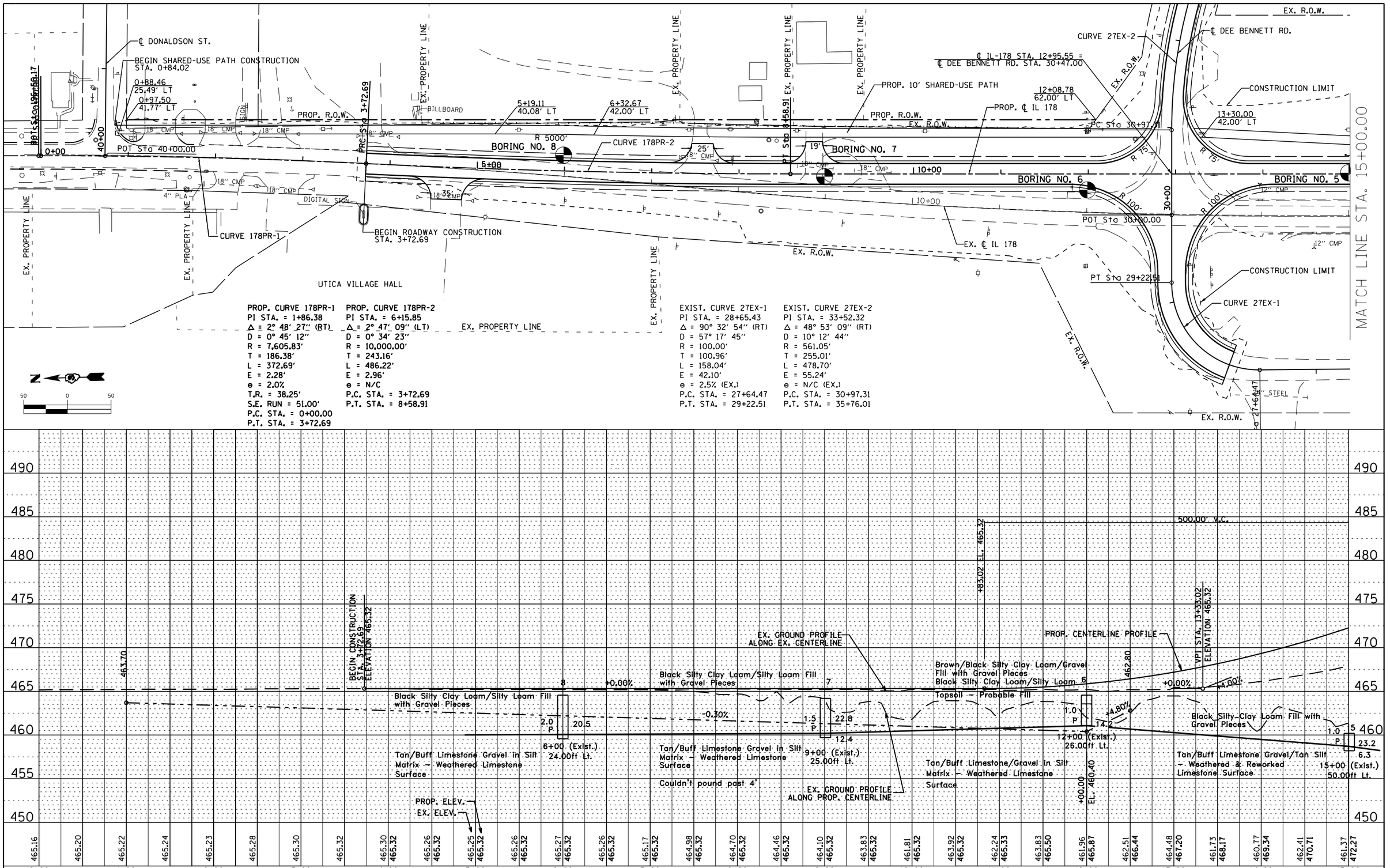
APPENDIX B



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ILLINOIS 178 – BORINGS
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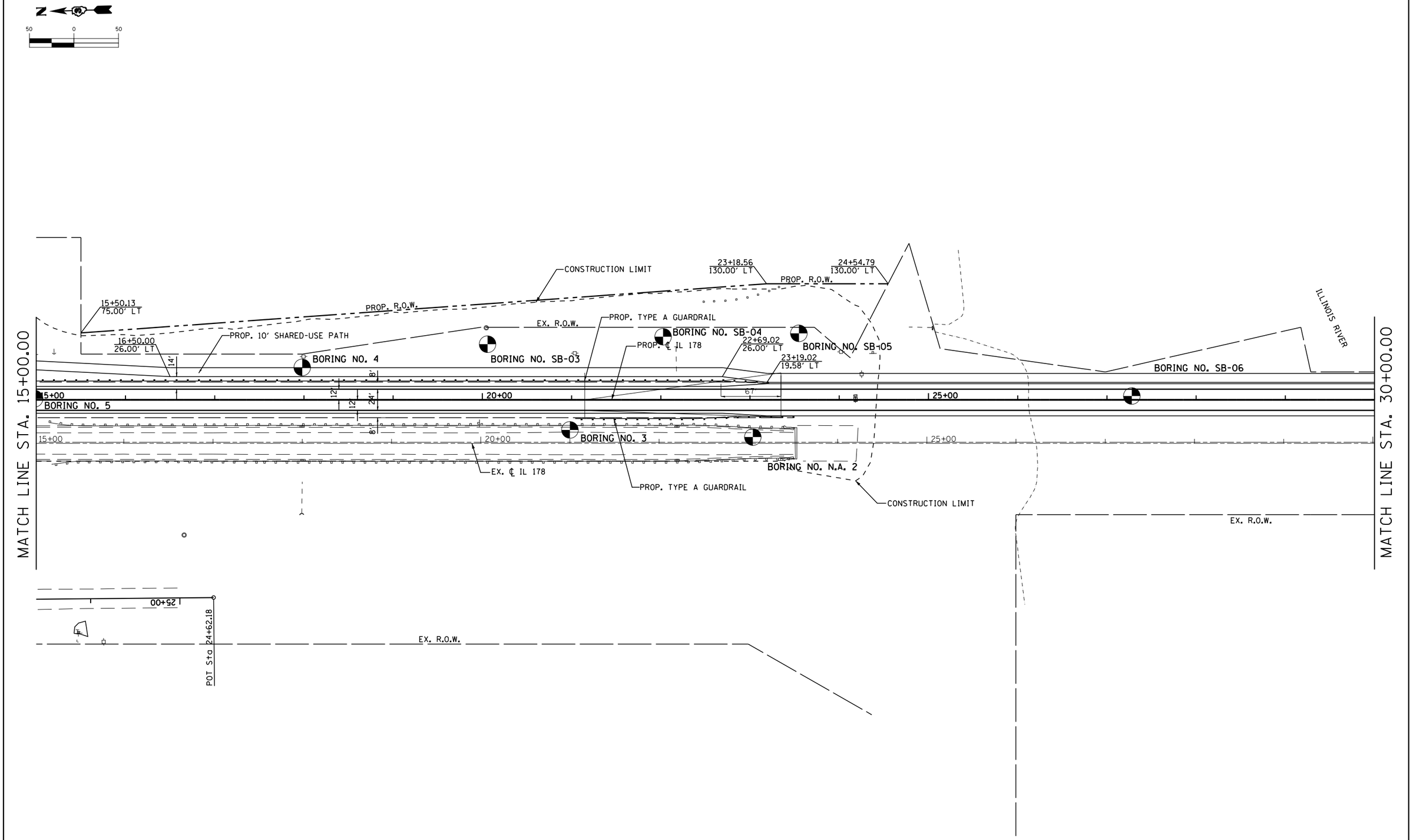

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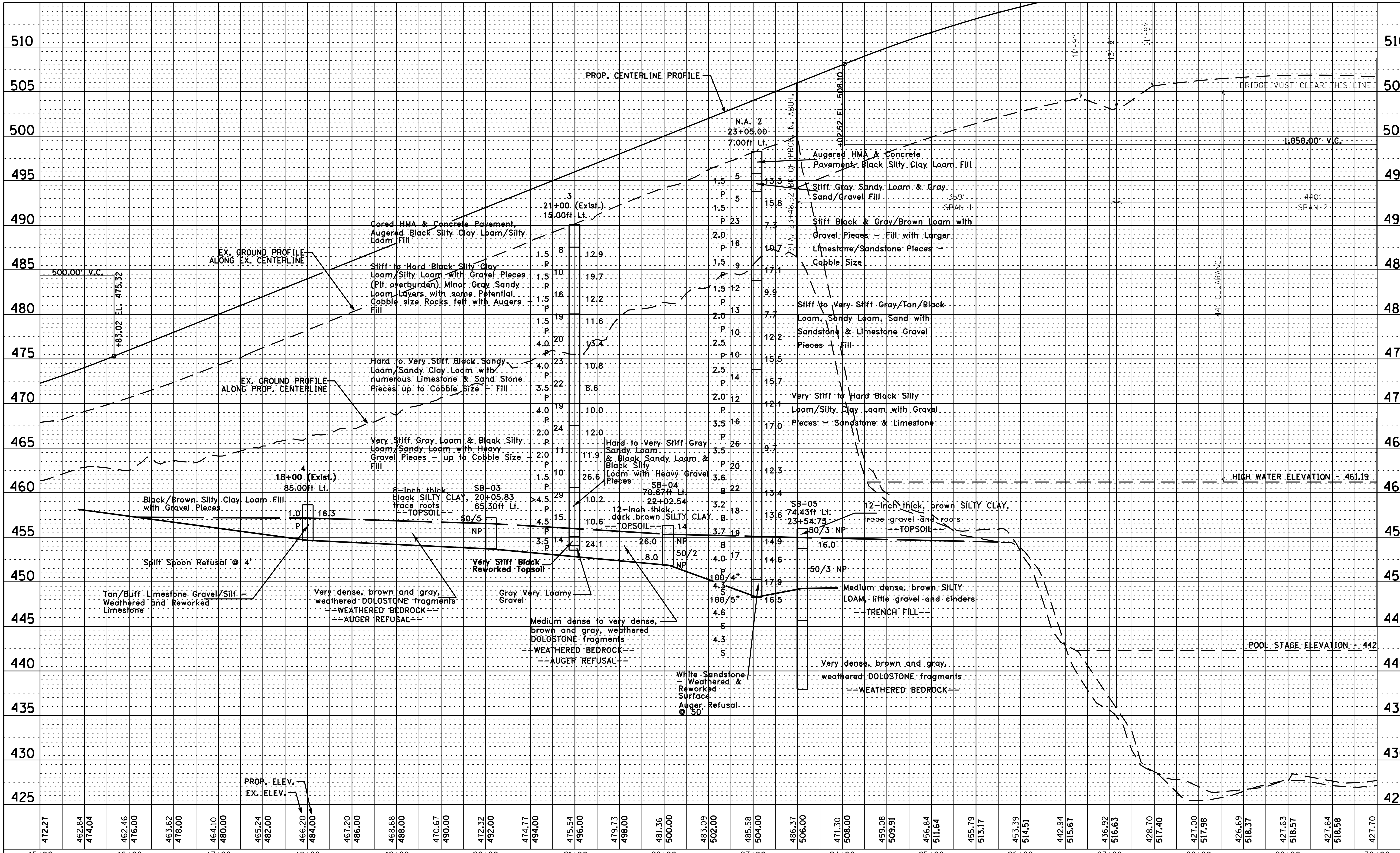

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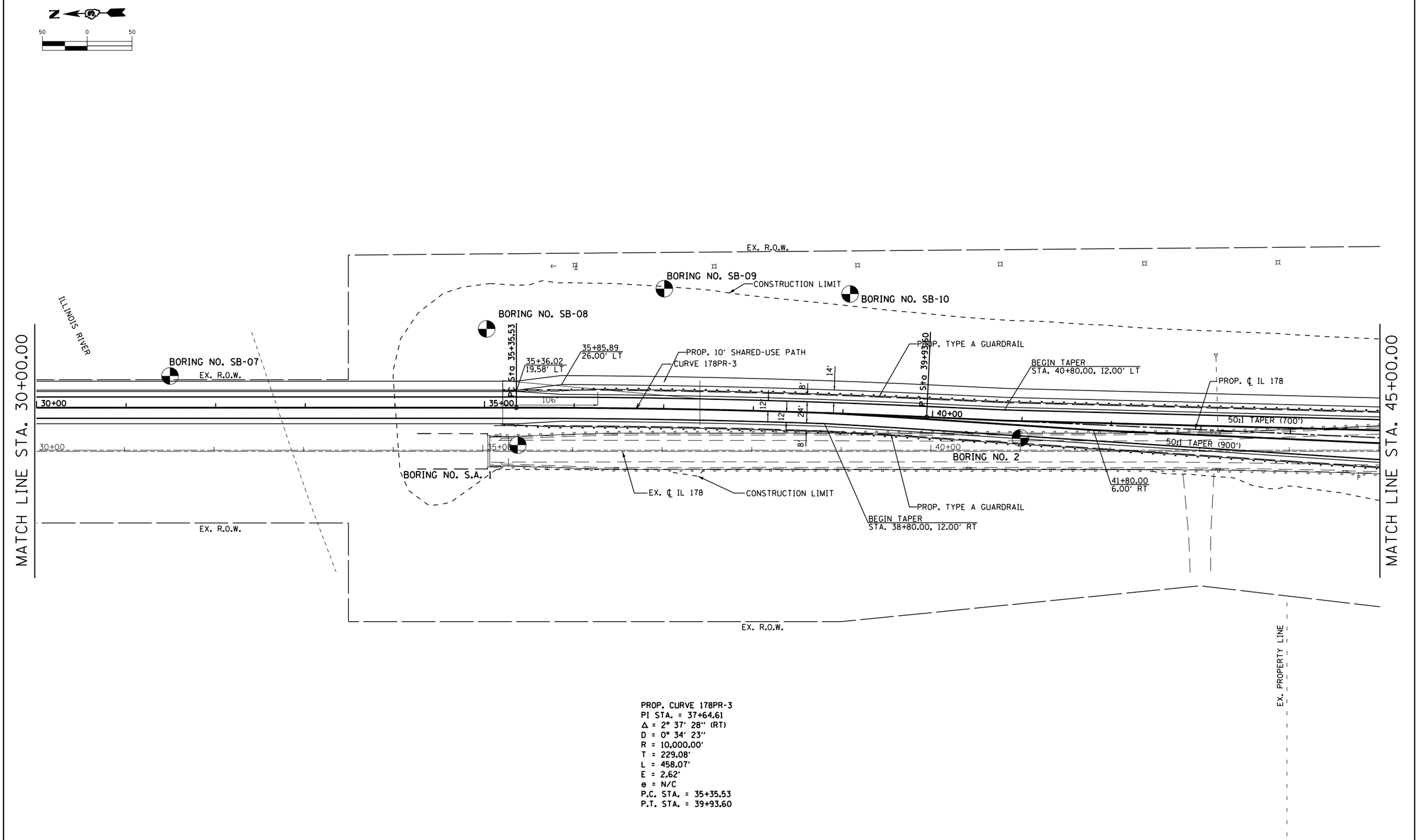

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ILLINOIS 178 – BORINGS
STA. 30+00 TO STA. 45+00

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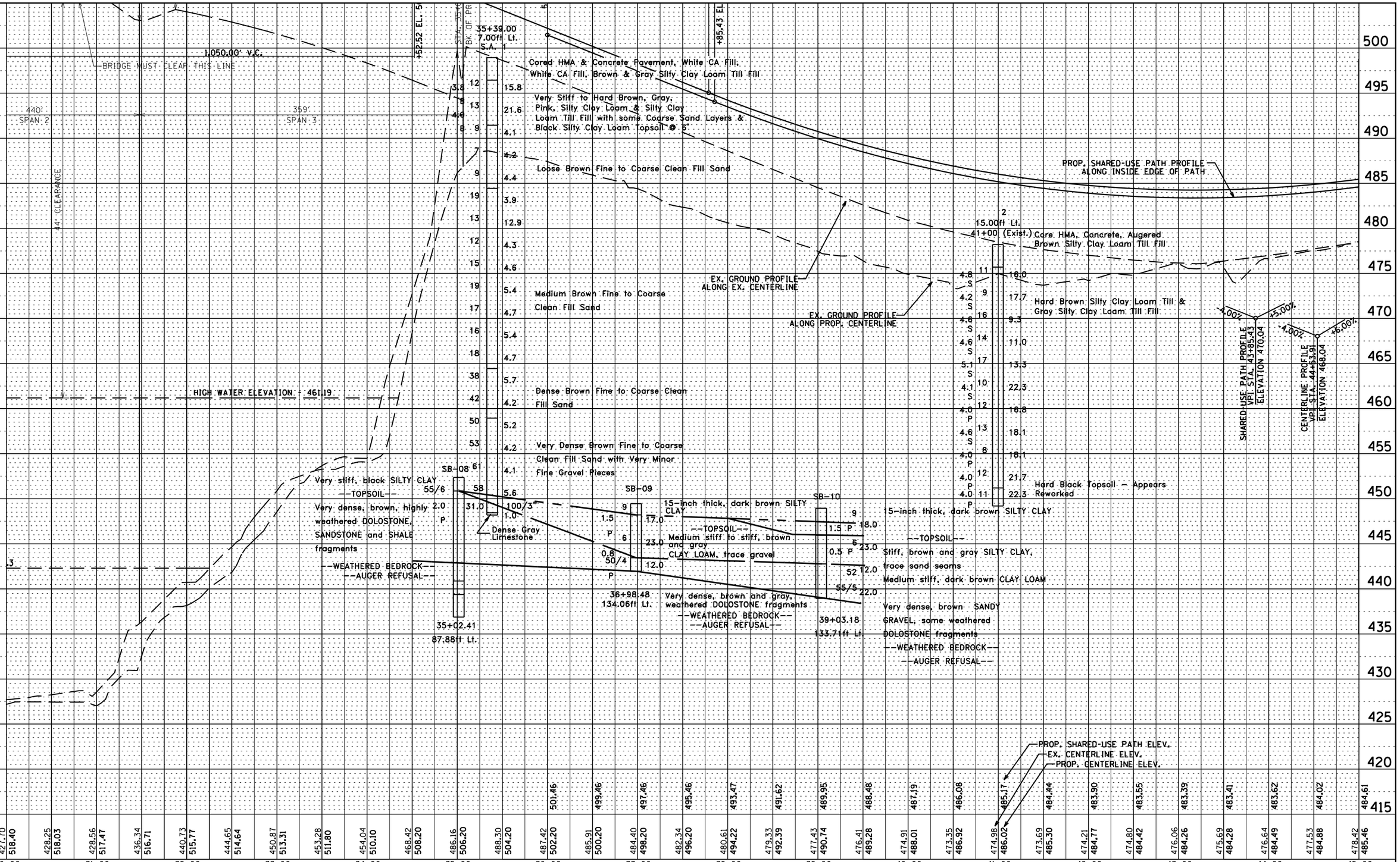

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STATE OF ILLINOIS
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ILLINOIS 178 – BORINGS
STA. 30+00 TO STA. 45+00

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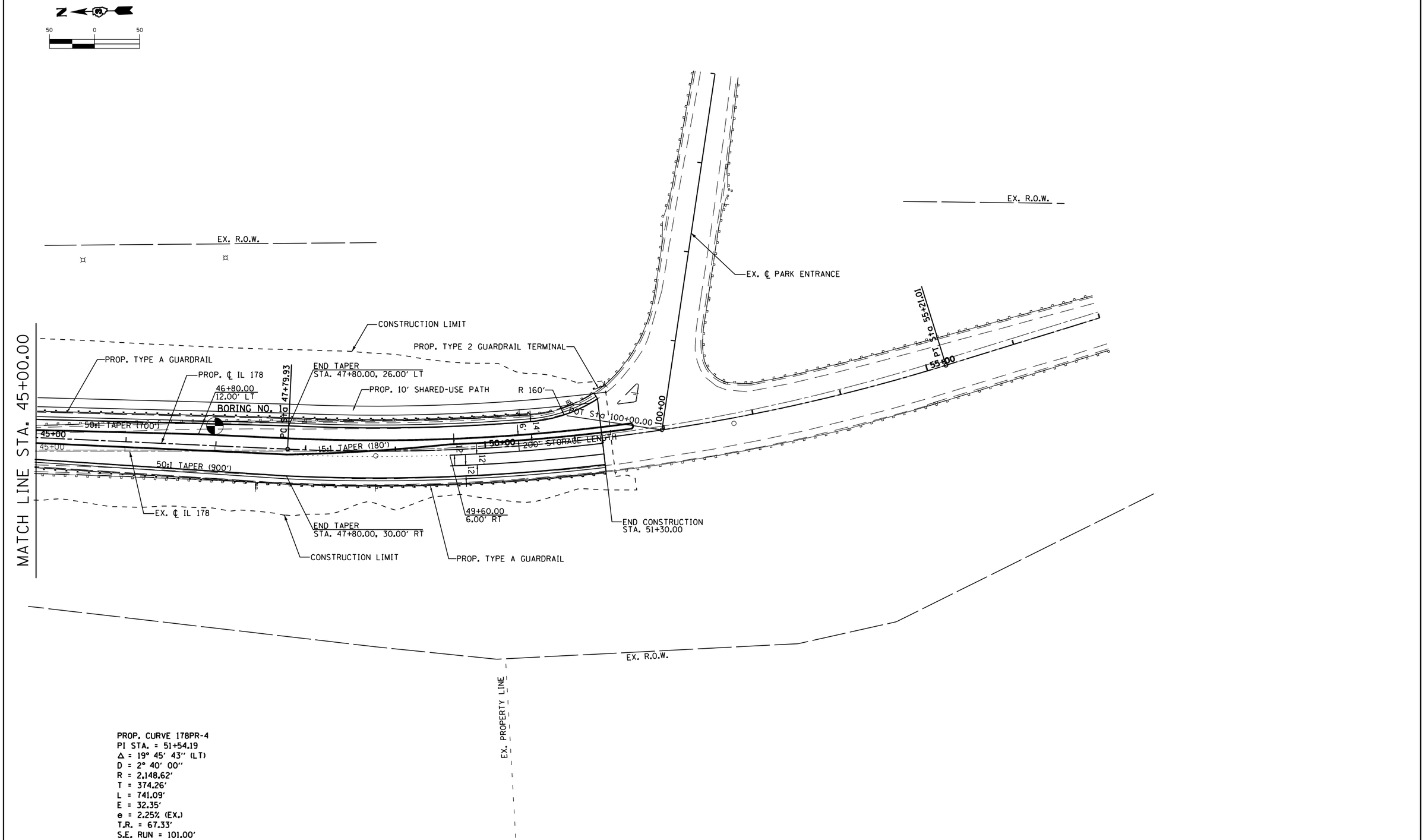

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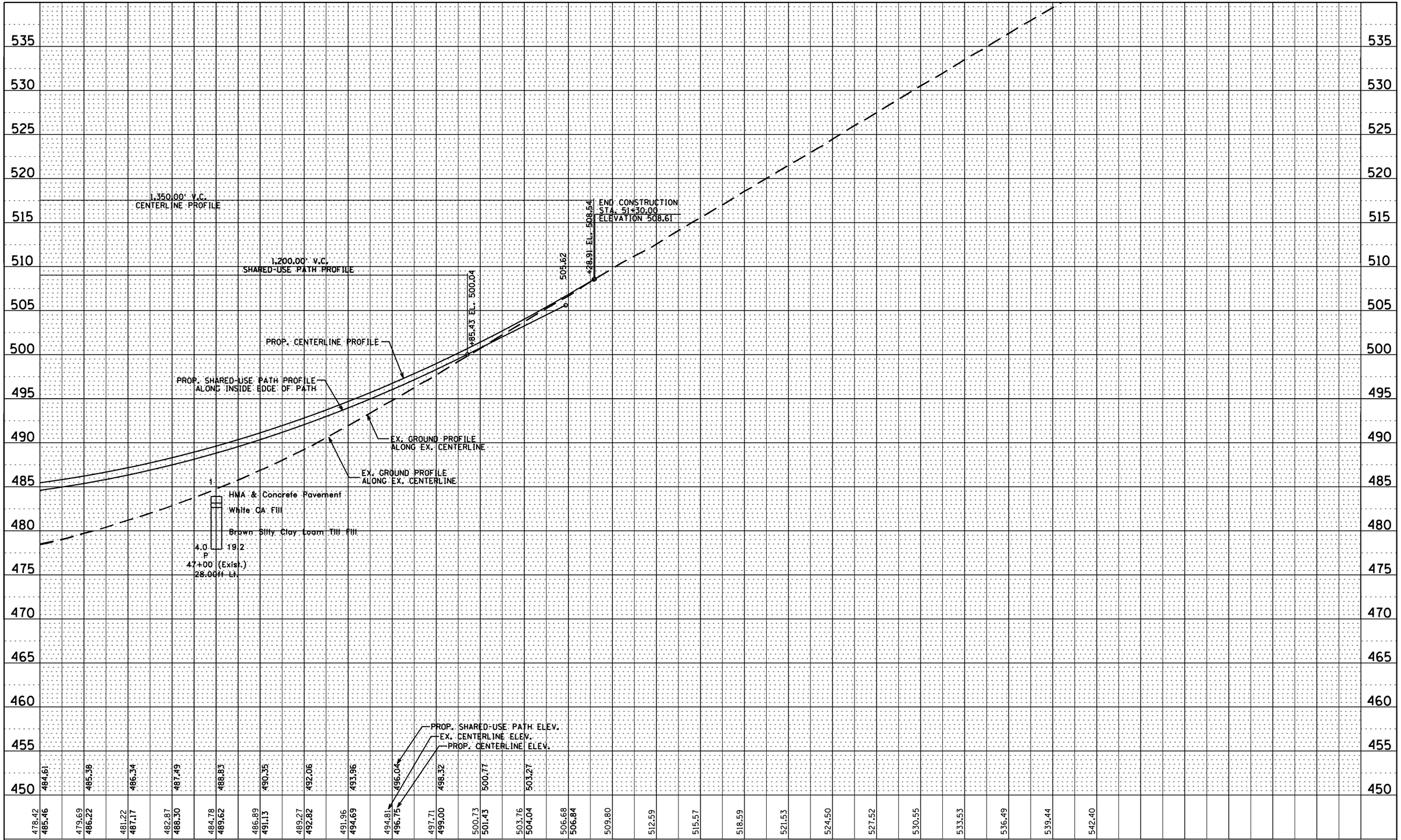

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DEPARTMENT OF TRANSPORTATION

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STA. 45+00 TO STA. 60+00

SCALE: | SHEET OF SHEETS | STA. 45+00.00 TO STA. 60+00.00

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1279	(1)BR&I	LASALLE		
		CONTRACT NO. 66992		
		ILLINOIS FED. AID PROJECT		

N

50 0 50

EXIST. CURVE 27EX-1
PI STA. = 28+65.43
Δ = 90° 32′ 54″ (RT)
D = 57° 17′ 45″
R = 100.00′
T = 100.96′
L = 158.04′
E = 42.10′
e = 2.5% (EX.)
P.C. STA. = 27+64.47
P.T. STA. = 29+22.51

EXIST. CURVE 27EX-2
PI STA. = 33+52.32
Δ = 48° 53′ 09″ (RT)
D = 10° 12′ 44″
R = 561.05′
T = 255.01′
L = 478.70′
E = 55.24′
e = N/C (EX.)
P.C. STA. = 30+97.31
P.T. STA. = 35+76.01

BORING NO. 6
BORING NO. 5
62′
42′
PROP. ℄ IL 178
12+08.78
62.00′ LT
℄ IL-178 STA. 12+95.55 =
℄ DEE BENNETT RD. STA. 30+47.00
PC Sta 30+97.31
EX. R.O.W.
END CONSTRUCTION
STA. 32+65.00
EX. PROPERTY LINE
CONSTRUCTION LIMIT
PT Sta 29+22.51
POT Sta 30+00.00
R 100′
R 75′
30+00
EX. R.O.W.
℄ DEE BENNETT RD.
BEGIN CONSTRUCTION
STA. 28+00.00
8′ 16′ 16′ 8′
CURVE 27EX-1
PC Sta 27+64.47
EX. ℄ IL 178
R 100′
℄ 27TH ST.
CURVE 27EX-2
EX. R.O.W.
35+00
PT Sta 35+76.01
CONSTRUCTION LIMIT
EX. R.O.W.
15+00
5+00
15+50.13
75.00′ LT
EX. R.O.W.
PROP. R.O.W.
PT Sta 37+

490
485
480
475
470
465
460
455
450

463.60 463.82 463.99 464.13 464.37 464.72 464.93 464.93 465.14 465.03 465.99 465.13 465.81 465.44 465.20 466.19 464.56 467.07 464.16 466.07 463.75 465.07 463.80 464.20 463.85 463.86 463.96 463.98 463.95 463.73 463.14

PROP. ELEV.
EX. ELEV.

25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00

BEGIN CONSTRUCTION
STA. 28+00.00
ELEVATION 464.93
+02.22 EL. 465.13
100.00′ V.C.
VPI STA. 29+52.22
ELEVATION 465.23
+02.22 EL. 466.23
+2.00%
VPI STA. 30+47.00
ELEVATION 467.15
+65.00 EL. 464.77
100.00′ V.C.
+65.00 EL. 463.87
END CONSTRUCTION
STA. 32+65.00
ELEVATION 463.88
PROP. CENTERLINE PROFILE
+0.20%
EX. GROUND PROFILE

Brown/Black Silty Clay Loam/Gravel Fill with Gravel Pieces
Black Silty Clay Loam/Silty Loam Topsoil - Probable Fill
Tan/Buff Limestone/Gravel in Silt Matrix - Weathered Limestone Surface
12+00 (Exist.) 26.00ft Lt.
1.0 P 14.2 6
1.0 P 23.2 6.3
15+00 (Exist.) 50.00ft Lt.
Black Silty Clay Loam Fill with Gravel Pieces
Tan/Buff Limestone Gravel/Tan Silt - Weathered & Reworked Limestone Surface
STA. 32+15.00
ELEVATION 463.77

FILE NAME = c:\pw_work\pwidot\wasilewskimw\d0163837\D356992-sht-plnprf_08.dgn	USER NAME = wasilewskimw	DESIGNED -	REVISED -
		DRAWN -	REVISED -
	PLOT SCALE 89.9955 ′ / in.	CHECKED -	REVISED -
	PLOT DATE = 7/26/2013	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

27TH ST. AND DEE BENNETT RD. – BORINGS
STA. 25+00 TO STA. 35+00

SCALE: 1″=50′ | SHEET NO. OF SHEETS | STA. 25+00.00 TO STA. 35+00.00

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1279	(1)BR&I	LASALLE		
		CONTRACT 66992		
		ILLINOIS FED. AID PROJECT		

APPENDIX C

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 10/22/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** (Sample 5) **LOGGED BY** Larry Myers

SECTION (1)BR&I **LOCATION** NE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E

COUNTY LaSalle **DRILLING METHOD** Push **HAMMER TYPE** CME Automatic

STRUCT. NO. _____
Station _____

BORING NO. 8 (IL 178)
Station 6+00 (Exist.)
Offset 24.00ft Lt.
Ground Surface Elev. 464.59 ft

Surface Water Elev. _____ ft
Stream Bed Elev. _____ ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion _____ ft
After _____ **Hrs.** _____ ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Black Silty Clay Loam/Silty Loam Fill with Gravel Pieces			2.0 P	20.5
460.09				
Tan/Buff Limestone Gravel in Silt Matrix - Weathered Limestone Surface	-5			
459.59				
End of Boring	-10			
	-15			
	-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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 10/22/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** (Sample 4) **LOGGED BY** Larry Myers

SECTION (1)BR&I **LOCATION** NE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E

COUNTY LaSalle **DRILLING METHOD** Push **HAMMER TYPE** CME Automatic

STRUCT. NO. _____
Station _____

BORING NO. 7 (IL 178)
Station 9+00 (Exist.)
Offset 25.00ft Lt.
Ground Surface Elev. 464.19 ft

Surface Water Elev. _____ ft
Stream Bed Elev. _____ ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion _____ ft
After _____ **Hrs.** _____ ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Black Silty Clay Loam/Silty Loam Fill with Gravel Pieces				
			1.5 P	22.8
460.19				
Tan/Buff Limestone Gravel in Silt Matrix - Weathered Limestone Surface				12.4
459.69	-5			
Couldn't pound past 4'				
End of Boring	-10			
	-15			
	-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)

Illinois Department of Transportation

Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 10/22/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** (Sample 3) **LOGGED BY** Larry Myers

SECTION (1)BR&I **LOCATION** NE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E

COUNTY LaSalle **DRILLING METHOD** Push **HAMMER TYPE** CME Automatic

STRUCT. NO. _____
Station _____

BORING NO. 6 (IL 178)
Station 12+00 (Exist.)
Offset 26.00ft Lt.
Ground Surface Elev. 464.56 ft

Surface Water Elev. _____ ft
Stream Bed Elev. _____ ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion _____ ft
After _____ **Hrs.** _____ ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown/Black Silty Clay Loam/Gravel Fill with Gravel Pieces 463.56				
Black Silty Clay Loam/Silty Loam Topsoil - Probable Fill				
461.06			1.0 P	14.2
Tan/Buff Limestone/Gravel in Silt Matrix - Weathered Limestone Surface				
End of Boring	-5			
	-10			
	-15			
	-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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 10/22/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** _____ **LOGGED BY** Larry Myers

SECTION (1)BR&I **LOCATION** NE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E

COUNTY LaSalle **DRILLING METHOD** Push **HAMMER TYPE** CME Automatic

STRUCT. NO. _____
Station _____

BORING NO. 5 (IL 178)
Station 15+00 (Exist.)
Offset 50.00ft Lt.
Ground Surface Elev. 460.19 ft

Surface Water Elev. _____ ft
Stream Bed Elev. _____ ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion _____ ft
After _____ **Hrs.** _____ ft

		DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Black Silty Clay Loam Fill with Gravel Pieces					
	458.69			1.0	23.2
Tan/Buff Limestone Gravel/Tan Silt - Weathered & Reworked Limestone Surface	458.19			P	
					6.3
End of Boring					
		-5			
		-10			
		-15			
		-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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 10/22/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** (Samples 1 & 2) **LOGGED BY** Larry Myers

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E

COUNTY LaSalle **DRILLING METHOD** Push **HAMMER TYPE** CME Automatic

STRUCT. NO. _____
Station _____

BORING NO. 4 (IL 178)
Station 18+00 (Exist.)
Offset 85.00ft Lt.
Ground Surface Elev. 458.63 ft

Surface Water Elev. _____ ft
Stream Bed Elev. _____ ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion _____ ft
After _____ **Hrs.** _____ ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Black/Brown Silty Clay Loam Fill with Gravel Pieces				
457.13			1.0 P	16.3
Tan/Buff Limestone Gravel/Silt - Weathered and Reworked Limestone				
454.63				
Split Spoon Refusal @ 4' End of Boring	-5			
	-10			
	-15			
	-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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 10/24/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** Illinois River Bridge South of Utica **LOGGED BY** B. Wilson

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E, 3rd **PM**

COUNTY LaSalle **DRILLING METHOD** Hollow Stem Auger **HAMMER TYPE** Automatic Hammer

STRUCT. NO. 050-0088 (Exist.) 050-0256 (Prop.)
Station 29+30.00

BORING NO. SB-03 (Wang Eng.)
Station 20+05.83
Offset 65.30ft Lt.
Ground Surface Elev. 457.20 ft

Surface Water Elev. 461.19 ft
Stream Bed Elev. 433.92 ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion Dry ft
After ____ **Hrs.** ____ ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
8-inch thick, black SILTY CLAY, trace roots --TOPSOIL-- 456.53		15		
Very dense, brown and gray, weathered DOLOSTONE fragments --WEATHERED BEDROCK--		50/5	NP	
--AUGER REFUSAL-- 453.70				
End of Boring	-5			
	-10			
	-15			
	-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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 10/24/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** (Samples 10, 11, 12 & 13) **LOGGED BY** Larry Myers

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E

COUNTY LaSalle **DRILLING METHOD** Hollow Stem Auger **HAMMER TYPE** CME Automatic

STRUCT. NO.
Station

BORING NO. 3 (IL 178)
Station 21+00 (Exist.)
Offset 15.00ft Lt.
Ground Surface Elev. 490.06 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion Dry ft
After Hrs. ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Cored HMA & Concrete Pavement, Augered Black Silty Clay Loam/Silty Loam Fill			
487.56			
Stiff to Hard Black Silty Clay Loam/Silty Loam with Gravel Pieces (Pit overburden) Minor Gray Sandy Loam Layers with some Potential Cobble size Rocks felt with Augers - Fill	3		
	4 4	1.5 P	12.9
-5	3		
	4 6	1.5 P	19.7
	8		
	9 7	1.5 P	12.2
480.06 -10			
Hard to Very Stiff Black Sandy Loam/Sandy Clay Loam with numerous Limestone & Sand Stone Pieces up to Cobble Size - Fill	8		
	9 10	1.5 P	11.6
	12		
	7 13	4.0 P	13.4
-15	8		
	10 13	4.0 P	10.8
	8		
	11 11	3.5 P	8.6
-20			
Hard to Very Stiff Black Sandy Loam/Sandy Clay Loam with numerous Limestone & Sand Stone Pieces up to Cobble Size - Fill *(continued)*	8		
	9 10	4.0 P	10.0
467.56			
Very Stiff Gray Loam & Black Silty Loam/Sandy Loam with Heavy Gravel Pieces - up to Cobble Size - Fill	15		
	13 11	2.0 P	12.0
-25	4		
	5 6	2.0 P	11.9
	3		
	4 6	1.5 P	26.6
460.56			
Hard to Very Stiff Gray Sandy Loam & Black Sandy Loam & Black Silty Loam with Heavy Gravel Pieces -30	7		
	10 19	>4.5 P	10.2
	9		
	7 8	4.5 P	10.6
455.06 -35			
Very Stiff Black Reworked Topsoil	4		
454.06			
Gray Very Loamy Gravel 453.56	5 9	3.5 P	24.1
End of Boring			
-40			

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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 10/24/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** Illinois River Bridge South of Utica **LOGGED BY** B. Wilson

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E, 3rd **PM**

COUNTY LaSalle **DRILLING METHOD** Hollow Stem Auger **HAMMER TYPE** Automatic Hammer

STRUCT. NO. 050-0088 (Exist.) 050-0256 (Prop.)
Station 29+30.00

BORING NO. SB-04 (Wang Eng.)
Station 22+02.54
Offset 70.67ft Lt.
Ground Surface Elev. 456.40 ft

Surface Water Elev. 461.19 ft
Stream Bed Elev. 433.92 ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion Dry ft
After ____ **Hrs.** ____ ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
12-inch thick, dark brown SILTY CLAY				
--TOPSOIL-- 455.40		4		
Medium dense to very dense, brown and gray, weathered DOLOSTONE fragments		7 7	NP	26.0
--WEATHERED BEDROCK--		16		
--AUGER REFUSAL-- 451.90		50/2	NP	8.0
End of Boring	-5			
	-10			
	-15			
	-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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 4/2/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** Illinois River Bridge South of Utica **LOGGED BY** Larry Myers

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E, 3rd **PM**

COUNTY LaSalle **DRILLING METHOD** Hollow Stem Auger **HAMMER TYPE** CME Automatic

STRUCT. NO. 050-0088 (Exist.) 050-0256 (Prop.)
Station 29+30.00

BORING NO. 2 (North Abut.)
Station 23+05.00
Offset 7.00ft Lt.
Ground Surface Elev. 498.32 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion ft
After Hrs. ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material
				Augered HMA & Concrete Pavement, Black Silty Clay Loam Fill
495.82				
	2			Stiff Gray Sandy Loam & Gray Sand/Gravel Fill
	2 3	1.5 P	13.3	
493.82				
-5				Stiff Black & Gray/Brown Loam with Gravel Pieces - Fill with Larger Limestone/Sandstone Pieces - Cobble Size
	2			
	2 3	1.5 P	15.8	
	12			
	10 13	2.0 P	7.3	
-10				
	7			
	10 6	1.5 P	10.7	
	2			
	2 7	1.5 P	17.1	
483.82				
-15				Stiff to Very Stiff Gray/Tan/Black Loam, Sandy Loam, Sand with Sandstone & Limestone Gravel Pieces - Fill
	3			
	7 5	2.0 P	9.9	
	3			
	5 8	2.5 P	7.7	
-20				
	4			Stiff to Very Stiff Gray/Tan/Black Loam, Sandy Loam, Sand with Sandstone & Limestone Gravel Pieces - Fill *(continued)*
	4 6	2.5 P	12.2	
	8			
	6 4	2.0 P	15.5	
473.82				
-25				Very Stiff to Hard Black Silty Loam/Silty Clay Loam with Gravel Pieces - Sandstone & Limestone
	4			
	6 8	3.5 P	15.7	
	6			
	4 8	3.5 P	12.1	
-30				
	6			
	8 8	3.6 B	17.0	
	10			
	12 14	3.2 B	9.7	
-35				
	10			
	8 12	3.7 B	12.3	
	8			
	10 12	4.0 P	13.4	
-40				

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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 4/2/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** Illinois River Bridge South of Utica **LOGGED BY** Larry Myers

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E, 3rd **PM**

COUNTY LaSalle **DRILLING METHOD** Hollow Stem Auger **HAMMER TYPE** CME Automatic

STRUCT. NO. 050-0088 (Exist.) 050-0256 (Prop.)
Station 29+30.00

BORING NO. 2 (North Abut.)
Station 23+05.00
Offset 7.00ft Lt.
Ground Surface Elev. 498.32 ft

Surface Water Elev. _____ ft
Stream Bed Elev. _____ ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion _____ ft
After _____ **Hrs.** _____ ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff to Hard Black Silty Loam/Silty Clay Loam with Gravel Pieces - Sandstone & Limestone *(continued)*		7		
		8 10	4.3 S	13.6
		7		
		8 11	4.6 S	14.9
	-45	6		
		7 10	4.3 S	14.6
450.32		14		
White Sandstone - Weathered & Reworked Surface		100/4"		17.9
448.32	-50			
Auger Refusal @ 50'		100/5"		16.5
End of Boring	-55			
	-60			

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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 10/24/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** Illinois River Bridge South of Utica **LOGGED BY** B. Wilson

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E, 3rd **PM**

COUNTY LaSalle **DRILLING METHOD** Hollow Stem Auger **HAMMER TYPE** Automatic Hammer

STRUCT. NO. 050-0088 (Exist.) 050-0256 (Prop.)
Station 29+30.00

BORING NO. SB-05 (Wang Eng.)
Station 23+54.75
Offset 74.43ft Lt.
Ground Surface Elev. 456.00 ft

Surface Water Elev. 461.19 ft
Stream Bed Elev. 433.92 ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion Dry ft
After ____ **Hrs.** ____ ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
12-inch thick, brown SILTY CLAY, trace gravel and roots --TOPSOIL-- 455.00		4		
Medium dense, brown SILTY LOAM, little gravel and cinders --TRENCH FILL-- 453.75		16 50/3	NP	16.0
Very dense, brown and gray, weathered DOLOSTONE fragments --WEATHERED BEDROCK--		30 50/3	NP	
Borehole continued with rock coring.	-5			
	-10			
	-15			
	-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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 12/4/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** Illinois River Bridge South of Utica **LOGGED BY** F. Bozga

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E, 3rd **PM**

COUNTY LaSalle **DRILLING METHOD** Mud Rotary **HAMMER TYPE** Automatic Hammer

STRUCT. NO. 050-0088 (Exist.) 050-0256 (Prop.)
Station 29+30.00

BORING NO. SB-06 (Wang Eng.)
Station 27+27.87
Offset 4.25ft Lt.
Ground Surface Elev. 432.90 ft

Surface Water Elev. 461.19 ft
Stream Bed Elev. 433.92 ft

Groundwater Elev.:
First Encounter 432.9 ft
Upon Completion 432.9 ft
After ____ **Hrs.** ____ ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
0	50/4	NP	10.1	Very dense, gray, weathered DOLOSTONE fragments --WEATHERED BEDROCK--
430.90				Borehole continued with rock coring.
-5				
-10				
-15				
-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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 12/3/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** Illinois River Bridge South of Utica **LOGGED BY** F. Bozga

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E, 3rd **PM**

COUNTY LaSalle **DRILLING METHOD** Mud Rotary **HAMMER TYPE** Automatic Hammer

STRUCT. NO. 050-0088 (Exist.) 050-0256 (Prop.)
Station 29+30.00

BORING NO. SB-07 (Wang Eng.)
Station 31+48.98
Offset 35.34ft Lt.
Ground Surface Elev. 436.90 ft

Surface Water Elev. 461.19 ft
Stream Bed Elev. 433.92 ft

Groundwater Elev.:
First Encounter 436.9 ft ▼
Upon Completion 436.9 ft ▽
After ____ **Hrs.** ____ ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very loose, gray, fine SAND, trace gravel	0		
	0	NP	
	3		
	4		
434.30	3	NP	
Weathered DOLOSTONE fragments	50/1		
--WEATHERED BEDROCK-- 432.90			
Borehole continued with rock coring.			
-5			
-10			
-15			
-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)

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 10/29/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** Illinois River Bridge South of Utica **LOGGED BY** B. Wilson

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E, 3rd **PM**

COUNTY LaSalle **DRILLING METHOD** Hollow Stem Auger **HAMMER TYPE** Automatic Hammer

STRUCT. NO. 050-0088 (Exist.) 050-0256 (Prop.)
Station 29+30.00

BORING NO. SB-08 (Wang Eng.)
Station 35+02.41
Offset 87.88ft Lt.
Ground Surface Elev. 452.40 ft

Surface Water Elev. 461.19 ft
Stream Bed Elev. 433.92 ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion 447.4 ft ▽
After ____ **Hrs.** ____ ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				Very stiff, black SILTY CLAY --TOPSOIL--
450.90	12			
	55/6	2.0 P	31.0	Very dense, brown, highly weathered DOLOSTONE, SANDSTONE and SHALE fragments --WEATHERED BEDROCK--
				Borehole continued with rock coring.
-5				
-10				
-15				
-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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 4/2/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** Illinois River Bridge South of Utica **LOGGED BY** Larry Myers

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E, 3rd **PM**

COUNTY LaSalle **DRILLING METHOD** Hollow Stem Auger **HAMMER TYPE** CME Automatic

STRUCT. NO. 050-0088 (Exist.) 050-0256 (Prop.)
Station 29+30.00

BORING NO. 1 (South Abut.)
Station 35+39.00
Offset 7.00ft Lt.
Ground Surface Elev. 498.99 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion ft
After Hrs. ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material
				Cored HMA & Concrete Pavement, White CA Fill, Brown & Gray Silty Clay Loam Till Fill
496.49				
	4			Very Stiff to Hard Brown, Gray, Pink, Silty Clay Loam & Silty Clay Loam Till Fill with some Coarse Sand Layers & Black Silty Clay Loam Topsoil @ 6'
	5 7	3.8 B	15.8	
-5				
	4			
	5 8	4.0 B	21.6	
491.49				
	4			Loose Brown Fine to Coarse Clean Fill Sand
	4 5		4.1	
-10				
	2			
	3 4		4.2	
	3			
	4 5		4.4	
484.49				
-15				Medium Brown Fine to Coarse Clean Fill Sand
	6			
	8 11		3.9	
	5			
	5 8		12.9	
-20				
	4			Medium Brown Fine to Coarse Clean Fill Sand *(continued)*
	5 7		4.3	
	4			
	6 9		4.6	
-25				
	6			
	8 11		5.4	
	6			
	7 10		4.7	
-30				
	5			
	7 9		5.4	
	6			
	8 10		4.7	
464.49				
-35				Dense Brown Fine to Coarse Clean Fill Sand
	10			
	18 20		5.7	
	10			
	20 22		4.2	
458.99 -40				

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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 4/2/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** Illinois River Bridge South of Utica **LOGGED BY** Larry Myers

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E, 3rd **PM**

COUNTY LaSalle **DRILLING METHOD** Hollow Stem Auger **HAMMER TYPE** CME Automatic

STRUCT. NO. 050-0088 (Exist.) 050-0256 (Prop.)
Station 29+30.00

BORING NO. 1 (South Abut.)
Station 35+39.00
Offset 7.00ft Lt.
Ground Surface Elev. 498.99 ft

Surface Water Elev. ____ ft
Stream Bed Elev. ____ ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion ____ ft
After ____ **Hrs.** ____ ft

Material	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Dense Brown Fine to Coarse Clean Fill Sand with Very Minor Fine Gravel Pieces		13		
		21		5.2
		29		
		18		
		24		4.2
		29		
	-45	22		
		28		4.1
		33		
		21		
		30		5.6
		28		
	-50	21		
	448.49			
Dense Gray Limestone	448.24	100/3"		1.0
End of Boring				
	-55			
	-60			

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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 10/29/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** Illinois River Bridge South of Utica **LOGGED BY** B. Wilson

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E, 3rd **PM**

COUNTY LaSalle **DRILLING METHOD** Hollow Stem Auger **HAMMER TYPE** Automatic Hammer

STRUCT. NO. 050-0088 (Exist.) 050-0256 (Prop.)
Station 29+30.00

BORING NO. SB-09 (Wang Eng.)
Station 36+98.48
Offset 134.06ft Lt.
Ground Surface Elev. 449.40 ft

Surface Water Elev. 461.19 ft
Stream Bed Elev. 433.92 ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion Dry ft
After ____ **Hrs.** ____ ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material Description
				15-inch thick, dark brown SILTY CLAY
				--TOPSOIL-- 448.15
	4			
	5	1.5	17.0	Medium stiff to stiff, brown and gray CLAY LOAM, trace gravel
	4	P		
	3			
	3	0.8	23.0	
-5	3	P		
				443.40
	18			Very dense, brown and gray, weathered DOLOSTONE fragments
	50/4		12.0	
				--WEATHERED BEDROCK-- 441.90
				--AUGER REFUSAL--
				End of Boring
-10				
-15				
-20				
-25				
-30				
-35				
-40				

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)

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 10/29/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** Illinois River Bridge South of Utica **LOGGED BY** B. Wilson

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E, 3rd **PM**

COUNTY LaSalle **DRILLING METHOD** Hollow Stem Auger **HAMMER TYPE** Automatic Hammer

STRUCT. NO. 050-0088 (Exist.) 050-0256 (Prop.)
Station 29+30.00

BORING NO. SB-10 (Wang Eng.)
Station 39+03.18
Offset 133.71ft Lt.
Ground Surface Elev. 448.90 ft

Surface Water Elev. 461.19 ft
Stream Bed Elev. 433.92 ft

Groundwater Elev.:
First Encounter 441.4 ft ▼
Upon Completion 441.9 ft ▽
After ____ **Hrs.** ____ ft

DEPTH (ft)	Material	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
	15-inch thick, dark brown SILTY CLAY			
	--TOPSOIL-- 447.40	3		
	Stiff, brown and gray SILTY CLAY, trace sand seams	3 6	1.5 P	18.0
	445.90			
	Medium stiff, dark brown CLAY LOAM	2		
		3 3	0.5 P	23.0
-5				
	442.73	2		
	Very dense, brown SANDY GRAVEL, some weathered DOLOSTONE fragments ▽▼	3 49		12.0
	--WEATHERED BEDROCK--			
		8		
		55/5		22.0
	--AUGER REFUSAL-- 438.90			
-10	End of Boring			
-15				
-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)

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 10/24/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** (Samples 7, 8 & 9) **LOGGED BY** Larry Myers

SECTION (1)BR&I **LOCATION** SE 1/4, **SEC.** 17, **TWP.** 33N, **RNG.** 2E

COUNTY LaSalle **DRILLING METHOD** Hollow Stem Auger **HAMMER TYPE** CME Automatic

STRUCT. NO. _____
Station _____

BORING NO. 2 (IL 178)
Station 41+00 (Exist.)
Offset 15.00ft Lt.
Ground Surface Elev. 478.19 ft

Surface Water Elev. _____ ft
Stream Bed Elev. _____ ft

Groundwater Elev.:
First Encounter Dry ft
Upon Completion Dry ft
After _____ **Hrs.** _____ ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Core HMA, Concrete, Augered			
Brown Silty Clay Loam Till Fill			
475.69			
Hard Brown Silty Clay Loam Till & Gray Silty Clay Loam Till Fill	4		
	5 6	4.8 S	16.0
-5			
	3		
	4 5	4.2 S	17.7
	6		
	8 8	4.6 S	9.3
-10			
	4		
	6 8	4.6 S	11.0
	6		
	8 9	5.1 S	13.3
-15			
	4		
	5 5	4.1 S	22.3
	4		
	7 5	4.0 P	16.8
-20			

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Hard Brown Silty Clay Loam Till & Gray Silty Clay Loam Till Fill *(continued)*	5		
	6 7	4.6 S	18.1
	3		
	4 4	4.0 P	18.1
-25			
	4		
	5 7	4.0 P	21.7
451.19			
Hard Black Topsoil - Appears Reworked	5		
	5 6	4.0 P	22.3
449.19			
End of Boring			
-30			
-35			
-40			

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)

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SOIL BORING LOG

Date 10/24/12

ROUTE IL 178 (FAS 1279) **DESCRIPTION** (Sample 6) **LOGGED BY** Larry Myers

SECTION (1)BR&I **LOCATION** NE 1/4, **SEC.** 20, **TWP.** 33N, **RNG.** 2E

COUNTY LaSalle **DRILLING METHOD** Push **HAMMER TYPE** CME Automatic

STRUCT. NO. _____
Station _____

BORING NO. 1 (IL 178)
Station 47+00 (Exist.)
Offset 28.00ft Lt.
Ground Surface Elev. 483.93 **ft**

Surface Water Elev. _____ **ft**
Stream Bed Elev. _____ **ft**

Groundwater Elev.:
First Encounter Dry **ft**
Upon Completion _____ **ft**
After _____ **Hrs.** _____ **ft**

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
HMA & Concrete Pavement 483.18				
White CA Fill 482.68				
Brown Silty Clay Loam Till Fill	-5			
477.93				
End of Boring	-10		4.0 P	19.2
	-15			
	-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)

APPENDIX D

Wang Engineering
wangeng@wangeng.com
Telephone:
Fax:

BORING LOG SB-03

WEI Job No.: 107-08-01

Client **Parsons Brinckerhoff**
Project **IL 178 Over Illinois River**
Location **SE 1/4 Section 17, T 33N, R 2E of 3rd PM**

Datum: NAVD88
Elevation: 457.20 ft
North: 1699208.33 ft
East: 798328.27 ft
Station: 20+05.83
Offset: 65.3 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	456.5	8-inch thick, black SILTY CLAY, trace roots						
		--TOPSOIL--						
		Very dense, brown and gray, weathered DOLOSTONE fragments			1	15 50/5	NP	
	453.7	--WEATHERED BEDROCK--						
		--AUGER REFUSAL--						
		Boring terminated at 3.50 ft	5					
			10					
			15					
			20					
			25					

GENERAL NOTES

Begin Drilling **10-24-2012** Complete Drilling **10-24-2012**
Drilling Contractor **Wang** Drill Rig **D-50 TMR**
Driller **R&N** Logger **B. Wilson** Checked by **C. Marin**
Drilling Method **3.25-inch 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 1070801.GPJ WANGENG.GDT 1/17/13

Wang Engineering
wangeng@wangeng.com
Telephone:
Fax:

BORING LOG SB-04

WEI Job No.: 107-08-01

Client **Parsons Brinckerhoff**
Project **IL 178 Over Illinois River**
Location **SE 1/4 Section 17, T 33N, R 2E of 3rd PM**

Datum: NAVD88
Elevation: 456.40 ft
North: 1699011.55 ft
East: 798328.18 ft
Station: 22+02.54
Offset: 70.67 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	455.4	12-inch thick, dark brown SILTY CLAY						
		--TOPSOIL--						
		Medium dense to very dense, brown and gray, weathered DOLOSTONE fragments			1	4 7 7	NP	26
		--WEATHERED BEDROCK--			2	16 50/2	NP	8
	451.9	--AUGER REFUSAL--						
		Boring terminated at 4.50 ft	5					
			10					
			15					
			20					
			25					

GENERAL NOTES

Begin Drilling **10-24-2012** Complete Drilling **10-24-2012**
Drilling Contractor **Wang** Drill Rig **D-50 TMR**
Driller **R&N** Logger **B. Wilson** Checked by **C. Marin**
Drilling Method **3.25-inch 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 1070801.GPJ WANGENG.GDT 1/17/13

Wang Engineering
wangeng@wangeng.com
Telephone:
Fax:

BORING LOG SB-05

WEI Job No.: 107-08-01

Client **Parsons Brinckerhoff**
Project **IL 178 Over Illinois River**
Location **SE 1/4 Section 17, T 33N, R 2E of 3rd PM**

Datum: NAVD88
Elevation: 456.00 ft
North: 1698859.29 ft
East: 798327.71 ft
Station: 23+54.75
Offset: 74.43 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	455.0	12-inch thick, brown SILTY CLAY, trace gravel and roots --TOPSOIL--			1	4 16 50/3	NP	16
	453.8	Medium dense, brown SILTY LOAM, little gravel and cinders --TRENCH FILL--						
		Very dense, brown and gray, weathered DOLOSTONE fragments --WEATHERED BEDROCK-- RECOVERY= 75% RQD= 0%	5		2	30 50/3	NP	
	449.3				1	CORE		
		Moderately weak to weak, very poor rock quality, weathered to fresh, light gray to white, bedded SANDSTONE RECOVERY= 58% RQD= 9%	10		2	CORE		
	445.7							
		Strong, poor rock quality, brown to gray, horizontally bedded, occasionally vuggy, DOLOSTONE with shale partings RECOVERY= 79% RQD= 31%	15		3	CORE		
	438.0							
		Boring terminated at 18.00 ft	20					
			25					

GENERAL NOTES

Begin Drilling **10-24-2012** Complete Drilling **10-24-2012**
Drilling Contractor **Wang** Drill Rig **D-50 TMR**
Driller **R&N** Logger **B. Wilson** Checked by **C. Marin**
Drilling Method **3.25-inch 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 1070801.GPJ WANGENG.GDT 1/17/13

Boring SB-05:
Run #1, 5.0′ to 7.0′, RECOVERY = 75%, RQD = 0%
Run #2, 7.0′ to 11.0′, RECOVERY = 58%, RQD = 9%
Run #3, 11.0′ to 18.0′, RECOVERY = 79%, RQD = 31%

BEDROCK CORE: IL ROUTE 178 OVER ILLINOIS RIVER LaSALLE COUNTY, ILLINOIS		
SCALE: GRAPHICAL	SB-05	DRAWN BY: C. MARIN CHECKED BY: LIORDACHE
Wang Engineering		1145 N. Main Street Lombard, IL 60148 www.wangeng.com
FOR PARSONS BRINCKERHOFF		107-08-01

Wang Engineering
wangeng@wangeng.com
Telephone:
Fax:

BORING LOG SB-06

WEI Job No.: 107-08-01

Client **Parsons Brinckerhoff**
Project **IL 178 Over Illinois River**
Location **SE 1/4 Section 17, T 33N, R 2E of 3rd PM**

Datum: NAVD88
Elevation: 432.90 ft
North: 1698488.26 ft
East: 798247.20 ft
Station: 27+27.87
Offset: 4.25 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	430.9	Very dense, gray, weathered DOLOSTONE fragments --WEATHERED BEDROCK--	0		1	50/4	NP	
		Strong, brownish gray to light gray, slightly weathered joints to fresh, poor to very good rock quality, horizontally bedded, horizontal greenish gray shale partings, occasionaly vuggy and cherty DOLOSTONE	5	CORE	1	CORE		
		RECOVERY=97% RQD=21%						
		RECOVERY=100% RQD=88%	10	CORE	2	CORE		
		RECOVERY=97% RQD=93%	15	CORE	3	CORE	10	
		RECOVERY=100% RQD=93%	20	CORE	4	CORE		
		RECOVERY=97% RQD=83%	25	CORE	5	CORE		
		RECOVERY=100% RQD=11%	30	CORE	6	CORE		
		RECOVERY=98% RQD=79%	35	CORE	7	CORE		
		RECOVERY=100% RQD=83%	40	CORE	8	CORE		
	390.9	Boring terminated at 42.00 ft	45					
			50					

GENERAL NOTES

Begin Drilling **12-04-2012** Complete Drilling **12-04-2012**
Drilling Contractor **Wang** Drill Rig **B-57 TMR**
Driller **R&N** Logger **F. Bozga** Checked by **C. Marin**
Drilling Method **4-inch casing; 3.25-inch roller bit; boring backfilled upon completion**

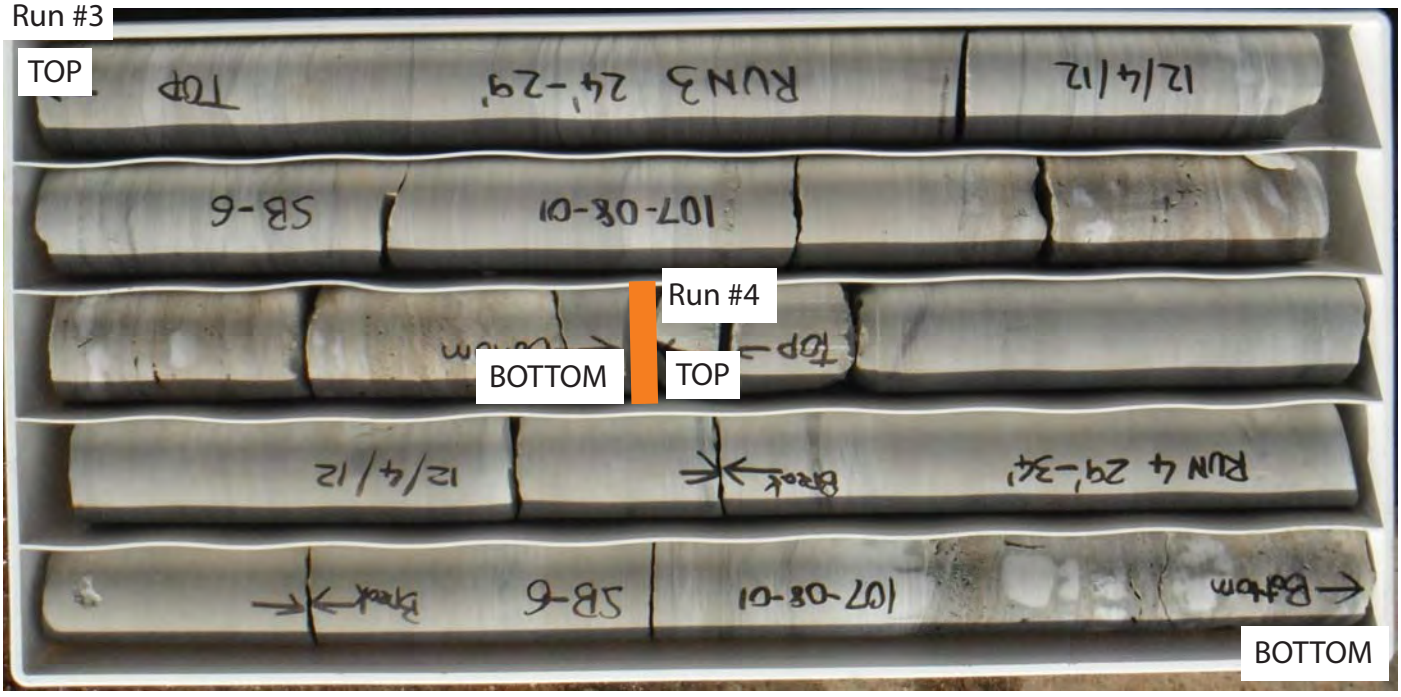
WATER LEVEL DATA

While Drilling ▽ **0.00 ft**
At Completion of Drilling ▼ **0.00 ft**
Time After Drilling **NA**
Depth to Water ▼ **NA**

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

WANGENGINC 1070801.GPJ WANGENG.GDT 1/17/13

0 3 6 9 12 inches



Boring SB-06:

Run #1: 14.0' to 19.0'; RECOVERY = 97%, RQD = 21%

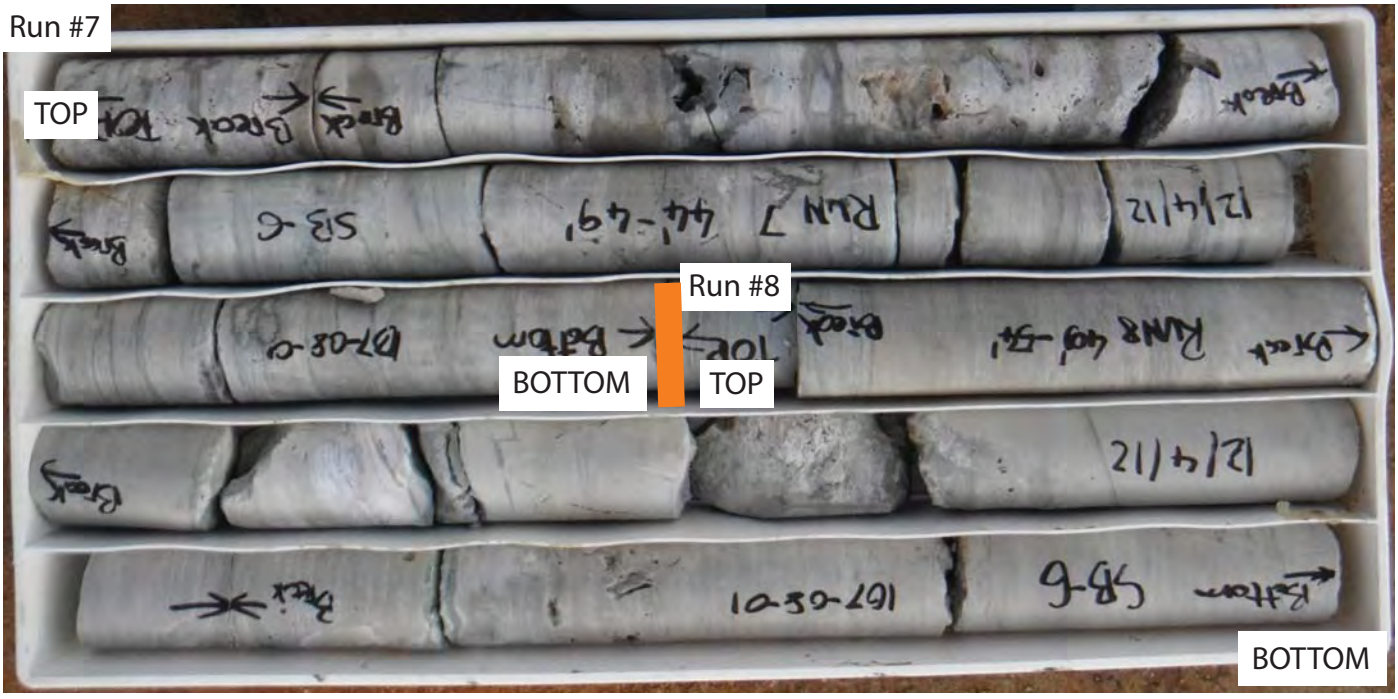
Run #2, 19.0' to 24.0'; RECOVERY = 100%, RQD = 88%

Run #3: 24.0' to 29.0'; RECOVERY = 97%, RQD = 93%

Run #4, 29.0' to 34.0'; RECOVERY = 100%, RQD = 93%

BEDROCK CORE: IL ROUTE 178 OVER THE ILLINOIS RIVER, LaSALLE COUNTY, ILLINOIS		
SCALE: GRAPHICAL	SB-06	DRAWN BY: C.Davis CHECKED BY:C. Marin
Wang Engineering		1145 N. Main Street Lombard, IL 60148 www.wangeng.com
FOR PARSONS BRINCKERHOFF		107-08-01

0 3 6 9 12 inches



Boring SB-06:
Run #5: 34.0' to 39.0'; RECOVERY = 97%, RQD = 83%
Run #6, 39.0' to 44.0'; RECOVERY = 100%, RQD = 11%
Run #7: 44.0' to 49.0'; RECOVERY = 98%, RQD = 78%
Run #8, 49.0' to 54.0'; RECOVERY = 100%, RQD = 83%

BEDROCK CORE: IL ROUTE 178 OVER THE ILLINOIS RIVER, LaSALLE COUNTY, ILLINOIS		
SCALE: GRAPHICAL	SB-06	DRAWN BY: C.Davis CHECKED BY: C. Marin
Wang Engineering		1145 N. Main Street Lombard, IL 60148 www.wangeng.com
FOR PARSONS BRINCKERHOFF		107-08-01

Wang Engineering
wangeng@wangeng.com
Telephone:
Fax:

BORING LOG SB-07

WEI Job No.: 107-08-01

Client **Parsons Brinckerhoff**
Project **IL 178 Over Illinois River**
Location **SE 1/4 Section 17, T 33N, R 2E of 3rd PM**

Datum: NAVD88
Elevation: 436.90 ft
North: 1698066.45 ft
East: 798266.59 ft
Station: 31+48.98
Offset: 35.34 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		Very loose, gray, fine SAND, trace gravel			1	0 0 3	NP	
					2	4 3 50/1	NP	
	434.3	Weathered DOLOSTONE fragments						
	432.9	--WEATHERED BEDROCK--						
		Strong, brownish gray to light gray, slightly weathered joints to fresh, poor to very good rock quality, horizontally bedded, horizontal greenish gray shale partings, occasionaly vuggy and cherty DOLOSTONE	5		1	CORE		
		RECOVERY=77% RQD=22%						
			10		2	CORE		
		RECOVERY=100% RQD=23%						
			15		3	CORE		
		RECOVERY=100% RQD=93%						
			20		4	CORE		
		RECOVERY=98% RQD=81%						
			25			C		
		RECOVERY=93% RQD=60%			5	CORE		
			30		6	CORE		
		RECOVERY=100% RQD=43%						
			35		7	CORE		
		RECOVERY=87% RQD=62%						
			40		8	CORE		
		RECOVERY=93% RQD=85%						
	392.9	Boring terminated at 44.00 ft	45					
			50					

GENERAL NOTES

Begin Drilling **12-03-2012** Complete Drilling **12-03-2012**
Drilling Contractor **Wang** Drill Rig **B-57 TMR**
Driller **R&N** Logger **F. Bozga** Checked by **C. Marin**
Drilling Method **4-inch casing; 3.25-inch roller bit; boring backfilled upon completion**

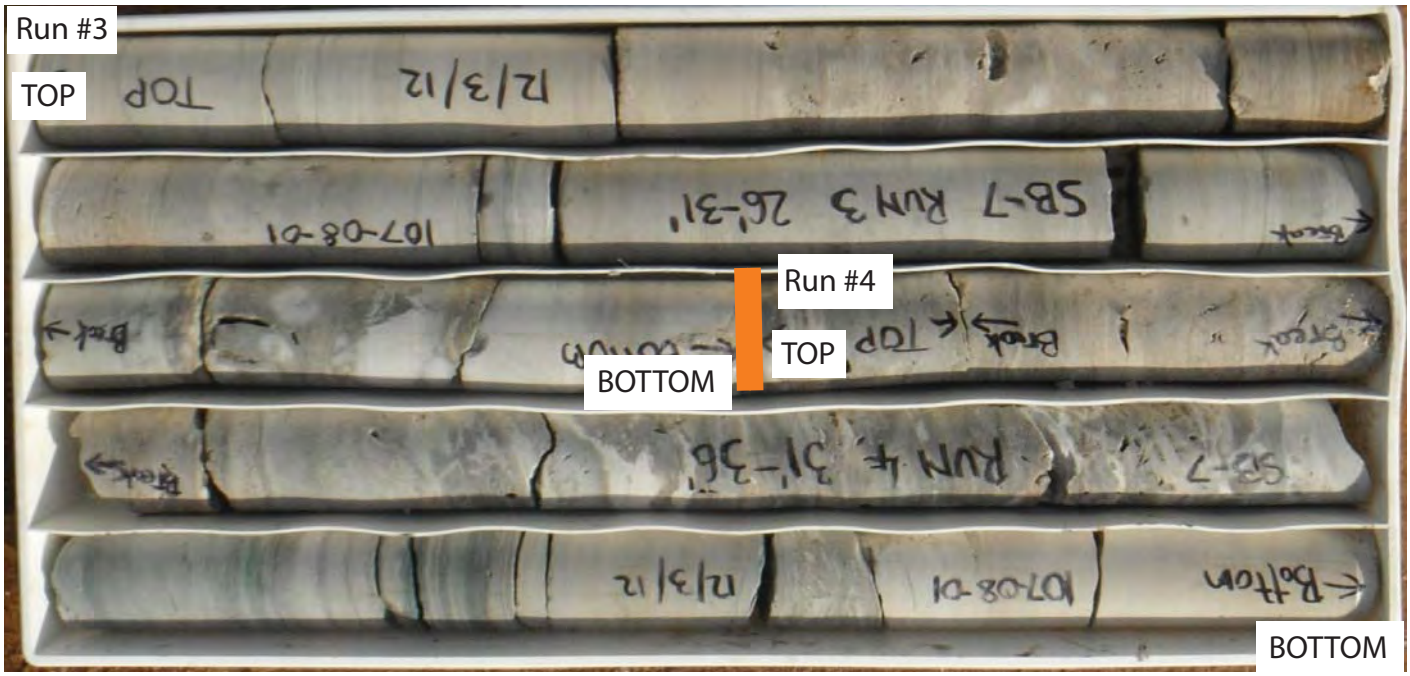
WATER LEVEL DATA

While Drilling ▽ **0.00 ft**
At Completion of Drilling ▼ **0.00 ft**
Time After Drilling **NA**
Depth to Water ▼ **NA**

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

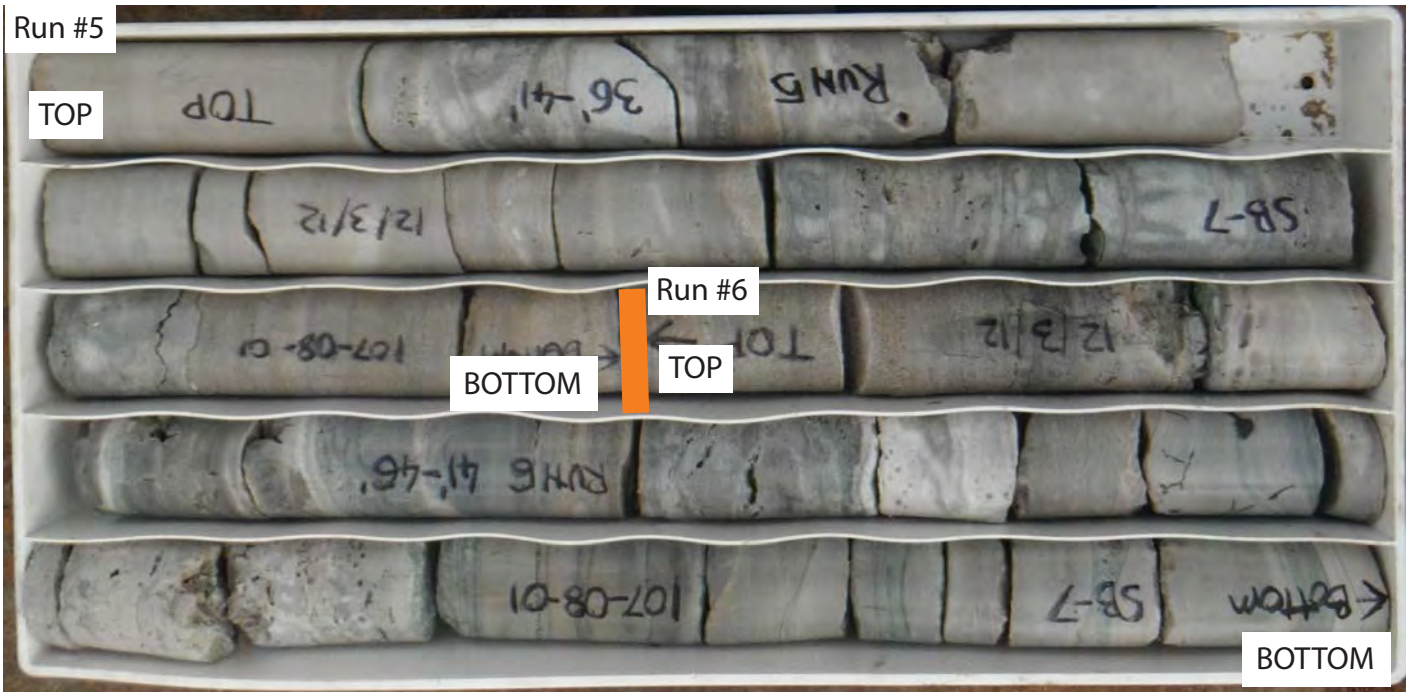
WANGENGINC 1070801.GPJ WANGENG.GDT 1/17/13

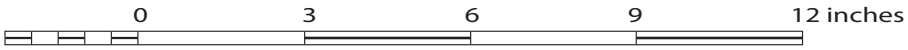
0 3 6 9 12 inches

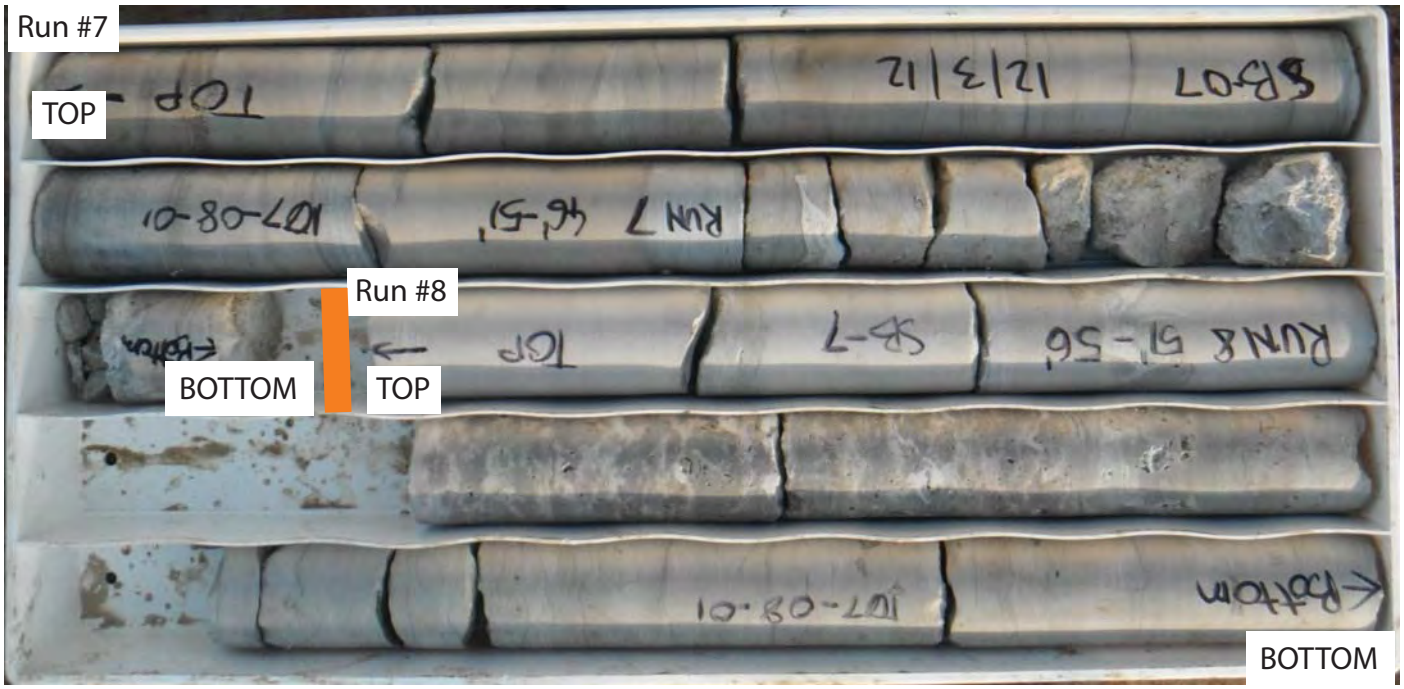


Boring SB-07:
Run #1: 16.0' to 21.0'; RECOVERY = 77%, RQD = 22%
Run #2, 21.0' to 26.0'; RECOVERY = 100%, RQD = 23%
Run #3: 26.0' to 31.0'; RECOVERY = 100%, RQD = 93%
Run #4, 31.0' to 36.0'; RECOVERY = 98%, RQD = 81%

BEDROCK CORE: IL ROUTE 178 OVER THE ILLINOIS RIVER, LaSALLE COUNTY, ILLINOIS		
SCALE: GRAPHICAL	SB-07	DRAWN BY: C.Davis CHECKED BY: C. Marin
Wang Engineering		1145 N. Main Street Lombard, IL 60148 www.wangeng.com
FOR PARSONS BRINCKERHOFF		107-08-01







Boring SB-07:
Run #5: 36.0' to 41.0'; RECOVERY = 93%, RQD = 60%
Run #6, 41.0' to 46.0'; RECOVERY = 100%, RQD = 43%
Run #7: 46.0' to 51.0'; RECOVERY = 87%, RQD = 62%
Run #8, 51.0' to 56.0'; RECOVERY = 93%, RQD = 85%

BEDROCK CORE: IL ROUTE 178 OVER THE ILLINOIS RIVER, LaSALLE COUNTY, ILLINOIS		
SCALE: GRAPHICAL	SB-07	DRAWN BY: C. Davis CHECKED BY: C. Marin
Wang Engineering		1145 N. Main Street Lombard, IL 60148 www.wangeng.com
FOR PARSONS BRINCKERHOFF		107-08-01

Wang Engineering
wangeng@wangeng.com
Telephone:
Fax:

BORING LOG SB-08

WEI Job No.: 107-08-01

Client **Parsons Brinckerhoff**
Project **IL 178 Over Illinois River**
Location **SE 1/4 Section 17, T 33N, R 2E of 3rd PM**

Datum: NAVD88
Elevation: 452.40 ft
North: 1697711.70 ft
East: 798309.30 ft
Station: 35+02.41
Offset: 87.88 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		Very stiff, black SILTY CLAY --TOPSOIL--						
	450.9				1	12 55/6	2.00 P	31
		Very dense, brown, highly weathered DOLOSTONE, SANDSTONE and SHALE fragments --WEATHERED BEDROCK-- --AUGER REFUSAL-- RECOVERY= 67% RQD= 17%	5		1	CORE		
		RECOVERY= 67% RQD= 0%			2	CORE		
		RECOVERY= 83% RQD= 34%			3	CORE		
	442.9	Moderately strong, poor rock quality, light gray, horizontally bedded DOLOSTONE with shale partings	10					
	440.9	Moderately strong, fair rock quality, light gray SANDSTONE RECOVERY= 85% RQD= 53%			4	CORE		
	439.4	Strong, fair rock quality, light gray, horizontally bedded, occasionally vuggy DOLOSTONE	15					
	436.9	Boring terminated at 15.50 ft						
			20					
			25					

GENERAL NOTES

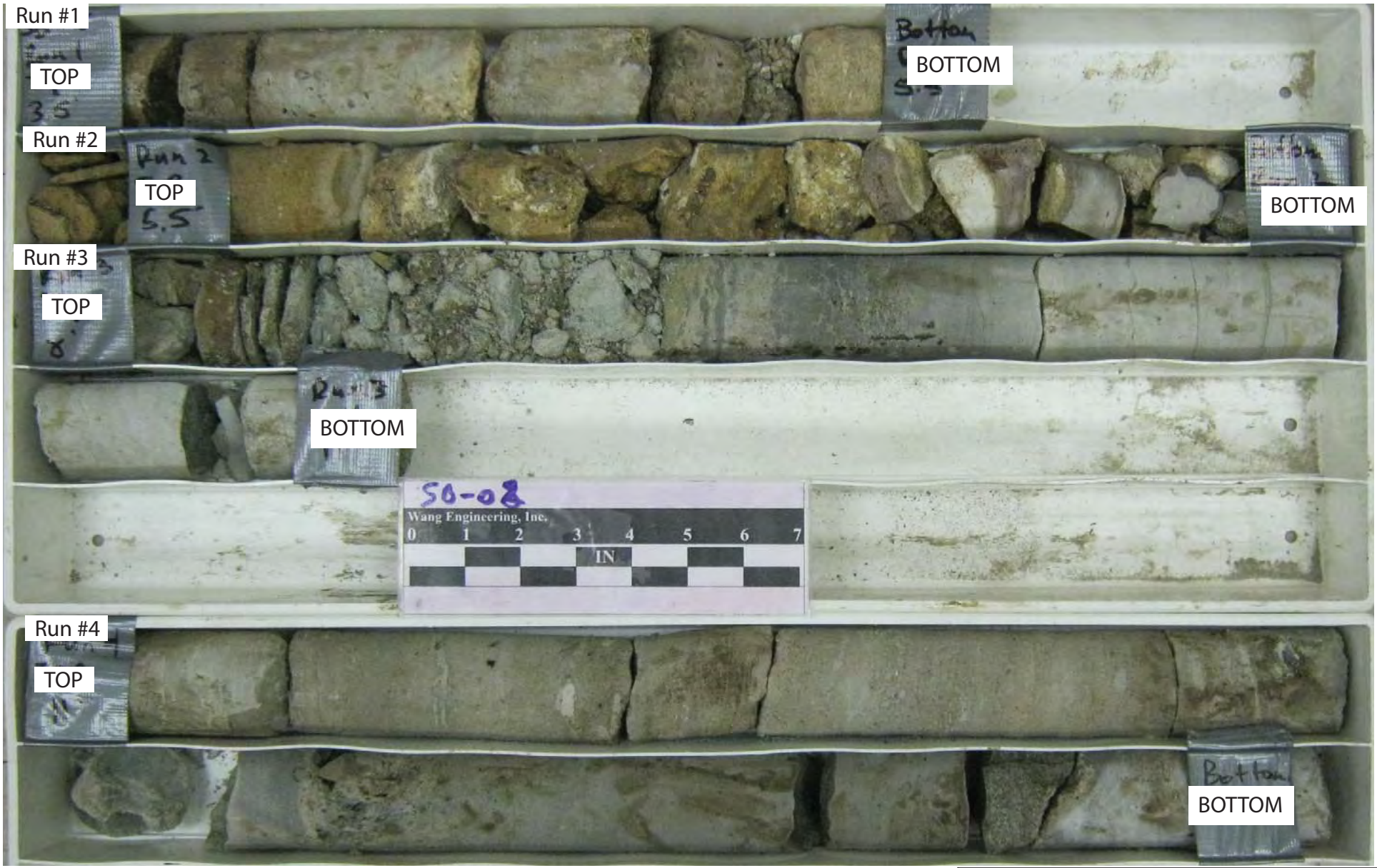
Begin Drilling **10-29-2012** Complete Drilling **10-29-2012**
Drilling Contractor **Wang** Drill Rig **D-50 TMR**
Driller **K&K** Logger **B. Wilson** Checked by **C. Marin**
Drilling Method **3.25-inch IDA HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ▽ **DRY**
At Completion of Drilling ▼ **5.00 ft**
Time After Drilling **NA**
Depth to Water ▼ **NA**

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

WANGENGINC 1070801.GPJ WANGENG.GDT 1/17/13



Boring SB-08:
Run #1, 3.5' to 5.5', RECOVERY = 67%, RQD = 17%
Run #2, 5.5' to 8.0', RECOVERY = 67%, RQD = 0%
Run #3, 8.0' to 11.0', RECOVERY = 83%, RQD = 34%
Run #4, 11.0' to 15.5', RECOVERY = 85%, RQD = 53%

BEDROCK CORE: IL ROUTE 178 OVER ILLINOIS RIVER
LaSALLE COUNTY, ILLINOIS

SCALE: GRAPHICAL	SB-08	DRAWN BY: C. MARIN CHECKED BY: LIORDACHE

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

FOR PARSONS BRINCKERHOFF | 107-08-01

Wang Engineering
wangeng@wangeng.com
Telephone:
Fax:

BORING LOG SB-09

WEI Job No.: 107-08-01

Client **Parsons Brinckerhoff**
Project **IL 178 Over Illinois River**
Location **SE 1/4 Section 17, T 33N, R 2E of 3rd PM**

Datum: NAVD88
Elevation: 449.40 ft
North: 1697512.28 ft
East: 798348.61 ft
Station: 36+98.48
Offset: 134.06 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	448.2	15-inch thick, dark brown SILTY CLAY --TOPSOIL--						
		Medium stiff to stiff, brown and gray CLAY LOAM, trace gravel			1	4 5 4	1.50 P	17
			5		2	3 3 3	0.75 P	23
	443.4							
		Very dense, brown and gray, weathered DOLOSTONE fragments			3	18 50/4		12
	441.9	--WEATHERED BEDROCK-- --AUGER REFUSAL--						
		Boring terminated at 7.50 ft	10					
			15					
			20					
			25					

GENERAL NOTES

Begin Drilling **10-29-2012** Complete Drilling **10-29-2012**
Drilling Contractor **Wang** Drill Rig **D-50 TMR**
Driller **K&K** Logger **B. Wilson** Checked by **C. Marin**
Drilling Method **3.25-inch 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 1070801.GPJ WANGENG.GDT 1/17/13

Wang Engineering
wangeng@wangeng.com
Telephone:
Fax:

BORING LOG SB-10

WEI Job No.: 107-08-01

Client **Parsons Brinckerhoff**
Project **IL 178 Over Illinois River**
Location **SE 1/4 Section 17, T 33N, R 2E of 3rd PM**

Datum: NAVD88
Elevation: 448.90 ft
North: 1697305.17 ft
East: 798337.01 ft
Station: 39+03.18
Offset: 133.71 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		15-inch thick, dark brown SILTY CLAY						
	447.4	--TOPSOIL--						
		Stiff, brown and gray SILTY CLAY, trace sand seams			1	3 3 6	1.50 P	18
	445.9	Medium stiff, dark brown CLAY LOAM			2	2 3 3	0.50 P	23
	442.7	Very dense, brown SANDY GRAVEL, some weathered DOLOSTONE fragments	5		3	2 3 49		12
		--WEATHERED BEDROCK--			4	8 55/5		22
	438.9	--AUGER REFUSAL--	10					
		Boring terminated at 10.00 ft						
			15					
			20					
			25					

GENERAL NOTES

Begin Drilling **10-29-2012** Complete Drilling **10-29-2012**
Drilling Contractor **Wang** Drill Rig **D-50 TMR**
Driller **K&K** Logger **B. Wilson** Checked by **C. Marin**
Drilling Method **3.25-inch IDA HSA; boring backfilled upon completion**

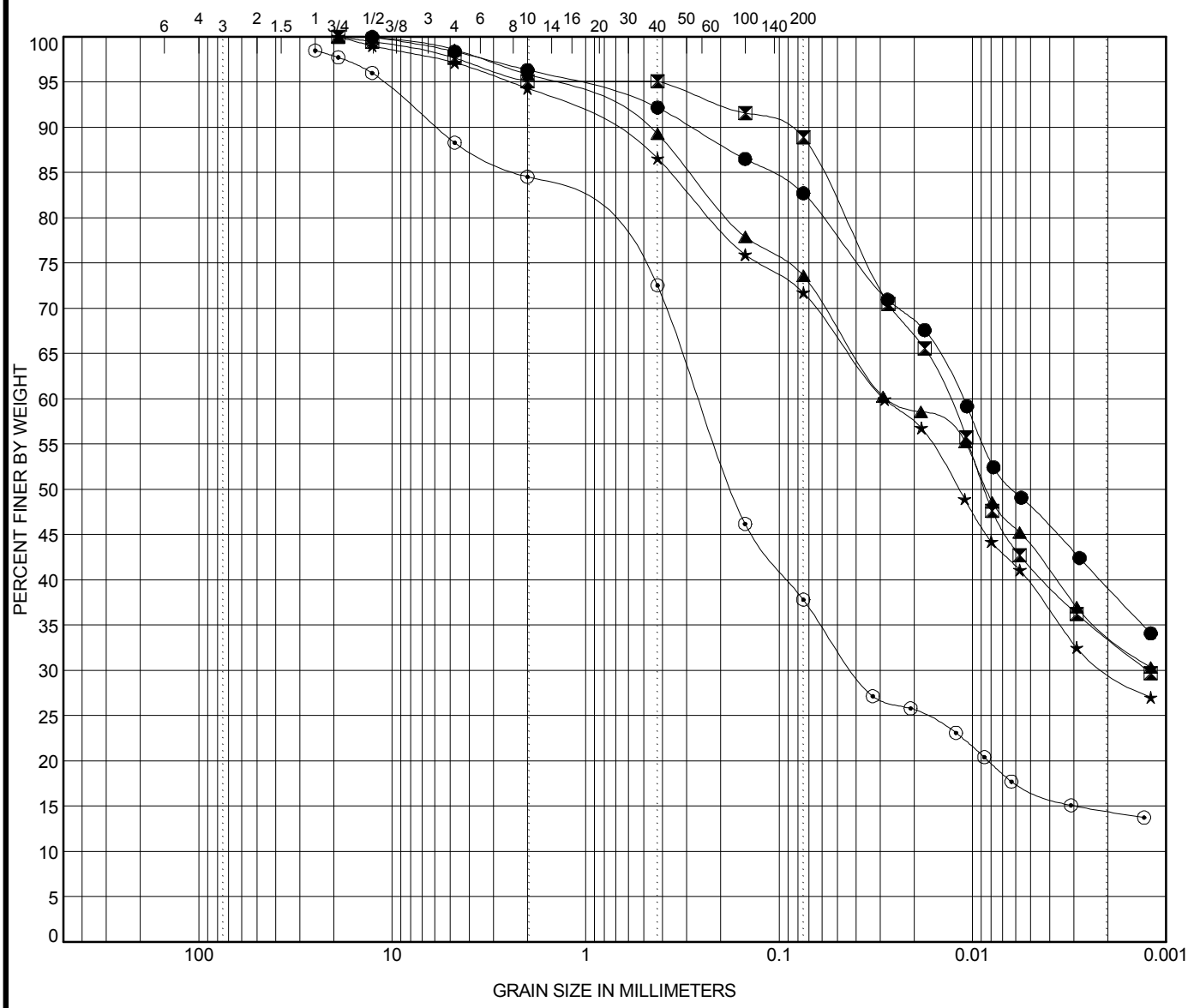
WATER LEVEL DATA

While Drilling ▽ **7.50 ft**
At Completion of Drilling ▼ **7.00 ft**
Time After Drilling **NA**
Depth to Water ▼ **NA**

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

WANGENGINC 1070801.GPJ WANGENG.GDT 1/17/13

APPENDIX E



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	1	1.50	A-6 (15) CLAY	35.4	15.6	19.8		
⊠	2	2.50	A-6 (15) SILTY CLAY	32.3	14.4	17.9		
▲	2	10.00	A-6 (10) CLAY	31.3	15.1	16.2		
★	2	20.00	A-6 (7) CLAY	28.9	15.7	13.2		
⊙	3	2.50	A-4 (0) SANDY LOAM	24.3	15.0	9.3		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	1	1.50	12.7	0.011			3.7	13.6	43.6	39.1
⊠	2	2.50	19	0.013	0.001		4.9	6.2	55.4	33.5
▲	2	10.00	19	0.027			4.2	22.2	39.4	34.2
★	2	20.00	19	0.029	0.002		5.7	22.6	41.6	30.2
⊙	3	2.50	25	0.259	0.041		14.0	46.7	23.4	14.4

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

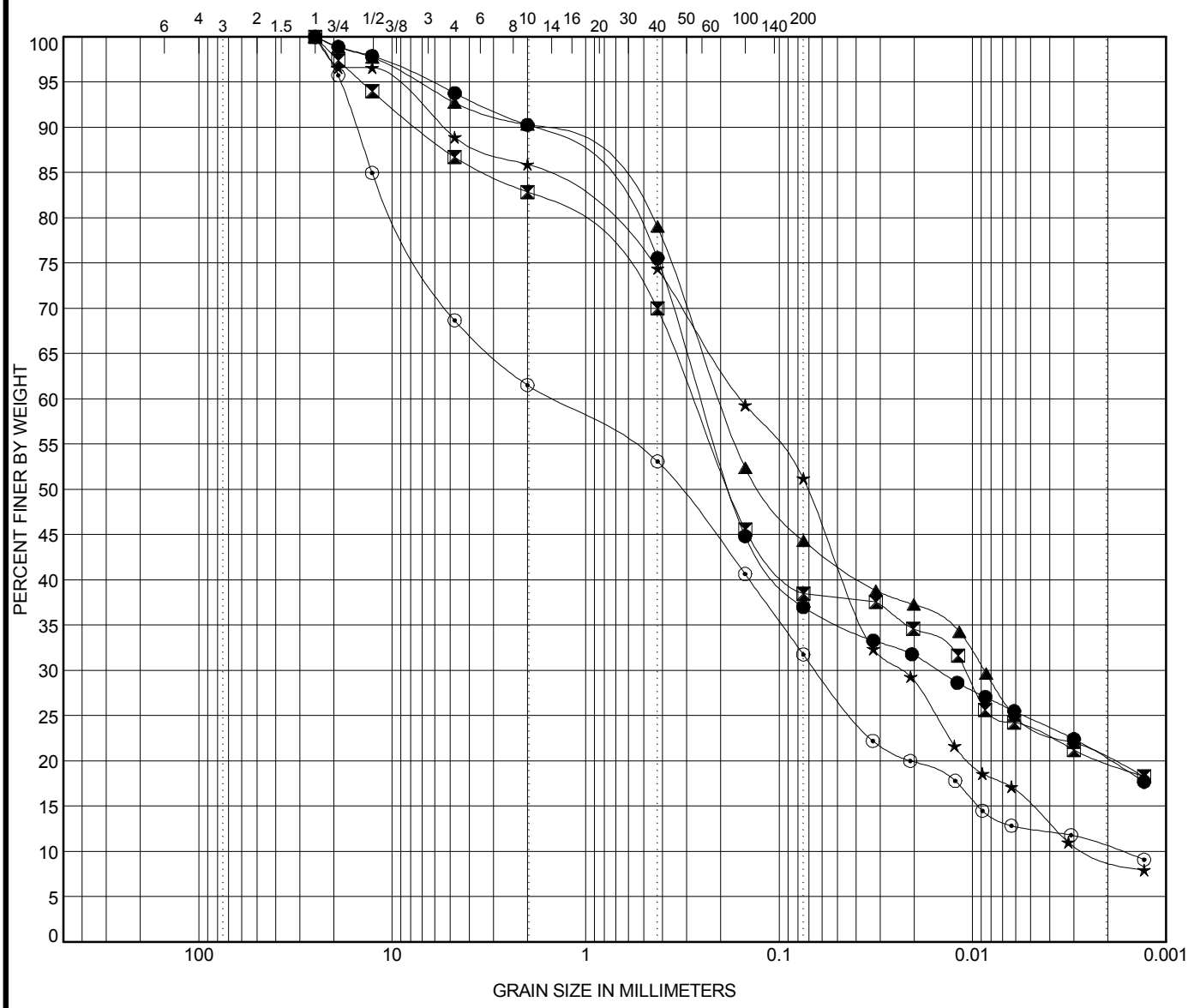
IDH GRAIN SIZE DISTRIBUTION

Route: IL 178 (FAS 1279)

Section: (1)BR&I

County: LaSalle

GRAIN SIZE IDH 3-18-11 UTICA RIVER BRIDGE, IL 178 LINE BORINGS.GPJ IL_DOT.GDT 7/5/13



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	3	10.00	**A-4 (0) SANDY CLAY LOAM**	20.1	12.0	8.1		
⊠	3	20.00	**A-4 (0) SANDY LOAM**	22.6	14.3	8.3		
▲	3	30.00	**A-4 (1) SANDY CLAY LOAM**	24.7	14.7	10.0		
★	4	0.00	**A-6 (3) LOAM**	33.8	23.0	10.8	1.43	66.34
⊙	4	1.50	**A-2-4 (0) SANDY LOAM**	20.4	18.7	1.7	1.57	868.48

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	3	10.00	25	0.251	0.015		9.7	53.3	16.9	20.1
⊠	3	20.00	25	0.278	0.011		17.1	44.4	18.6	19.8
▲	3	30.00	25	0.202	0.009		9.7	46.0	24.1	20.2
★	4	0.00	25	0.157	0.023	0.002	14.1	34.7	41.8	9.4
⊙	4	1.50	25	1.512	0.064	0.002	38.5	29.8	21.3	10.4

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

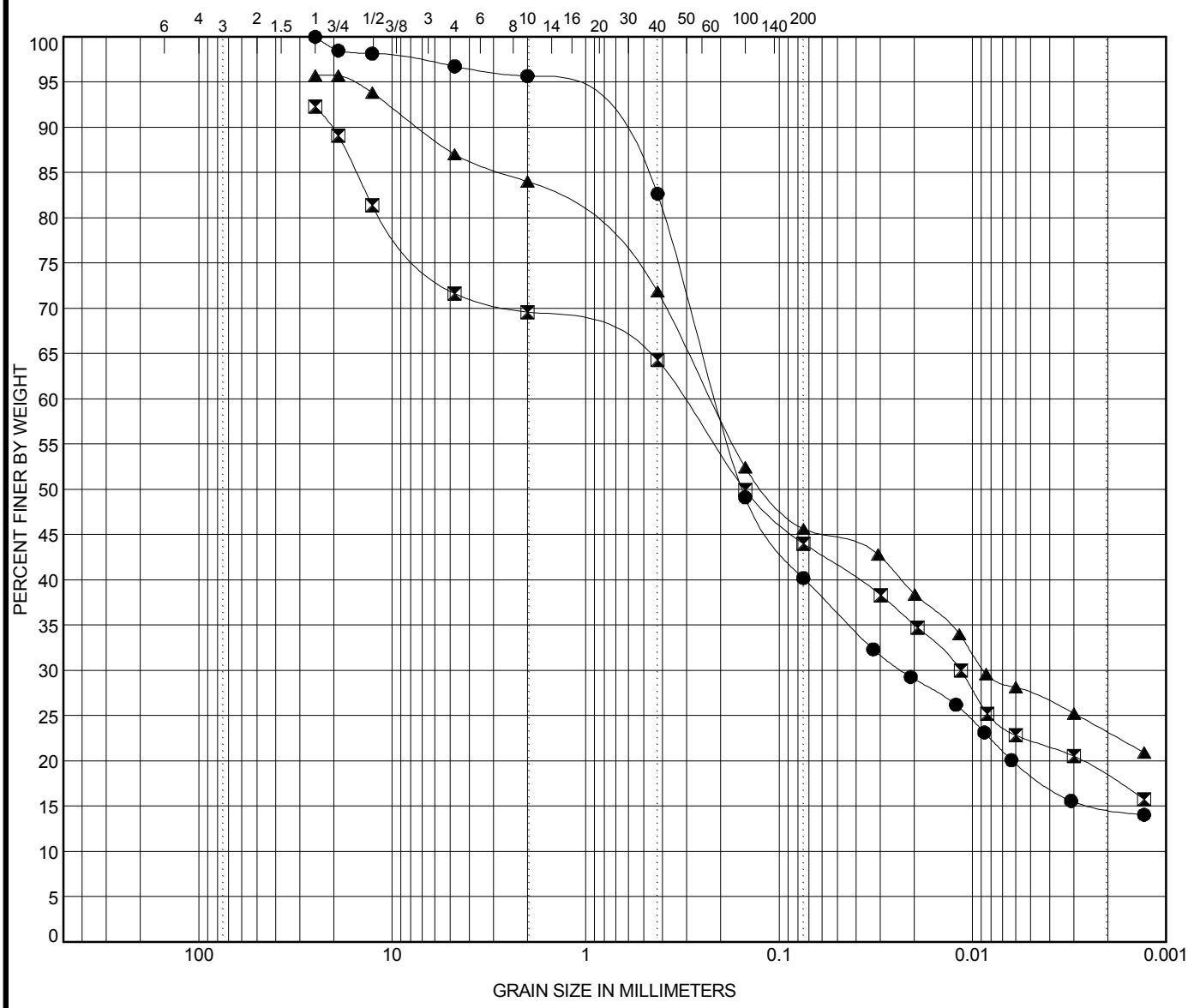
IDH GRAIN SIZE DISTRIBUTION

Route: IL 178 (FAS 1279)

Section: (1)BR&I

County: LaSalle

GRAIN_SIZE_IDH_3-18-11_UTICA RIVER BRIDGE, IL 178 LINE BORINGS.GPJ IL_DOT.GDT 7/5/13



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	6	1.00	**A-6 (2) SANDY LOAM**	**29.6**	**16.3**	**13.3**		
⊠	7	0.00	**A-6 (3) SANDY LOAM**	**32.4**	**18.3**	**14.1**		
▲	8	0.00	**A-6 (4) SANDY CLAY LOAM**	**36.6**	**19.6**	**17.0**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	6	1.00	**25**	**0.21**	**0.023**		**4.3**	**55.5**	**25.4**	**14.8**
⊠	7	0.00	**25**	**0.311**	**0.012**		**22.7**	**25.6**	**25.8**	**18.2**
▲	8	0.00	**25**	**0.225**	**0.009**		**11.7**	**38.4**	**22.5**	**23.2**

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

IDH GRAIN SIZE DISTRIBUTION

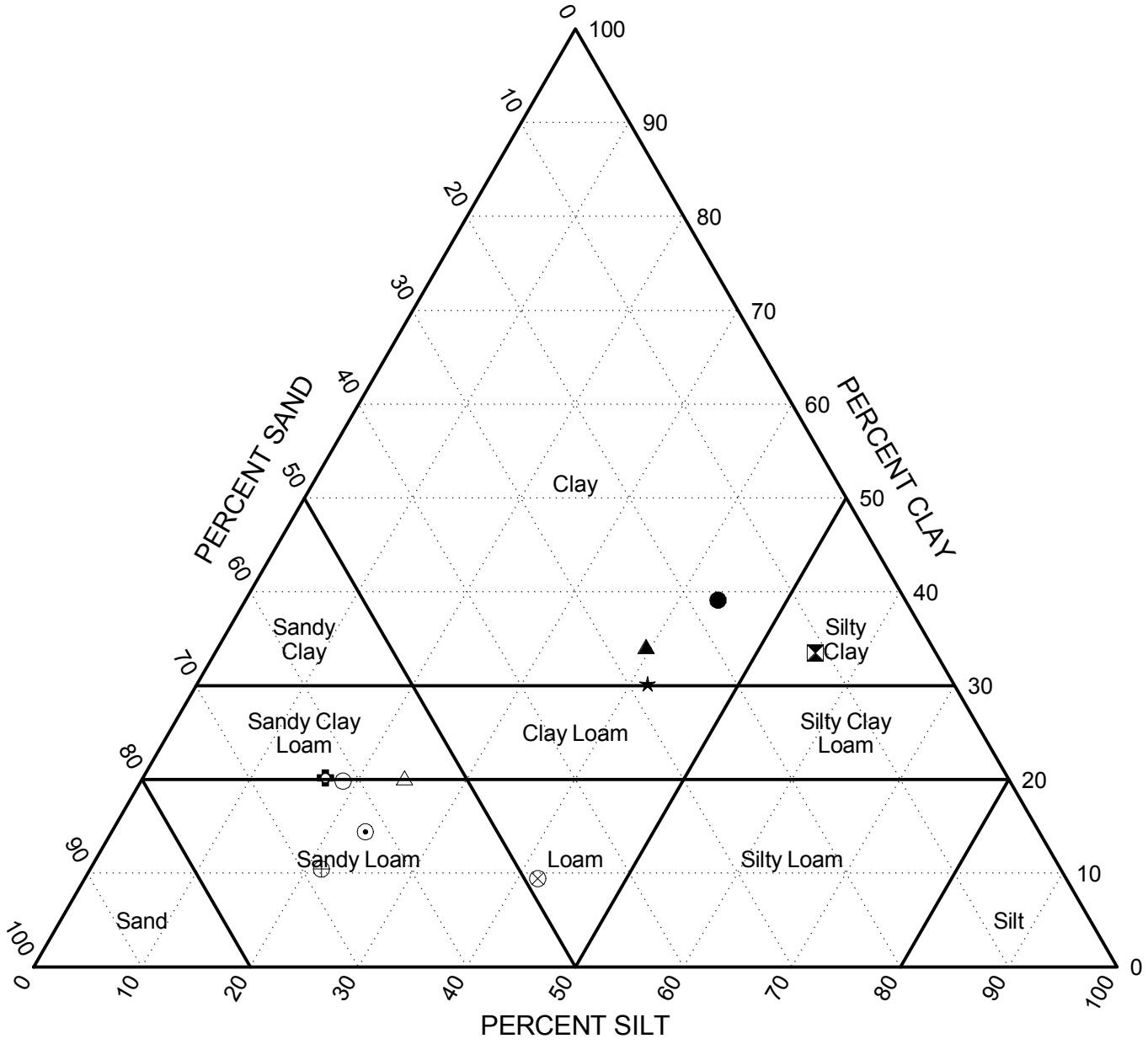
Route: IL 178 (FAS 1279)

Section: (1)BR&I

County: LaSalle

GRAIN_SIZE_IDH_3-18-11_UTICA RIVER BRIDGE, IL 178 LINE BORINGS.GPJ IL_DOT.GDT 7/5/13

APPENDIX F



	Borehole	Station	Offset	Depth (ft)	Classification
●	**1**	**47+00 (Exist.)**	**28.00ft Lt.**	**1.50**	**A-6 (15) CLAY**
⧓	**2**	**41+00 (Exist.)**	**15.00ft Lt.**	**2.50**	**A-6 (15) SILTY CLAY**
▲	**2**	**41+00 (Exist.)**	**15.00ft Lt.**	**10.00**	**A-6 (10) CLAY**
★	**2**	**41+00 (Exist.)**	**15.00ft Lt.**	**20.00**	**A-6 (7) CLAY**
⊙	**3**	**21+00 (Exist.)**	**15.00ft Lt.**	**2.50**	**A-4 (0) SANDY LOAM**
✿	**3**	**21+00 (Exist.)**	**15.00ft Lt.**	**10.00**	**A-4 (0) SANDY CLAY LOAM**
○	**3**	**21+00 (Exist.)**	**15.00ft Lt.**	**20.00**	**A-4 (0) SANDY LOAM**
△	**3**	**21+00 (Exist.)**	**15.00ft Lt.**	**30.00**	**A-4 (1) SANDY CLAY LOAM**
⊗	**4**	**18+00 (Exist.)**	**85.00ft Lt.**	**0.00**	**A-6 (3) LOAM**
⊕	**4**	**18+00 (Exist.)**	**85.00ft Lt.**	**1.50**	**A-2-4 (0) SANDY LOAM**

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

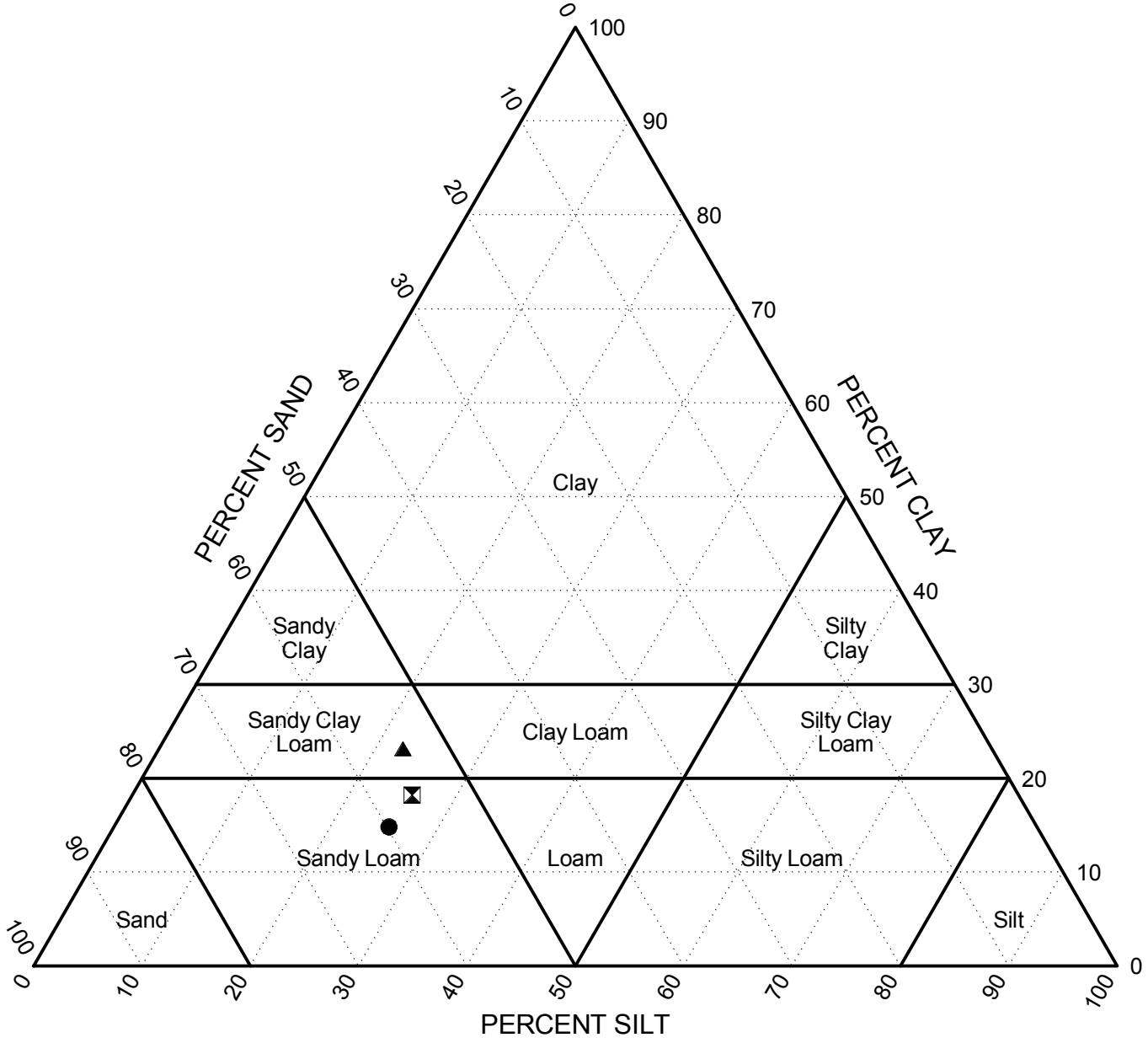
IDH Textural Classification Chart

Route: IL 178 (FAS 1279)

Section: (1)BR&I

County: LaSalle

TEXTURAL CLASSIFICATION UTICA RIVER BRIDGE, IL 178 LINE BORINGS.GPJ IL_DOT.GDT 7/5/13



	Borehole	Station	Offset	Depth (ft)	Classification
●	**6**	**12+00 (Exist.)**	**26.00ft Lt.**	**1.00**	**A-6 (2) SANDY LOAM**
⊠	**7**	**9+00 (Exist.)**	**25.00ft Lt.**	**0.00**	**A-6 (3) SANDY LOAM**
▲	**8**	**6+00 (Exist.)**	**24.00ft Lt.**	**0.00**	**A-6 (4) SANDY CLAY LOAM**

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

IDH Textural Classification Chart

Route: IL 178 (FAS 1279)

Section: (1)BR&I

County: LaSalle

TEXTURAL CLASSIFICATION UTICA RIVER BRIDGE, IL 178 LINE BORINGS.GPJ IL_DOT.GDT 7/5/13

APPENDIX G

EMBANKMENT
August 2013

Embankments shall be constructed according to Sections 202, 204 and 205 of the Standard Specifications and as required, or modified, in this Special Provision.

When embankments are to be constructed on hillsides or existing slopes, steps shall be keyed into the existing slope by stepping and benching as directed by the Engineer.

All material proposed for use in embankment construction shall be approved by the Engineer. In addition to the requirements of Section 204, soils exhibiting the following properties shall not be allowed:

Liquid Limit (AASHTO T 89) greater than 60.

Soils exhibiting the following properties shall be restricted to the interior of the embankment:

Less than 35% passing the #200 sieve.
Liquid Limit (AASHTO T 89) greater than 50 but less than 60.
Plasticity Index (AASHTO T 90) less than 12.

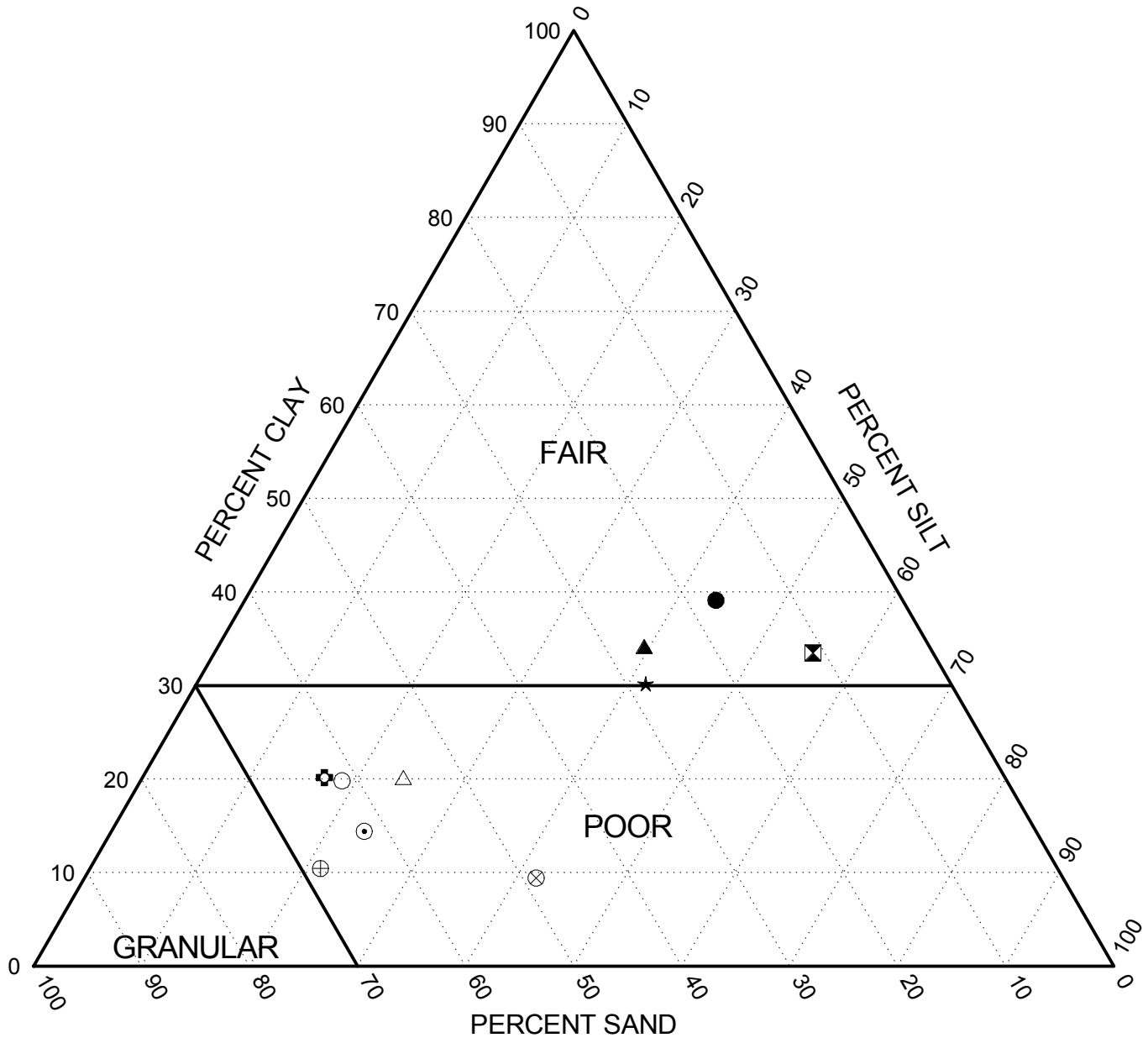
These restricted soils shall be encapsulated by a minimum of three (3) feet of unrestricted soil as directed by the Engineer. The thickness of encapsulation shall not include topsoil. The Engineer may restrict or prohibit the use of materials other than those identified above, which exhibit potential for significant erosion or excessive volume change.

The moisture content of all embankment shall not exceed 110% of the optimum moisture determined according to AASHTO T 99 (Method C). If the Engineer determines the embankment lifts are unstable after achieving the required density, the Contractor shall reprocess and compact the unstable material as directed by the Engineer. The Engineer may reduce the allowable moisture content to correct or prevent stability problems during embankment construction.

All embankment lift shall provide a minimum Immediate Bearing Value (IBV) of 4.0 when tested by the Engineer according to Illinois Testing Procedure 501 or 502. Any embankment lift not providing the minimum required IBV shall be removed and replaced, modified, and/or re-processed, to provide an IBV of 4.0.

This work will not be paid for separately, but shall be considered included in the unit prices for Earth Excavation, Borrow, and/or Furnished Excavation as included in the project.

APPENDIX H



	Borehole	Station	Offset	Depth (ft)	Classification
●	**1**	**47+00 (Exist.)**	**28.00ft Lt.**	**1.50**	**A-6 (15) CLAY**
⧓	**2**	**41+00 (Exist.)**	**15.00ft Lt.**	**2.50**	**A-6 (15) SILTY CLAY**
▲	**2**	**41+00 (Exist.)**	**15.00ft Lt.**	**10.00**	**A-6 (10) CLAY**
★	**2**	**41+00 (Exist.)**	**15.00ft Lt.**	**20.00**	**A-6 (7) CLAY**
⊙	**3**	**21+00 (Exist.)**	**15.00ft Lt.**	**2.50**	**A-4 (0) SANDY LOAM**
✿	**3**	**21+00 (Exist.)**	**15.00ft Lt.**	**10.00**	**A-4 (0) SANDY CLAY LOAM**
○	**3**	**21+00 (Exist.)**	**15.00ft Lt.**	**20.00**	**A-4 (0) SANDY LOAM**
△	**3**	**21+00 (Exist.)**	**15.00ft Lt.**	**30.00**	**A-4 (1) SANDY CLAY LOAM**
⊗	**4**	**18+00 (Exist.)**	**85.00ft Lt.**	**0.00**	**A-6 (3) LOAM**
⊕	**4**	**18+00 (Exist.)**	**85.00ft Lt.**	**1.50**	**A-2-4 (0) SANDY LOAM**

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

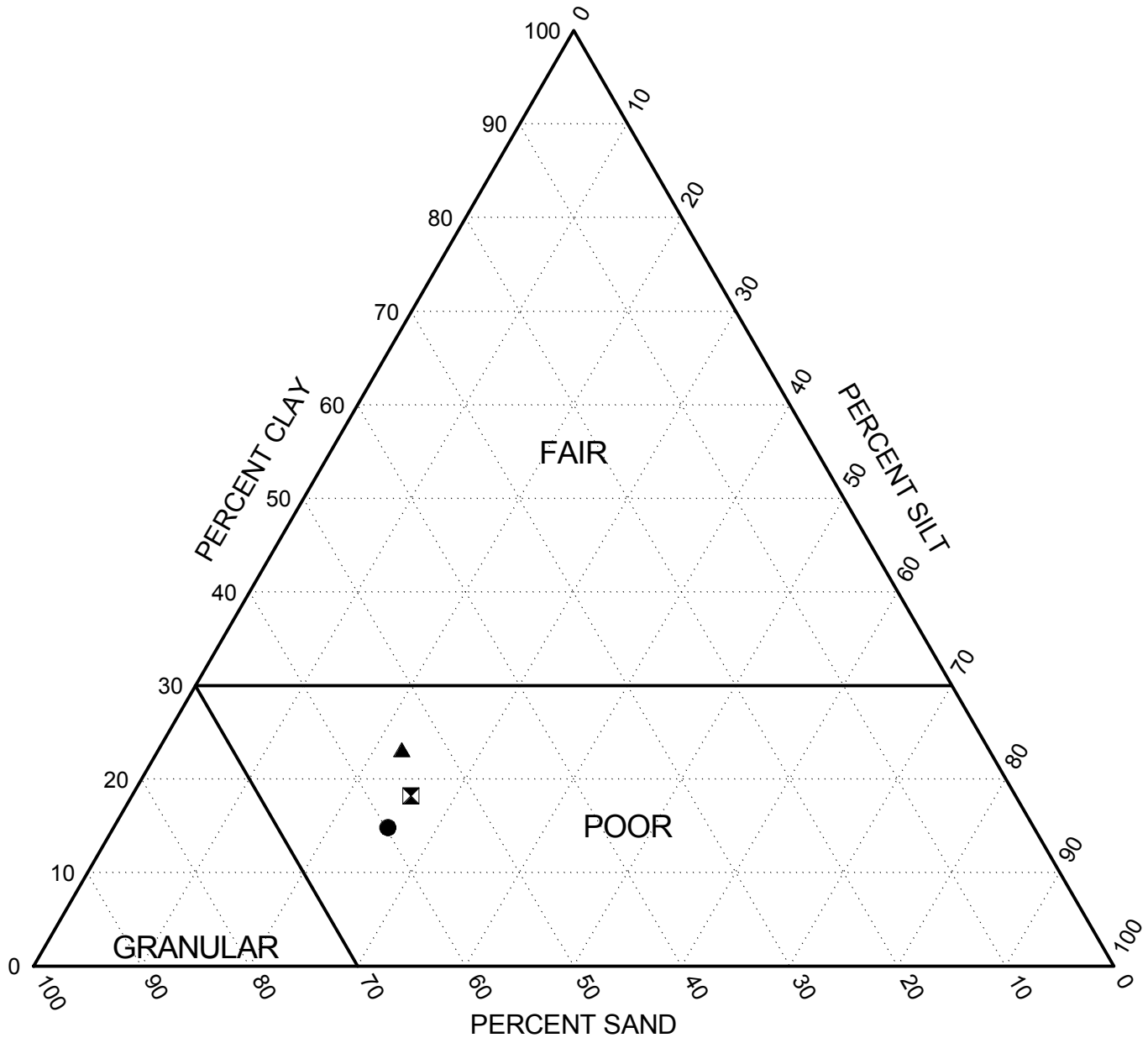
SUBGRADE SUPPORT RATING

Route: IL 178 (FAS 1279)

Section: (1)BR&I

County: LaSalle

SUBGRADE SUPPORT RATINGS UTICA RIVER BRIDGE, IL 178 LINE BORINGS.GPJ IL_DOT.GDT 7/5/13



	Borehole	Station	Offset	Depth (ft)	Classification
●	**6**	**12+00 (Exist.)**	**26.00ft Lt.**	**1.00**	**A-6 (2) SANDY LOAM**
⧓	**7**	**9+00 (Exist.)**	**25.00ft Lt.**	**0.00**	**A-6 (3) SANDY LOAM**
▲	**8**	**6+00 (Exist.)**	**24.00ft Lt.**	**0.00**	**A-6 (4) SANDY CLAY LOAM**

Illinois Department of Transportation
Division of Highways
ILLINOIS DOT

SUBGRADE SUPPORT RATING

Route: IL 178 (FAS 1279)

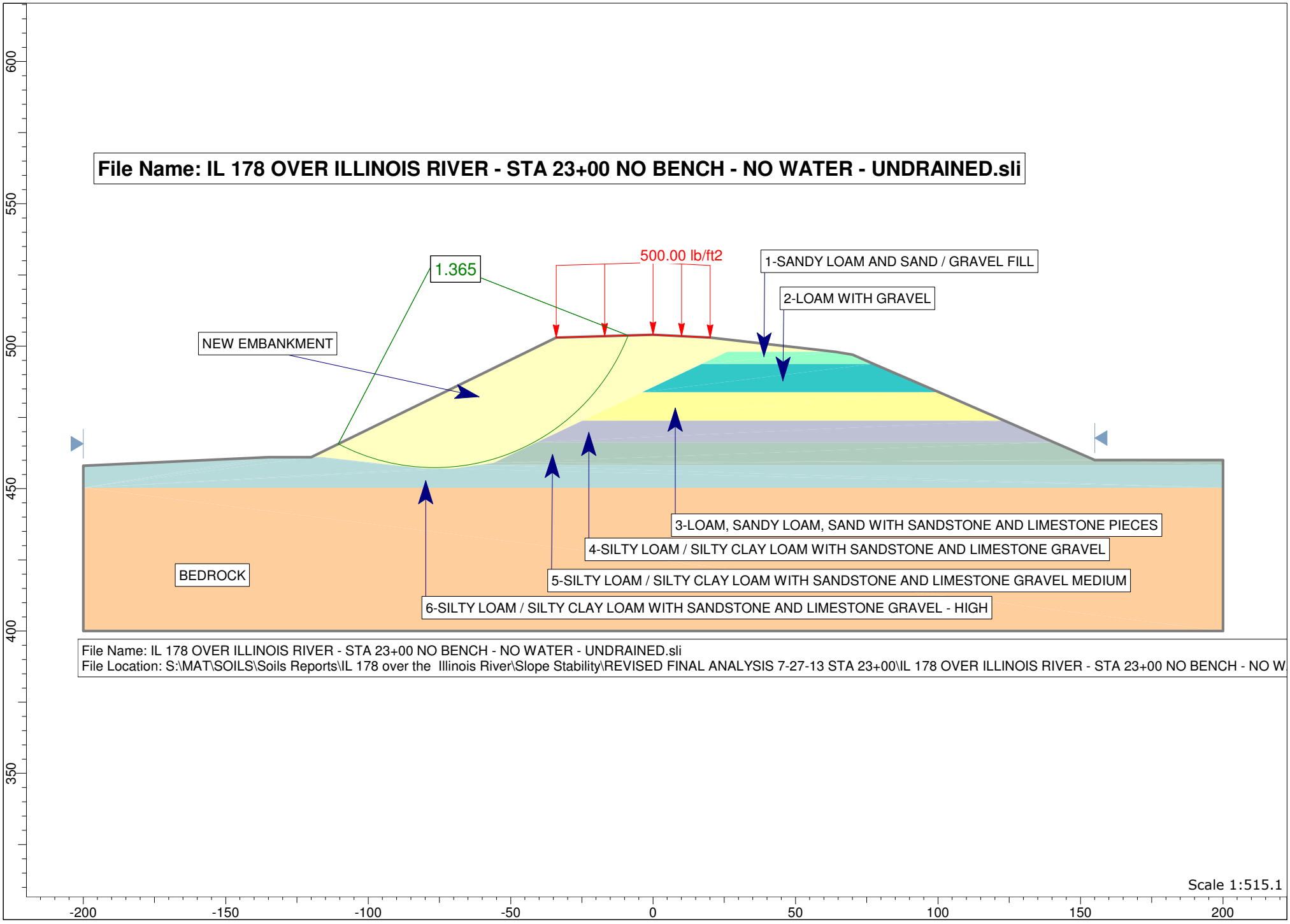
Section: (1)BR&I

County: LaSalle

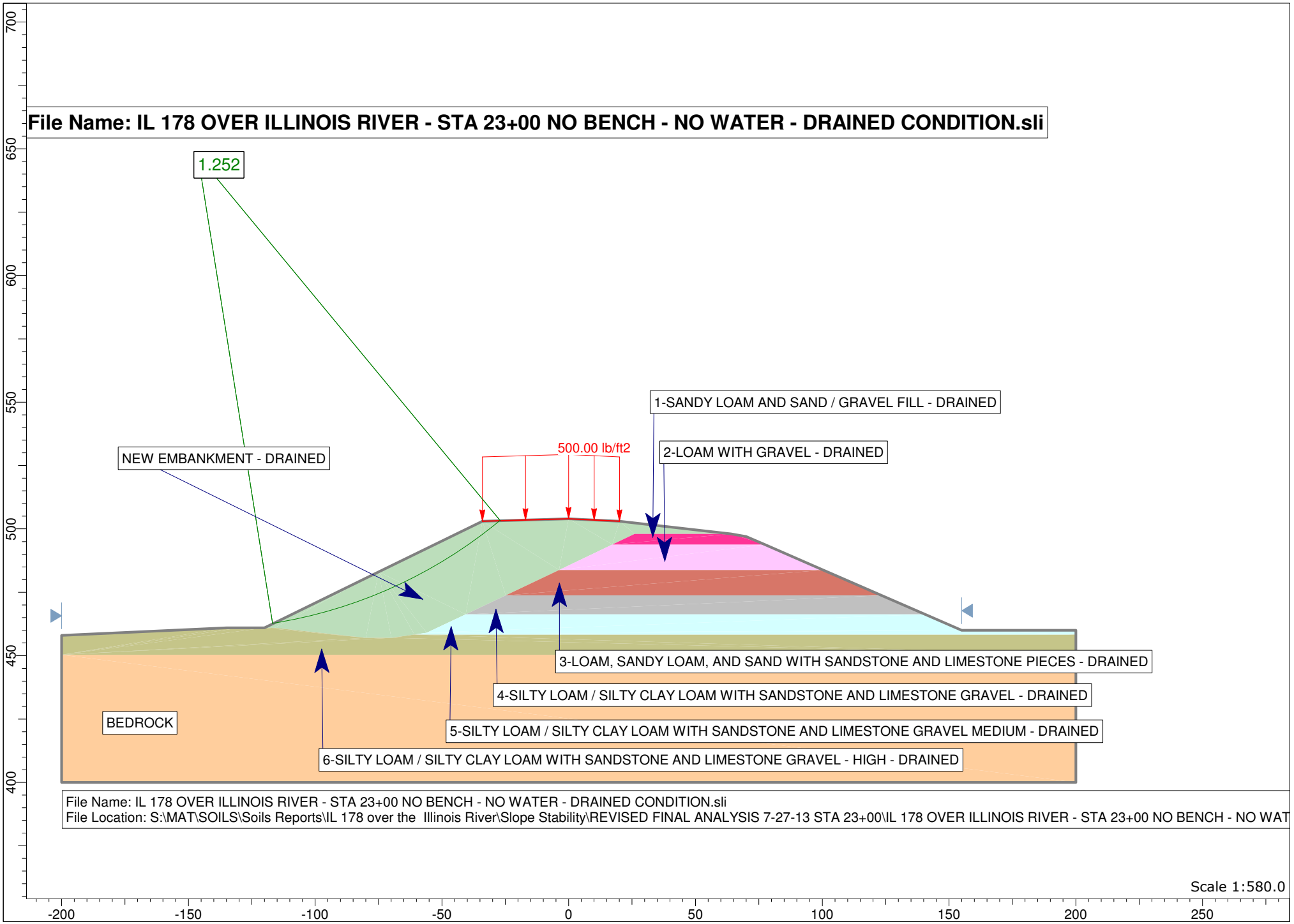
SUBGRADE SUPPORT RATINGS UTICA RIVER BRIDGE, IL 178 LINE BORINGS.GPJ IL_DOT.GDT 7/5/13

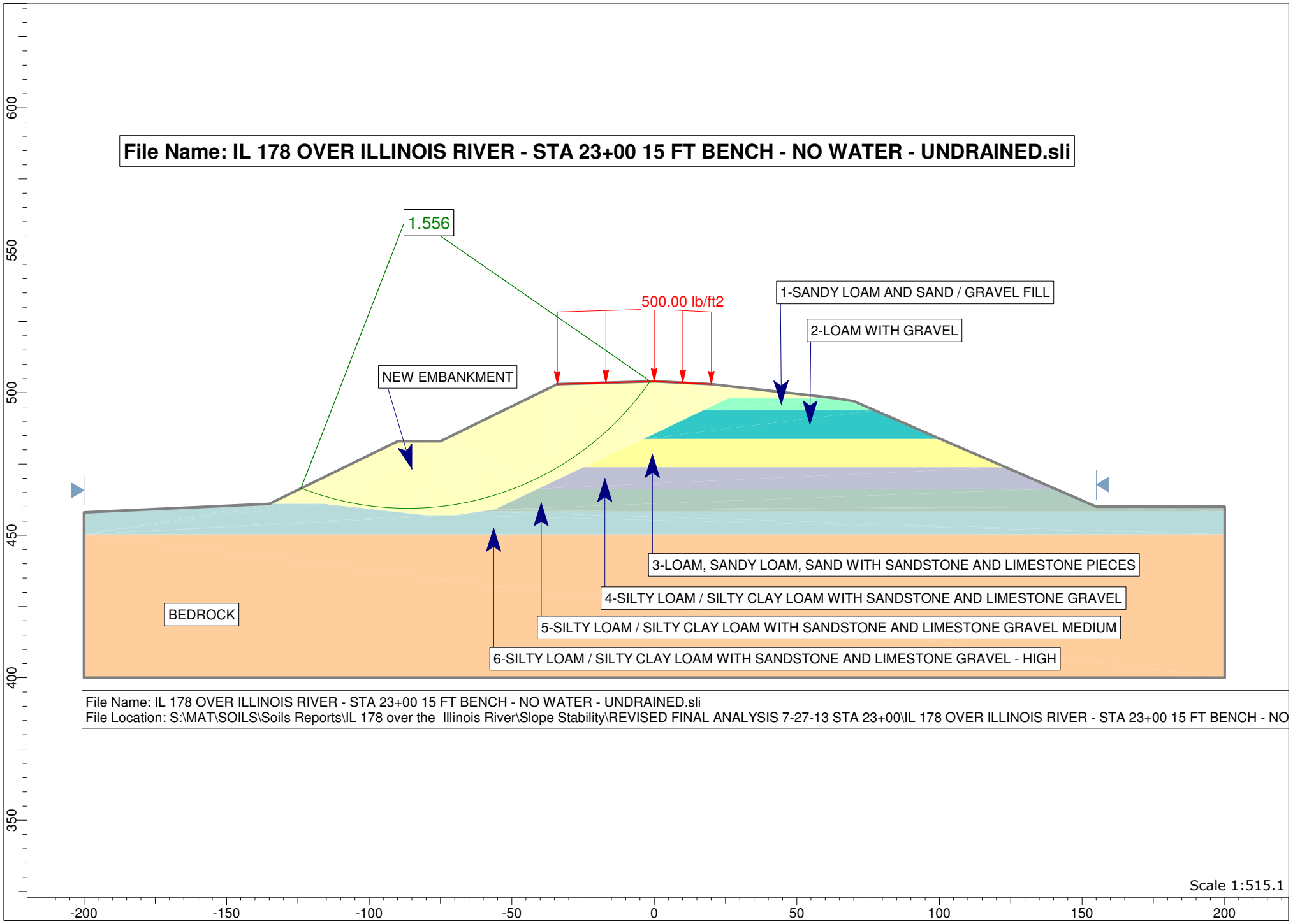
APPENDIX I

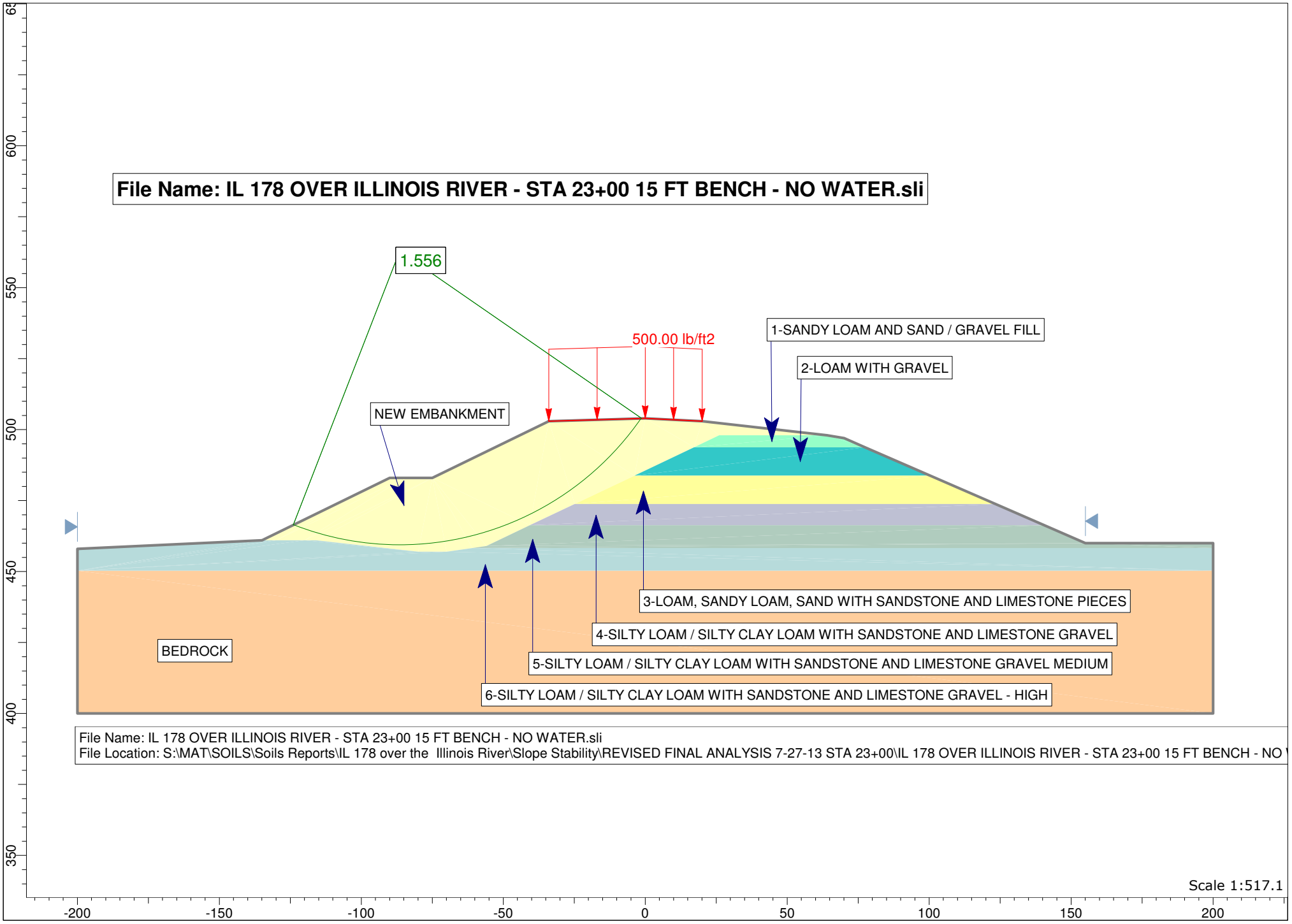
File Name: IL 178 OVER ILLINOIS RIVER - STA 23+00 NO BENCH - NO WATER - UNDRAINED.sli



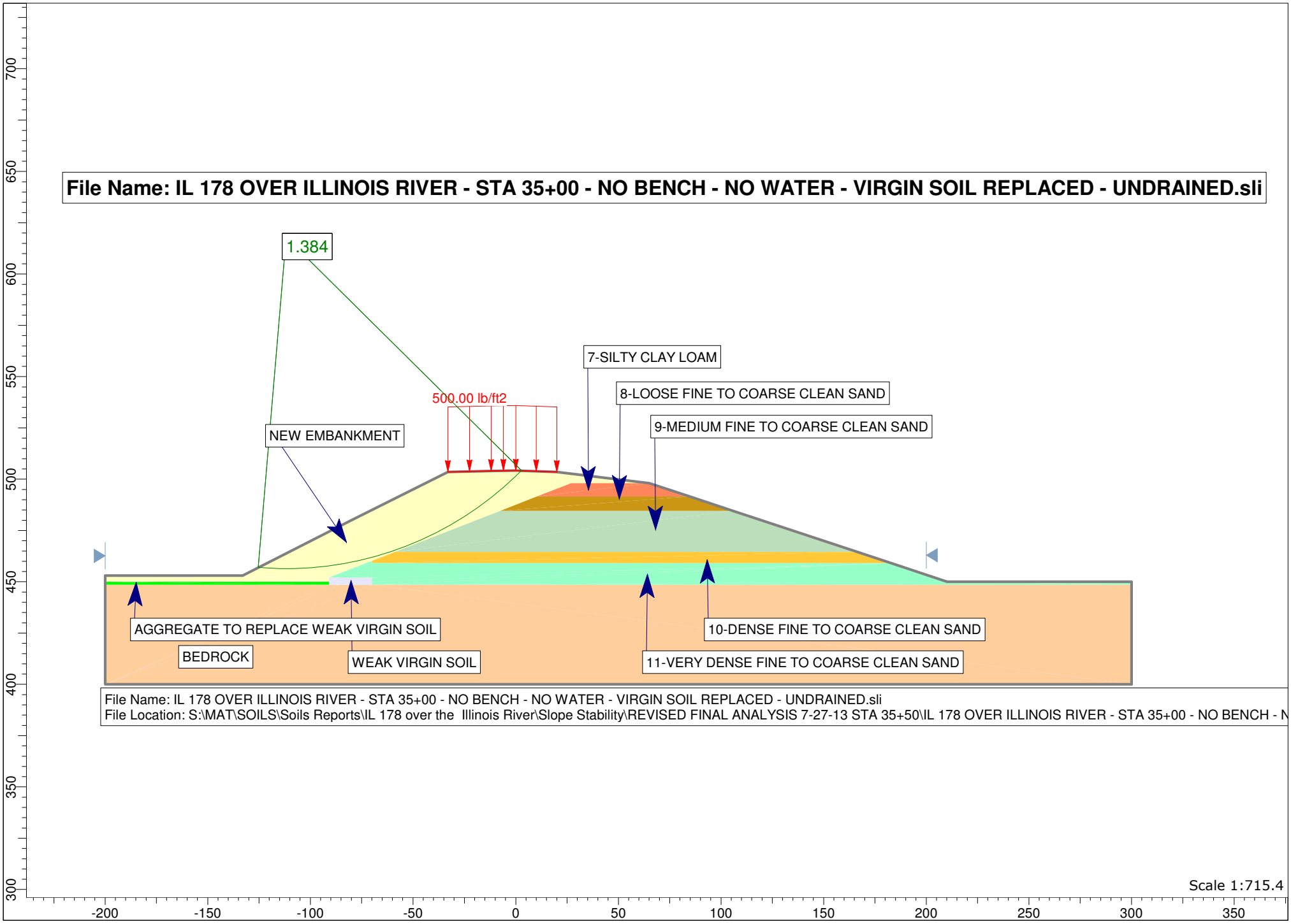
File Name: IL 178 OVER ILLINOIS RIVER - STA 23+00 NO BENCH - NO WATER - UNDRAINED.sli
File Location: S:\MAT\SOILS\Soils Reports\IL 178 over the Illinois River\Slope Stability\REVISED FINAL ANALYSIS 7-27-13 STA 23+00\IL 178 OVER ILLINOIS RIVER - STA 23+00 NO BENCH - NO W


File Name: IL 178 OVER ILLINOIS RIVER - STA 23+00 NO BENCH - NO WATER - DRAINED CONDITION.sli
1.252
1-SANDY LOAM AND SAND / GRAVEL FILL - DRAINED
500.00 lb/ft2
2-LOAM WITH GRAVEL - DRAINED
NEW EMBANKMENT - DRAINED
3-LOAM, SANDY LOAM, AND SAND WITH SANDSTONE AND LIMESTONE PIECES - DRAINED
4-SILTY LOAM / SILTY CLAY LOAM WITH SANDSTONE AND LIMESTONE GRAVEL - DRAINED
BEDROCK
5-SILTY LOAM / SILTY CLAY LOAM WITH SANDSTONE AND LIMESTONE GRAVEL MEDIUM - DRAINED
6-SILTY LOAM / SILTY CLAY LOAM WITH SANDSTONE AND LIMESTONE GRAVEL - HIGH - DRAINED
File Name: IL 178 OVER ILLINOIS RIVER - STA 23+00 NO BENCH - NO WATER - DRAINED CONDITION.sli
File Location: S:\MAT\SOILS\Soils Reports\IL 178 over the Illinois River\Slope Stability\REVISED FINAL ANALYSIS 7-27-13 STA 23+00\IL 178 OVER ILLINOIS RIVER - STA 23+00 NO BENCH - NO WAT
Scale 1:580.0
700
650
600
550
500
450
400
-200
-150
-100
-50
0
50
100
150
200
250


File Name: IL 178 OVER ILLINOIS RIVER - STA 23+00 15 FT BENCH - NO WATER - UNDRAINED.sli
1.556
500.00 lb/ft2
1-SANDY LOAM AND SAND / GRAVEL FILL
2-LOAM WITH GRAVEL
NEW EMBANKMENT
3-LOAM, SANDY LOAM, SAND WITH SANDSTONE AND LIMESTONE PIECES
4-SILTY LOAM / SILTY CLAY LOAM WITH SANDSTONE AND LIMESTONE GRAVEL
5-SILTY LOAM / SILTY CLAY LOAM WITH SANDSTONE AND LIMESTONE GRAVEL MEDIUM
6-SILTY LOAM / SILTY CLAY LOAM WITH SANDSTONE AND LIMESTONE GRAVEL - HIGH
BEDROCK
File Name: IL 178 OVER ILLINOIS RIVER - STA 23+00 15 FT BENCH - NO WATER - UNDRAINED.sli
File Location: S:\MAT\SOILS\Soils Reports\IL 178 over the Illinois River\Slope Stability\REVISED FINAL ANALYSIS 7-27-13 STA 23+00\IL 178 OVER ILLINOIS RIVER - STA 23+00 15 FT BENCH - NO
Scale 1:515.1
600
550
500
450
400
350
-200
-150
-100
-50
0
50
100
150
200


File Name: IL 178 OVER ILLINOIS RIVER - STA 23+00 15 FT BENCH - NO WATER.sli
1.556
500.00 lb/ft2
1-SANDY LOAM AND SAND / GRAVEL FILL
2-LOAM WITH GRAVEL
NEW EMBANKMENT
3-LOAM, SANDY LOAM, SAND WITH SANDSTONE AND LIMESTONE PIECES
4-SILTY LOAM / SILTY CLAY LOAM WITH SANDSTONE AND LIMESTONE GRAVEL
5-SILTY LOAM / SILTY CLAY LOAM WITH SANDSTONE AND LIMESTONE GRAVEL MEDIUM
6-SILTY LOAM / SILTY CLAY LOAM WITH SANDSTONE AND LIMESTONE GRAVEL - HIGH
BEDROCK
File Name: IL 178 OVER ILLINOIS RIVER - STA 23+00 15 FT BENCH - NO WATER.sli
File Location: S:\MAT\SOILS\Soils Reports\IL 178 over the Illinois River\Slope Stability\REVISED FINAL ANALYSIS 7-27-13 STA 23+00\IL 178 OVER ILLINOIS RIVER - STA 23+00 15 FT BENCH - NO
Scale 1:517.1
650
600
550
500
450
400
350
-200
-150
-100
-50
0
50
100
150
200

File Name: IL 178 OVER ILLINOIS RIVER - STA 35+00 - NO BENCH - NO WATER - VIRGIN SOIL REPLACED - UNDRAINED.sli



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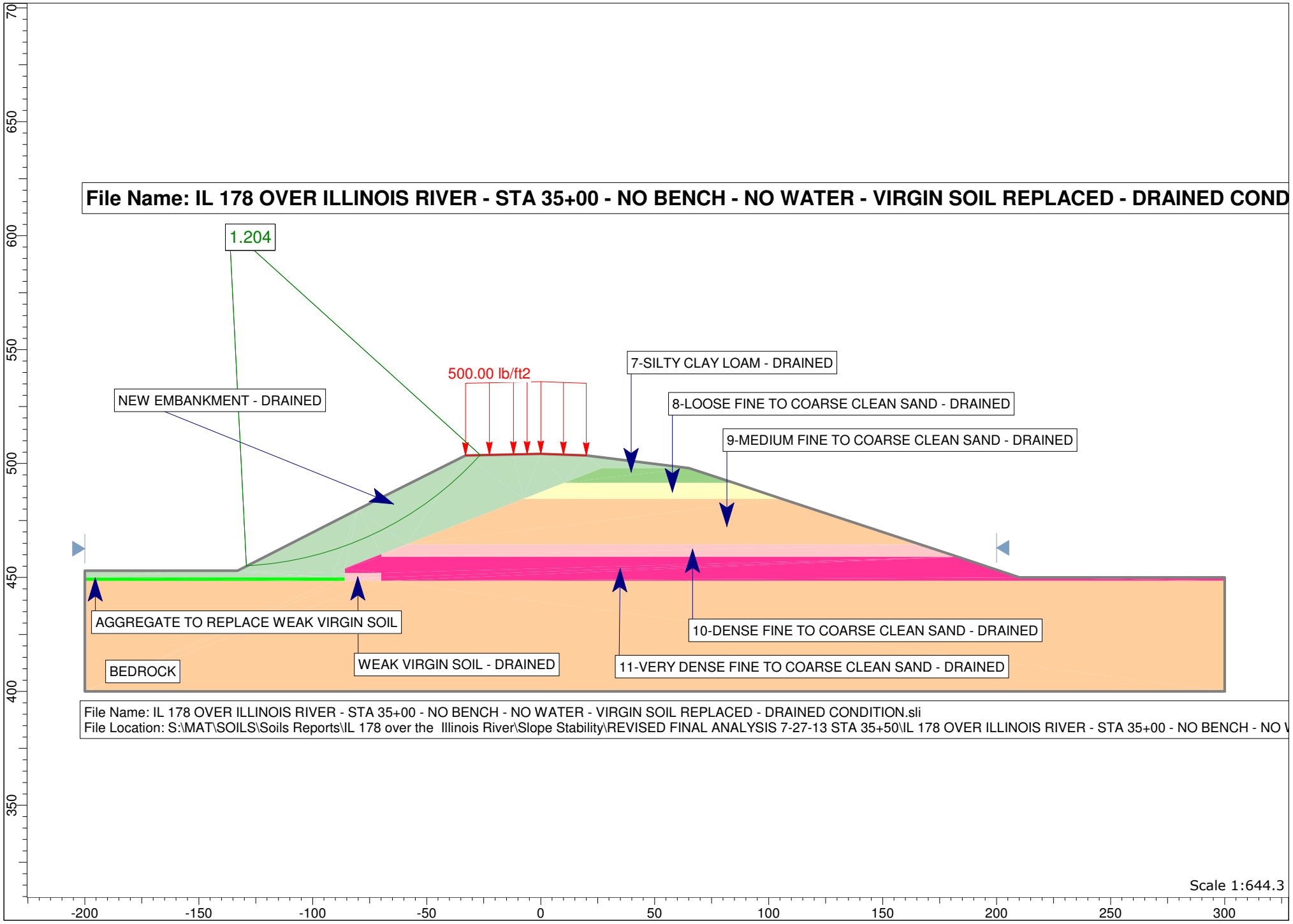
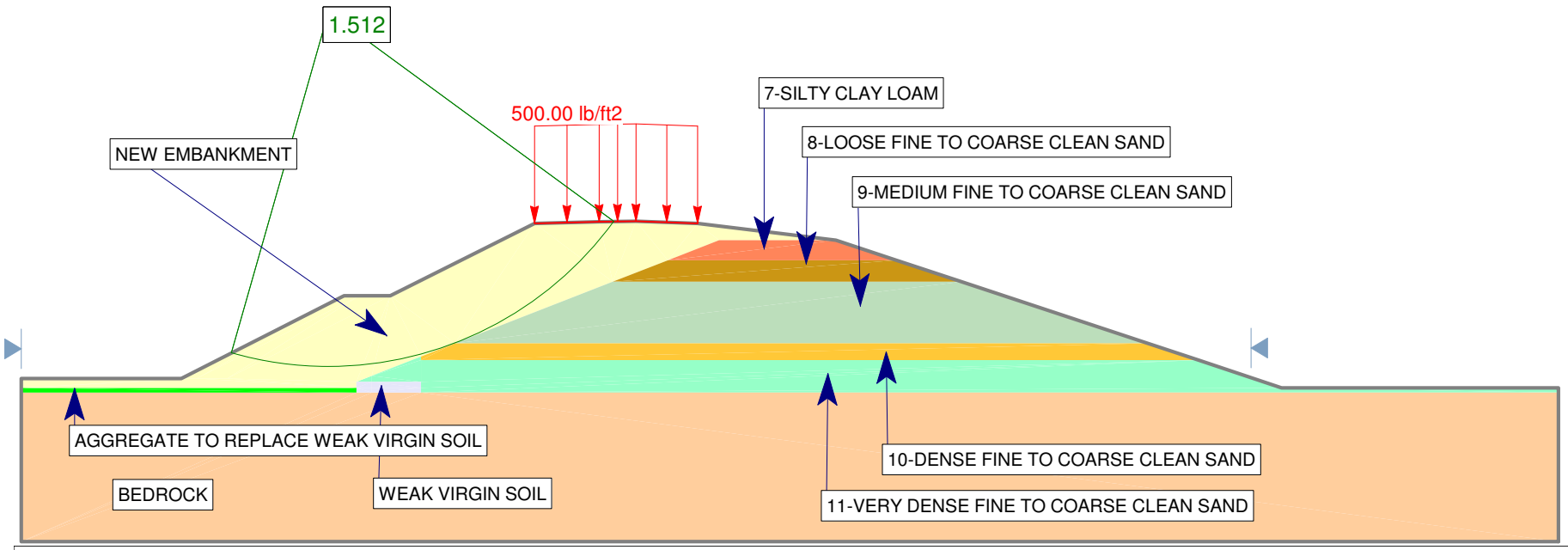
File Location: S:\MAT\SOILS\Soils Reports\IL 178 over the Illinois River\Slope Stability\REVISED FINAL ANALYSIS 7-27-13 STA 35+50\IL 178 OVER ILLINOIS RIVER - STA 35+00 - NO BENCH - N

Scale 1:715.4

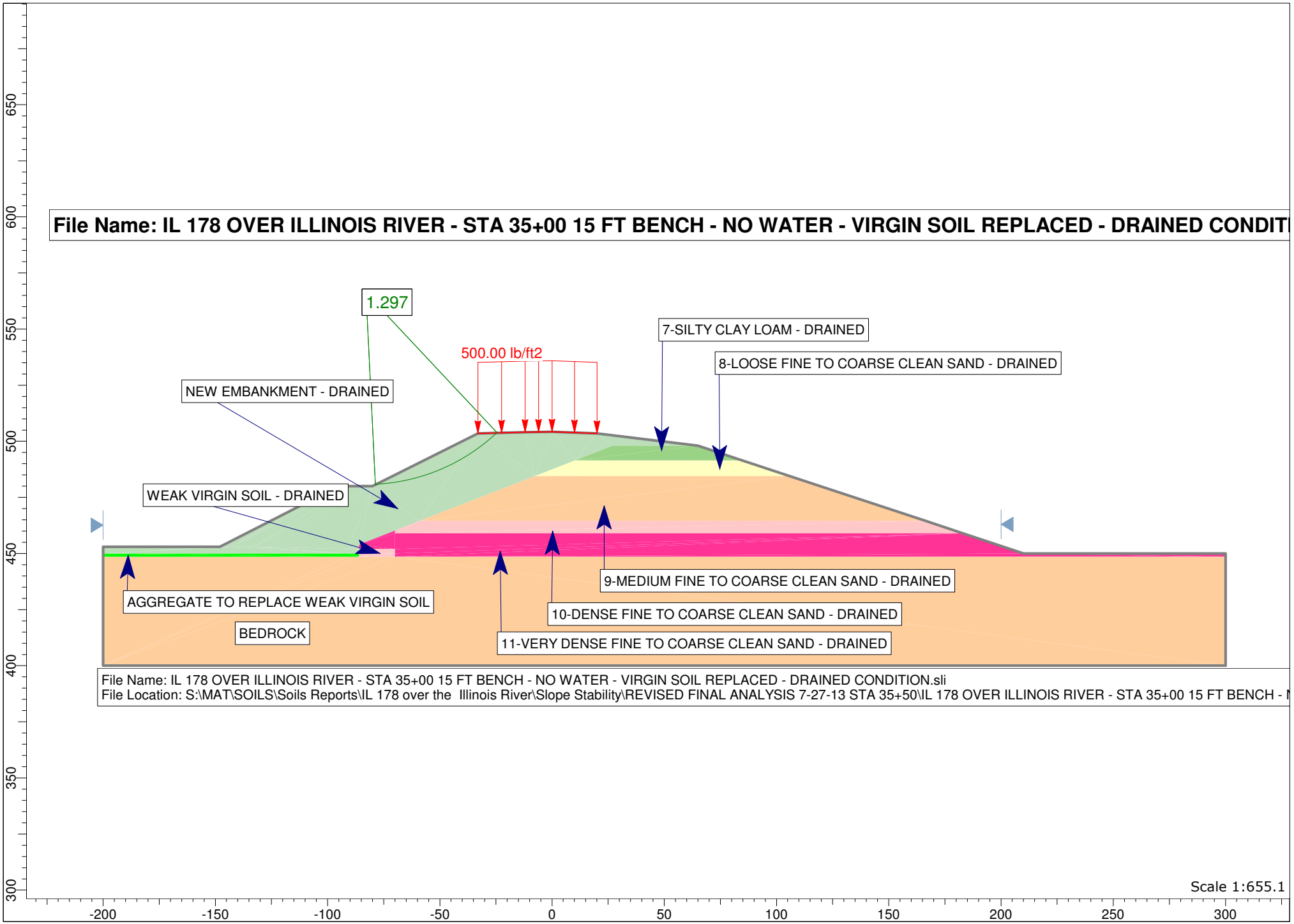

File Name: IL 178 OVER ILLINOIS RIVER - STA 35+00 - NO BENCH - NO WATER - VIRGIN SOIL REPLACED - DRAINED COND
1.204
500.00 lb/ft2
7-SILTY CLAY LOAM - DRAINED
8-LOOSE FINE TO COARSE CLEAN SAND - DRAINED
9-MEDIUM FINE TO COARSE CLEAN SAND - DRAINED
NEW EMBANKMENT - DRAINED
AGGREGATE TO REPLACE WEAK VIRGIN SOIL
BEDROCK
WEAK VIRGIN SOIL - DRAINED
10-DENSE FINE TO COARSE CLEAN SAND - DRAINED
11-VERY DENSE FINE TO COARSE CLEAN SAND - DRAINED
File Name: IL 178 OVER ILLINOIS RIVER - STA 35+00 - NO BENCH - NO WATER - VIRGIN SOIL REPLACED - DRAINED CONDITION.sli
File Location: S:\MAT\SOILS\Soils Reports\IL 178 over the Illinois River\Slope Stability\REVISED FINAL ANALYSIS 7-27-13 STA 35+50\IL 178 OVER ILLINOIS RIVER - STA 35+00 - NO BENCH - NO V
Scale 1:644.3
70
650
600
550
500
450
400
350
-200
-150
-100
-50
0
50
100
150
200
250
300

File Name: IL 178 OVER ILLINOIS RIVER - STA 35+00 15 FT BENCH - NO WATER - VIRGIN SOIL REPLACED - UNDRAINED CO

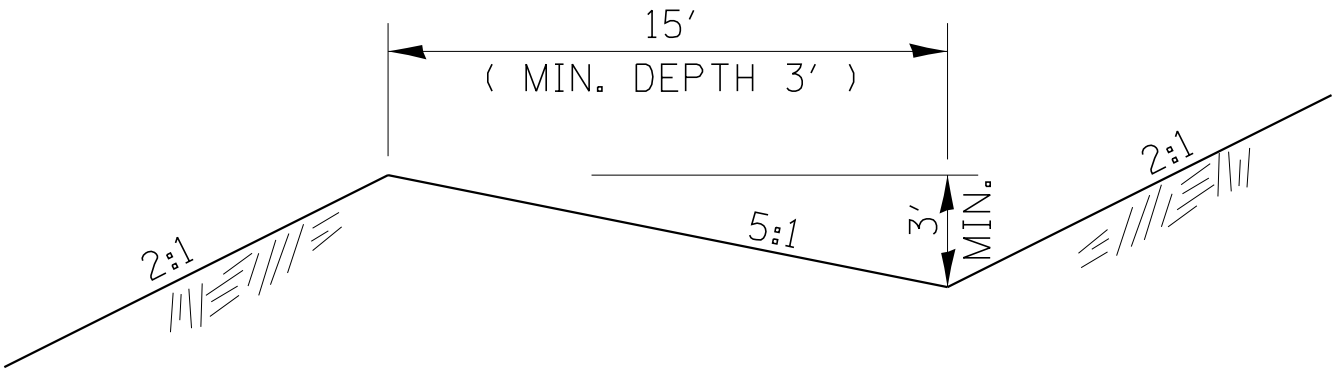


File Name: IL 178 OVER ILLINOIS RIVER - STA 35+00 15 FT BENCH - NO WATER - VIRGIN SOIL REPLACED - UNDRAINED CONDITION.sli
File Location: S:\MAT\SOILS\Soils Reports\IL 178 over the Illinois River\Slope Stability\REVISED FINAL ANALYSIS 7-27-13 STA 35+50\IL 178 OVER ILLINOIS RIVER - STA 35+00 15 FT BENCH - NO

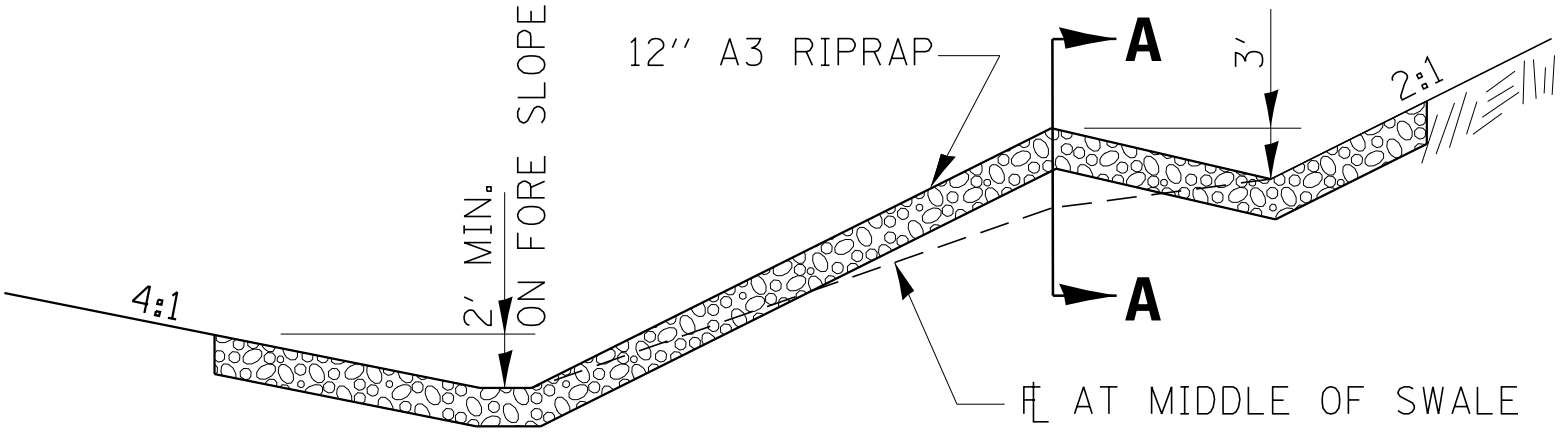
Scale 1:643.9

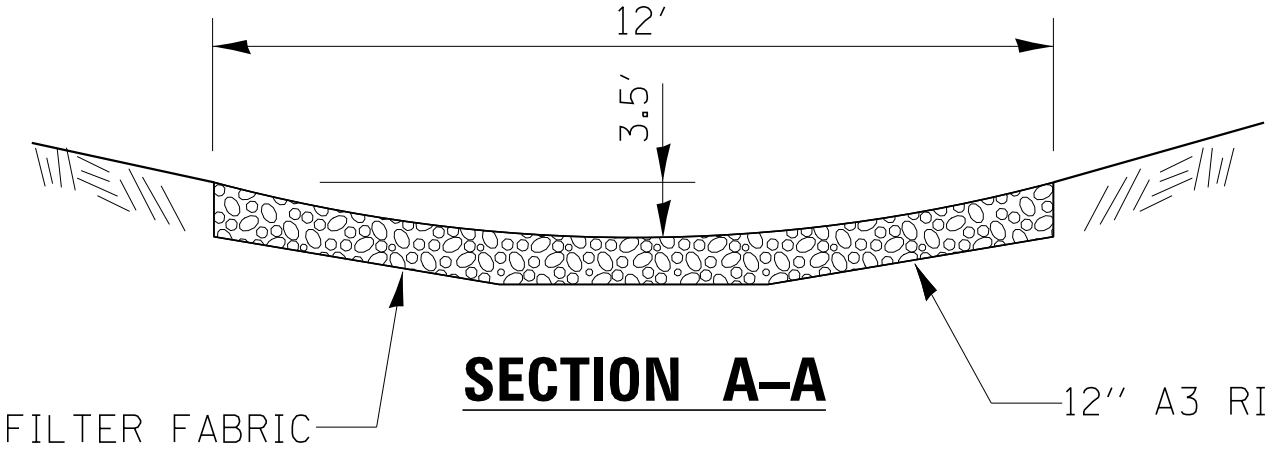

File Name: IL 178 OVER ILLINOIS RIVER - STA 35+00 15 FT BENCH - NO WATER - VIRGIN SOIL REPLACED - DRAINED CONDITI
1.297
500.00 lb/ft2
7-SILTY CLAY LOAM - DRAINED
8-LOOSE FINE TO COARSE CLEAN SAND - DRAINED
NEW EMBANKMENT - DRAINED
WEAK VIRGIN SOIL - DRAINED
9-MEDIUM FINE TO COARSE CLEAN SAND - DRAINED
AGGREGATE TO REPLACE WEAK VIRGIN SOIL
10-DENSE FINE TO COARSE CLEAN SAND - DRAINED
BEDROCK
11-VERY DENSE FINE TO COARSE CLEAN SAND - DRAINED
File Name: IL 178 OVER ILLINOIS RIVER - STA 35+00 15 FT BENCH - NO WATER - VIRGIN SOIL REPLACED - DRAINED CONDITION.sli
File Location: S:\MAT\SOILS\Soils Reports\IL 178 over the Illinois River\Slope Stability\REVISED FINAL ANALYSIS 7-27-13 STA 35+50\IL 178 OVER ILLINOIS RIVER - STA 35+00 15 FT BENCH - N
Scale 1:655.1
650
600
550
500
450
400
350
300
-200
-150
-100
-50
0
50
100
150
200
250
300

APPENDIX J

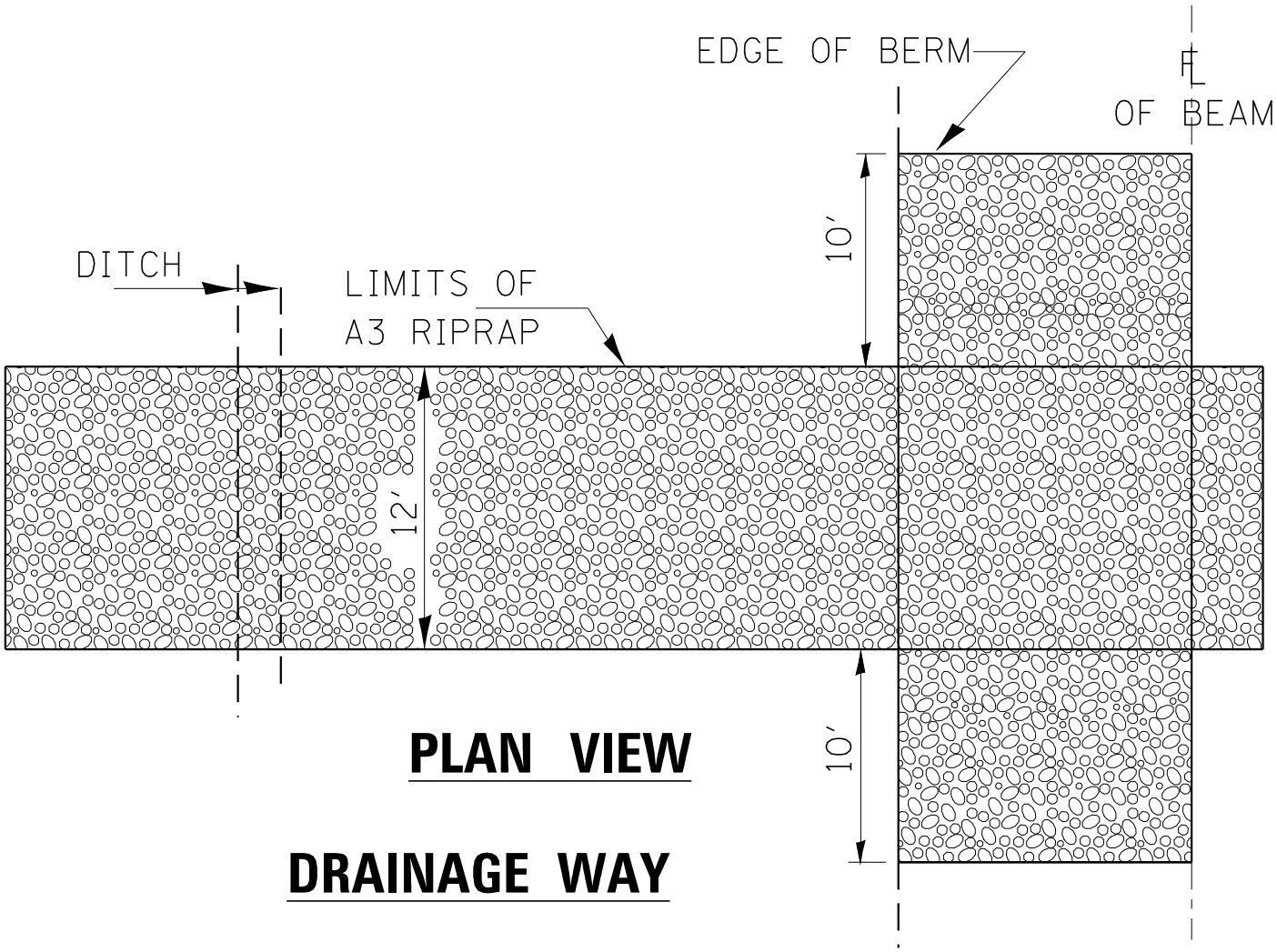


BERM TYPICAL SECTION





SECTION A–A



PLAN VIEW

DRAINAGE WAY