
STRUCTURE GEOTECHNICAL REPORT

US 52 / IL 64 / IL 84

IL 84 RETAINING WALL

SN 008-7001, SECTION 104B-2

PTB 158/018

IDOT JOB D-92-001-11

CARROLL COUNTY, ILLINOIS

for

Parsons Transportation Group, Inc.

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Technical Report Documentation Page

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9. Prepared for Parsons Transportation Group, Inc. 10 South Riverside Plaza Suite 400 Chicago, IL 60606	Structural Engineer Martin Furrer, S.E., P.E.	Contact Phone Number (312) 930-5258
10. Abstract <p>A new retaining wall will be constructed to accommodate widening of IL 84 on the east side of the roadway. This report provides geotechnical recommendations for the design and construction of the proposed retaining wall. The proposed wall is a cut wall with maximum total height of 30 feet. Wang completed 27 structure borings along the proposed retaining wall alignment.</p> <p>At some locations, below the ground surface, the borings revealed up to 10 feet of fill consisting of sand, sandy loam, clay loam, and/or silty clay. Beneath the fill or surface, the borings revealed up to 34 feet of colluvium over up to 10 feet of highly weathered shale bedrock. The shale bedrock was encountered at 599 to 641 feet elevation (10 to 34 feet bgs).</p> <p>Due to soil and rock condition and constructability, we recommend drilled soldier pile wall or tangent pile wall. The report provides soil parameters for the design of the wall.</p>		
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TABLE OF CONTENTS

1.0 INTRODUCTION	1
1.1 PROPOSED STRUCTURE	1
2.0 SITE CONDITIONS AND GEOLOGICAL SETTING	1
2.1 PHYSIOGRAPHY	2
2.2 SURFICIAL COVER.....	2
2.3 BEDROCK	3
3.0 METHODS OF INVESTIGATION.....	3
3.1 SUBSURFACE INVESTIGATION	3
3.2 LABORATORY TESTING	4
4.0 RESULTS OF OF FIELD AND LABORATORY INVESTIGATIONS	5
4.1 SOIL AND BEDROCK CONDITIONS	5
4.2 GROUNDWATER CONDITIONS.....	6
4.3 RESULTS OF LABORATORY TESTING	6
4.4 SEISMIC CONSIDERATIONS	6
5.0 ANALYSIS AND RECOMMENDATIONS	7
5.1 RETAINING WALL TYPE EVALUATION	7
5.2 DRILLED SOLDIER PILE WALL	8
5.3 TANGENT PILE WALL.....	9
5.4 DRAINAGE BEHIND WALL	11
5.5 GLOBAL SLOPE STABILITY.....	11
6.0 CONSTRUCTION CONSIDERATIONS	11
7.0 QUALIFICATIONS.....	13
REFERENCES	
EXHIBITS	
1. Site Location Map	
2. Site and Regional Geology	
3. Boring Location Plan	
4. Subsurface Data Profile	
APPENDIX A	
Boring Logs	
APPENDIX B	
Laboratory Test Results	
APPENDIX C	
TS&L Plan	
APPENDIX D	
Cross Sections – Subsurface Data	

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FOR
PARSONS TRANSPORTATION GROUP, INC.

1.0 INTRODUCTION

This report presents the results of Wang Engineering, Inc. (Wang) subsurface investigation, laboratory testing, and geotechnical evaluation for a new retaining wall proposed along the east side of IL Route 84 (IL 84), on the east flank of the Mississippi River, just north of City of Savanna, Illinois. The purpose of our investigation was to characterize the site subsurface soil and groundwater conditions and provide geotechnical analyses and recommendations for the design and construction of the new wall. A *Site Location Map* is presented as Exhibit 1.

1.1 Proposed Structure

The new retaining wall (SN 008-7001) is basically a cut wall retaining existing sloping ground immediately east of IL 84 roadway. The proposed retaining wall be 1565'-0" long measured along wall's front face from Station 709+65.66 to Station 725+08.27 and its maximum total height of 30'-0". TSL plan dated August 13, 2014 is included in Appendix C.

2.0 SITE CONDITIONS AND GEOLOGICAL SETTING

The project area is located in the northwestern section of Carroll County just north of Savanna, Illinois. On the USGS *Savanna Quadrangle 7.5 Minute Series* map, the proposed Retaining Wall is located in the NE ¼ of Section 4, Tier 24 North, and Range 3 East of the 4th Principal Meridian.

The following review of published geologic data, with emphasis on factors that might influence the design and construction of the proposed engineering works, is meant to place the project area within a geological framework and, thus, to confirm the dependability and consistency of the present subsurface investigation results. For the study of the regional geologic framework, Wang considered northwestern Illinois area in general and Carroll County in particular. Exhibit 2 illustrates the *Site and Regional Geology*.

2.1 Physiography

Northwestern Carroll County and a slice of northeastern Jackson County are part of the Wisconsin Driftless Section. It is a low plateau area bordering the outwash-filled valley of the upper Mississippi River (Leighton et al. 1948).

The project is located along the Mississippi River Valley in an unglaciated area of northwestern Illinois. The project lies on the southwestern flank of the gently sloping Wisconsin Arch, and just northwest of the Illinois Basin. Although the Savanna area was not directly impacted by glacial ice, early pre-Illinois glaciers encircled the Savanna area and had a dramatic effect on the region geomorphology. Meltwater from over 400,000 years of glacial retreats and advances established the Mississippi River Valley to its maximum depth by erosion (Richmond et al 1991). After this time, the Mississippi River Valley began to be aggraded by outwash and stratified sand and gravel deposits (Henry Formation); with intermitted periods of erosion during subsequent glacial and interglacial intervals. Modern river deposits are identified as Cahokia Alluvium and occur as stratified silt, clay, and re-deposited loess within the river channel, floodplains and backwaters of the Mississippi River. At the time of our investigation the Mississippi River water surface elevation measured 582.5 feet. At the south end of the proposed wall near the bridge, the abrupt ground surface on the Illinois side steps into the valley from 631.2 feet elevation to river level.

2.2 Surficial Cover

The surficial cover is represented by up to 34-foot thick colluvium made up of silty clay to silty loam with little to some angular clasts that rests over the bedrock (Grimley 1997). Along the wall alignment, the surficial cover varies in thickness from 10 to 34 feet.

2.3 Bedrock

The bedrock outcrops along the edge of the Mississippi River Valley on the east (Illinois) side of the project and forms an extended line of rock cliffs known as the Mississippi Palisades (Frankie 2001). Within the river valley, the elevation of the bedrock surface becomes gradually deeper toward the west, such that rock beneath the Iowa side of the main river channel was found at approximately 120 feet below the water surface. The general lithological profile includes Silurian dolostones over Ordovician shale and dolostones.

The Plum River fault zone is mapped approximately 1,000 feet south of the existing bridge. The east-west Plum River fault zone width may measure as much as 4,000 feet. The fault is considered inactive, but the near vertical fault lines with a strike-slip component of movement have resulted in a structure with horsts and grabens and zones of breccia with rotated blocks.

There was no coal mining activity in the bridge area; the nearest active coal mines and coal resources are identified by the Illinois State Geological Survey at approximately 7 miles east from the bridge, just west from the village of Mt. Carroll.

Our subsurface investigation results fit into the local geologic context. The borings drilled in the project area revealed the native sediments consists of silty clay loam to silty loam with trace to some gravel to cobble size angular clasts (Colluvium) resting over weathered to solid shale bedrock. Borings referenced in this report encountered the bedrock at depths ranging from 10.0 to 34.5 feet bgs (elevations of 599.1 to 640.8 feet).

3.0 METHODS OF INVESTIGATION

The following sections outline the subsurface soil and groundwater investigation and laboratory testing performed by Wang.

3.1 Subsurface Investigation

For the proposed retaining wall along IL 84, Wang drilled a total of 27 borings between Station 709+50 and Station 724+50. During Phase 1, Wang drilled Boring RWB-01 in November 2011. During Phase 2, Wang drilled 26 borings designated as 84-RWB-01 through 84-RWB-22 including the A and B borings, from both the proposed wall alignment and from the IL 84 roadway where the access was problematic. Drilling and sampling for Phase 2 was

performed between December 2013 and July 2014. Borings 84-RWB-01, 84-RWB-04, and 84-RWB-05 were performed on the pavement along IL 84. The borings were drilled to depths ranging from 17.5 to 72.0 feet below ground surface (bgs). However, due to the sloped and wooded area with scattered debris from demolished cabins, it was difficult to gain access along the new retaining wall alignment to the proposed boring location. In order to do so, we had to cut trees and use a small bulldozer to perform the borings. Also because of these difficulties we performed some of the borings at an offset location, from the IL 84 roadway.

Truck- and ATV-mounted drilling rigs were used to complete the structure borings. Drilling was conducted with hollow stem augers to advance and maintain an open borehole. Soil sampling was performed according to AASHTO T 206, "*Penetration Test and Split Barrel Sampling of Soils.*" The soil was sampled at 2.5-foot intervals to a depth of 30 feet bgs and at 5.0-foot intervals to the bedrock. The bedrock was cored in 5- and 10-foot runs up to 40 feet. Samples collected from each sampling interval were placed in sealed glass jars. As-drilled northing, easting, and elevations were surveyed by Wang using a mapping grade Trimble GPS survey system, capable of +/- 4 inches accuracy for vertical and lateral directions. Boring locations and elevations data are shown in the *Boring Logs* (Appendix A). The as-drilled locations are shown in the *Boring Location Plan* (Exhibits 4).

Field boring logs prepared and maintained by a Wang engineer or geologist included lithological descriptions, visual-manual soil classifications, results of Rimac or pocket penetrometer unconfined compression tests, and Standard Penetration Tests (SPT) recorded as blows per 6 inches of penetration.

Groundwater levels were measured while drilling and at the completion of drilling operations. Upon completion, the boreholes were backfilled with bentonite chips mixed with soil cuttings. The pavement surface was restored using cold asphalt patch.

3.2 Laboratory Testing

Samples obtained in the field were transported to our in-house laboratory in Lombard, Illinois. The testing program included moisture content (AASHTO T 265) on all soil samples. Particle-size gradation (AASHTO T 88) and Atterberg limits (T 89 and T 90) were performed on

selected soil samples. Tested samples were classified according to the IDH and AASHTO classification systems. Density-unit weight (ASTM D 7263) and uniaxial compressive strength tests were performed on selected rock cores. Field visual-manual classifications were also verified in the laboratory. The results of the laboratory testing program are shown in the attached *Boring Logs* (Appendix A) and in *Subgrade Data Profile* (Exhibit 4).

The soil samples will be retained in our laboratory for 60 days following the final report submittal. After that, the samples will be discarded unless a specific written request is received as to their disposition.

4.0 RESULTS OF FIELD AND LABORATORY INVESTIGATIONS

Detailed descriptions of the soil conditions encountered during the subsurface investigation are presented in the attached *Boring Logs* (Appendix A) and in the *Soil Profile* (Exhibit 3). Please note that strata contact lines represent approximate boundaries between soil types. The actual transition between soil types in the field may be gradual in horizontal and vertical directions.

4.1 Soil and Bedrock Conditions

Up to 12-inch thick black silty loam topsoil was measured in the borings drilled within the wooded area or outside of the roadway pavement. Borings 84-RWB-01, 84-RWB-04, and 84-RWB-05 were drilled through IL 84 roadway pavement and recorded 12-inch thick asphalt pavement. Borings 84-RWB-16, 84-RWB-17, and 84-RWB-18 were drilled through a driveway and encountered 3- to 4- inch thick asphalt. The subsurface soils encountered below the pavement and/or topsoil are described in descending order as follows:

- a) Man-made ground consisting of up to 10.5-foot thick granular and/or cohesive fill was encountered in Borings 84-RWB-01, 84-RWB-03, 84-RWB-11, 84-RWB-13, 84-RWB-22, and 84-RWB-22A. Granular fill consists of loose to very dense silty loam, sand to gravelly sand characterized by SPT N-values of 5 to 62 blows/foot and moisture content (MC) values of 8 to 28%. The cohesive fill is made up of soft to hard clay loam to gravelly silty clay characterized by unconfined compressive strength (Q_u) values of 0.3 to 4.5 tsf and MC values of 11 to 22%.
- b) Up to 34-foot thick colluvium deposits overlie the bedrock. The colluvium is made up of 20-foot thick stiff to hard silty clay with little gravel characterized by Q_u values of 1.8 to

- more than 4.5 tsf, MC values of 9 to 21%; and 14-foot thick of medium dense to very dense sand to gravelly sandy loam with SPT N-value of 15 blow/foot to spoon refusal.
- c) Up to 10.0 feet of weathered shale bedrock, described as hard silty clay to silty loam with shale and mudstone fragments characterized by unconfined compressive strength (Q_u) values of more than 4.0 tsf, SPT N-values of 35 blows/foot to sampler refusal, and MC of 8 to 28%;
- d) At 15 to 35 feet bgs, the borings advanced through shale-mudstone interbedded bedrock, of Ordovician - Maquoketa Group, characterized by sampler refusal and MC values of 9 to 14%; In our analysis we distinguish two layers as follows
- 1) Weak shale bedrock was encountered below the weathered bedrock, with thicknesses ranging from 2 to 22 feet characterized by Q_u value of 1030 psi, dry unit weight values of 116.7 to 138.1 pcf., weak strength, with very poor to fair rock mass quality, and RQD values of 0 to 72%.
 - 2) Competent shale bedrock was encountered at elevations ranging from 567.2 to 630.6 feet (22.0 to 60.0 feet bgs.) characterized by Q_u values of 1130 to 9420 psi, dry unit weight values ranging from 141.7 to 160.0 pcf., moderately strong, poor to excellent rock mass quality with RQD values of 44 to 100%.

4.2 Groundwater Conditions

Groundwater was encountered in Borings 84-RWB-01A and 84-RWB-22 at 8.5 and 13.8 feet bgs and more likely is perched water within the granular layers. In general, borings have not encountered groundwater during our drilling operations. Mississippi River runs approximately 450 feet west from boring location and its water level was recorded at elevations of 582.5 feet.

4.3 Results of laboratory testing

We perform unconfined compressive strength, moisture content, and unit weight tests on selected rock cores samples and the results are shown in Appendix A - *Boring Logs* and are included in Appendix B - *Laboratory Test Results*.

4.4 Seismic Considerations

Seismic design data is not required for wall design. As per 2012 IDOT Bridge Manual, specific need for Seismic Design was not identified.

5.0 ANALYSIS AND RECOMMENDATIONS

5.1 Retaining Wall Type Evaluation

Wang has evaluated possible wall types that can be considered for the support of the proposed cut associated with the roadway widening. The selection of type of wall system should be based on the construction and cost considerations. The proposed retaining wall is basically a cut wall. The boring log data is shown on cross sections at the boring station/off set locations in Appendix D. It should be noted that the borings could not be performed exactly along the wall alignment due to existing ground condition. Since existing ground surface was regraded for providing access to boring locations for drilling, the grade elevation shown on the boring logs may not match with the cross sections.

It is our opinion that drilled soldier-pile wall or a tangent pile wall would be more appropriate considering existing site and soil conditions and constructability. Our evaluation for the selection of wall type at this location is presented below.

Based on cross section drawings provided by Parsons, the proposed retaining wall will retain the existing high slope on the east side of IL 84. The possible wall types that could be considered are cast-in-place concrete cantilever, Mechanically Stabilized Earth (MSE), soldier-pile and steel sheet pile walls with concrete facing.

Since the cast-in-place reinforced concrete and MSE walls are fill wall types, additional open cut excavations into the existing slope or a temporary soil retention system will be required to construct them. This would also require backfilling and longer construction time.

Thus, cantilevered pile wall type such as sheet and soldier pile would be more appropriate for this cut situation. Since the borings show dense to very dense granular soils and very stiff to hard cohesive soils over shale bedrock at 15 to 30 feet bgs it will be difficult to drive steel sheeting through very dense granular and hard cohesive soils. Therefore, it is our opinion that the cantilever steel sheet pile wall is not an appropriate wall system at this site.

Soldier pile and lagging type of retaining wall (S-P Wall) can be considered as a wall installed with a top-down constructed method. Depending on the embedment length required, it may not be difficult to drive soldier piles in existing soils at locations where the wall is not

very high. However, driving H-piles in very dense granular and hard cohesive soils will be very difficult and the required pile embedment depth may not be achieved. Piles will be limited to H-pile section for the driven. Thus, we recommend *Drilled Soldier Pile Retaining Wall*. The drilled shafts will provide more passive resistance and wider section can be used such as wide flange beam (W) section.

Another wall type option could be the tangent pile wall consisting of a single row of tangentially touching drilled reinforced-concrete piles. The reinforcement of each pile may consist of a steel beam or reinforcing bar cage. Lateral deflections can be relatively less compared to S-P Wall. Design parameters and construction recommendations for the selected wall types are presented in the following sections.

For the higher portion of the wall, larger soldier pile section and/or a less spacing, of the piles, or permanent ground anchors (tie backs) will be necessary for additional lateral support and control of deflection. Design of permanent ground anchors should consider corrosion protection. Design and construction should be in accordance with AASHTO LRFD Bridge Design Specifications latest edition. US Department of Transportation, Federal Highway Administration publications FHWA-IF-99-015 and FHWA/Rd-82/047 may also be referred for the design and construction of ground anchors. The soldier piles should also be designed to resist the total vertical component of the ground anchor load. Vertical Soldier pile capacity below the bottom of the excavation can be evaluated from the skin friction considering soil and rock properties given in Tables 1A through 1C.

5.2 Drilled Soldier Pile Wall

Soldier pile and lagging type of retaining wall (S-P Wall) can be considered as a wall installed with a top-down construction method. As discussed earlier, we recommend drilled soldier pile wall.

Based on the soil conditions encountered in borings the geotechnical design parameters shown in Tables 1A through 1C are recommended to be used for the design.

The design of the soldier-pile wall should ignore 3 feet of soil in front of the wall measured from the finished ground surface elevation in providing passive pressure due to excavation required for installation of concrete facing, drainage system and for frost-heave conditions. In

developing the design lateral pressure, the lateral pressure due to construction equipment surcharge loads should be added to the lateral earth pressure. The earth pressure distributions shown in 2012 AASHTO LRFD Bridge Design Specifications should be used. Design considerations should include deflection control at the top of the wall. The recommendations pertaining to site preparation and earthwork are presented in subsequent sections of this report. The plan should show minimum timber lagging thickness of 3 inches.

5.3 Tangent Pile Wall

A tangent pile wall consisting of a single row of tangentially touching drilled reinforced concrete shafts can be considered. Lateral movement of this type of wall is relatively small compared to more flexible wall systems. The recommendations for the design of the drilled soldier pile wall including the geotechnical parameters shown in Tables 1A through 1C are also applicable to the tangent pile wall.

Table 1A: Recommended Soil Parameters

Soil Description	Moist Unit Weight (pcf)	Shear Strength Properties			Estimated Lateral Soil Modulus Parameter (Static), k (pci)	Estimated Soil Strain Parameter, ϵ_{50}
		Short Term Cohesion C_u (psf)	Short Term Friction Angle, ϕ (Degree)	Long Term Friction Angle, ϕ' (Degree)		
Existing Fill-Granular	120	0	30	30	20	-
Existing Fill-Cohesive	120	1000	0	28	300	0.0085
Medium Stiff to Stiff Cohesive (Qu 0.5 to 1.5 tsf)	120	1000	0	28	300	0.0085
Stiff to Hard Cohesive (Qu 1.5 to > 4.0 tsf)	125	4000	0	31	1400	0.0045
Loose Granular (N < 10)	110	0	28	28	10	-
Medium Dense Granular (N 10 to 29)	120	0	30	30	40	-
Dense Granular (N 30 to 50)	130	--	37	37	185	-
Very Dense Granular (N > 50)	135	--	39	39	220	-

Soil Description	Moist Unit Weight (pcf)	Shear Strength Properties			Estimated Lateral Soil Modulus Parameter (Static), k (pci)	Estimated Soil Strain Parameter, ϵ_{50}
		Short Term Cohesion C_u (psf)	Friction Angle, ϕ (Degree)	Long Term Friction Angle, ϕ' (Degree)		
Weathered Bedrock, SHALE	140	--	41	41	260	--

- Granular soils are classified as Sand, Sandy Gravel, Silty Loam, Sandy Loam and Gravelly Sand on the boring logs.
- Cohesive soils are classified as Silty Clay, Silty Clay Loam and Clay Loam on the boring logs.
- Unconfined Compressive Strength values of the cohesive soils are shown as Q_u on the boring logs.
- Boring logs show SPT values number for three consecutive 6-inch penetration. N value is the sum of the second and the third numbers.
- Moist Unit Weight and Friction Angle estimated from SPT numbers.

Table 1B: Recommended Rock Parameters
 South of Station 714+40

Rock Type	Total Unit Weight, γ (pcf)	Modulus of Rock Mass (ksi)	Uniaxial Compressive Strength (psi)	RQD (%)	Strain Factor ($k_{r m}$)
Weak Shale Bedrock Note 1	135	170	700	30	0.0005
Competent Shale Bedrock Note 2	140	250	5000	70	0.0005

Table 1C: Recommended Rock Parameters
 North of Station 714+40

Rock Type	Total Unit Weight, γ (pcf)	Modulus of Rock Mass (ksi)	Uniaxial Compressive Strength, Q_u (psi)	RQD (%)	Strain Factor ($k_{r m}$)
Weak Shale Bedrock Note 1	135	230	1500	35	0.0005
Competent Shale Bedrock Note 2	140	280	5500	80	0.0005

Notes: 1. Below weathered shale bedrock, 2. Below weak shale bedrock

5.4 Drainage Behind Wall

Drainage behind the wall and underdrain should be as per 2012 IDOT Bridge Manual. The water pressure should be added to the earth pressure if drainage is not provided. A Geocomposite Wall Drain should be placed between the timber lagging and CIP concrete facing and connected to the 4 inch diameter perforated drain pipe. It is understood that ground surface water runoff behind the wall will be drain by providing a concrete gutter and inlet system behind and at top of the wall. The wall inlets will be connected to IL 84 roadway storm sewer inlets.

5.5 Global Slope Stability

The retaining wall will be drilled shaft soldier pile wall. The slope stability failure circle will go below tip of the drilled shafts which are expected to be in hard/dense soils or bedrock giving very high factor of safety for a permanent condition. Therefore, we do not anticipate any global instability for a permanent condition.

To install ground anchors, excavation to a level few feet below ground anchor locations will be required having a temporary cantilever wall condition. We will perform global stability analysis after knowing elevation of ground anchors during the design phase.

6.0 CONSTRUCTION CONSIDERATIONS

6.1 Excavation

Any required excavations should be performed in accordance with local, state, and federal regulations including current OSHA regulations. The potential effect of ground movements upon nearby rail tracks and utilities should also be taken into consideration.

6.2 Dewatering

Since groundwater was encountered deeper than expected excavation depths, we do not anticipate any significant groundwater problems during the construction. Perched water existing in the granular soils will seep into the excavation in relatively small quantity which can be handled by the sump pump method.

6.3 Filling and Backfilling

All fill and backfill materials should be pre-approved by the site engineer. The backfill material should be porous granular material free of organic materials and debris. Backfill material should be compacted in lifts no greater than 8 inches in loose thickness. Each layer should be compacted to a minimum 95 percent of the maximum dry density as determined by AASHTO T 99, Standard Proctor Method. The slope of the ground surface behind the wall due to cut and fill should match with the existing slope for proper drainage preferably not steeper than 1:2(V:H). The excavated soil material can be reused for the roadway embankment.

6.4 Wall Construction

The wall should be constructed as per IDOT Standard Specifications and the current special provision developed by IDOT for construction of drilled soldier-pile wall, available at the IDOT web-site (<http://www.dot.state.il.us/bridges/gbsp.html>). A special provision *Permanent Ground Anchors* is available from IDOT BBS. Policies, Standards & Specifications Unit. A temporary casing in the granular soils will be required. It is understood that a storm sewer for IL 84 roadway will be constructed in front of the retaining wall. The construction of this roadway storm sewer is discussed in a separate report (Roadway Geotechnical Report for IL 84 Roadway Reconstruction.) If the roadway storm sewer is to be constructed after construction of the wall, the design of retaining wall should consider temporary excavation performed for construction of roadway storm sewer in front of the wall. It would be preferable to construct roadway storm sewer including backfilling to the proposed roadway subgrade before excavation in front of the wall.

6.5 Construction Monitoring

There is no need for a special construction monitoring for the retaining wall except normally required by the IDOT Standard Specifications.

7.0 QUALIFICATIONS

The analysis and recommendations submitted in this report are based upon the data obtained from the borings performed by Wang at the locations shown on the boring logs and Exhibit 2. This report does not reflect any variations that may occur between the borings or elsewhere on the site, variations whose nature and extent may not become evident until the course of construction. In the event that any changes in the design and/or location of the retaining wall are planned, we should be timely informed so that foundation recommendations can be re-reviewed, and revised if necessary.

It has been a pleasure to assist Parsons Transportation Group and IDOT on this project. Please call if there are any questions, or if we can be of further service.

Respectfully Submitted,

WANG ENGINEERING, INC.

Mohammed A. Kothawala
11-25-14

Mohammed A. Kothawala, P.E., D. GE
Project Manager/Sr. Geotechnical Engineer



Jerry W.H. Wang ICIF

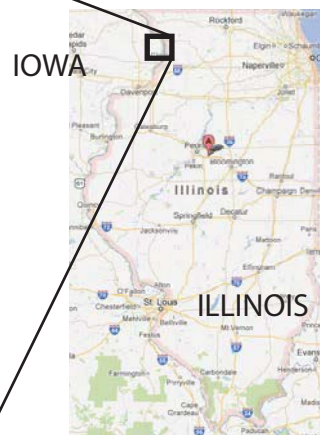
Jerry W.H. Wang, Ph.D., P.E.
Principal

license expires: 11-30-2015

REFERENCES

- AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS (2012) *LRFD Bridge Design Specifications*. United States Department of Transportation, Washington, D.C.
- FRANKIE, W.T., 2001, Guide to the Geology of the Mississippi Palisades State Park and the Savanna Area, Carroll and Jo Daviess Counties, Illinois: ISGS Field Trip Guidebook 2001C, D, Illinois State Geological Survey, 78 p.
- GRIMLEY, D.A., 1997, Quaternary Deposits of Carroll County, Illinois: Illinois State Geological Survey.
- ILLINOIS DEPARTMENT OF TRANSPORTATION (1999) *Geotechnical Manual*. IDOT Bureau of Materials and Physical Research, Springfield, IL.
- ILLINOIS DEPARTMENT OF TRANSPORTATION (2012) *Standard Specifications for Road and Bridge Construction*. IDOT Division of Highways, Springfield, IL.
- ILLINOIS DEPARTMENT OF TRANSPORTATION (2012) *Bridge Manual*. IDOT Bureau of Bridges and Structures, Springfield, IL.
- LEIGHTON, M.M., EKBLAW, G.E., and HORBERG, L. (1948) *Physiographic Divisions of Illinois*. The Journal of Geology, v. 56, p. 16-33.

EXHIBITS



0 1 2 3 4 miles

SITE LOCATION MAP: US 52/IL 64/IL 84, SN 008-7001
CARROLL COUNTY, ILLINOIS

SCALE: GRAPHICAL

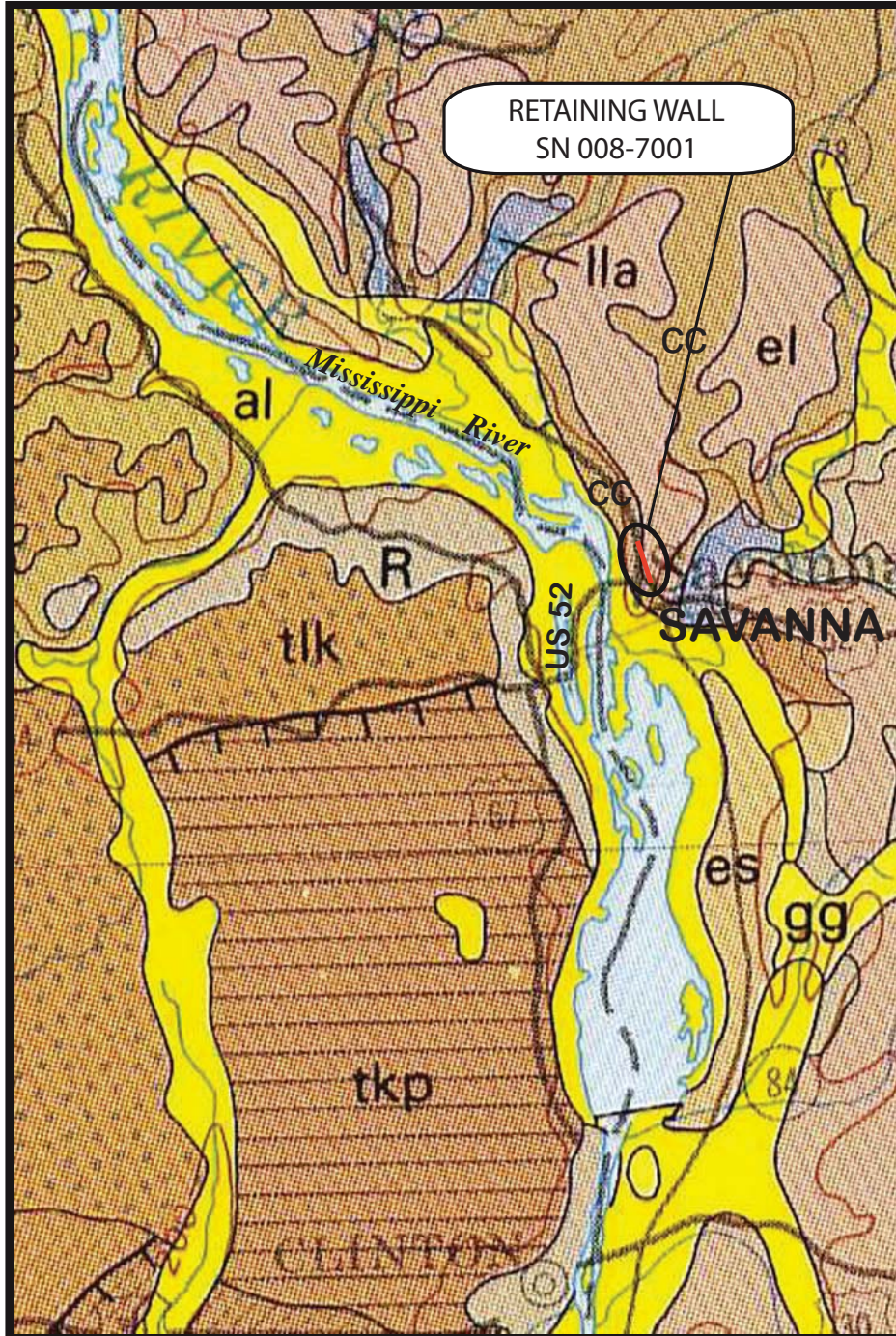
EXHIBIT 1

DRAWN BY: C. Marin
CHECKED BY: M. Kothawala



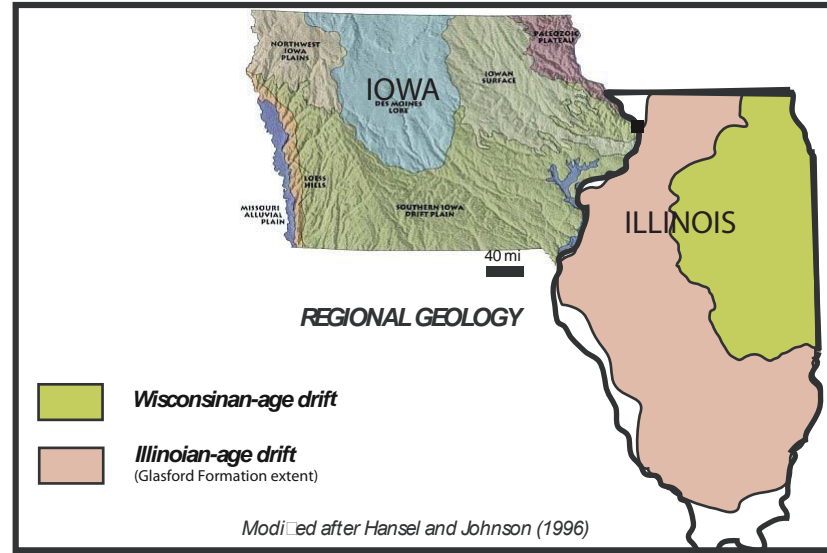
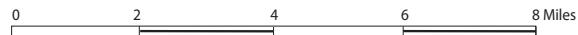
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FOR PARSONS TRANSPORTATION GROUP, INC. 342-06-02



RETAINING WALL
SN 008-7001

Modified after Richmond et al. (1991)



REGIONAL GEOLOGY

- Wisconsinan-age drift
- Illinoian-age drift (Glasford Formation extent)

Modified after Hansel and Johnson (1996)

LEGEND

- al** **Cahokia Alluvium,**
Deposits in flood plains and channels of modern rivers and streams; stratified silt, clay and sand with wood and shell fragments;
- es** **Parkland Sand,**
Eolian sheet sand, brown, well-sorted, medium to fine sand; blanketlike deposits and dune overlies the lake deposits;
- el** **Peoria Loess,**
Gray to yellowish-brown windblown silt and silt loam; mapped only in Illinois and where its thickness is more than 6 m;
- cc** **Collivium,**
Material transported and deposited by mass-wasting processes; brown or reddish-brown to gray clay, sandy caly, or clayey sand contains angular and subangular clasts of dolostone, chert, minor limestone and sandstone; thin discontinuous patches, mapped only in Illinois;
- lla** **Equality Formation,**
Slackwater lake deposits; stratified silt, clay and sand; yellowish-brown to brown and gray, massive to thinly laminated silty clay and silt;
- gg** **Henry Formation,**
Outwash sand and gravel deposits; yellowish-brown to gray pebble to cobble gravel in fine to coarse sand matrix; mapped only in Illinois;
- tkp** **Glasford Formation,**
Ground moraine; loamy till, reddish-brown to bluish-gray clay lom and loam; texture from sany loam to clay loam, massive and compact with clasts of limestone and dolostone, occasionaly shale, sandstone, granite, coal;
- tk** **Walf Creek Formation,**
Pre-Illinoian loamy till, light- to dark-gray sandy to silty loam; nonsorted to poorly sorted; compact calcareous; clasts of pebble and gravel size, most are granite and fine-grained igneous and metamorphis rocks.
- R** **Bedrock,**
Silurian dolstone and Ordovician Maquoketa shale and Galena dolostone

Modified after Richmond et al. (1991)

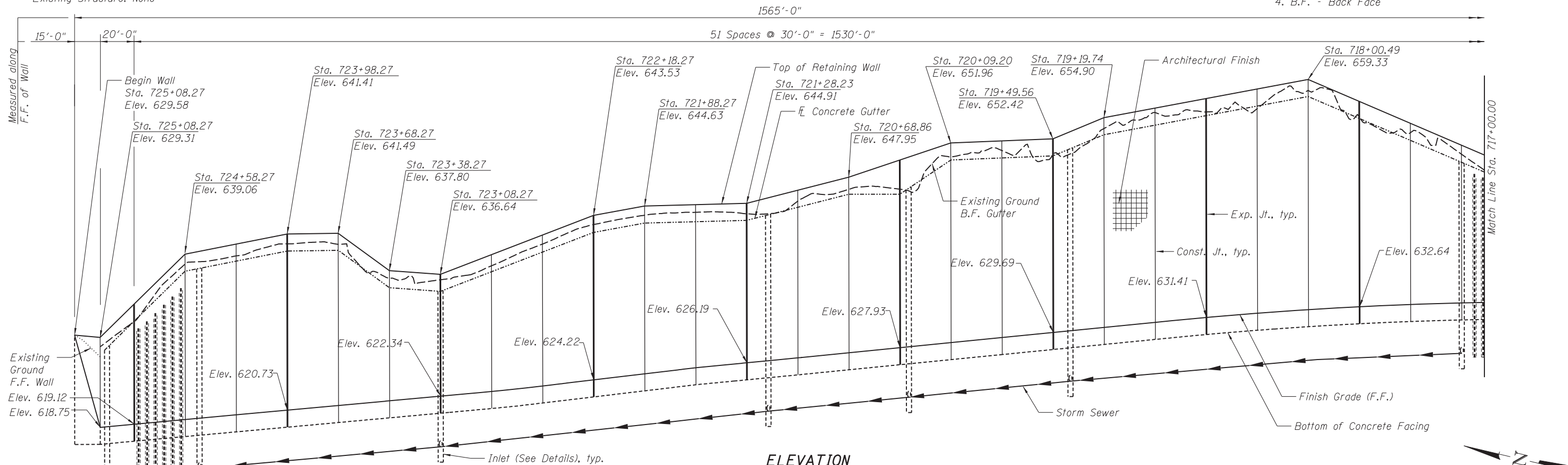
SITE AND REGIONAL GEOLOGY: US52/IL 64/IL 84, SN 008-7001, CARROLL COUNTY, ILLINOIS

SCALE: GRAPHICAL	EXHIBIT 2	DRAWN BY: C. Marin CHECKED BY: L. Iordache
		1145 N. Main Street Lombard, IL 60148 www.wangeng.com
FOR PARSONS TRANSPORTATION GROUP, INC.		342-06-02

Benchmark:
 BM CP5 - Concrete pedestal set south of the west abutment
 of Illinois River Bridge SN 008-6000 on US 52 @ Savanna @
 Sta. 1560+65.46; Offset 24.85' Lt. NAVD 88 = 597.891 Ft.

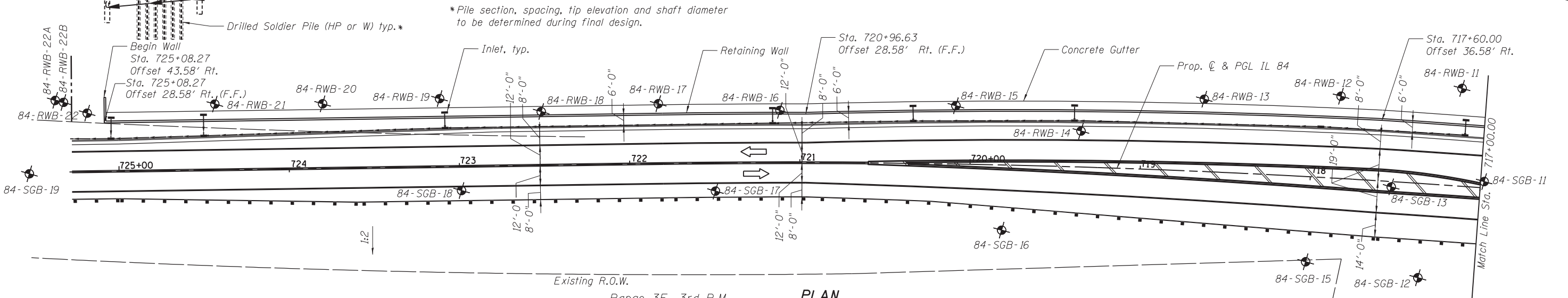
Existing Structure: None

- Notes:
 1. All Elevations are given in NAVD 1988 Datum unless noted.
 2. Denotes soil boring.
 3. F.F. - Front Face
 4. B.F. - Back Face



ELEVATION

*Pile section, spacing, tip elevation and shaft diameter to be determined during final design.



PLAN

DESIGN SPECIFICATIONS

2012 AASHTO LRFD Bridge
 Design Specifications, 6th Edition
 with 2013 Interims

DESIGN STRESSES

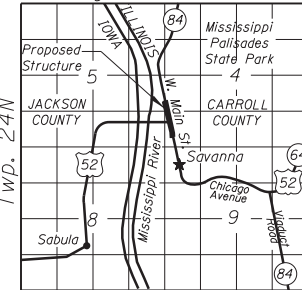
FIELD UNITS

$f'_c = 3,500$ psi
 $f_y = 60,000$ psi (Reinforcement)
 $f_y = 50,000$ psi (M270 Grade 50)

HIGHWAY CLASSIFICATION

US 52/IL 64/IL 84 (FAP 17/308)
 Functional Class: Other Principal Arterial
 ADT: 4150 (2015); 4350 (2035)
 ADTT: 430 (2015); 450 (2035)
 DHV: 440
 Design Speed: Varies 55 m.p.h. to 45 m.p.h.
 Posted Speed: Varies 55 m.p.h. to 40 m.p.h.
 Two-Way Traffic
 Directional Distribution: 50/50

Range 3E, 3rd P.M.



LOCATION SKETCH

GENERAL PLAN

US 52/IL 64/IL 84
 F.A.P. RTE. 17/308-SEC. 104B-2
 CARROLL COUNTY
 STATION 725+10.00 TO 709+70.00
 STRUCTURE NO. 008-7001

BORING LOCATION PLAN: US 52/IL 64/IL 84, SN 008-7001
 CARROLL COUNTY, ILLINOIS

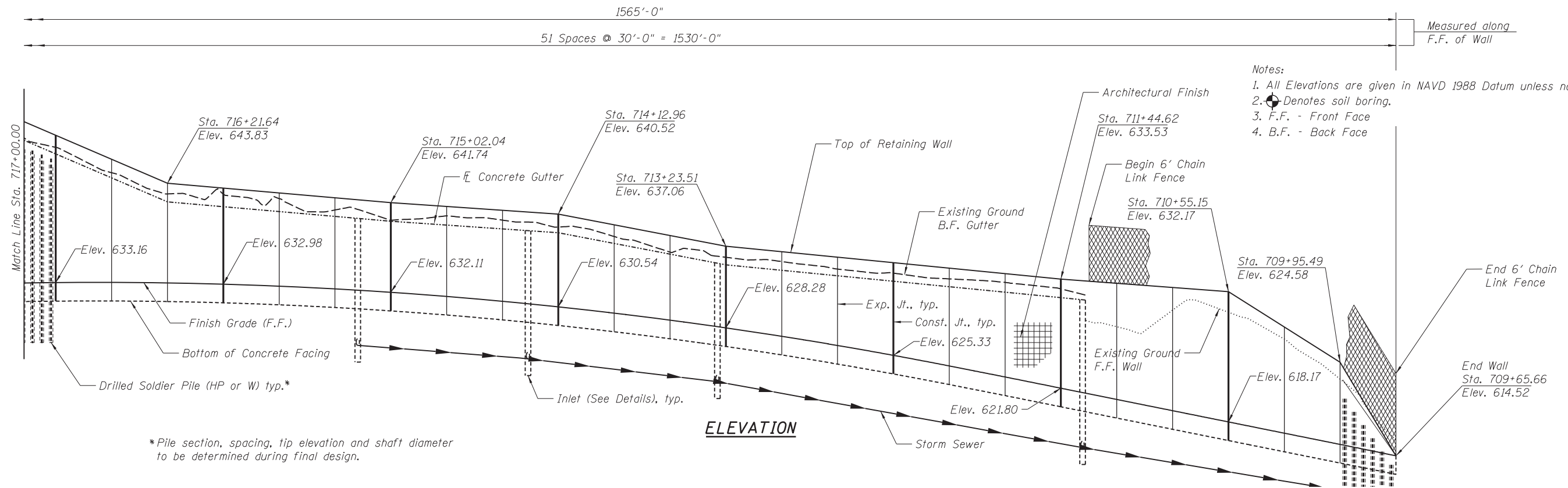
SCALE GRAPHICAL	EXHIBIT 3-1	DRAWN BY: C. Marin CHECKED BY: M. Kothawala
		1145 N. Main Street Lombard, IL 60148 www.wangeng.com
FOR PARSONS TRANSPORTATION GROUP, INC.		342-06-01

PARSONS

USER NAME = p005313a	DESIGNED - JC	REVISED -
DATE = 7/30/14	CHECKED - GH	REVISED -
PLOT SCALE =	DRAWN - SQ	REVISED -
PLOT DATE = 8/13/2014	CHECKED - GH	REVISED -

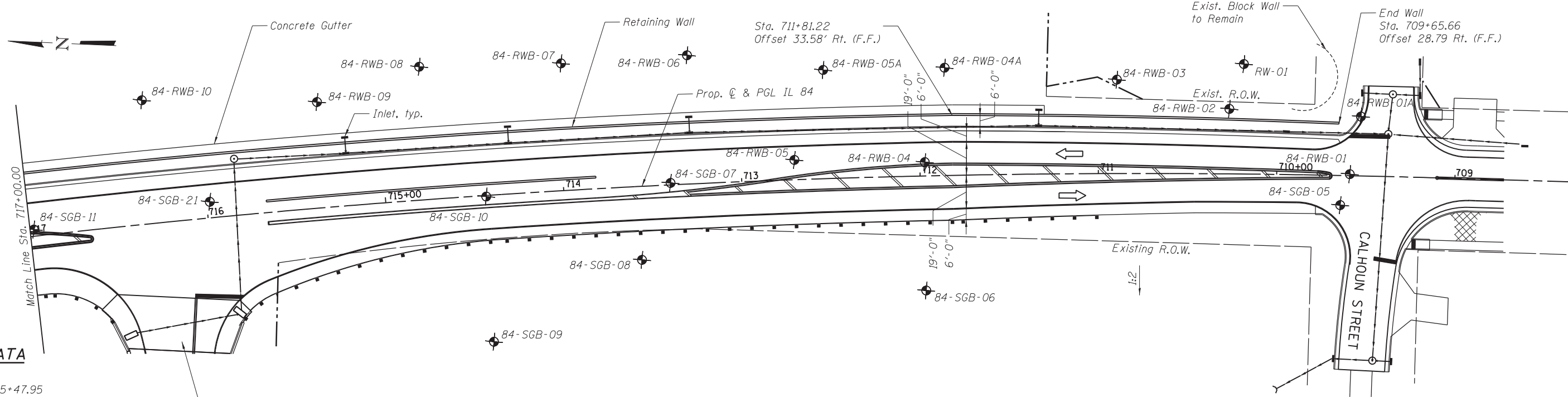
STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
17	104B-2	CARROLL		
				CONTRACT NO. 64G59
ILLINOIS FED. AID PROJECT				



*Pile section, spacing, tip elevation and shaft diameter to be determined during final design.

ELEVATION



CURVE DATA
(IL 84)

PI STA. = 715+47.95
 Δ = 13° 11' 06" (LT)
D = 1° 02' 17"
R = 5,520.00'
T = 637.95'
L = 1,270.27'
E = 36.74'
e = 2.40%
T.R. = 41.00'
S.E. RUN = 65.00'
P.C. STA. = 709+10.00
P.T. STA. = 721+80.27

Approach to Proposed US 52/IL 64
Over Mississippi River
SN: 008-0052

PLAN

GENERAL PLAN
US 52/IL 64/IL 84
F.A.P. RTE. 17/308-SEC. 104B-2
CARROLL COUNTY
STATION 725+10.00 TO 709+70.00
STRUCTURE NO. 008-7001

BORING LOCATION PLAN: US52/IL 64/IL 84, SN 008-7001
CARROLL COUNTY, ILLINOIS

SCALE GRAPHICAL EXHIBIT 3-2
DRAWN BY: C. Marin
CHECKED BY: M. Kothawala

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

FOR PARSONS TRANSPORTATION GROUP, INC. 342-06-01

PARSONS

USER NAME = p005313a	DESIGNED - JC	REVISED -
DATE = 7/30/14	CHECKED - GH	REVISED -
PLOT SCALE =	DRAWN - SQ	REVISED -
PLOT DATE = 8/13/2014	CHECKED - GH	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET NO. 2 OF 3 SHEETS

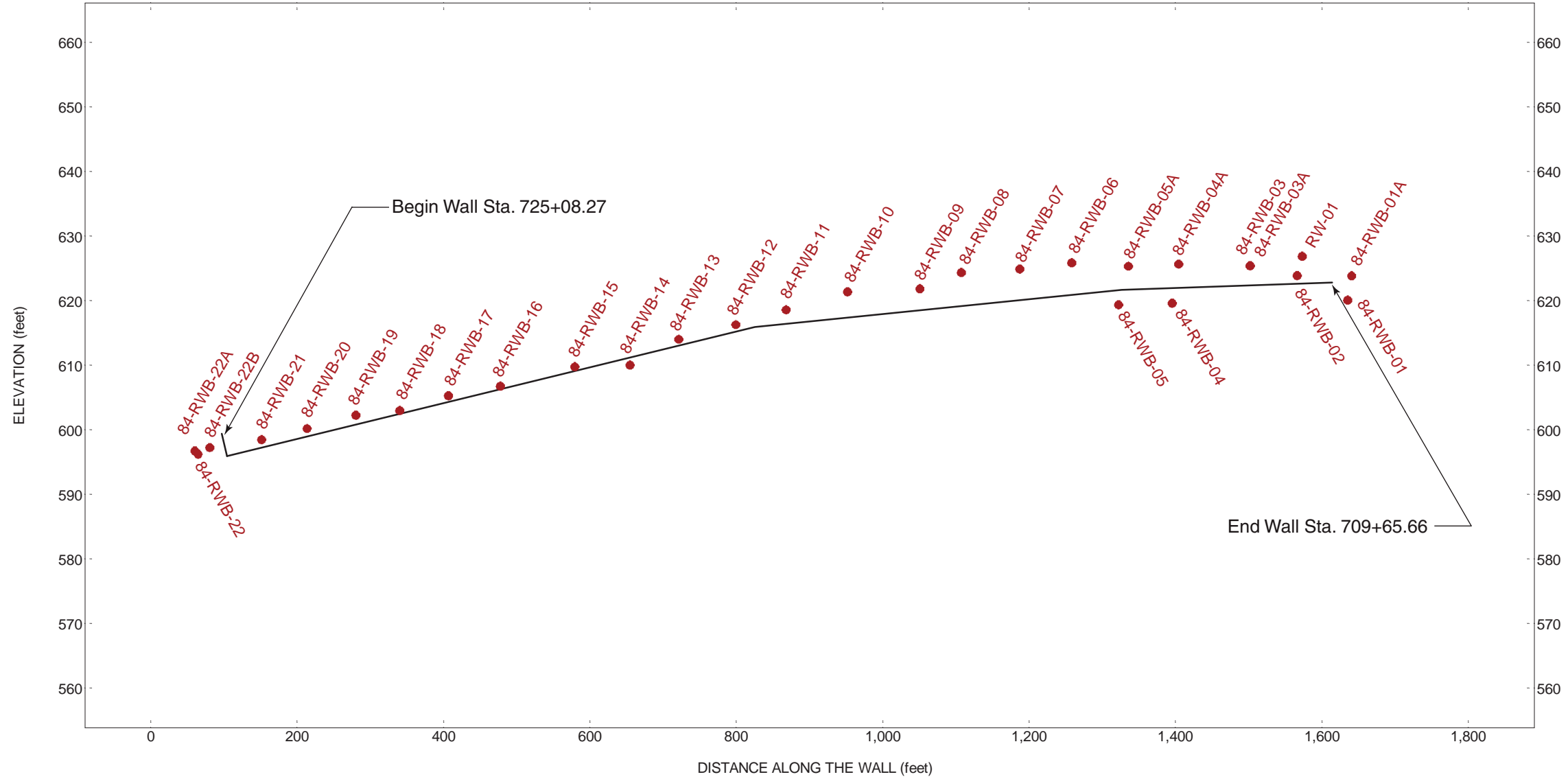
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
17	104B-2	CARROLL		
CONTRACT NO. 64C59				

ILLINOIS FED. AID PROJECT

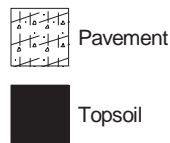
FILE NAME = p:\top\p02\purn\01\parsons.com\illinois\State Documents\US52IL64 - 647512\04\purn\cadd\Reinring Wall\A_Sheets_Z80111-SHT-RE102.dgn



BORINGS LOCATION ALONG THE WALL



Lithology Graphics



Pavement



Topsoil



Gravelly sand, sandy gravel



IDH Sand, Sandy Loam



IDH Silty Clay, Silty Clay Loam



IDH Clay Loam



IDH Silt, Silty Loam



Weathered bedrock



Weak Shale Bedrock

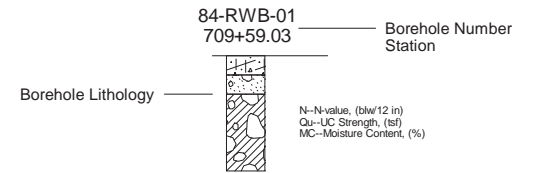


Competent Shale Bedrock

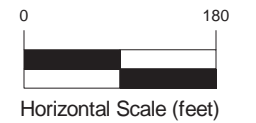
LEGEND

Site Map Scale 1 inch equals 660 feet

Explanation:



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



Vertical Exaggeration: 9x

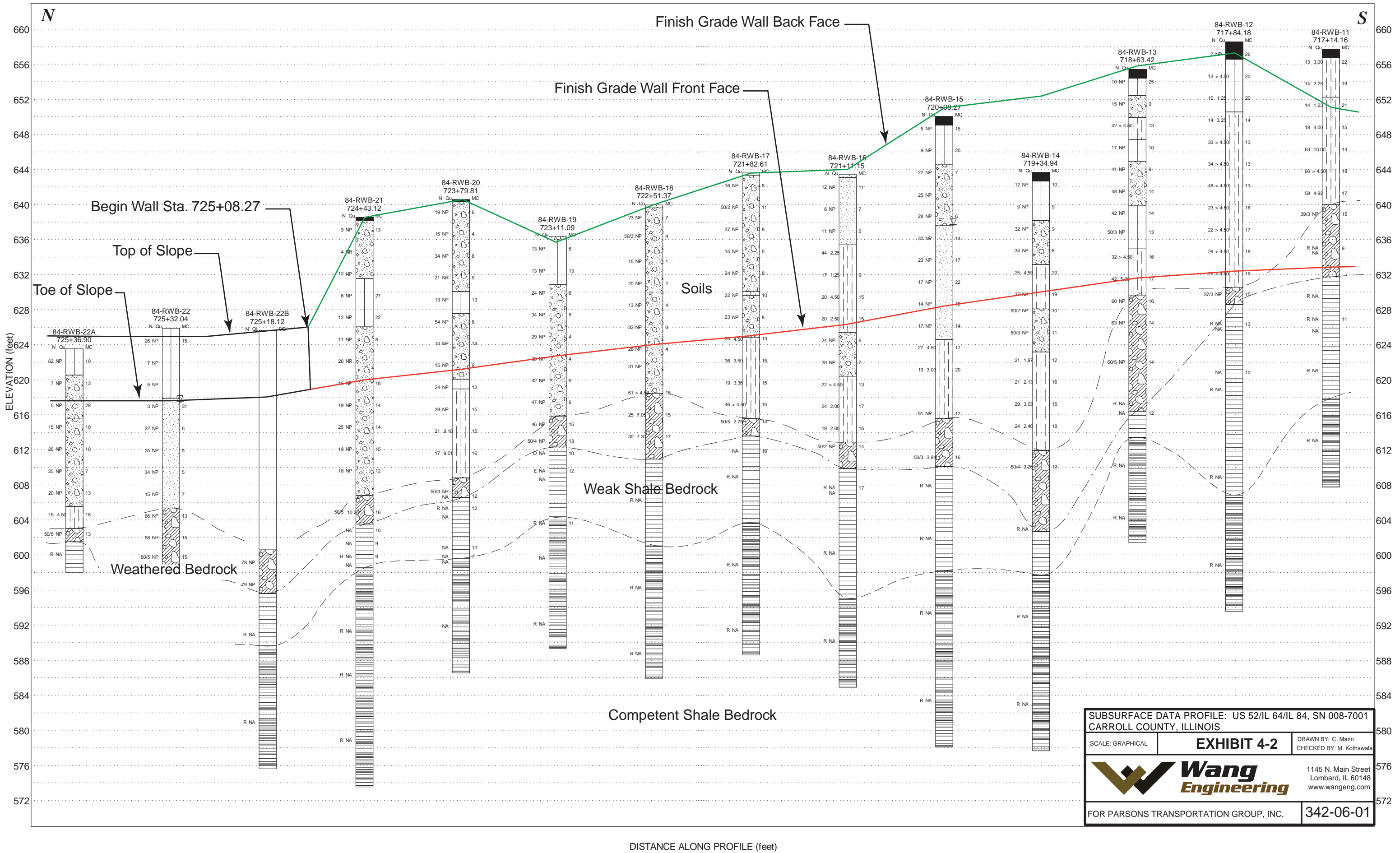
Wang Engineering
 1145 N Main Street
 Lombard, IL 60148

Subsurface Data Profile

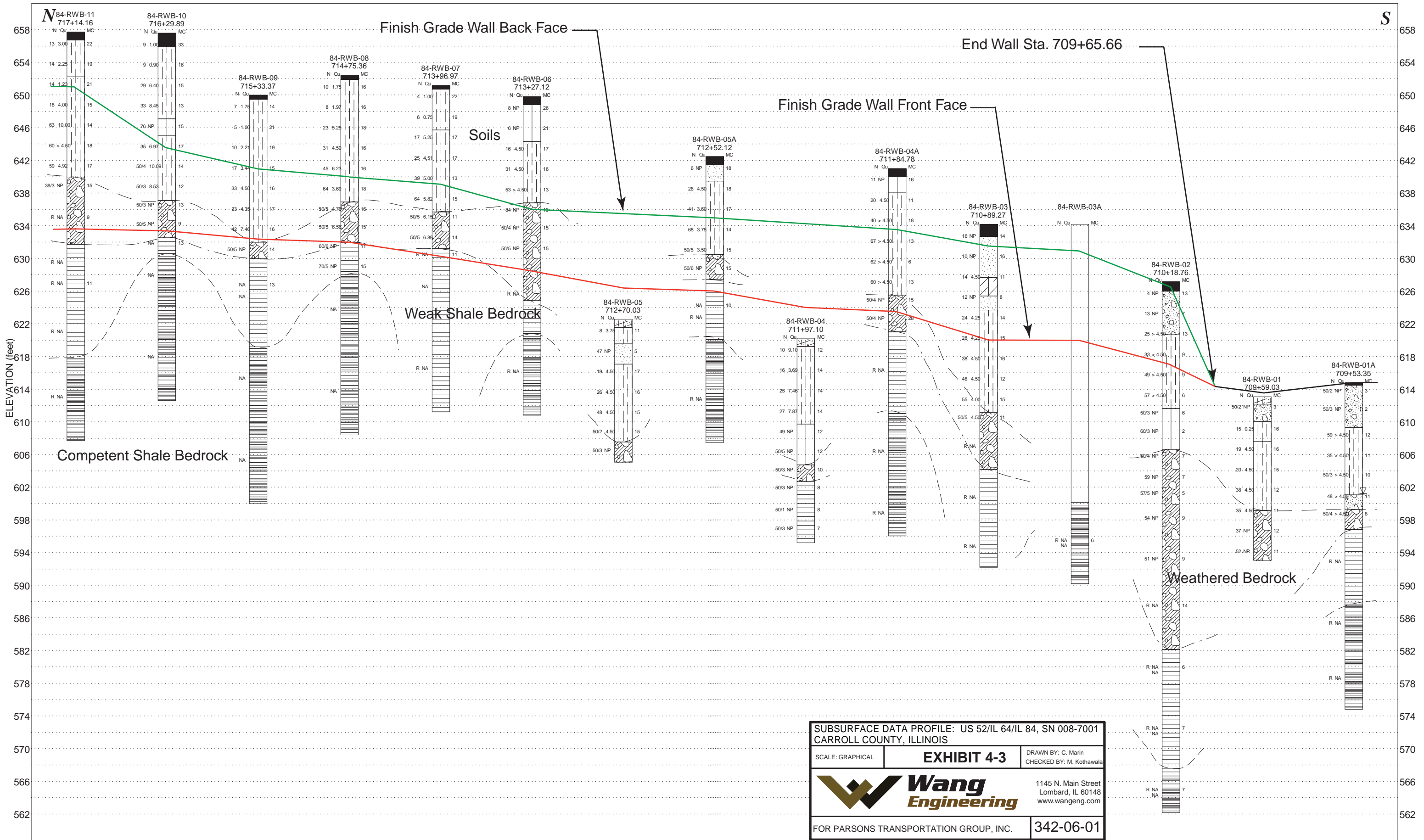


US 52 / IL 64 / IL 84
 Carrol County, Illinois

JOB NUMBER	PLATE NUMBER
342-06-02	EXHIBIT 4-1



DISTANCE ALONG PROFILE (feet)



SUBSURFACE DATA PROFILE: US 52/IL 64/IL 84, SN 008-7001		
CARROLL COUNTY, ILLINOIS		
SCALE: GRAPHICAL	EXHIBIT 4-3	DRAWN BY: C. Marin CHECKED BY: M. Kothawala
		1145 N. Main Street Lombard, IL 60148 www.wangeng.com
FOR PARSONS TRANSPORTATION GROUP, INC.		342-06-01

DISTANCE ALONG PROFILE (feet)

APPENDIX A



BORING LOG RW-01

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 Lombard, IL 60148
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 Fax: 630 953-9938

WEI Job No.: 342-06-02

Client **PARSONS**
 Project **US 52 over Mississippi River and IL 84 Retaining Wall**
 Location **Carrol County, IL**

Datum: NAVD 88
 Elevation: 626.25 ft
 North: 1979857.76 ft
 East: 2299120.56 ft
 Station: 710+26.71
 Offset: 36.96 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	625.8	6-inch thick, black SILTY CLAY LOAM --TOPSOIL--			1	6	1.50 P	15									
		Very dense, brown weathered dolostone fragments --COLLUVIUM-- --HARD DRILLING--	5		2	30 25 32	NP	4									
		--HARD DRILLING--			3	20 23 11	NP	8									
			10		4	13 13 17	NP	10									
	615.8	Hard, gray SILTY CLAY to SILTY LOAM, some shale and mudstone fragments --WEATHERED SHALE BEDROCK--			5	10 19 20	4.50 P	13									
			15		6	21 35 40	4.50 P	18									
					7	30 42 42	NP	12									
	606.8	Very dense, dark gray interbedded MUDSTONE and SHALE --BEDROCK--	20		8	24 38 50/3	NP	14									
					9	50/5	NP	16									
	602.5	Boring terminated at 23.75 ft	25		10	50/3	NP	15									

WANGENG 3420602.GPJ WANGENG.GDT 7/17/14

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **11-21-2011** Complete Drilling **11-21-2011**
 Drilling Contractor **Wang Testing Services** Drill Rig **B-57 TMR**
 Driller **R&N** Logger **F. Bozga** Checked by **C. Marin**
 Drilling Method **3.5" HSA**

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

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



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BORING LOG 84-RWB-01

WEI Job No.: 342-06-02

Client: **Parsons Transportation Group, Inc.**
 Project: **US 52 / IL 64 / IL 84**
 Location: **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 613.08 ft
 North: 1979795.75 ft
 East: 2299061.45 ft
 Station: 709+59.03
 Offset: 01.10 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	612.1	12-inch thick, ASPHALT --PAVEMENT--															
	610.1	Very dense, brown and yellow SANDY GRAVEL, some cobbles --FILL--		▲	1	11 25 50/2	NP	3									
	607.6	Soft, brown GRAVELLY SILTY CLAY --FILL--	5	▲	2	3 6 9	0.25 P	16									
		Hard, gray SILTY CLAY to SILTY CLAY LOAM, trace gravel		▲	3	4 8 11	4.50 P	16									
		--L _L (%)=36, P _L (%)=17-- --%Gravel=6.4-- --%Sand=11.8-- --%Silt=51.3-- --%Clay=30.5-- --A-6 (14)--	10	▲	4	4 8 12	4.50 P	15									
				▲	5	7 17 21	4.50 P	12									
	599.2	Very dense, reddish brown and gray GRAVELLY SANDY LOAM, 15 some shale fragments --WEATHERED SHALE BEDROCK--	15	▲	6	10 16 19	4.50 P	11									
		--%Gravel=35.9-- --%Sand=45.0-- --%Silt=16.0-- --%Clay=3.1-- --A-1-b (0)--		▲	7	6 14 23	NP	12									
	593.1		20	▲	8	13 25 27	NP	11									
<p>NOTE: SPT values for samples obtained using 3-inch split-spoon have been adjusted. Boring terminated at 20.00 ft</p>																	

WANGENG 3420602.GPJ WANGENG.GDT 8/14/14

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling: **12-13-2013** Complete Drilling: **12-13-2013**
 Drilling Contractor: **Wang Testing Services** Drill Rig: **CME 55 TMR**
 Driller: **R&N** Logger: **A. Tomaras** Checked by: **C. Marin**
 Drilling Method: **3.25" HSA, boring backfilled upon completion**

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

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



BORING LOG 84-RWB-01A

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 1145 N Main Street
 Lombard, IL 60148
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 Fax: 630 953-9938

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 614.83 ft
 North: 1979790.91 ft
 East: 2299093.98 ft
 Station: 709+53.35
 Offset: 33.49 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	
	614.5	Black, SILTY LOAM --TOPSOIL--																
		Very dense, brown GRAVELLY SAND, some cobbles --HARD DRILLING 1-2.5'-- --HARD DRILLING 3.5-6'--		X	1	46 50/2	NP	3		588.3	Competent rock, moderate strength, gray and brown, poor to fair rock mass quality, slightly weathered to fresh, 3 to 7 inch spacing of the joints, laminated to massive SHALE and MUDSTONE							
			5	X	2	50/3	NP	2			--RUN 2: 26.5-33' --RECOVERY= 67% --RQD= 44%	30		2				
	609.3	Hard, greenish gray, SILTY CLAY --HARD DRILLING 6-13.5'--		X	3	14 29 30	> 4.50 P	12										
			10	X	4	17 22 13	> 4.50 P	11			--RUN 2: 33.0 to 40.0' --RECOVERY= 100% --RQD= 63% ³⁵ 34.6 ft-Qu=2800 psi --->							
				X	5	13 27 50/3	> 4.50 P	10						3				
	601.1	Dense, brown SANDY GRAVEL, trace cobbles --Wet--	15	X	6	21 24 24	> 4.50 P	11										
	599.3	Hard, gray SILTY CLAY LOAM to SILTY LOAM, trace shale fragments --WEATHERED SHALE BEDROCK--		X	7	18 50/4	> 4.50 P	8		574.8	Boring terminated at 40.00 ft							
	596.8	Very weak to weak strength, gray and brown, very poor rock mass quality, highly weathered, laminated to massive SHALE and MUDSTONE --RUN 1: 18-26.5' --RECOVERY: 62% --RQD: 18%	20									45						
			25		1							50						

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **05-08-2014** Complete Drilling **05-08-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**
 Driller **R&J** Logger **A. Tomaras** Checked by **C. Marin**
 Drilling Method **3.25" HSA, boring backfilled upon completion**

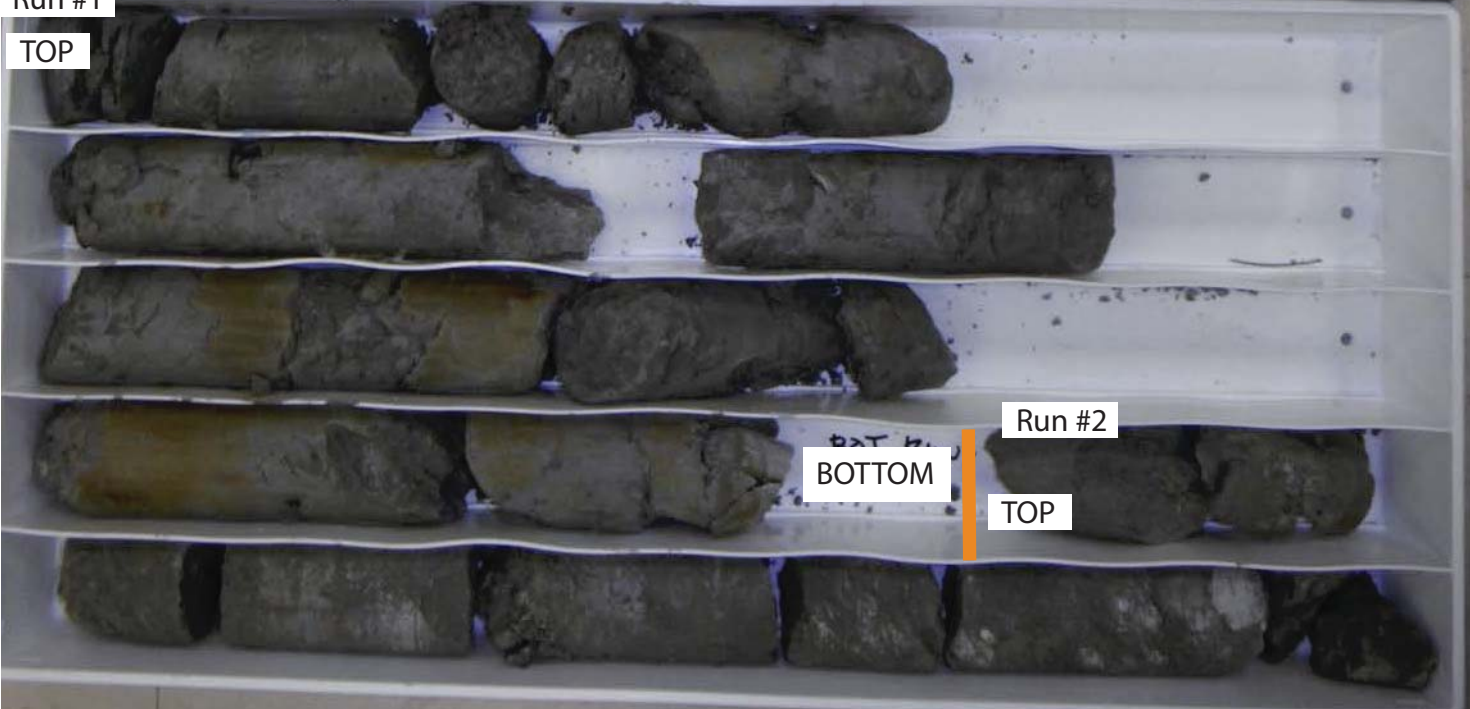
While Drilling ∇ **13.75 ft**
 At Completion of Drilling ∇ **NA**
 Time After Drilling **NA**
 Depth to Water ∇ **NA**

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

WANGENGINC 3420602.GPJ WANGENG.GDT 8/14/14

Run #1

TOP



Run #2

BOTTOM

TOP

Run #3

TOP



BOTTOM

BOTTOM

BEDROCK CORE: IL 84 RETAINING WALL,
SAVANNA, ILLINOIS / SABULA, IOWA

SCALE: GRAPHIC

84-RWB-01B

DRAWN BY: C.L.M.
CHECKED BY: M.A.K.



Wang
Engineering

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

FOR PARSONS CORPORATION

342-06-01

Boring 84-RWB-01B:

- Run #1, 18.0' to 26.5', RECOVERY = 62%, RQD = 18%
- Run #2, 26.5' to 33.0', RECOVERY = 67%, RQD = 44%
- Run #3, 33.0' to 40.0', RECOVERY = 100%, RQD = 63%



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BORING LOG 84-RWB-02

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 627.17 ft
 North: 1979864.82 ft
 East: 2299095.05 ft
 Station: 710+18.76
 Offset: 62.17 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	
	626.0	14-inch thick, brown SILTY CLAY LOAM with roots --TOPSOIL--			1	3 2 2	NP	13			--%Silt=45.3-- --%Clay=27.3-- --A-6 (12)--			11	5 5	NP	5	
		Loose to medium dense, brown SANDY GRAVEL	5		2	2 5 8	NP	7				30		12	14 21 33	NP	9	
	620.7	Hard, brown and green SILTY CLAY LOAM to SILTY LOAM, little to some gravel	10		3	8 12 13	> 4.50 P	13										
			15		4	10 13 20	> 4.50 P	9				35		13	24 31 20	NP	9	
					5	13 22 27	> 4.50 P	9			--L _L (%)=34, P _L (%)=17-- --%Gravel=5.2-- --%Sand=4.3-- --%Silt=55.3-- --%Clay=35.2-- --A-6 (15)--							
					6	17 21 36	> 4.50 P	6			--RUN 1: 35.0 to 45.0 feet-- --RECOVERY = 16%--40 --RQD = 0%--			1				14
	611.7	Very dense, green and brown SILTY LOAM to SILT, some gravel	20		7	35 50/3	NP	6										
					8	60/3	NP	2										
	606.7	Very dense, gray and brown SILTY LOAM so SILTY CLAY, trace shale fragments --WEATHERED SHALE BEDROCK--	45		9	20 47 50/4	NP	7		582.2	Weak strength, brown and gray, poor to fair rock mass quality, highly weathered, highly fragmented SHALE --RUN 2: 45.0 to 50.0 feet-- --RECOVERY = 88%-- --RQD = 72%--			2				6
					10	28 18 41	NP	7				50						

WANGENGINC 3420602.GPJ WANGENG.GDT 8/14/14

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **07-08-2014** Complete Drilling **07-08-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 Turbo ATV**
 Driller **K&P** Logger **M. de los Reyes** Checked by **C. Marin**
 Drilling Method **3.25" HSA, boring backfilled upon completion**

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

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



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BORING LOG 84-RWB-02

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 627.17 ft
 North: 1979864.82 ft
 East: 2299095.05 ft
 Station: 710+18.76
 Offset: 62.17 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--RUN 3: 50.0 to 60.0 feet --RECOVERY = 76%-- --RQD = 47%--	55		3	0 0 0 0 0		7									
	567.2	Competent rock, moderate strength, gray, fair rock mass quality, slightly weathered to fresh, laminated to massive, interbedded SHALE and MUDSTONE --RUN 4: 60.0 to 65.0 feet --RECOVERY = 92%-- --RQD = 72%--	60		4	0 0 0 0 0		7									
	562.2	Boring terminated at 65.00 ft	65														
			70														
			75														

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **07-08-2014** Complete Drilling **07-08-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 Turbo ATV**
 Driller **K&P** Logger **M. de los Reyes** Checked by **C. Marin**
 Drilling Method **3.25" HSA, boring backfilled upon completion**

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

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



Boring 84-RWB-02

Run #1, 35.0' to 45.0', RECOVERY = 16%, RQD = 0%
 Run #2, 45.0' to 50.0', RECOVERY = 88%, RQD = 72%
 Run #3, 50.0' to 60.0', RECOVERY = 76%, RQD = 47%
 Run #4, 60.0' to 65.0', RECOVERY = 92%, RQD = 72%

BEDROCK CORE: IL 84 RETAINING WALL,
 SAVANNA, ILLINOIS

SCALE: GRAPHIC

84-RWB-02

DRAWN BY: M.DLR
 CHECKED BY: C.LM



Wang
 Engineering

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 www.wangeng.com

FOR PARSONS CORPORATION

342-06-02



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 Fax: 630 953-9938

BORING LOG 84-RWB-03

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 634.19 ft
 North: 1979928.56 ft
 East: 2299108.70 ft
 Station: 710+89.27
 Offset: 53.46 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	632.7	18-inch thick, Dark brown SILTY LOAM --TOPSOIL--			1	3 7 9	NP	14			BEDROCK--						
		Medium dense, red and brown, fine and medium SAND, with brick fragments --FILL--	5		2	2 3 7	NP	16			--RUN 1: 25.0-30.0 ft --RECOVERY= 8% --RQD= 0%			1			
	627.7	Hard, brown CLAY LOAM, little gravel --FILL-- --Wet--			3	8 7 7	4.50 P	11		604.2	Very weak to weak strength, gray and brown, very poor to poor rock mass quality, highly to moderately weathered, 3 inch spacing of the joints, laminated SHALE						
	625.4	Medium dense, brown and red, SANDY LOAM, little gravel and brick fragments	10		4	5 5 7	NP	8			--RUN 2: 30.0-37.5 ft --RECOVERY= 60% --RQD= 29% 32.0 ft-Qu=1030 psi -->			2			
	623.7	Hard, brown and blue gray, SILTY CLAY LOAM, with shale fragments and gravel --FILL--			5	5 8 16	4.25 P	14									
			15		6	10 13 15	4.25 P	15			--RUN : 37.5-42.0 ft --RECOVERY= 22% --RQD= 9%			3			
		--L _i (%)=33, P _L (%)=17-- --%Gravel=15.0-- --%Sand=14.4-- --%Silt=46.8-- --%Clay=23.8-- --A-6 (9)--			7	20 17 21	4.50 P	16		592.2	Boring terminated at 42.00 ft						
			20		8	23 20 26	4.50 P	12									
					9	15 22 33	4.00 P	15									
	611.2	Hard, brown and gray SILTY CLAY LOAM to SILTY LOAM, trace shale fragments --WEATHERED SHALE	25		10	36 50/5	4.50 P	11									

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **06-10-2014** Complete Drilling **06-10-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
 Driller **N&K** Logger **A. Happel** Checked by **C. Marin**
 Drilling Method **2.25" HSA. 2.5' interval to 25', Rock core thereafter**

While Drilling **NA**
 At Completion of Drilling **12.5 (MUD)**
 Time After Drilling **NA**
 Depth to Water **NA**

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

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BORING LOG 84-RWB-03A

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carrol County, Illinois**

Datum: NAVD 88
 Elevation: 634.19 ft
 North: 1979928.56 ft
 East: 2299108.70 ft
 Station:
 Offset:

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--Drilled without sampling--	5									30					
			10							600.2	Competent rock, moderate strength, gray and brown, fair rock mass quality, highly to moderately weathered, interbedded SHALE and MUDSTONE --RUN 1: 34.0-44.0 ft --RECOVERY= 86% --RQD= 66%	35					
			15									40		1			6
			20							590.2	Boring terminated at 44.00 ft	45					
			25									50					

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **07-08-2014** Complete Drilling **07-08-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 Turbo ATV**
 Driller **K&P** Logger **M. de los Reyes** Checked by
 Drilling Method

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

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

84-RWB-03



84-RWB-03A



Boring 84-RWB-03

Run #1, 25.0' to 30.0', RECOVERY = 8%, RQD = 0%
 Run #2, 30.0' to 37.5', RECOVERY = 60%, RQD = 29%
 Run #3, 37.5' to 42.0', RECOVERY = 22%, RQD = 9%

Boring 84-RWB-03A

Run #1, 34.0' to 44.0', RECOVERY = 86%, RQD = 66%

BEDROCK CORE: IL 84 RETAINING WALL,
 SAVANNA, ILLINOIS / SABULA, IOWA

SCALE: GRAPHIC

84-RWB-03 and -03A

DRAWN BY: C.L.M.
 CHECKED BY: M.A.K.



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BORING LOG 84-RWB-04

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 620.24 ft
 North: 1980034.13 ft
 East: 2299057.75 ft
 Station: 711+97.10
 Offset: 08.96 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	619.2	12-inch thick, ASPHALT --PAVEMENT--															
		Very stiff to hard, gray SILTY CLAY LOAM, trace to some gravel			1	9 5 5	9.10 B	12									
			5		2	3 6 10	3.69 B	14									
					3	5 7 18	7.46 B	14									
			10		4	10 12 15	7.87 S	14									
	609.7	Dense to very dense, gray SILTY LOAM to SILTY CLAY			5	7 20 29	NP	12									
		--L _L (%)=37, P _L (%)=17-- --%Gravel=0.4-- --%Sand=4.4-- --%Silt=57.4-- --%Clay=37.9--			6	10 25 50/5	NP	12									
	604.7	Very dense, gray SILTY LOAM, some shale fragments			7	25 50/3	NP	10									
	602.7	--WEATHERED SHALE BEDROCK--			8	50/3	NP	8									
		Very dense, gray laminated SHALE fragments --SHALE BEDROCK--	20		9	50 50/1	NP	8									
					10	50/3	NP	7									
	595.2	Boring terminated at 25.00 ft	25														

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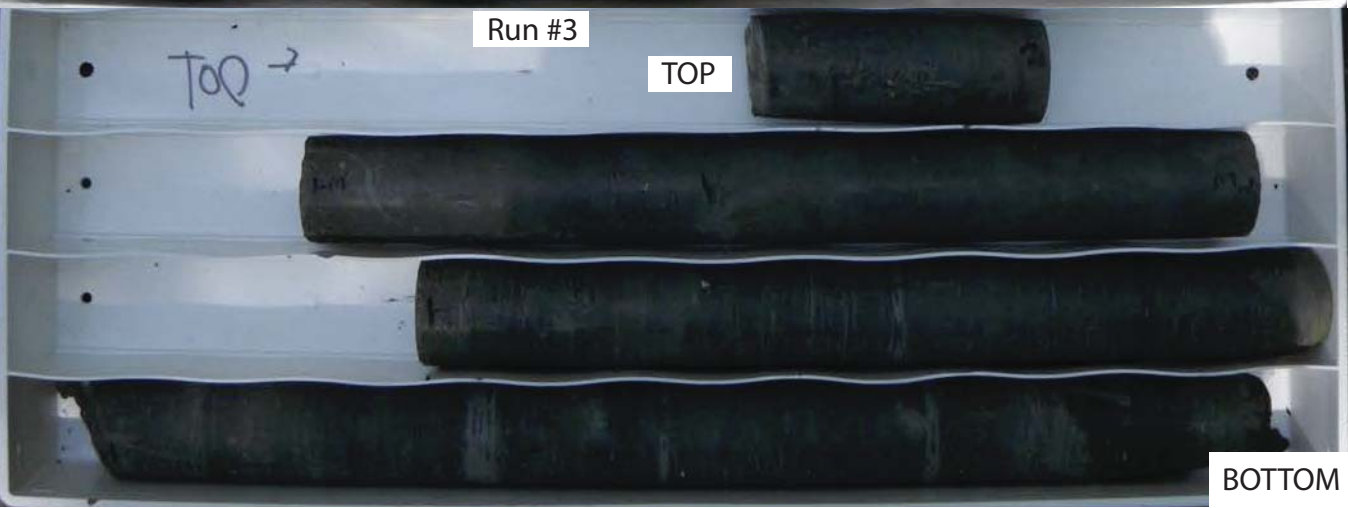
GENERAL NOTES

Begin Drilling **12-13-2013** Complete Drilling **12-13-2013**
 Drilling Contractor **Wang Testing Services** Drill Rig **CME 55 TMR**
 Driller **R&N** Logger **A. Tomaras** Checked by **C. Marin**
 Drilling Method **3.25" HSA, boring backfilled upon completion**


WATER LEVEL DATA

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

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



Boring 84-RWB-04A
 Run #1, 20.0' to 30.0', RECOVERY = 60%, RQD = 37%
 Run #2, 30.0' to 40.0', RECOVERY = 95%, RQD = 93%
 Run #3, 40.0' to 50.0', RECOVERY = 100%, RQD = 100%

BEDROCK CORE: IL 84 RETAINING WALL, SAVANNA, ILLINOIS / SABULA, IOWA		
SCALE: GRAPHIC	84-RWB-04A	DRAWN BY: C.L.M. CHECKED BY: M.A.K.
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BORING LOG 84-RWB-05

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 622.57 ft
 North: 1980107.26 ft
 East: 2299055.79 ft
 Station: 712+70.03
 Offset: 12.61 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	621.6	12-inch thick, ASPHALT --PAVEMENT--															
	619.6	Very stiff, brown and gray SILTY CLAY LOAM, some gravel --FILL--			1	8 4 4	3.75 P	11									
	617.1	Dense, brown GRAVELLY SANDY LOAM	5		2	8 23 24	NP	5									
	617.1	Hard, gray SILTY CLAY LOAM, little to some gravel			3	6 8 11	4.50 P	17									
			10		4	9 10 16	4.50 P	16									
					5	5 18 30	4.50 P	15									
					6	8 24	4.50 P	15									
	607.6		Very dense, gray SILTY LOAM, some shale fragments	15		7	23 50/2	NP									
	605.1	--WEATHERED SHALE BEDROCK--															
		NOTE: SPT values for samples obtained using 3-inch split-spoon have been adjusted. Boring terminated at 17.50 ft	20														
			25														

GENERAL NOTES

WATER LEVEL DATA


Begin Drilling **12-13-2013** Complete Drilling **12-13-2013**
 Drilling Contractor **Wang Testing Services** Drill Rig **CME 55 TMR**
 Driller **R&N** Logger **A. Tomaras** Checked by **C. Marin**
 Drilling Method **3.25" HSA, boring backfilled upon completion**

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

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



Boring 84-RWB-05A
 Run #1, 15.0' to 25.0', RECOVERY = 81%, RQD = 73%
 Run #2, 25.0' to 35.0', RECOVERY = 93%, RQD = 92%

BEDROCK CORE: IL 84 RETAINING WALL, SAVANNA, ILLINOIS / SABULA, IOWA		
SCALE: GRAPHIC	84-RWB-05A	DRAWN BY: C.L.M. CHECKED BY: M.A.K.
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BORING LOG 84-RWB-06

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WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 649.83 ft
 North: 1980170.00 ft
 East: 2299111.79 ft
 Station: 713+27.12
 Offset: 72.95 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	648.8	12-inch thick, brown SILTY LOAM --TOPSOIL--															
		Loose, brown SILTY LOAM to SILTY CLAY LOAM, trace gravel			1	4 4 4	NP	26									
			5		2	3 2 4	NP	21		620.8	Weak strength, gray and brown, poor rock mass quality, highly to slightly weathered, laminated to massive, interbedded SHALE and MUDSTONE						
	644.3	Hard, light brown and gray SILTY CLAY LOAM, trace shale															
					3	5 6 10	4.50 P	17			Competent rock, moderate strength, gray, fair rock mass quality, slightly weathered to fresh, laminated to massive, interbedded SHALE and MUDSTONE						
			10		4	13 14 17	4.50 P	16			--Run 2 - 29.0-39.0 ft --RECOVERY = 93%-- --RQD = 62%--			2			
					5	12 20 33	4.50 P	13									
	636.8	Very dense, light brown to blue gray, some shale fragments --WEATHERED SHALE BEDROCK--			6	21 34 50	NP	13									
					7	21 50/4	NP	15			Boring terminated at 39.00 ft						
					8	35 50/5	NP	15									
			20														
	624.8		25		1												

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GENERAL NOTES

WATER LEVEL DATA


Begin Drilling **05-28-2014** Complete Drilling **05-28-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
 Driller _____ Logger **A. Happel** Checked by **C. Marin**
 Drilling Method **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

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

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



Boring 84-RWB-06
 Run #1, 20.0' to 29.0', RECOVERY = 72%, RQD = 47%
 Run #2, 29.0' to 39.0', RECOVERY = 93%, RQD = 62%

BEDROCK CORE: IL 84 RETAINING WALL, SAVANNA, ILLINOIS / SABULA, IOWA		
SCALE: GRAPHIC	84-RWB-06	DRAWN BY: C.L.M. CHECKED BY: M.A.K.
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BORING LOG 84-RWB-07

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 651.22 ft
 North: 1980240.38 ft
 East: 2299104.16 ft
 Station: 713+96.97
 Offset: 73.39 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	650.7	6-inch thick, brown SILTY CLAY LOAM --TOPSOIL-- Medium stiff to stiff, brown SILTY CLAY			1	3 2 2	1.00 P	22						1			
			5		2	1 2 4	0.75 P	19									
	645.7	Hard, brown CLAY to SILTY CLAY, trace gravel			3	4 7 10	5.25 B	17									
		--L _L (%)=39, P _L (%)=18-- --%Gravel=2.6-- --%Sand=2.4--10 --%Silt=44.3-- --%Clay=50.7-- --A-6 (21)--			4	7 10 15	4.51 S	17						2			
					5	12 17 22	5.00 S	13									
			15		6	20 26 38	5.82 S	15									
	635.7	Hard, brown and gray SILTY CLAY LOAM to SILTY LOAM, some shale fragments --WEATHERED SHALE BEDROCK--			7	25 50/5	6.15 S	11									
					8	31 50/5	6.89 S	14									
	631.2	Very weak to weak strength, gray and brown, poor rock mass quality, highly to moderately weathered, laminated to massive, interbedded SHALE and MUDSTONE --Run 1 - 20.0-30.0 ft --RECOVERY= 85% --RQD= 40%						11									
			20														
			25														
										611.2	Boring terminated at 40.00 ft						

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **05-21-2014** Complete Drilling **05-21-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
 Driller **N&J** Logger **F. Bozga** Checked by **C. Marin**
 Drilling Method **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

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

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

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Run #1

TOP

TOP



BOTTOM

Run #2

TOP

TOP



BOTTOM

Boring 84-RWB-07

Run #1, 20.0' to 30.0', RECOVERY = 85%, RQD = 40%
Run #2, 30.0' to 40.0', RECOVERY = 73%, RQD = 40%

BEDROCK CORE: IL 84 RETAINING WALL,
SAVANNA, ILLINOIS / SABULA, IOWA

SCALE: GRAPHIC

84-RWB-07

DRAWN BY: A. Happel.
CHECKED BY: C. Marin



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BORING LOG 84-RWB-08

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 652.43 ft
 North: 1980319.74 ft
 East: 2299098.80 ft
 Station: 714+75.36
 Offset: 77.06 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	651.96	6-inch thick, black SILTY CLAY LOAM --TOPSOIL-- Stiff to hard, brown SILTY CLAY LOAM, trace gravel			1	3 5 5	1.75 P	16			quality, fresh, laminated to massive, interbedded SHALE and MUDSTONE --Run 1: 24.0-34.0 ft --RECOVERY= 86% --RQD= 64%			1			
			5		2	2 3 5	1.97 B	16				30					
					3	4 10 13	5.25 B	18									
			10		4	17 15 16	4.50 P	16			--Run 2: 34.0-44.0 ft --RECOVERY= 95.0% --RQD= 71.3%			2			
					5	10 18 27	6.23 B	16									
			15		6	15 29 35	3.69 S	18				40					
	636.9	Hard, brown SILTY CLAY, trace shale fragments --WEATHERED SHALE BEDROCK-- --L _L (%)=35, P _L (%)=18-- --%Gravel=0.1-- --%Sand=1.7-- --%Silt=61.2-- --%Clay=37.0-- --A-6 (17)--			7	25 39 50/5	4.76 S	16									
					8	24 50/5	6.56 S	15		608.4	Boring terminated at 44.00 ft						
	631.9	Very dense, brown, weak SHALE --SHALE BEDROCK--			9	60/6	NP	11				45					
	628.4	Competent rock, moderate strength, gray, fair rock mass	25		10	70/5	NP	15				50					

GENERAL NOTES

Begin Drilling **05-20-2014** Complete Drilling **05-21-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
 Driller **N&J** Logger **F. Bozga** Checked by **C. Marin**
 Drilling Method **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA


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

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

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Boring 84-RWB-08
 Run #1, 24.0' to 34.0', RECOVERY = 86%, RQD = 64%
 Run #2, 34.0' to 44.0', RECOVERY = 95%, RQD = 88%

BEDROCK CORE: IL 84 RETAINING WALL, SAVANNA, ILLINOIS / SABULA, IOWA		
SCALE: GRAPHIC	84-RWB-08	DRAWN BY: A. Happel. CHECKED BY: C. Marin
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FOR PARSONS CORPORATION		342-06-02



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BORING LOG 84-RWB-09

WEI Job No.: 342-06-02

Client: **Parsons Transportation Group, Inc.**
 Project: **US 52 / IL 64 / IL 84**
 Location: **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 650.00 ft
 North: 1980376.13 ft
 East: 2299076.53 ft
 Station: 715+33.37
 Offset: 62.06 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	649.56	6-inch thick, black SILTY LOAM --TOPSOIL--															
		Stiff to hard, brown SILTY CLAY LOAM, trace gravel			1	3 3 4	1.75 P	14						1			
			5		2	1 2 3	1.00 P	21				30					
					3	3 4 6	2.21 B	19		619.0	Competent rock, moderate strength, gray, good rock mass quality, fresh, laminated to massive, interbedded SHALE and MUDSTONE						
			10		4	4 6 11	3.44 B	15			--Run 2: 30.0-40.0 ft --RECOVERY= 97% --RQD= 83% ³⁵			2			
					5	9 13 20	4.50 P	16									
			15		6	9 15 18	4.35 S	17				40					
					7	13 18 24	7.46 S	16			--Run 3: 40.0-50.0 ft --RECOVERY= 99% --RQD= 82%						
	632.0	Very dense, brown SILTY LOAM, some shale fragments			8	29 30 50/5	NP	14						3			
	630.0	--WEATHERED SHALE BEDROCK--										45					
		Weak strength, gray and brown, very poor rock mass quality, highly to moderately weathered, laminated to massive SHALE and MUDSTONE															
		--Run 1: 20.0-30.0 ft --RECOVERY= 87% --RQD= 5%										50					
			25					13		600.0							

Boring terminated at 50.00 ft

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling: **05-20-2014** Complete Drilling: **05-20-2014**
 Drilling Contractor: **Wang Testing Services** Drill Rig: **D-25 ATV**
 Driller: **N&J** Logger: **F. Bozga** Checked by: **C. Marin**
 Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

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

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

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Run #1

TOP



BOTTOM

Run #2

TOP



Run #3

TOP



BOTTOM

Boring 84-RWB-09

Run #1, 20.0' to 30.0', RECOVERY = 87%, RQD = 5%
 Run #2, 30.0' to 40.0', RECOVERY = 97%, RQD = 83%
 Run #3, 40.0' to 50.0', RECOVERY = 99%, RQD = 82%

BEDROCK CORE: IL 84 RETAINING WALL,
 SAVANNA, ILLINOIS / SABULA, IOWA

SCALE: GRAPHIC

84-RWB-09

DRAWN BY: A. Happel.
 CHECKED BY: C. Marin



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BORING LOG 84-RWB-10

WEI Job No.: 342-06-02

Client: **Parsons Transportation Group, Inc.**
 Project: **US 52 / IL 64 / IL 84**
 Location: **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 657.61 ft
 North: 1980474.33 ft
 East: 2299073.23 ft
 Station: 716+29.89
 Offset: 72.49 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	655.9	Stiff, dark brown SILTY CLAY LOAM, and plant material --TOPSOIL--									Weak strength, gray and brown, slightly weathered, laminated to massive, interbedded SHALE and MUDSTONE						
		Medium stiff to hard, brown and gray SILTY CLAY LOAM, trace to little gravel	1	X	1	3 4 5	1.00 P	33		630.6	Competent rock, moderate strength, gray, fresh, laminated to massive, interbedded SHALE and MUDSTONE	30		1			
			2	X	2	2 3 6	0.90 B	16			--Run 1: 25.0-35.0 ft --RECOVERY= 100.0% --RQD= 85.8%						
			3	X	3	9 12 17	6.40 B	15									
			4	X	4	10 14 19	8.45 B	13									
	647.1	Very dense, brown SILTY LOAM, trace gravel	5	X	5	20 40 36	NP	15			--Run 2: 35.0-45.0 ft --RECOVERY= 95.8% --RQD= 84.2%						
	645.1	Hard, brown SILTY CLAY	6	X	6	11 15 20	6.97 S	17						2			
		--L _I (%)=35, P _I (%)=17-- --%Gravel=0.0-- --%Sand=1.2-- --%Silt=59.5-- --%Clay=39.3-- --A-6 (18)--	7	X	7	20 39 50/4	10.09 S	14									
			8	X	8	30 42 50/3	8.53 S	12		612.6	Boring terminated at 45.00 ft	45					
	637.1	Very dense, brown SILTY LOAM, trace shale fragments --WEATHERED SHALE BEDROCK--	9	X	9	45 50/3	NP	13									
			10	X	10	50/5	NP	9									
	632.6		25														

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **05-19-2014** Complete Drilling **05-19-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
 Driller **N&J** Logger **F. Bozga** Checked by **C. Marin**
 Drilling Method **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

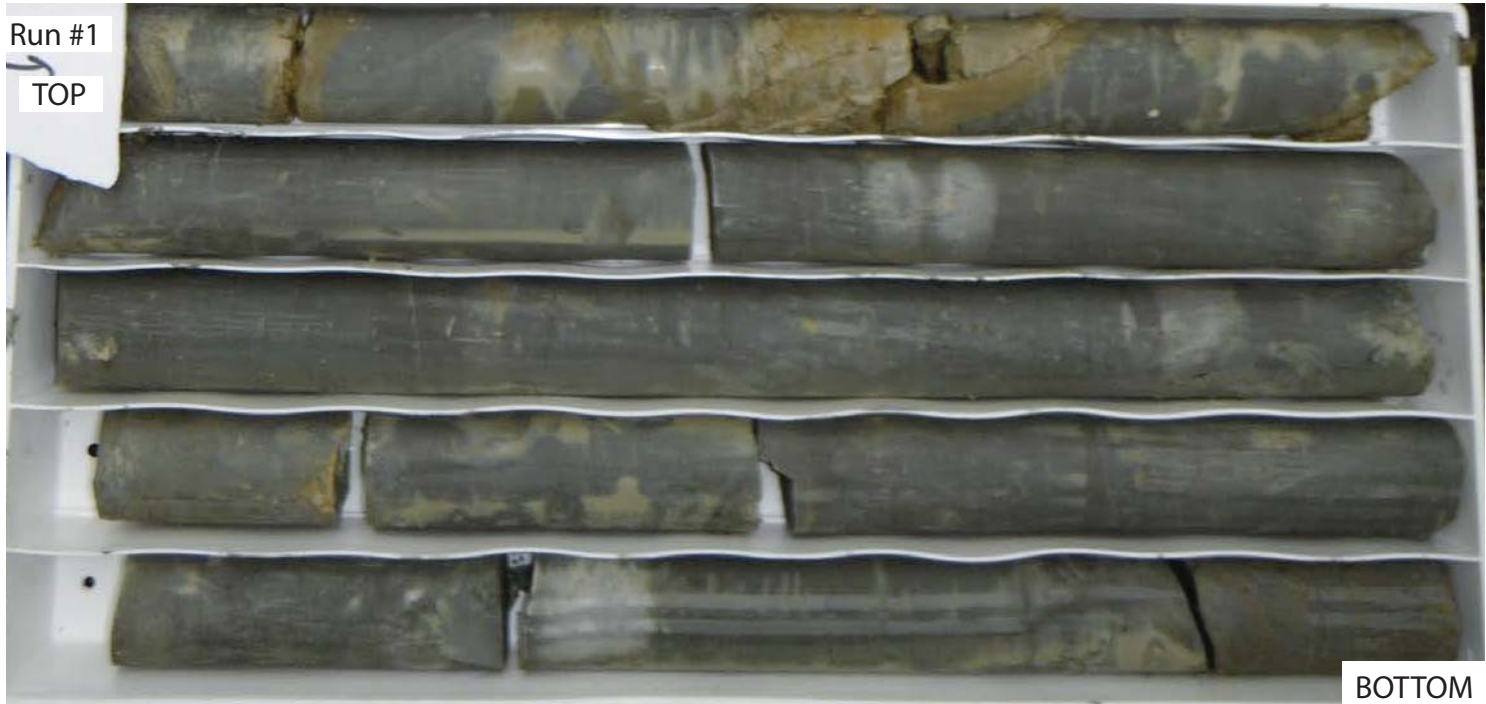
While Drilling **NA**
 At Completion of Drilling **10 (MUD)**
 Time After Drilling **NA**
 Depth to Water **NA**

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

WANGENG 3420602.GPJ WANGENG.GDT 8/14/14

Run #1

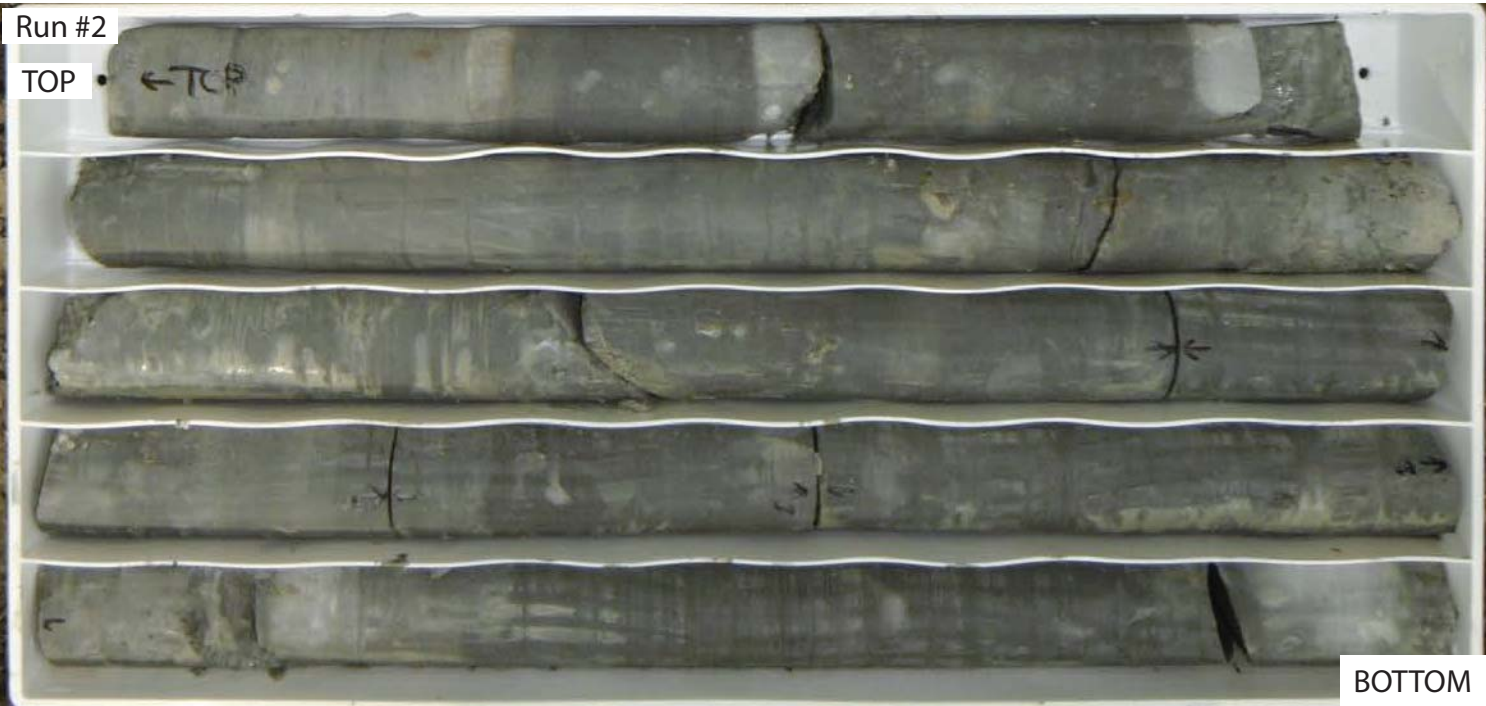
TOP



BOTTOM

Run #2

TOP



BOTTOM

BOTTOM

Boring 84-RWB-10

Run #1, 25.0' to 35.0', RECOVERY = 100%, RQD = 86%

Run #2, 35.0' to 45.0', RECOVERY = 96%, RQD = 84%

BEDROCK CORE: IL 84 RETAINING WALL,
SAVANNA, ILLINOIS / SABULA, IOWA

SCALE: GRAPHIC

84-RWB-10

DRAWN BY: A. Happel.
CHECKED BY: C. Marin



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BORING LOG 84-RWB-11

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 657.75 ft
 North: 1980556.76 ft
 East: 2299048.46 ft
 Station: 717+14.16
 Offset: 60.87 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	656.7	12-inch thick, dark brown SILTY LOAM --TOPSOIL--			1	4 5 8	3.00 P	22		631.7	Very weak to weak strength, gray and brown, very poor to fair rock mass quality, highly to moderately weathered, laminated to massive, interbedded SHALE and MUDSTONE			2			
		Very stiff, brown SILTY CLAY LOAM, little gravel --FILL--	5		2	7 7 7	2.25 P	19			--Run 2: 26.0-31.0 ft --RECOVERY= 92% ³⁰ --RQD= 43%			3			
	652.2	Stiff to hard, yellowish brown to greenish gray SILTY CLAY to SILTY CLAY LOAM, trace gravel			3	5 5 9	1.23 B	21			--Run 3: 31.0-34.0 ft --RECOVERY= 96% --RQD= 13%			4			
			10		4	4 8 10	4.00 P	15			--Run 4: 34.0-40.0 ft --RECOVERY= 80% ³⁵ --RQD= 51%			5			
					5	9 41 22	10.00 B	14						6			
			15		6	13 27 33	4.50 P	18		617.7	Competent rock, moderate strength, gray, excellent rock mass quality, fresh, laminated to massive SHALE and MUDSTONE			7			
					7	12 23 36	4.92 S	17						8			
	640.0	Very dense, brown weathered Shale --WEATHERED SHALE BEDROCK--	20		8	21 40 39/3	NP	15			--Run 5: 40.0-50.0 ft --RECOVERY= 95% ⁴⁵ --RQD= 94%			9			
		--Run 1: 20.0-26.0 ft --RECOVERY= 65.9% --RQD= 27%	25		1			9		607.7							

GENERAL NOTES

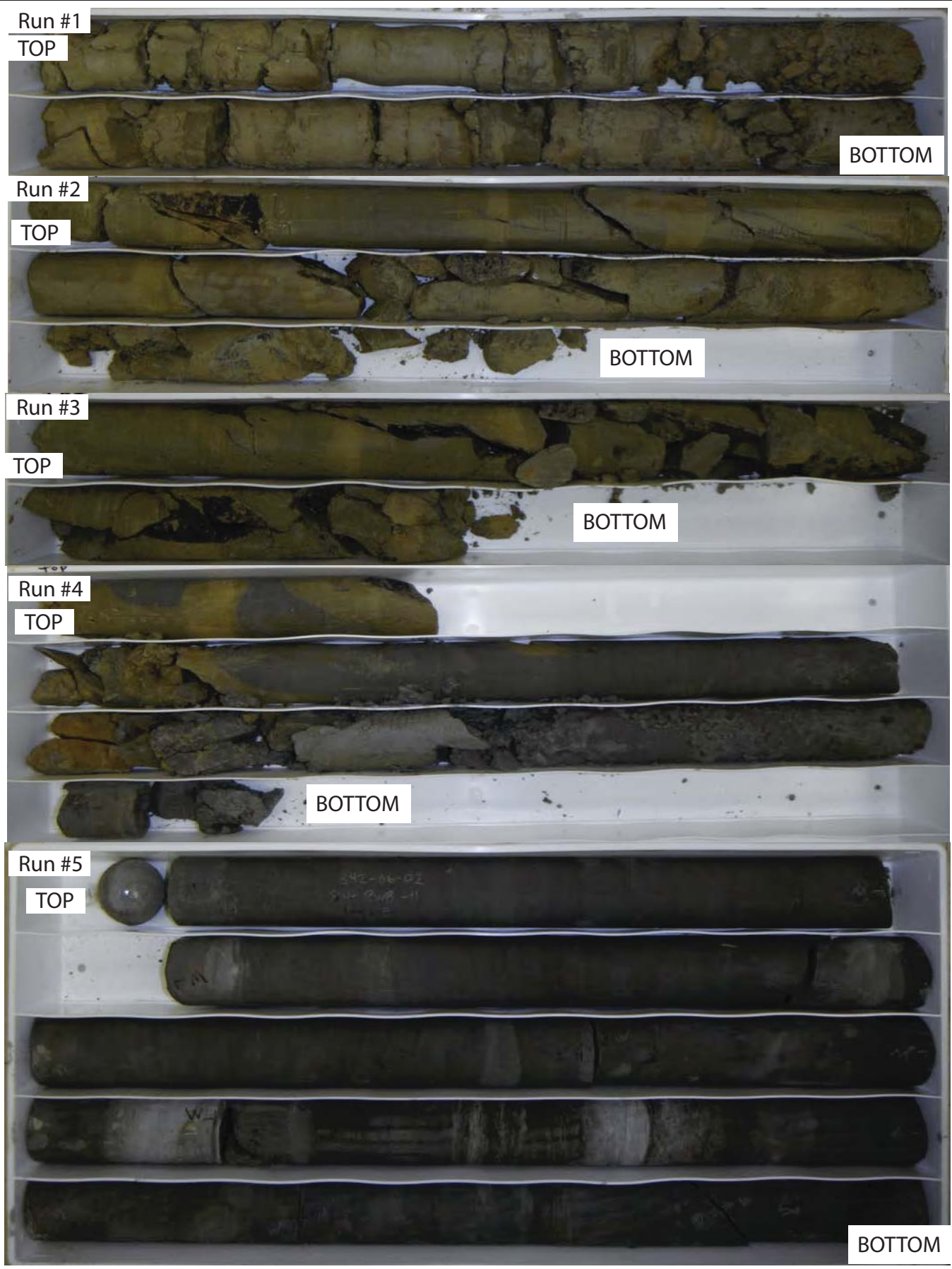
WATER LEVEL DATA

Begin Drilling **05-14-2014** Complete Drilling **05-15-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
 Driller **N&J** Logger **D. Kolpacki** Checked by **C. Marin**
 Drilling Method **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

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

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

WANGENGINC 3420602.GPJ WANGENG.GDT 8/14/14



Run #1
TOP

BOTTOM

Run #2

TOP

BOTTOM

Run #3

TOP

BOTTOM

Run #4

TOP

BOTTOM

Run #5

TOP

BOTTOM

Boring 84-RWB-11

- Run #1, 20.0' to 26.0', RECOVERY = 66%, RQD = 27%
- Run #2, 26.0' to 31.0', RECOVERY = 92%, RQD = 43%
- Run #3, 31.0' to 34.0'. RECOVERY = 96%, RQD = 13%
- Run #4, 34.0' to 40.0', RECOVERY = 80%, RQD = 51%
- Run #5, 40.0' to 50.0', RECOVERY = 95%, RQD = 94%

BEDROCK CORE: IL 84 RETAINING WALL,
SAVANNA, ILLINOIS / SABULA, IOWA

SCALE: GRAPHIC	84-RWB-11	DRAWN BY: A. Happel. CHECKED BY: C. Marin
----------------	------------------	--

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BORING LOG 84-RWB-12

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 658.58 ft
 North: 1980624.99 ft
 East: 2299027.78 ft
 Station: 717+84.18
 Offset: 52.07 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	656.6	Loose, dark brown SILTY LOAM, little gravel --TOPSOIL--			1	3 3 4	NP	26									
		Stiff to hard, brown SILTY CLAY LOAM, trace gravel to GRAVELLY SILTY LOAM			2	5 6 7	> 4.50 P	20		630.6	Very dense, yellowish brown SILTY LOAM, some shale fragments			11	11 12 14	> 4.50 P	19
		--L _L (%)=25, P _L (%)=18-- --%Gravel=21.78-- --%Sand=22.3-- --%Silt=48.9-- --%Clay=7.2-- --A-4 (1)--	5		3	4 5 5	1.25 P	20		628.6	--WEATHERED SHALE BEDROCK--			12	23 40 37/3	NP	15
	650.6	Very stiff to hard, brown and yellow to yellowish gray SILTY CLAY to SILTY CLAY LOAM, little gravel	10		4	2 6 8	3.25 P	14			Very weak to weak strength, gray and brown, poor to fair rock mass quality, highly to moderately weathered, laminated to massive, interbedded SHALE and MUDSTONE			1			13
					5	7 13 20	> 4.50 P	13			--Run 1: 30.0-35.0 ft --RECOVERY= 83% --RQD= 37%						
					6	9 14 20	> 4.50 P	13			--Run 2: 35.0-45.0 ft --RECOVERY= 50% --RQD= 39%						
					7	12 24 24	> 4.50 P	13									
		--L _L (%)=32, P _L (%)=15-- --%Gravel=0.9-- --%Sand=6.8-- --%Silt=58.8-- --%Clay=33.5-- --A-6 (15)--	15		8	12 11 12	> 4.50 P	16									
					9	7 10 12	> 4.50 P	17									
					10	8 11 18	> 4.50 P	18									
			25														

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **05-13-2014** Complete Drilling **05-14-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
 Driller **N&J** Logger **D. Kolpacki** Checked by **C. Marin**
 Drilling Method **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

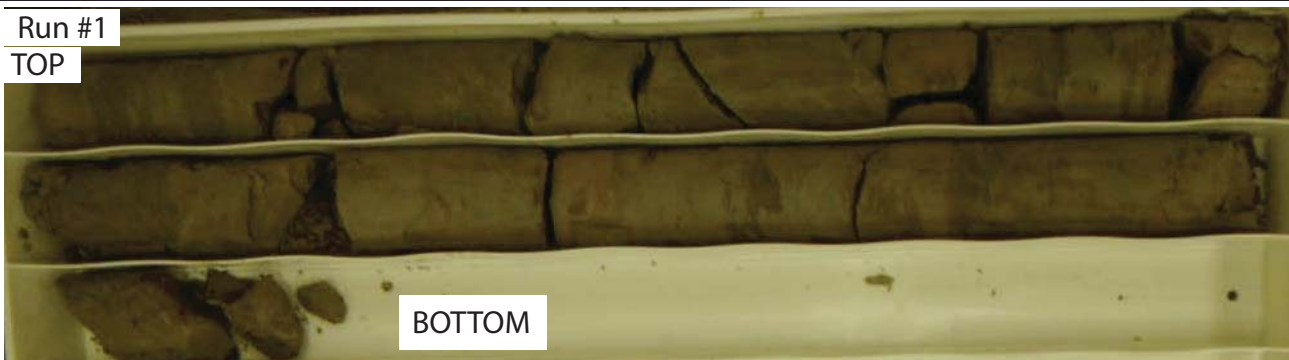
While Drilling **DRY**
 At Completion of Drilling **DRY**
 Time After Drilling **NA**
 Depth to Water **NA**

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

WANGENGINC 3420602.GPJ WANGENG.GDT 8/14/14

Run #1

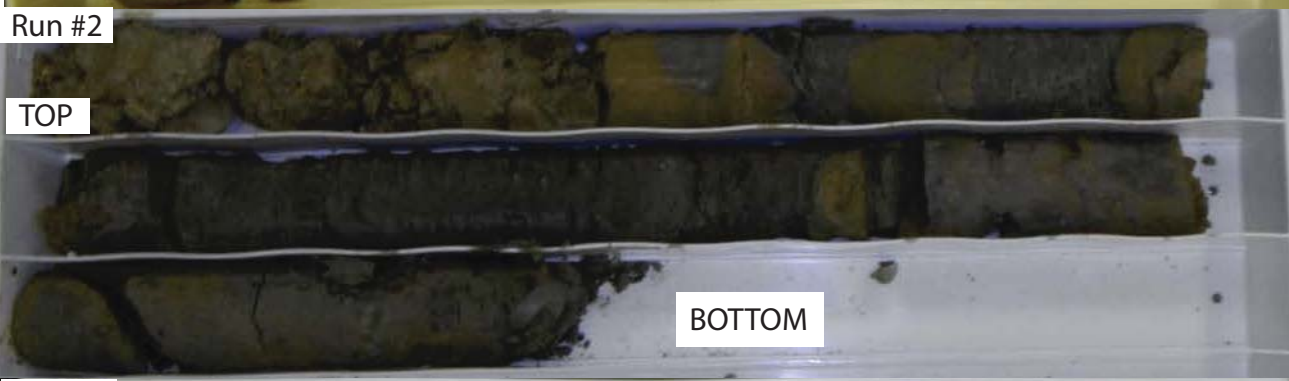
TOP



BOTTOM

Run #2

TOP



BOTTOM

Run #3

TOP



BOTTOM

Run #4

TOP



BOTTOM


Boring 84-RWB-12

Run #1, 30.0' to 35.0', RECOVERY = 83%, RQD = 37%

Run #2, 35.0' to 45.0', RECOVERY = 50%, RQD = 39%

Run #3, 45.0' to 55.0'. RECOVERY = 70%, RQD = 53%

Run #4, 55.0' to 65.0', RECOVERY = 100%, RQD = 87%

BEDROCK CORE: IL 84 RETAINING WALL, SAVANNA, ILLINOIS / SABULA, IOWA		
SCALE: GRAPHIC	84-RWB-12	DRAWN BY: A. Happel. CHECKED BY: C. Marin
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FOR PARSONS CORPORATION		342-06-02

n #5



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BORING LOG 84-RWB-13

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 655.44 ft
 North: 1980702.79 ft
 East: 2299007.77 ft
 Station: 718+63.42
 Offset: 46.74 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	654.4	12-inch thick dark brown SILTY LOAM, some gravel --TOPSOIL--			1	3 5 5	NP	25		629.7	Very dense, brown and gray SILTY LOAM, some shale fragments --WEATHERED SHALE BEDROCK--			11	15 26 34	NP	16
	652.4	Medium dense, dark brown SILTY LOAM, some gravel --FILL--			2	3 5 10	NP	9			Medium dense, brown SANDY GRAVEL --FILL--	30		12	18 28 35	NP	14
	649.9	Hard, brown SILTY CLAY LOAM, some gravel			3	17 20 22	> 4.50 P	13						13	50 5	NP	14
	647.4	Medium dense, greenish brown SILTY LOAM, some gravel --MOIST--			4	6 7 10	NP	10						13		NP	14
	644.9	Dense, brown SANDY GRAVEL --DRY--			5	6 18 23	NP	9						1			
					6	5 21 27	NP	14		616.4	Very weak to weak strength, gray and brown, poor rock mass quality, highly to slightly weathered, laminated to massive SHALE and MUDSTONE --14 inch void-->	40		1			12
	639.9	Dense to very dense, brown SILTY LOAM, little gravel --MOIST-- --%Gravel=9.1-- --%Sand=23.1-- --%Silt=55.8-- --%Clay=12.0-- --A-4 (0)--			7	15 20 22	NP	14		613.4	Competent rock, moderate strength, gray, excellent rock mass quality, slightly weathered to fresh, laminated to massive SHALE and MUDSTONE	45		2			
	634.9	Hard, yellowish brown and blue SILTY CLAY, trace gravel			8	18 50 3	NP	13						2			
					9	15 14 18	> 4.50 P	16									
					10	9 18 24	5.00 S	17									

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **05-15-2014** Complete Drilling **05-16-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
 Driller **N&J** Logger **D. Kolpacki** Checked by **C. Marin**
 Drilling Method **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

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

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

WANGENG 3420602.GPJ WANGENG.GDT 8/14/14



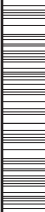
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 Fax: 630 953-9938

BORING LOG 84-RWB-13

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carrol County, Illinois**

Datum: NAVD 88
 Elevation: 655.44 ft
 North: 1980702.79 ft
 East: 2299007.77 ft
 Station: 718+63.42
 Offset: 46.74 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	601.4	--Run 3: 49.0-54.0 ft --RECOVERY= 97% --RQD= 97%			3	NRD											
		Boring terminated at 54.00 ft	55														
			60														
			65														
			70														
			75														

GENERAL NOTES

Begin Drilling **05-15-2014** Complete Drilling **05-16-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
 Driller **N&J** Logger **D. Kolpacki** Checked by **C. Marin**
 Drilling Method **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

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

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



Boring 84-RWB-13

Run #1, 35.0' to 42.0', RECOVERY = 79%, RQD = 46%
 Run #2, 42.0' to 49.0', RECOVERY = 100%, RQD = 91%
 Run #3, 49.0' to 54.0'. RECOVERY = 97%, RQD = 100%

BEDROCK CORE: IL 84 RETAINING WALL,
 SAVANNA, ILLINOIS / SABULA, IOWA

SCALE: GRAPHIC

84-RWB-13

DRAWN BY: A. Happel.
 CHECKED BY: C. Marin



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BORING LOG 84-RWB-14

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carrol County, Illinois**

Datum: NAVD 88
 Elevation: 643.68 ft
 North: 1980769.05 ft
 East: 2298973.05 ft
 Station: 719+34.94
 Offset: 25.61 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
577.7		--RUN 2: 46.0-56.0 ft --RECOVERY= 100% --RQD= 89%	55		2				M R O C								
			60		3												
		Boring terminated at 66.00 ft	65									70					
			75														

GENERAL NOTES

Begin Drilling **06-05-2014** Complete Drilling **06-05-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
 Driller **N&K** Logger **A. Happel** Checked by **C. Marin**
 Drilling Method **2.25" HSA. 2.5' interval to 36', Rock core thereafter**

WATER LEVEL DATA

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

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

Run #1

TOP



BOTTOM

Run #2

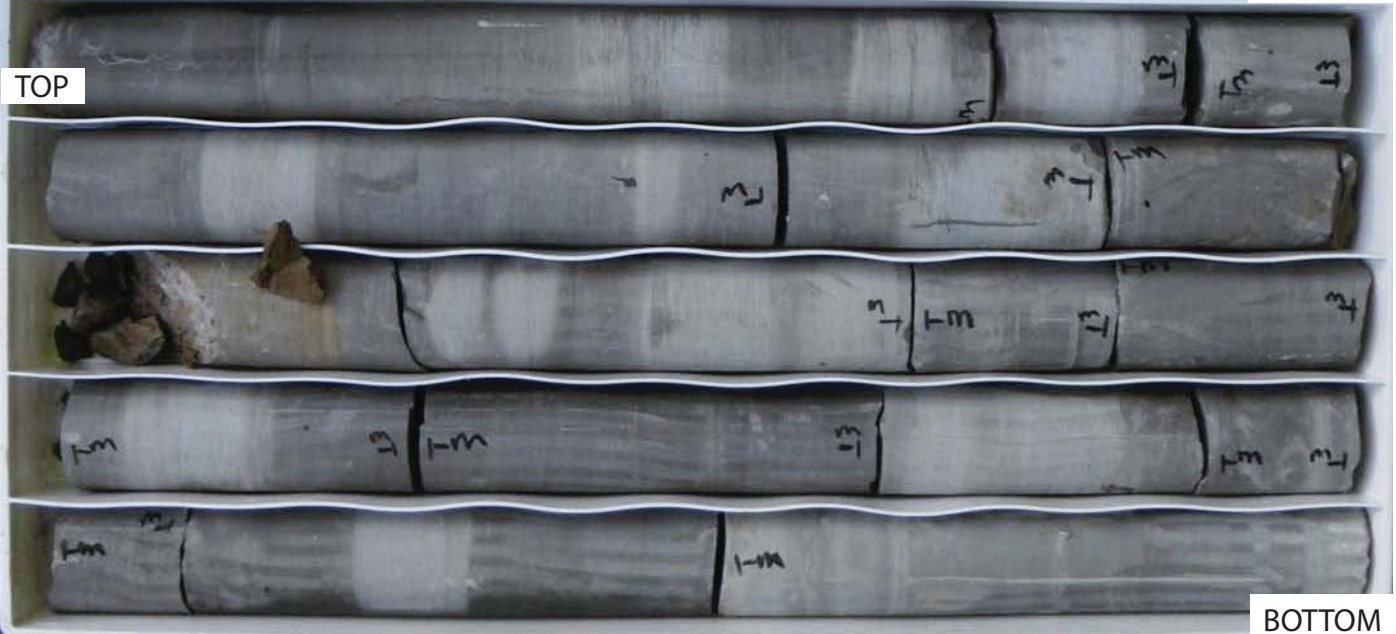
TOP



BOTTOM

Run #3

TOP



BOTTOM

Boring 84-RWB-14

Run #1, 36.0' to 46.0', RECOVERY = 18%, RQD = 0%
Run #2, 46.0' to 56.0', RECOVERY = 100%, RQD = 89%
Run #3, 56.0' to 66.0', RECOVERY = 99%, RQD = 95%

BEDROCK CORE: IL 84 RETAINING WALL,
SAVANNA, ILLINOIS / SABULA, IOWA

SCALE: GRAPHIC

84-RWB-14

DRAWN BY: C.L.M.
CHECKED BY: M.A.K.



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BORING LOG 84-RWB-15

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 650.10 ft
 North: 1980843.99 ft
 East: 2298970.76 ft
 Station: 720+08.27
 Offset: 39.07 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	649.1	12-inch thick, black SILTY LOAM --TOPSOIL--								624.6							
		Loose, black SILTY LOAM, with seams of sand	1	X	1	2 2 3	NP	15			Very stiff to hard, grayish green, SILTY CLAY LOAM	11	X	11	9 13 14	4.50 P	17
			2	X	2	4 4 5	NP	20				12	X	12	7 10 9	3.00 P	20
	644.6	Medium dense, brown GRAVELLY SANDY LOAM to GRAVELLY SAND	5	X	3	10 8 14	NP	7				30	X	13	20 49 42	NP	12
		--%Gravel=37.6-- --%Sand=32.9-- --%Silt=24.0-- --%Clay=5.5-- --A-2-4 (0)--	10	X	4	9 12 13	NP			615.6	Very stiff, grayish blue SILTY LOAM to SILTY CLAY, trace shale fragments --WEATHERED SHALE BEDROCK-- --L _L (%)=41, P _L (%)=21-- --%Gravel=0.0-- --%Sand=0.2-- --%Silt=53.1-- --%Clay=46.7-- --A-7-6 (22)--	35	X	14	15 40 50/3	3.94 S	16
	637.6	Medium dense to dense, brown SANDY LOAM, little gravel to GRAVELLY SANDY LOAM	15	X	6	23 16 14	NP	14		610.1	Weak strength, gray and brown, very poor to fair rock mass quality, highly to moderately weathered, laminated to massive SHALE and MUDSTONE --RUN 1: 40.0-45.0 ft --RECOVERY= 82% --RQD= 58%	40	X	1			
		--%Gravel=28.5-- --%Sand=36.7-- --%Silt=28.6-- --%Clay=6.2-- --A-2-4 (0)--	20	X	8	6 9 8	NP	22				45	X	2			
			25	X	10	11 8 6	NP	15				50	X				
				X	9	7 8 9	NP	14					X				

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **06-03-2014** Complete Drilling **06-03-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
 Driller **N&K** Logger **A. Happel** Checked by **C. Marin**
 Drilling Method **2.25" HSA. 2.5' interval to 40', Rock core thereafter**

While Drilling ∇ **12.50 ft**
 At Completion of Drilling ∇ **12.5 (MUD)**
 Time After Drilling **NA**
 Depth to Water ∇ **NA**

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

WANGENG 3420602.GPJ WANGENG.GDT 8/14/14



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BORING LOG 84-RWB-15

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 650.10 ft
 North: 1980843.99 ft
 East: 2298970.76 ft
 Station: 720+08.27
 Offset: 39.07 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	598.1	Competent rock, moderate strength, gray and brown, good to excellent rock mass quality, slightly weathered to fresh, laminated to massive SHALE and MUDSTONE --RUN 3: 52.0-62.0 ft --RECOVERY= 99% --RQD= 98%	55		3												
		--RUN 4: 62.0-72.0 ft --RECOVERY= 80% --RQD= 80%	65		4												
	578.1	Boring terminated at 72.00 ft															
			70														
			75														

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **06-03-2014** Complete Drilling **06-03-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-25 ATV**
 Driller **N&K** Logger **A. Happel** Checked by **C. Marin**
 Drilling Method **2.25" HSA. 2.5' interval to 40', Rock core thereafter**


While Drilling ∇ **12.50 ft**
 At Completion of Drilling ∇ **12.5 (MUD)**
 Time After Drilling **NA**
 Depth to Water ∇ **NA**

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

WANGENGINC 3420602.GPJ WANGENG.GDT 8/14/14



Boring 84-RWB-15
 Run #1, 40.0' to 45.0', RECOVERY = 82%, RQD = 58%
 Run #2, 45.0' to 52.0', RECOVERY = 20%, RQD = 0%
 Run #3, 52.0' to 62.0', RECOVERY = 99%, RQD = 98%
 Run #4, 62.0' to 72.0', RECOVERY = 80%, RQD = 80%

BEDROCK CORE: IL 84 RETAINING WALL, SAVANNA, ILLINOIS / SABULA, IOWA		
SCALE: GRAPHIC	84-RWB-15	DRAWN BY: C.L.M. CHECKED BY: M.A.K.
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FOR PARSONS CORPORATION		342-06-01



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BORING LOG 84-RWB-16

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 643.41 ft
 North: 1980944.06 ft
 East: 2298944.57 ft
 Station: 721+11.15
 Offset: 35.99 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	643.14	14-inch thick ASPHALT --PAVEMENT--															
		Loose to medium dense, brown, medium SAND, little to trace cobbles and gravel			1	7 6 6	NP	11						11	10 10 14	2.00 P	17
		---HARD DRILLING 3.5-6'---			2	3 4 4	NP	7				30		12	4 6 13	2.00 P	16
		--HARD DRILLING 6-8.5'--			3	5 5 6	NP	5		612.9	Very dense, gray SILTY LOAM, some shale fragments --WEATHERED SHALE BEDROCK--			13	23 50/2	NP	14
	635.4	Stiff to hard, brown SILTY CLAY LOAM and cobbles ---HARD DRILLING 8.5-11'---			4	6 8 36	2.25 P			609.9	Weak strength, gray and brown, poor to fair rock mass quality, moderately to slightly weathered, laminated to massive, interbedded SHALE and MUDSTONE			1			17
		---HARD DRILLING 11-13.5'---			5	9 9 8	1.25 P	9									
		---HARD DRILLING 13.5-16'---			6	6 10 10	4.50 P	15									
		---HARD DRILLING 16-18.5'---			7	11 13 7	2.50 P	15									
	625.4	Medium dense, brown GRAVELLY SAND ---HARD DRILLING 21-23.5'---			8	7 12 12	NP	6						2			
					9	8 11 9	NP	7									
	620.4	Very stiff to hard, greenish gray, SILTY CLAY, trace cobbles and gravel ---HARD DRILLING 23.5'--25'			10	8 10 12	4.50 P	13		594.9	Competent rock, moderate strength, gray, excellent rock mass quality, fresh, laminated to						

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **05-07-2014** Complete Drilling **05-07-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**
 Driller **R&J** Logger **A. Tomaras** Checked by **C. Marin**
 Drilling Method **3.25" HSA, boring backfilled upon completion**

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

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

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BORING LOG 84-RWB-16

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carrol County, Illinois**

Datum: NAVD 88
 Elevation: 643.41 ft
 North: 1980944.06 ft
 East: 2298944.57 ft
 Station: 721+11.15
 Offset: 35.99 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
584.9		massive, interbedded SHALE and MUDSTONE 50.0 ft-Qu=5180 psi ---> --Run 3: 48.5-58.5 ft --RECOVERY= 92% --RQD= 91%	55		3												
		Boring terminated at 58.50 ft	60														
			65														
			70														
			75														

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **05-07-2014** Complete Drilling **05-07-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**
 Driller **R&J** Logger **A. Tomaras** Checked by **C. Marin**
 Drilling Method **3.25" HSA, boring backfilled upon completion**

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

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

Run #1

TOP



BOTTOM

Run #2

TOP



BOTTOM

Run #3

TOP



BOTTOM

BOTTOM

Boring 84-RWB-16

Run #1, 33.5' to 38.5', RECOVERY = 58%, RQD = 22%
Run #2, 38.5' to 48.5', RECOVERY = 100%, RQD = 54%
Run #3, 48.5' to 58.5', RECOVERY = 92%, RQD = 90%

BEDROCK CORE: IL 84 RETAINING WALL,
SAVANNA, ILLINOIS / SABULA, IOWA

SCALE: GRAPHIC

84-RWB-16

DRAWN BY: C.L.M.
CHECKED BY: M.A.K.



Wang
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BORING LOG 84-RWB-17

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 643.61 ft
 North: 1981014.52 ft
 East: 2298932.04 ft
 Station: 721+82.61
 Offset: 39.95 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	
	643.43	4.5-inch thick, ASPHALT --PAVEMENT--																
		Medium dense to very dense, brown GRAVELLY MEDIUM SAND	1		1	4 5 11	NP	8						11	8 21 25	4.50 P	15	
			2		2	4 4	NP	11		615.6	Very stiff, gray SILTY CLAY LOAM, trace shale fragments --WEATHERED SHALE	12		12	50/5	2.75 P	14	
			3		3	15 22	NP	8		613.6	Weak strength, gray and brown, poor rock mass quality, highly to slightly weathered, laminated SHALE --RUN 1 - 30.0-40.0 ft-- --RECOVERY= 64%-- --RQD= 34%--							16
			4		4	8 6 9	NP	5						1				
			5		5	8 11 13	NP	8										
	630.1	Hard (4.5 P), gray SILTY CLAY, and cobbles	6		6	8 11 11	NP	10										
	629.6	Medium dense, brown GRAVELLY MEDIUM SAND	7		7	11 14 9	NP	8		603.6	Competent rock, moderate strength, gray, good to excellent rock mass quality, slightly weathered to fresh, 8 to 12 inch spacing of the joints, laminated to massive SHALE and MUDSTONE --RUN 2 - 40.0-50.0 ft-- --RECOVERY= 98%-- --RQD= 95%--			2				
	624.9	Very stiff to hard, greenish gray SILTY CLAY LOAM	8		8	11 15 11	4.50 P	13										
			9		9	8 25 11	3.50	15										
			10		10	6 10 9	3.36 B	15										
			25															

GENERAL NOTES

Begin Drilling **05-06-2014** Complete Drilling **05-06-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**
 Driller **R&J** Logger **A. Tomaras** Checked by **C. Marin**
 Drilling Method **3.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

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

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

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BORING LOG 84-RWB-17

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carrol County, Illinois**

Datum: NAVD 88
 Elevation: 643.61 ft
 North: 1981014.52 ft
 East: 2298932.04 ft
 Station: 721+82.61
 Offset: 39.95 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type <i>recovery</i>	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type <i>recovery</i>	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	588.6	--RUN 3 - 50.0-55.0 ft-- --RECOVERY= 93%-- --RQD= 85%--	55		3	MPOC											
		Boring terminated at 55.00 ft															
			60														
			65														
			70														
			75														

GENERAL NOTES

Begin Drilling **05-06-2014** Complete Drilling **05-06-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**
 Driller **R&J** Logger **A. Tomaras** Checked by **C. Marin**
 Drilling Method **3.25" HSA, boring backfilled upon completion**

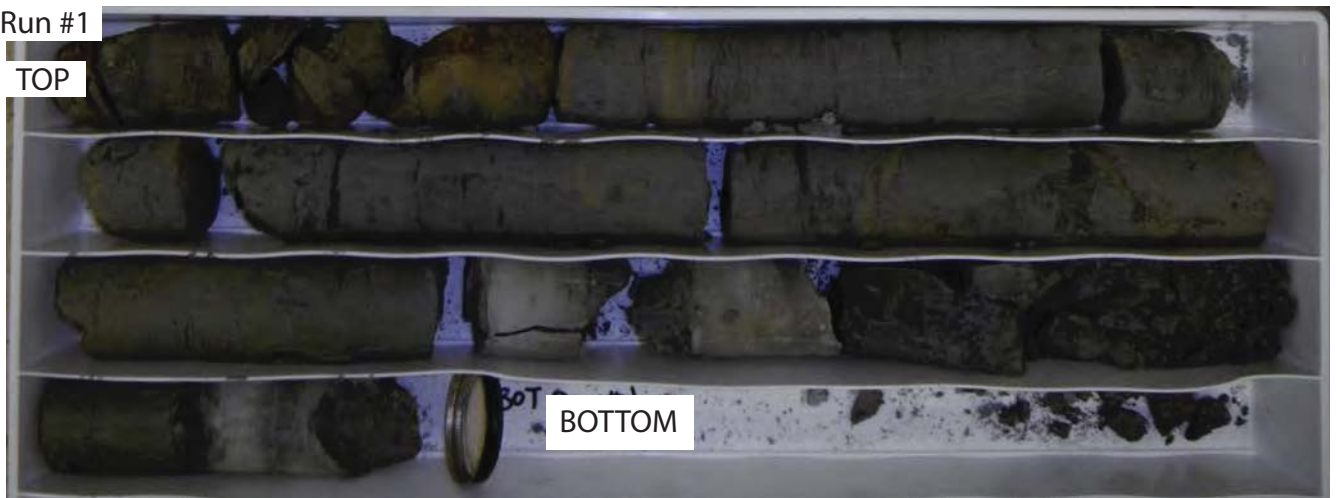
WATER LEVEL DATA

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

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

Run #1

TOP



BOTTOM

Run #2

TOP



BOTTOM

Run #3

TOP



BOTTOM

Boring 84-RWB-17

Run #1, 30.0' to 40.0', RECOVERY = 64%, RQD = 34%

Run #2, 40.0' to 50.0', RECOVERY = 98%, RQD = 95%

Run #3, 50.0' to 55.0', RECOVERY = 93%, RQD = 85%

BEDROCK CORE: IL 84 RETAINING WALL,
SAVANNA, ILLINOIS / SABULA, IOWA

SCALE: GRAPHIC

84-RWB-17

DRAWN BY: C.L.M.
CHECKED BY: M.A.K.



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BORING LOG 84-RWB-18

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WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 639.96 ft
 North: 1981080.42 ft
 East: 2298911.88 ft
 Station: 722+51.37
 Offset: 35.43 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	639.64	64-inch thick, ASPHALT --PAVEMENT--															
		Medium dense to very dense, brown GRAVELLY SAND to SANDY LOAM			1	9 13 10	NP	7						11	7 10 20	7.30 S	17
			5		2	14 50/3	NP	4		611.0	Weak strength, gray and brown, poor rock mass quality, highly to moderately weathered, laminated to massive, interbedded SHALE and MUDSTONE	30					
					3	27 12 3	NP	1			--RUN 1 - 29.0-39.0 ft-- --RECOVERY= 73%-- --RQD= 37%--						
			10		4	7 12 8	NP	2				35		1			
					5	4 7 6	NP	4									
		--%Gravel=11.0-- --%Sand=61.9-- --%Silt=24.5-- --%Clay=2.6-- --A-2-4 (0)--			6	5 11 11	NP	3		601.0	Competent rock, moderate strength, gray, good to excellent rock mass quality, slightly weathered to fresh, laminated to massive, interbedded SHALE and MUDSTONE	40					
					7	13 16 10	NP	4									
			20		8	13 17 14	NP				--RUN 2 - 39.0-49.0 ft-- --RECOVERY= 100%-- --RQD= 96%--	45		2			
	618.5	Hard, gray SILTY CLAY LOAM, some shale fragments --WEATHERED SHALE BEDROCK--			9	24 25 36	4.50 P	15									
					10	7 12 13	7.05 S	15				50			C		

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **05-05-2014** Complete Drilling **05-05-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**
 Driller **R&J** Logger **A. Tomaras** Checked by **C. Marin**
 Drilling Method **3.25" HSA, boring backfilled upon completion**

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

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

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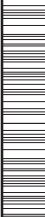
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BORING LOG 84-RWB-18

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carrol County, Illinois**

Datum: NAVD 88
 Elevation: 639.96 ft
 North: 1981080.42 ft
 East: 2298911.88 ft
 Station: 722+51.37
 Offset: 35.43 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	586.0	--RUN 3 - 39.0-54.0 ft-- --RECOVERY= 100%-- --RQD= 82%-- Boring terminated at 54.00 ft	55		3												
			60														
			65														
			70														
			75														

GENERAL NOTES

Begin Drilling **05-05-2014** Complete Drilling **05-05-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**
 Driller **R&J** Logger **A. Tomaras** Checked by **C. Marin**
 Drilling Method **3.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

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

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


Run #1



Run #2



Boring 84-RWB-18
 Run #1, 29.0' to 39.0', RECOVERY = 73%, RQD = 37%
 Run #2, 39.0' to 49.0', RECOVERY = 100%, RQD = 96%
 Run #3, 49.0' to 54.0', RECOVERY = 100%, RQD = 82%

BEDROCK CORE: IL 84 RETAINING WALL, SAVANNA, ILLINOIS / SABULA, IOWA		
SCALE: GRAPHIC	84-RWB-18	DRAWN BY: C.L.M. CHECKED BY: M.A.K.
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FOR PARSONS CORPORATION		342-06-01



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BORING LOG 84-RWB-19

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 636.36 ft
 North: 1981140.31 ft
 East: 2298905.67 ft
 Station: 723+11.09
 Offset: 43.11 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	
	636.1	GRAVEL and CRUSHED ASPHALT																10
		Medium dense, brown GRAVELLY SILTY LOAM			1	7 6 7	NP	5			highly to moderately weathered, laminated to massive, interbedded SHALE and MUDSTONE							12
					2	3 6 7	NP	13			--RUN 1 - 24.0-32.0 ft-- --RECOVERY= 100%-- --RQD= 20%--			1				
	630.9	Medium dense to dense, brown GRAVELLY SANDY LOAM to GRAVELLY SILTY LOAM			3	4 12 12	NP	6		604.4	Competent rock, moderate strength, gray, fair to good rock mass quality, slightly weathered to fresh, laminated to massive, interbedded SHALE and MUDSTONE							11
		--%Gravel=13.3-- --%Sand=46.4-- --%Silt=34.1-- --%Clay=6.2-- --A-4 (0)--			4	18 17 17	NP	5			33.0 ft-Qu=3630 psi ---> --RUN 2 - 32.0-42.0 ft-- --RECOVERY= 98%-- --RQD= 64%-- 37.5 ft-Qu=7260 psi --->			2				
					5	11 21 8	NP	4										
					6	7 13 17	NP	4										
		--%Gravel=48.4-- --%Sand=20.7-- --%Silt=26.4-- --%Clay=4.5-- --A-2-4 (0)--			7	11 16 26	NP	5			42.0 ft-Qu=8170 psi --->							
					8	7 18 29	NP	6			--RUN 3 - 42.0-47.0 ft-- --RECOVERY= 95%-- --RQD= 77%--			3				
	615.9	Dense to very dense, greenish gray SILTY LOAM, some shale fragments			9	6 16 30	NP	15		589.4	46.5 ft-Qu=9420 psi --->							
		--WEATHERED SHALE BEDROCK--			10	50/4	NP	13			Boring terminated at 47.00 ft							
	612.4	Weak strength, gray and brown, very poor rock mass quality,			10													

GENERAL NOTES

Begin Drilling **05-02-2014** Complete Drilling **05-02-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**
 Driller **R&J** Logger **F. Bozga** Checked by **C. Marin**
 Drilling Method **2.25" SSA, 4" casing, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **NA**
 At Completion of Drilling **8 (MUD)**
 Time After Drilling **NA**
 Depth to Water **NA**

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

WANGENG 3420602.GPJ WANGENG.GDT 8/14/14

Run #1

TOP

Run #2

TOP

Run #3

TOP

BOTTOM

BOTTOM

Boring 84-RWB-19

Run #1, 24.0' to 32.0', RECOVERY = 100%, RQD = 20%

Run #2, 32.0' to 42.0', RECOVERY = 98%, RQD = 64%

Run #3, 42.0' to 47.0', RECOVERY = 95%, RQD = 77%

BEDROCK CORE: IL 84 RETAINING WALL,
SAVANNA, ILLINOIS

SCALE: GRAPHIC

84-RWB-19

DRAWN BY: C.L.M.
CHECKED BY: M.A.K.



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BORING LOG 84-RWB-20

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 640.57 ft
 North: 1981206.53 ft
 East: 2298887.04 ft
 Station: 723+79.81
 Offset: 40.16 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	640.33	33-inch thick, black LOAM --TOPSOIL--															
		Medium dense to dense, brown SANDY GRAVEL			1	19 13 6	NP	6						11	5 10 11	9.10 B	15
			5		2	8 9 6	NP	4						12	5 7 10	9.51 S	16
					3	12 22 12	NP	8		608.8	Very dense, gray SILTY LOAM, some shale fragments --WEATHERED SHALE BEDROCK--						
			10		4	8 11 10	NR	9		606.6	Weak strength, gray and brown, very poor rock mass quality, highly weathered, laminated to massive, interbedded SHALE and MUDSTONE				50/3	NP	12
	630.1	Medium dense, brown SILTY LOAM, some gravel			5	7 5 8	NP	13				35		1			12
	627.6	Medium dense to very dense, brown SANDY GRAVEL, trace rock fragments			6	12 27 27	NP	8									
			15		7	5 6 8	NP	14		599.6	41.5 ft-Qu=6420 psi ---> Competent rock, moderate strength, gray and brown, fair rock mass quality, slightly weathered to fresh, laminated to massive, interbedded SHALE and MUDSTONE			2			10
					8	7 8 7	NP	9									
	620.1	Medium dense, brown SILTY LOAM, some gravel			9	5 10 14	NP	12									
	619.0	Hard, greenish gray SILTY LOAM to SILTY CLAY, trace to some gravel			10	7 18 11	NP	15						3			7
			25									50					

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **05-01-2014** Complete Drilling **05-01-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**
 Driller **R&J** Logger **F. Bozga** Checked by **C. Marin**
 Drilling Method **2.25" SSA, 4" casing, boring backfilled upon completion**

While Drilling **NA**
 At Completion of Drilling **8 (MUD)**
 Time After Drilling **NA**
 Depth to Water **NA**

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

WANGENG 3420602.GPJ WANGENG.GDT 8/14/14




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BORING LOG 84-RWB-20

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carrol County, Illinois**

Datum: NAVD 88
 Elevation: 640.57 ft
 North: 1981206.53 ft
 East: 2298887.04 ft
 Station: 723+79.81
 Offset: 40.16 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		50.5 ft-Qu=7660 psi --->															
	586.6	Boring terminated at 54.00 ft	55														
			60														
			65														
			70														
			75														

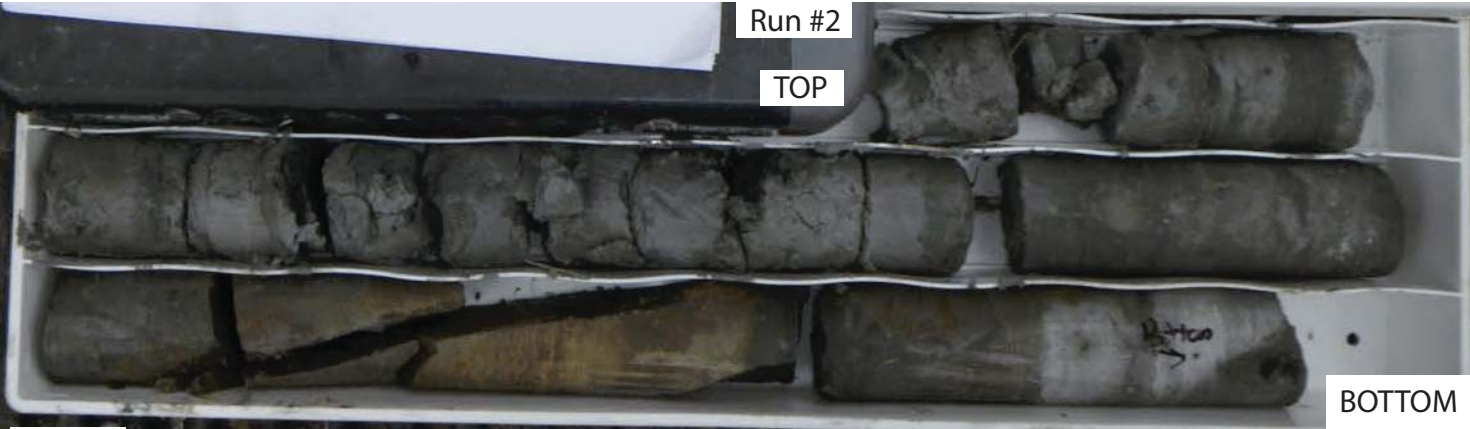
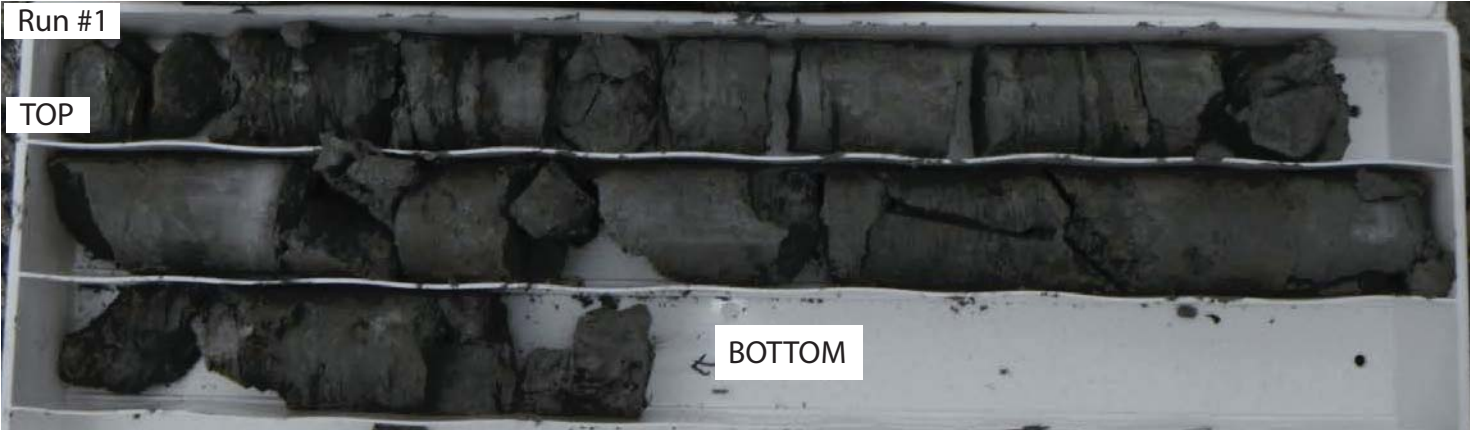
GENERAL NOTES

Begin Drilling **05-01-2014** Complete Drilling **05-01-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**
 Driller **R&J** Logger **F. Bozga** Checked by **C. Marin**
 Drilling Method **2.25" SSA, 4" casing, boring backfilled upon completion**

WATER LEVEL DATA


While Drilling ∇ **NA**
 At Completion of Drilling ∇ **8 (MUD)**
 Time After Drilling **NA**
 Depth to Water ∇ **NA**

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



Boring 84-RWB-20

Run #1, 34.0' to 39.0', RECOVERY = 85%, RQD = 0%
 Run #2, 39.0' to 44.0', RECOVERY = 83%, RQD = 24%
 Run #3, 44.0' to 54.0', RECOVERY = 99%, RQD = 63%

BEDROCK CORE: IL 84 RETAINING WALL, SAVANNA, ILLINOIS		
SCALE: GRAPHIC	84-RWB-20	DRAWN BY: C.L.M. CHECKED BY: M.A.K.
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FOR PARSONS CORPORATION		342-06-01



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BORING LOG 84-RWB-21

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 638.55 ft
 North: 1981268.13 ft
 East: 2298872.46 ft
 Station: 724+43.12
 Offset: 40.09 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	638.24	1-inch thick, brown CLAY LOAM --TOPSOIL--															
		Loose, brown SANDY GRAVEL, rock fragments			1	4 4 5	NP	13						11	12 10 9	NP	15
			5		2	2 2 2	NR					30		12	14 9 9	NP	12
	631.5	Loose to medium dense, brown SILTY LOAM to SANDY LOAM, trace to little gravel			3	5 8 4	NP			606.8	Herd, gray, SILTY CLAY LOAM, some shale fragments --WEATHERED SHALE BEDROCK--						
			10		4	4 3 3	NP	27						13	40 50/5	10.25 S	16
		--%Gravel=14.1-- --%Sand=53.5-- --%Silt=28.7-- --%Clay=3.7-- --A-2-4(0)--			5	6 6 6	NP	22		603.5	Weak strength, gray and brown, poor rock mass quality, highly weathered, laminated to massive, interbedded SHALE and MUDSTONE --RUN 1 - 35.0-45.0 ft-- --RECOVERY= 89%-- --RQD= 48%--						
	626.0	Medium dense, brown GRAVELLY SAND to GRAVELLY SANDY LOAM			6	3 4 7	NP	8									
			15		7	10 12 14	NR			598.5	40.5 ft-Qu=4150 psi ---> Competent rock, moderate strength, gray and brown, very poor to good rock mass quality, slightly weathered to fresh, laminated to massive, interbedded SHALE and MUDSTONE						
					8	8 7 9	NP	18									
			20		9	5 8 11	NP	14									
		--%Gravel=23.1-- --%Sand=44.2-- --%Silt=29.9-- --%Clay=2.8-- --A-2-4(0)--			10	21 16 9	NP	14									
			25														

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **04-29-2014** Complete Drilling **04-30-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**
 Driller **R&J** Logger **F. Bozga** Checked by **C. Marin**
 Drilling Method **2.25" SSA, 4" casing, boring backfilled upon completion**

While Drilling **NA**
 At Completion of Drilling **8 (MUD)**
 Time After Drilling **NA**
 Depth to Water **NA**

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

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BORING LOG 84-RWB-21

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 638.55 ft
 North: 1981268.13 ft
 East: 2298872.46 ft
 Station: 724+43.12
 Offset: 40.09 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
573.5		--RUN 3 - 50.0-55.0 ft-- --RECOVERY= 100%-- --RQD= 36%--	50.0		3	MPOC											
		54.5 ft-Qu=3590 psi ---> 55.5 ft-Qu=2930 psi --->	55.0														
		--RUN 4 - 55.0-65.0 ft-- --RECOVERY= 53%-- --RQD= 18%-- Highly fractured--->	55.0		4	MPOC											
		Boring terminated at 65.00 ft	65.0														
			70.0														
			75.0														

GENERAL NOTES

Begin Drilling **04-29-2014** Complete Drilling **04-30-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**
 Driller **R&J** Logger **F. Bozga** Checked by **C. Marin**
 Drilling Method **2.25" SSA, 4" casing, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ∇ **NA**
 At Completion of Drilling ∇ **8 (MUD)**
 Time After Drilling **NA**
 Depth to Water ∇ **NA**

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



Boring 84-RWB-21

Run #1, 35.0' to 45.0', RECOVERY = 89%, RQD = 48%
 Run #2, 45.0' to 50.0', RECOVERY = 100%, RQD = 78%
 Run #3, 50.0' to 55.0', RECOVERY = 100%, RQD = 36%
 Run #4, 55.0' to 65.0', RECOVERY = 53%, RQD = 18%

BEDROCK CORE: IL 84 RETAINING WALL,
 SAVANNA, ILLINOIS

SCALE: GRAPHIC

84-RWB-21

DRAWN BY: C.L.M.
 CHECKED BY: M.A.K.



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BORING LOG 84-RWB-22

WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carrol County, Illinois**

Datum: NAVD 88
 Elevation: 625.90 ft
 North: 1981354.94 ft
 East: 2298853.16 ft
 Station: 725+32.04
 Offset: 41.20 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		Loose to medium dense, brown SILTY LOAM and GRAVEL, trace brick fragments --FILL--			1	7 17 9	NP	15		599.0	--AUGER REFUSAL-- Boring terminated at 26.00 ft			11	48 50/5	NP	15
	617.9		5		2	2 2 5	NP					30					
					3	4 3 2	NP										
		Very loose to dense, brown SAND and GRAVEL	10		4	0 1 2	NP	31				35					
					5	9 11 11	NP	6									
			15		6	10 12 13	NP	5				40					
					7	7 8 26	NP	5									
					8	8 8 7	NP	7				45					
	605.4	Very dense, gray SILTY LOAM, some shale fragments --WEATHERED SHALE BEDROCK--			9	7 18 48	NP	13									
					10	25 30 28	NP	15				50					

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **12-09-2013** Complete Drilling **12-09-2013**
 Drilling Contractor **Wang Testing Services** Drill Rig **CME 55 TMR**
 Driller **R&N** Logger **A. Tomaras** Checked by **C. Marin**
 Drilling Method **3.25" HSA, boring backfilled upon completion**

While Drilling ∇ **8.50 ft**
 At Completion of Drilling ∇ **15.5 (MUD)**
 Time After Drilling **NA**
 Depth to Water ∇ **NA**

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

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BORING LOG 84-RWB-22A

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WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carrol County, Illinois**

Datum: NAVD 88
 Elevation: 623.54 ft
 North: 1981359.22 ft
 East: 2298857.62 ft
 Station: 725+36.90
 Offset: 42.34 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	620.5	Very dense, brown and yellow SILTY LOAM and GRAVEL, trace brick fragments --FILL--			1	34 36 26	NP	10		598.0							
		Loose to medium dense, brown and white GRAVELLY SAND, trace metal and brick fragments --FILL--	5		2	2 4 3	NP	13									
					3	1 3 2	NP	28									
	615.5	Medium dense to dense, brown GRAVELLY SANDY LOAM to SANDY LOAM, trace cobbles	10		4	1 5 10	NP	10									
		--%Gravel=31.8-- --%Sand=39.3-- --%Silt=25.1-- --%Clay=3.9-- --A-2-4 (0)--			5	9 11 14	NP	10									
			15		6	14 14 11	NP	7									
		--%Gravel=11.9-- --%Sand=46.5-- --%Silt=34.2-- --%Clay=7.5-- --A-4 (0)--			7	10 9 11	NP	13									
	605.5	Hard, gray SILTY CLAY, trace gravel	20		8	4 7 8	4.50 P	18									
	603.0	Very dense, gray, weathered SHALE and MUDSTONE			9	48	NP	13									
	601.5	--WEATHERED SHALE BEDROCK--				50/5											
		Very weak strength, gray and brown, highly weathered, laminated SHALE --SHALE BEDROCK--	25		1												

NOTE: SPT values for samples obtained using 3-inch split-spoon have been adjusted.
 Boring terminated at 25.50 ft

GENERAL NOTES

Begin Drilling **12-10-2013** Complete Drilling **12-10-2013**
 Drilling Contractor **Wang Testing Services** Drill Rig **CME 55 TMR**
 Driller **R&N** Logger **A. Tomaras** Checked by **C. Marin**
 Drilling Method **3.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

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

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

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BORING LOG 84-RWB-22B

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WEI Job No.: 342-06-02

Client **Parsons Transportation Group, Inc.**
 Project **US 52 / IL 64 / IL 84**
 Location **Carroll County, Illinois**

Datum: NAVD 88
 Elevation: 625.62 ft
 North: 1981337.87 ft
 East: 2298862.26 ft
 Station: 725+18.12
 Offset: 34.84 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)	
		Drilled 25 feet without sampling																
			5							595.6	Hard, greenish gray SILTY CLAY, trace shale fragments --WEATHERED SHALE BEDROCK-- --L _L (%)=42, P _L (%)=21-- --%Gravel=8.2-- --%Sand=0.6-- --%Silt=49.1-- --%Clay=42.0-- --A7-6 (20)--	30		1	32 35 43			NP
			10								Very weak strength, gray, poor rock mass quality, highly weathered, laminated to massive, interbedded SHALE and MUDSTONE --RUN 1 - 30.0-40.0 ft-- --RECOVERY= 81%-- --RQD= 28%--	35		2	44 34 45			NP
			15							589.6	36.0 ft-Qu=4920 psi ---> Competent rock, moderate strength, gray, good rock mass quality, slightly weathered to fresh, laminated to massive, interbedded SHALE and MUDSTONE	40						
			20								39.0 ft-Qu=5930 psi ---> 40.0 ft-Qu=5960 psi --->	45						
			25							600.6	--RUN 2 - 40.0-50.0 ft-- --RECOVERY= 99%-- --RQD= 81%--	50		2				
											46.0 ft-Qu=6140 psi --->							
										575.6								

Boring terminated at 50.00 ft

GENERAL NOTES

WATER LEVEL DATA

Begin Drilling **04-28-2014** Complete Drilling **04-28-2014**
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**
 Driller **R&J** Logger **F. Bozga** Checked by **C. Marin**
 Drilling Method **2.25" SSA, 4" casing, boring backfilled upon completion**


While Drilling **NA**
 At Completion of Drilling **6.5 (MUD)**
 Time After Drilling **NA**
 Depth to Water **NA**

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

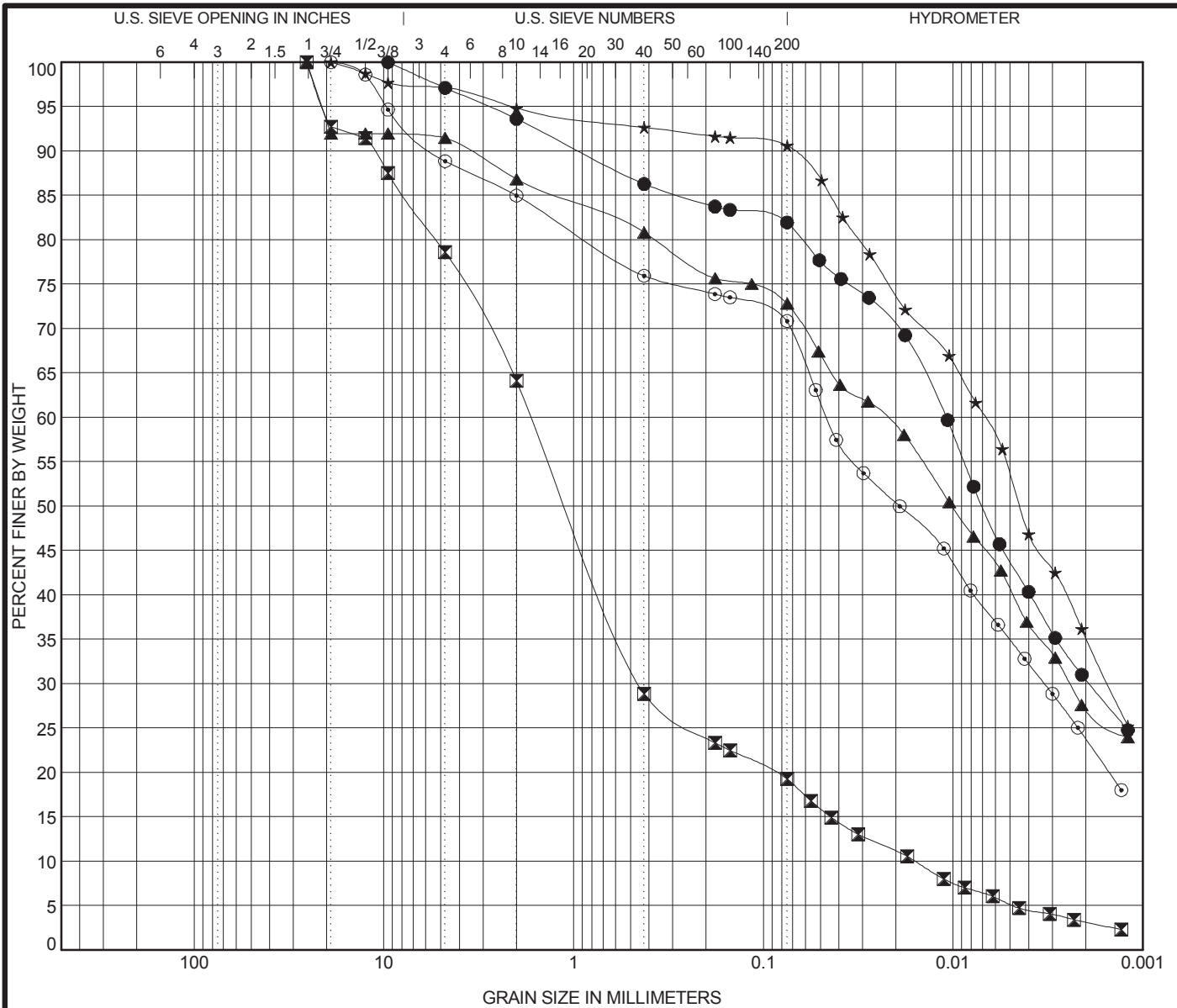
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Boring 84-RWB-22B
 Run #1, 30.0' to 40.0', RECOVERY = 81%, RQD = 28%
 Run #2, 40.0' to 50.0', RECOVERY = 99%, RQD = 81%

BEDROCK CORE: IL 84 RETAINING WALL, SAVANNA, ILLINOIS		
SCALE: GRAPHIC	84-RWB-22B	DRAWN BY: C.L.M. CHECKED BY: M.A.K.
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FOR PARSONS CORPORATION		342-06-01

APPENDIX B



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

Specimen Identification			IDH Classification					LL	PL	PI	Cc	Cu
●	84-RWB-01#4	8.5 ft	Silty Clay					36	17	19		
☒	84-RWB-01#6	13.5 ft	Gravelly Sandy Loam					NP	NP	NP	7.51	105.04
▲	84-RWB-02#10	23.5 ft	Silty Clay					36	17	19		
★	84-RWB-02#1	35.0 ft	Silty Clay					34	17	17		
⊙	84-RWB-03#7	16.0 ft	Gravelly Silty Clay Loam					33	17	16		
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	84-RWB-01#4	8.5 ft	9.5	0.011	0.002		6.4	11.8	51.3	30.5		
☒	84-RWB-01#6	13.5 ft	25.4	1.67	0.447	0.016	35.9	45.0	16.0	3.1		
▲	84-RWB-02#10	23.5 ft	25.4	0.023	0.002		13.2	14.2	45.3	27.3		
★	84-RWB-02#1	35.0 ft	19	0.007	0.002		5.2	4.3	55.3	35.2		
⊙	84-RWB-03#7	16.0 ft	19	0.046	0.003		15.0	14.4	46.8	23.8		

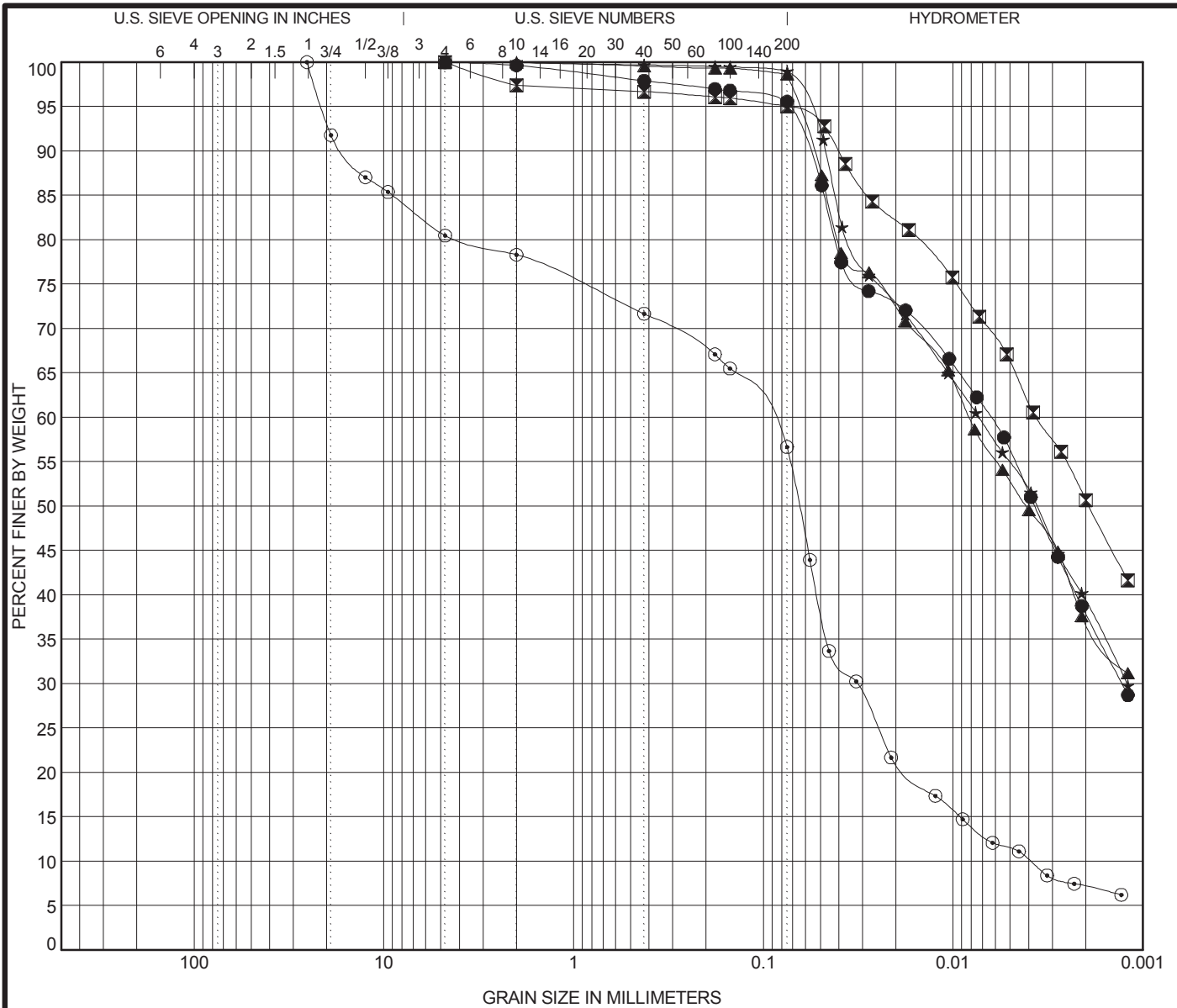
WEI GRAIN SIZE IDH 3420602.GPJ US LAB.GDT 8/14/14



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GRAIN SIZE DISTRIBUTION

Project: US 52 / IL 64 / IL 84
 Location: Carrol County, Illinois
 Number: 342-06-02



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

Specimen Identification	IDH Classification	LL	PL	PI	Cc	Cu
● 84-RWB-04#6 13.5 ft	Silty Clay	37	17	20		
☒ 84-RWB-07#4 8.5 ft	Clay	39	18	21		
▲ 84-RWB-08#7 16.0 ft	Silty Clay	35	18	17		
★ 84-RWB-10#7 16.0 ft	Silty Clay	35	17	18		
⊙ 84-RWB-12#3 6.0 ft	Gravelly Silty Loam	25	18	7	2.68	24.90

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 84-RWB-04#6 13.5 ft	4.75	0.006	0.001		0.4	4.4	57.4	37.9
☒ 84-RWB-07#4 8.5 ft	4.75	0.004			2.6	2.4	44.3	50.7
▲ 84-RWB-08#7 16.0 ft	4.75	0.008			0.1	1.7	61.2	37.0
★ 84-RWB-10#7 16.0 ft	2	0.007	0.001		0.0	1.2	59.5	39.3
⊙ 84-RWB-12#3 6.0 ft	25.4	0.098	0.032	0.004	21.7	22.3	48.9	7.2

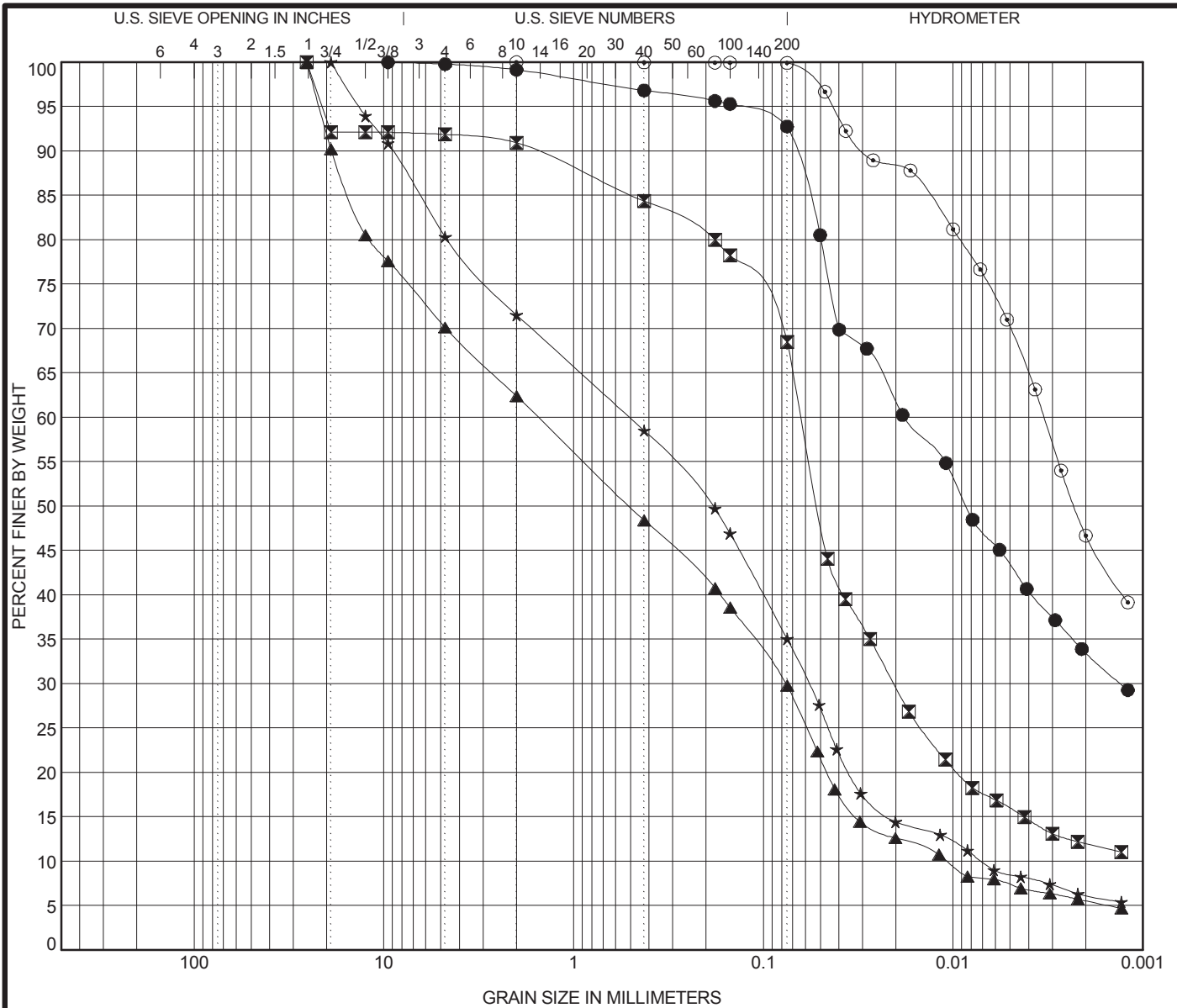


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 Number: 342-06-02

WEI GRAIN SIZE IDH 3420602.GPJ US LAB.GDT 8/14/14



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

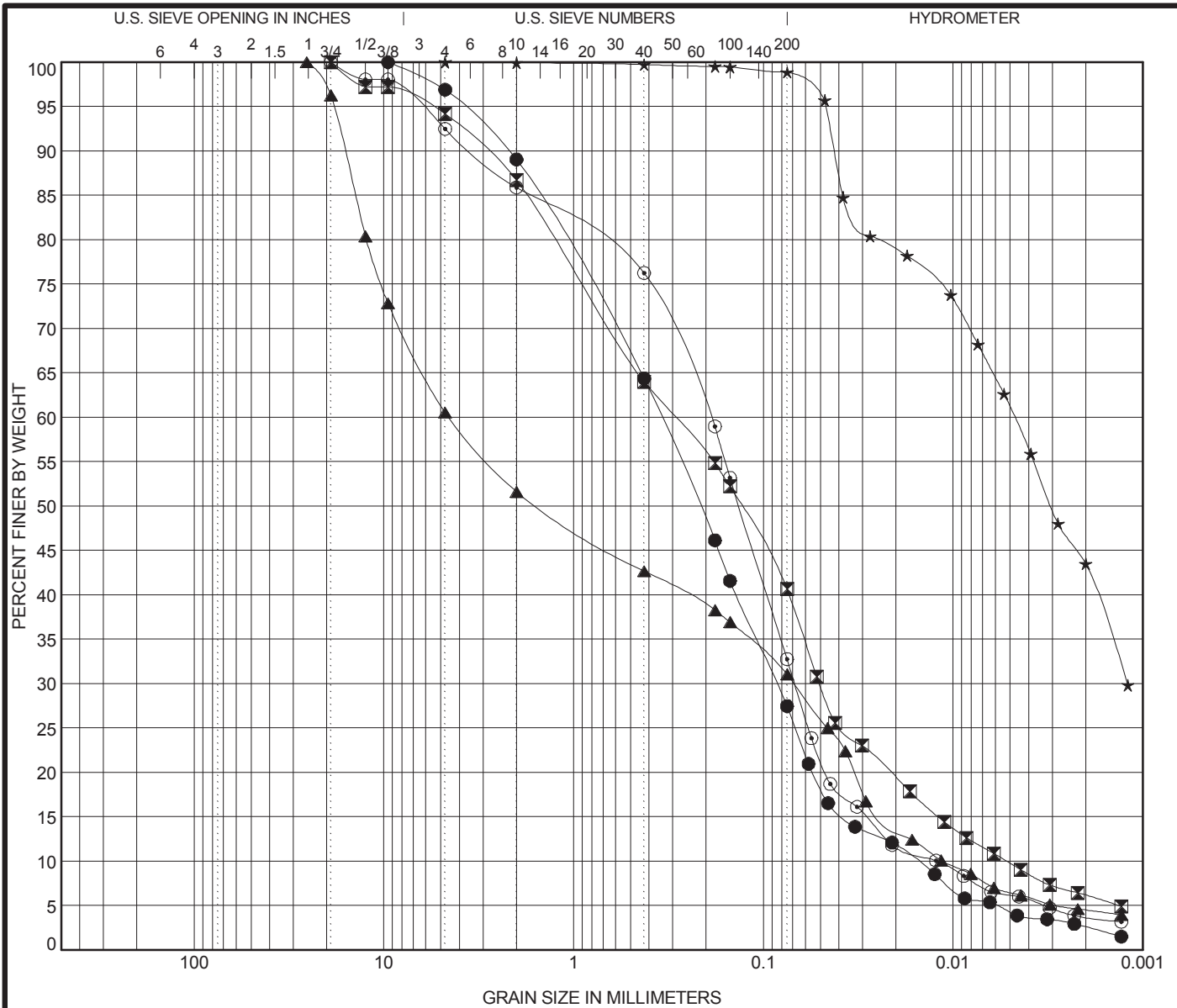
Specimen Identification			IDH Classification					LL	PL	PI	Cc	Cu
●	84-RWB-12#8	18.5 ft	Silty Clay					32	15	17		
■	84-RWB-13#7	16.0 ft	Silty Loam					NP	NP	NP		
▲	84-RWB-15#	8.5 ft	Gravelly Sandy Loam					NP	NP	NP	0.35	143.28
★	84-RWB-15#8	18.5 ft	Gravelly Sandy Loam					NP	NP	NP	0.93	72.01
○	84-RWB-15#14	38.5 ft	Silty Clay					41	21	20		
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	84-RWB-12#8	18.5 ft	9.5	0.018	0.001		0.9	6.8	58.8	33.5		
■	84-RWB-13#7	16.0 ft	25.4	0.063	0.02		9.1	23.1	55.8	12.0		
▲	84-RWB-15#	8.5 ft	25.4	1.535	0.076	0.011	37.6	32.9	24.0	5.5		
★	84-RWB-15#8	18.5 ft	19	0.508	0.058	0.007	28.5	36.7	28.6	6.2		
○	84-RWB-15#14	38.5 ft	2	0.003			0.0	0.2	53.1	46.7		



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GRAIN SIZE DISTRIBUTION
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 Location: Carrol County, Illinois
 Number: 342-06-02

WEI GRAIN SIZE IDH 3420602.GPJ US LAB.GDT 8/14/14



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

Specimen Identification			IDH Classification					LL	PL	PI	Cc	Cu
●	84-RWB-18#6	13.5 ft	Sandy Loam					NP	NP	NP	1.35	22.35
☒	84-RWB-19#3	6.0 ft	Sandy Loam					NP	NP	NP	1.68	55.84
▲	84-RWB-19#7	16.0 ft	Gravelly Silty Loam					NP	NP	NP	0.09	398.03
★	84-RWB-20#12	28.5 ft	Silty Clay					35	18	17		
◎	84-RWB-21#5	11.0 ft	Sandy Loam					NP	NP	NP	2.03	15.58
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	84-RWB-18#6	13.5 ft	9.5	0.346	0.085	0.015	11.0	61.9	24.5	2.6		
☒	84-RWB-19#3	6.0 ft	19	0.292	0.051	0.005	13.3	46.4	34.1	6.2		
▲	84-RWB-19#7	16.0 ft	25.4	4.506	0.069	0.011	48.4	20.7	26.4	4.5		
★	84-RWB-20#12	28.5 ft	4.75	0.005	0.001		0.1	1.1	55.3	43.5		
◎	84-RWB-21#5	11.0 ft	19	0.189	0.068	0.012	14.1	53.5	28.7	3.7		



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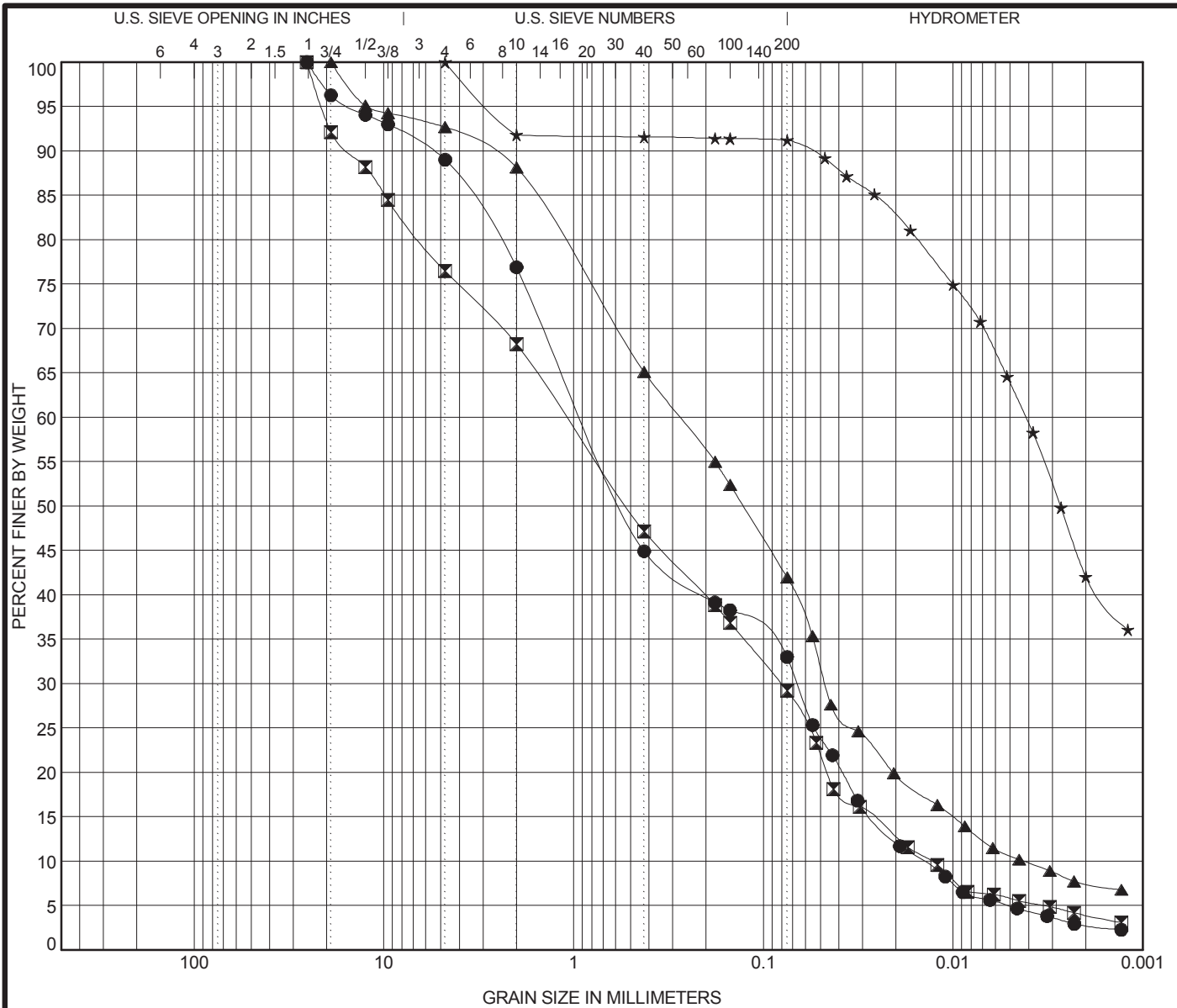
GRAIN SIZE DISTRIBUTION

Project: US 52 / IL 64 / IL 84

Location: Carrol County, Illinois

Number: 342-06-02

WEI GRAIN SIZE IDH 3420602.GPJ US LAB.GDT 8/14/14



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

Specimen Identification	IDH Classification	LL	PL	PI	Cc	Cu
● 84-RWB-21#10 23.5 ft	Gravelly Sandy Loam	NP	NP	NP	0.34	60.82
☒ 84-RWB-22A#5 11.0 ft	Gravelly Sandy Loam	NP	NP	NP	0.46	83.86
▲ 84-RWB-22A#7 16.0 ft	Sandy Loam	NP	NP	NP	1.89	64.36
★ 84-RWB-22B#1 26.0 ft	Silty Clay	42	21	21		

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 84-RWB-21#10 23.5 ft	25.4	0.882	0.066	0.015	23.1	44.2	29.9	2.8
☒ 84-RWB-22A#5 11.0 ft	25.4	1.092	0.081	0.013	31.8	39.3	25.1	3.9
▲ 84-RWB-22A#7 16.0 ft	19	0.275	0.047	0.004	11.9	46.5	34.2	7.5
★ 84-RWB-22B#1 26.0 ft	4.75	0.004			8.2	0.6	49.1	42.0

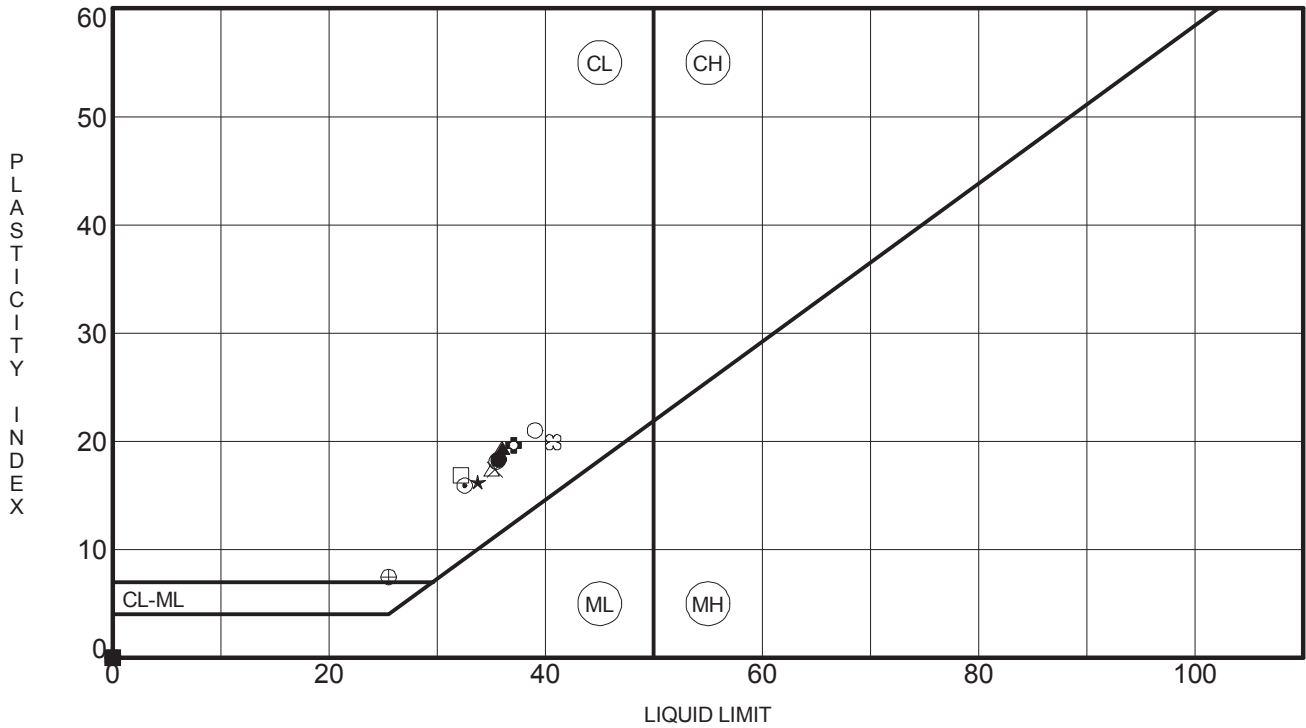


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GRAIN SIZE DISTRIBUTION

Project: US 52 / IL 64 / IL 84
 Location: Carrol County, Illinois
 Number: 342-06-02

WEI GRAIN SIZE IDH 3420602.GPJ US LAB.GDT 8/14/14



Specimen Identification	LL	PL	PI	Fines	IDH Classification
● 84-RWB-01#4 8.5 ft	36	17	19	82	Silty Clay
☒ 84-RWB-01#6 13.5 ft	NP	NP	NP	19	Gravelly Sandy Loam
▲ 84-RWB-02#10 23.5 ft	36	17	19	73	Silty Clay
★ 84-RWB-02#1 35.0 ft	34	17	17	91	Silty Clay
⊙ 84-RWB-03#7 16.0 ft	33	17	16	71	Gravelly Silty Clay Loam
⊕ 84-RWB-04#6 13.5 ft	37	17	20	96	Silty Clay
○ 84-RWB-07#4 8.5 ft	39	18	21	95	Clay
△ 84-RWB-08#7 16.0 ft	35	18	17	99	Silty Clay
⊗ 84-RWB-10#7 16.0 ft	35	17	18	99	Silty Clay
⊕ 84-RWB-12#3 6.0 ft	25	18	7	57	Gravelly Silty Loam
□ 84-RWB-12#8 18.5 ft	32	15	17	93	Silty Clay
⊕ 84-RWB-13#7 16.0 ft	NP	NP	NP	68	Silty Loam
⊕ 84-RWB-15# 8.5 ft	NP	NP	NP	30	Gravelly Sandy Loam
☆ 84-RWB-15#8 18.5 ft	NP	NP	NP	35	Gravelly Sandy Loam
⊗ 84-RWB-15#14 38.5 ft	41	21	20	100	Silty Clay
■ 84-RWB-18#6 13.5 ft	NP	NP	NP	27	Sandy Loam
◆ 84-RWB-19#3 6.0 ft	NP	NP	NP	41	Sandy Loam
◇ 84-RWB-19#7 16.0 ft	NP	NP	NP	31	Gravelly Silty Loam
× 84-RWB-20#12 28.5 ft	35	18	17	99	Silty Clay
⊗ 84-RWB-21#5 11.0 ft	NP	NP	NP	33	Sandy Loam

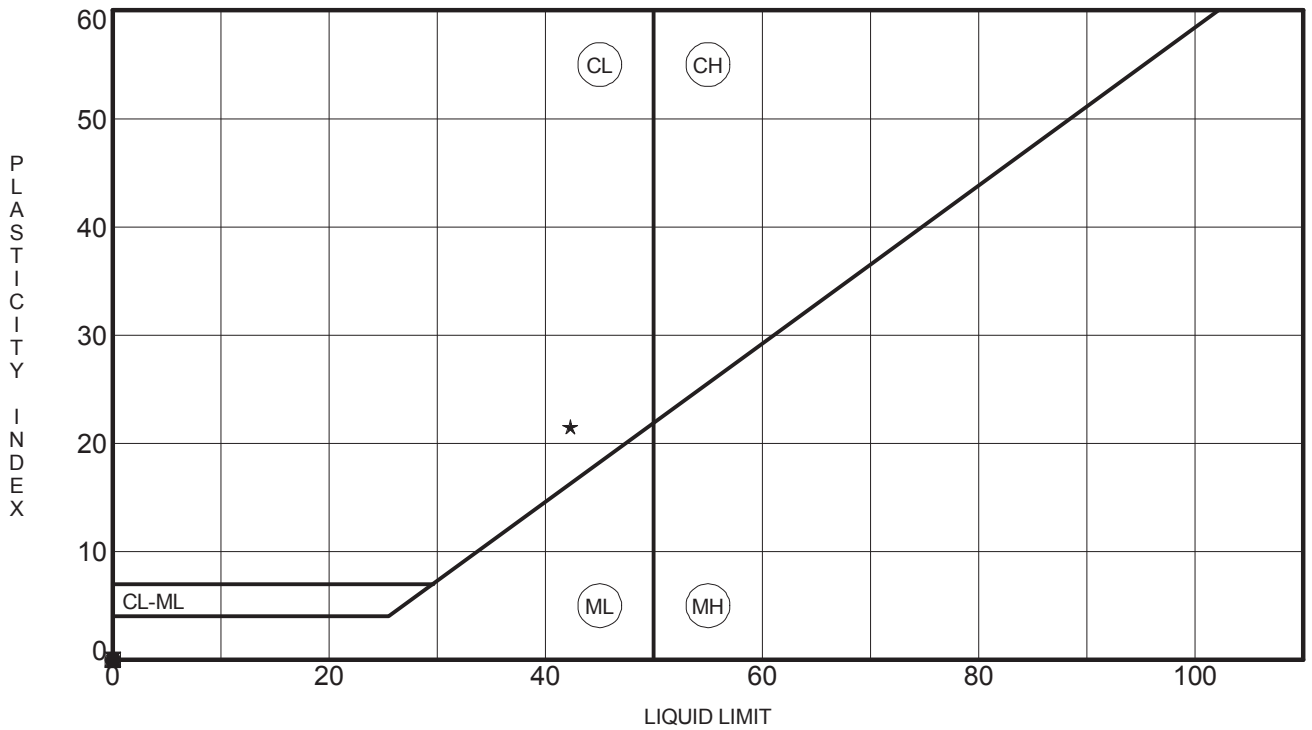
WEI ATTERBERG LIMITS IDH 3420602.GPJ US LAB.GDT_8/14/14



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ATTERBERG LIMITS' RESULTS

Project: US 52 / IL 64 / IL 84
 Location: Carrol County, Illinois
 Number: 342-06-02



Specimen Identification	LL	PL	PI	Fines	IDH Classification	
● 84-RWB-21#10	23.5 ft	NP	NP	NP	33	Gravelly Sandy Loam
☒ 84-RWB-22A#5	11.0 ft	NP	NP	NP	29	Gravelly Sandy Loam
▲ 84-RWB-22A#7	16.0 ft	NP	NP	NP	42	Sandy Loam
★ 84-RWB-22B#1	26.0 ft	42	21	21	91	Silty Clay

WEI ATTERBERG LIMITS IDH 3420602.GPJ US LAB.GDT 8/14/14

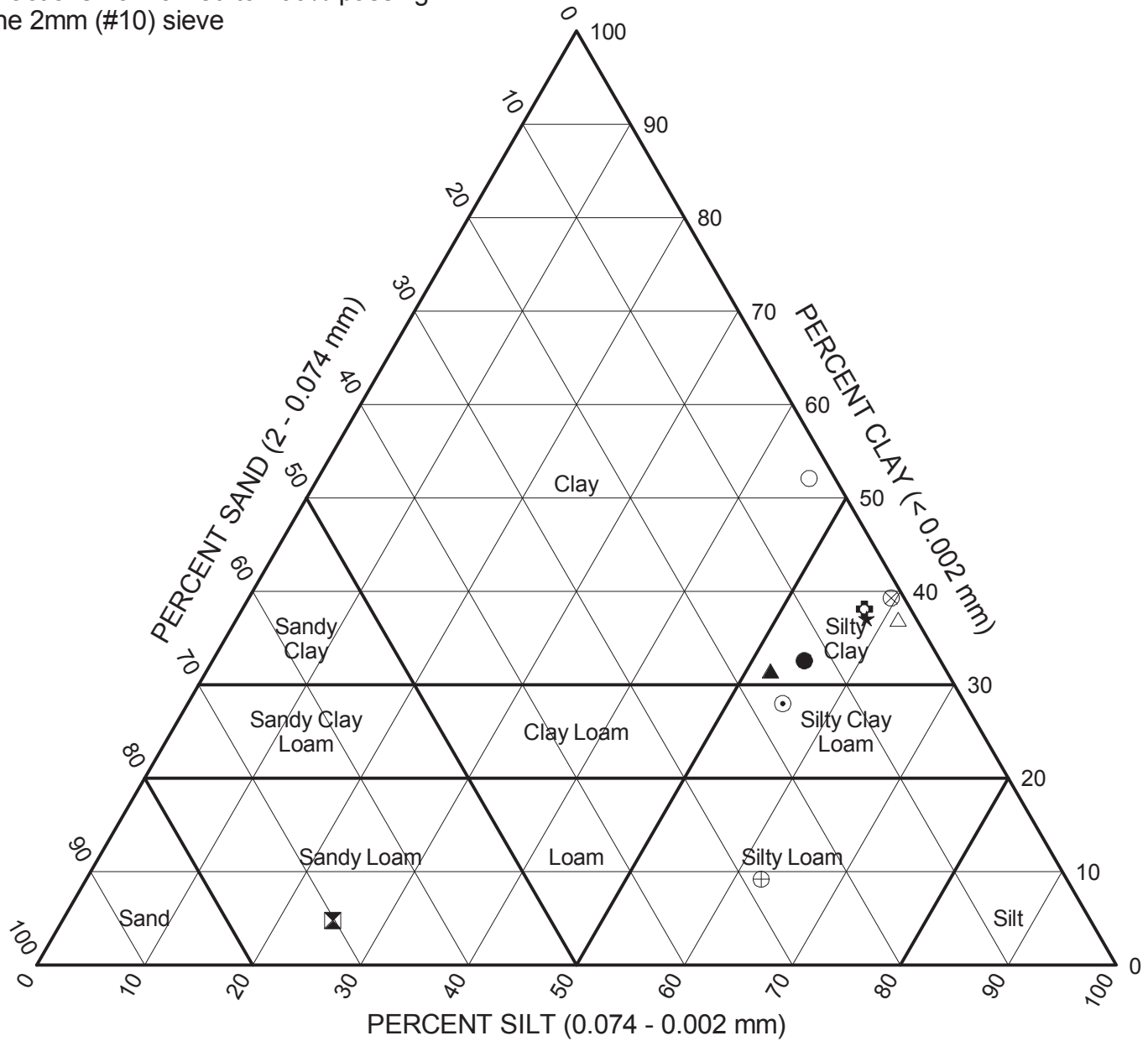


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ATTERBERG LIMITS' RESULTS

Project: US 52 / IL 64 / IL 84
 Location: Carrol County, Illinois
 Number: 342-06-02

Fractions normalized to 100% passing the 2mm (#10) sieve



Sample	Depth (ft)	Sand (%)	Silt (%)	Clay (%)	Classification		
					IL DOT	AASHTO	ASTM
● 84-RWB-01#4	8.5	12.6	54.8	32.6	Silty Clay	A-6 (14)	CL
⊠ 84-RWB-01#6	13.5	70.2	25.0	4.8	Gravelly Sandy Loam	A-1-b (0)	SM
▲ 84-RWB-02#10	23.5	16.4	52.2	31.5	Silty Clay	A-6 (12)	CL
★ 84-RWB-02#1	35.0	4.5	58.3	37.1	Silty Clay	A-6 (15)	CL
⊙ 84-RWB-03#7	16.0	16.9	55.1	28.0	Gravelly Silty Clay Loam	A-6 (9)	CL
⊕ 84-RWB-04#6	13.5	4.4	57.6	38.1	Silty Clay	A-6 (19)	CL
○ 84-RWB-07#4	8.5	2.5	45.5	52.1	Clay	A-6 (21)	CL
△ 84-RWB-08#7	16.0	1.7	61.3	37.0	Silty Clay	A-6 (17)	CL
⊗ 84-RWB-10#7	16.0	1.2	59.5	39.3	Silty Clay	A-6 (18)	CL
⊕ 84-RWB-12#3	6.0	28.5	62.5	9.2	Gravelly Silty Loam	A-4 (1)	CL-ML

WEI IDH 3420602.GPJ WANGENG_GDT 8/14/14

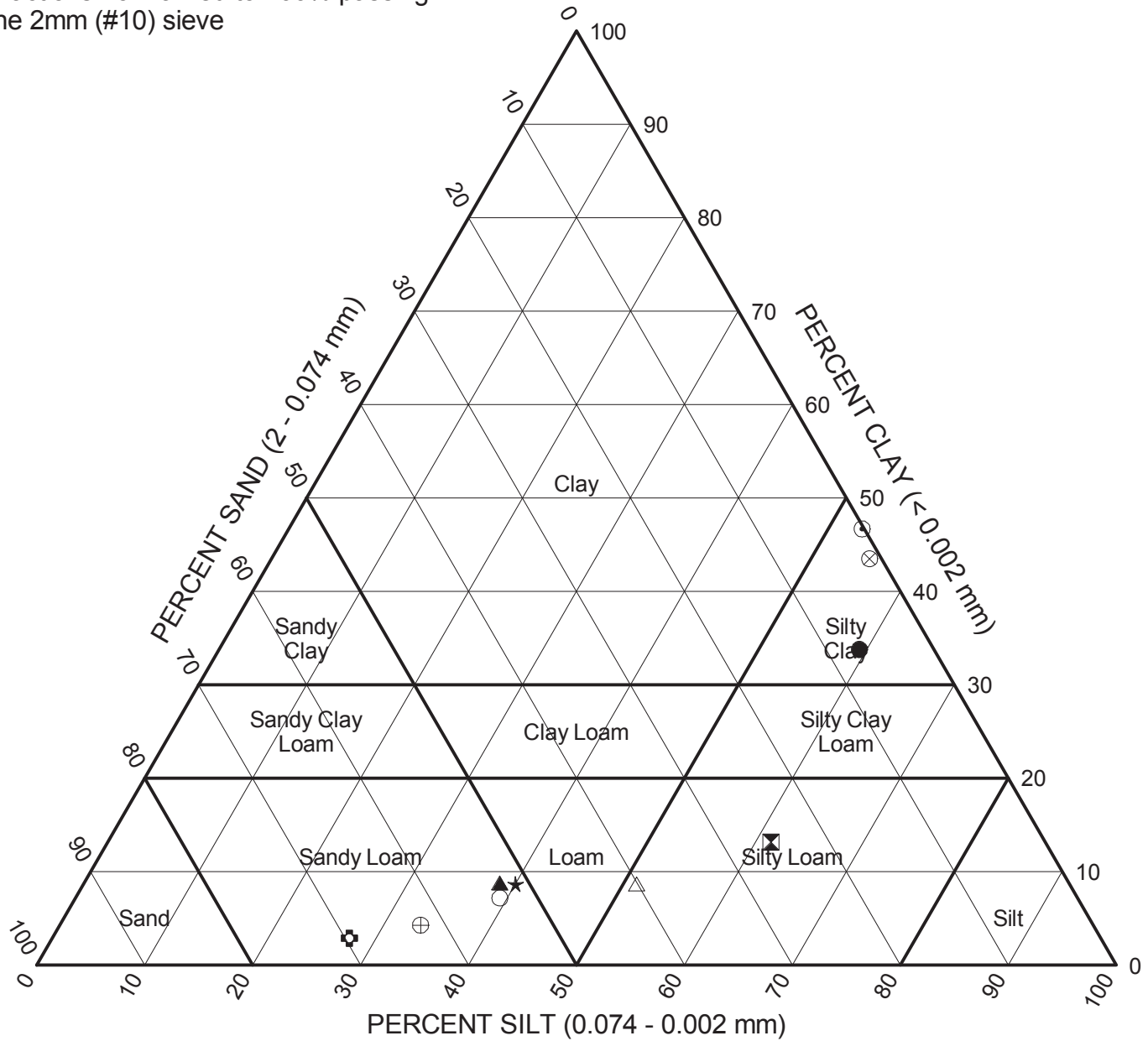


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IDH Textural Classification Chart

Project: US 52 / IL 64 / IL 84
 Location: Carrol County, Illinois
 Number: 342-06-02

Fractions normalized to 100% passing the 2mm (#10) sieve



Sample	Depth (ft)	Sand (%)	Silt (%)	Clay (%)	Classification		
					IL DOT	AASHTO	ASTM
● 84-RWB-12#8	18.5	6.9	59.3	33.8	Silty Clay	A-6 (15)	CL
⊠ 84-RWB-13#7	16.0	25.4	61.4	13.2	Silty Loam	A-4 (0)	ML
▲ 84-RWB-15#	8.5	52.7	38.5	8.8	Gravelly Sandy Loam	A-2-4 (0)	SM
★ 84-RWB-15#8	18.5	51.3	40.0	8.7	Gravelly Sandy Loam	A-2-4 (0)	SM
⊙ 84-RWB-15#14	38.5	0.2	53.1	46.7	Silty Clay	A-7-6 (22)	CL
⊕ 84-RWB-18#6	13.5	69.6	27.5	2.9	Sandy Loam	A-2-4 (0)	SM
○ 84-RWB-19#3	6.0	53.5	39.3	7.2	Sandy Loam	A-4 (0)	SM
△ 84-RWB-19#7	16.0	40.1	51.2	8.7	Gravelly Silty Loam	A-2-4 (0)	GM
⊗ 84-RWB-20#12	28.5	1.1	55.4	43.5	Silty Clay	A-6 (17)	CL
⊕ 84-RWB-21#5	11.0	62.3	33.4	4.3	Sandy Loam	A-2-4 (0)	SM

WEI IDH 3420602.GPJ WANGENG_GDT 8/14/14

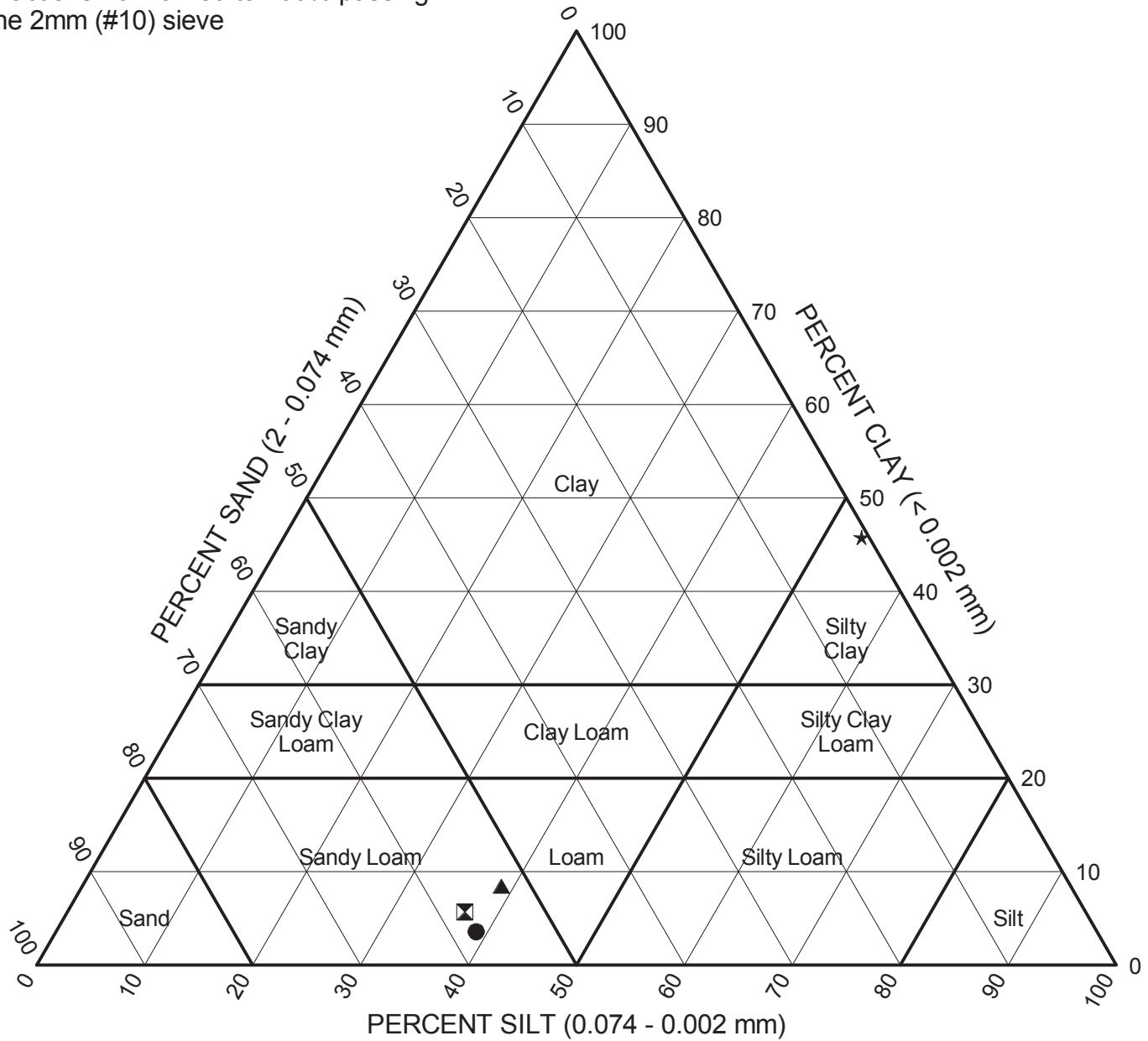


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IDH Textural Classification Chart

Project: US 52 / IL 64 / IL 84
 Location: Carrol County, Illinois
 Number: 342-06-02

Fractions normalized to 100% passing the 2mm (#10) sieve



Sample	Depth (ft)	Sand (%)	Silt (%)	Clay (%)	Classification		
					IL DOT	AASHTO	ASTM
● 64-RWB-21#10	23.5	57.5	38.9	3.6	Gravelly Sandy Loam	A-2-4 (0)	SM
◻ 64-RWB-22A#5	11.0	57.6	36.8	5.7	Gravelly Sandy Loam	A-2-4 (0)	SM
▲ 64-RWB-22A#7	16.0	52.8	38.8	8.5	Sandy Loam	A-4 (0)	SM
★ 64-RWB-22B#1	26.0	0.7	53.5	45.8	Silty Clay	A-7-6 (20)	CL

WEI IDH 3420602.GPJ WANGENG_GDT 8/14/14



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IDH Textural Classification Chart
 Project: US 52 / IL 64 / IL 84
 Location: Carrol County, Illinois
 Number: 342-06-02

DENSITY-UNIT WEIGHT DETERMINATION
ASTM D 7263

Client: Parsons Transportation Group, Inc.
Project: US 52 / IL 64 / IL 84 Analyst name: A. Mohammed
WEI Job No: 342-06-02 Test date: June 10, 2014

Sample #:	84-RWB-05A Run 1, 18.5ft	84-RWB-08 Run 1, 25.0ft	
Water content determination			
Mass of tare and wet soil (g) $W_w =$	169.92	182.94	
Mass of tare and dry soil (g) $W_d =$	158.23	172.66	
Mass of tare (g) $W_t =$	31.12	31.24	
Water content $w =$	9%	7%	

Density--Unit Weight

Diameter measurements (in) $D_1 =$	1.993	2.000	
$D_2 =$	2.001	2.010	
$D_3 =$	2.001	2.000	
Average diameter (in) $D =$	1.998	2.003	
Height measurements (in) $H_1 =$	1.123	1.200	
$H_2 =$	1.102	1.210	
$H_3 =$	1.130	1.210	
Average height (in) $H =$	1.118	1.207	
Total weight (g) $W =$	138.800	151.700	
Bulk Unit Weight (pcf) $g =$	150.78	151.97	
Dry Unit Weight (pcf) $g_d =$	138.08	141.67	

Prepared by: Jay Date: 6/10/14
Checked by: A.P. Date: 6/10/14

DENSITY-UNIT WEIGHT DETERMINATION
ASTM D 7263

Client: Parsons Transportation Group, Inc.
Project: US 52 / IL 64 / IL 84 Analyst name: A. Mohammed
WEI Job No: 342-06-02 Test date: June 10, 2014

Sample #:	84-RWB-11 Run 1, 20.5ft	84-RWB-13 Run 1, 39.0ft	84-RWB-17 Run 1, 32.2ft
Water content determination			
Mass of tare and wet soil (g) $W_w =$	119.55	156.62	179.35
Mass of tare and dry soil (g) $W_d =$	110.66	146.38	160.13
Mass of tare (g) $W_t =$	31.17	31.30	31.24
Water content $w =$	11%	9%	15%

Density--Unit Weight

Diameter measurements (in) $D_1 =$	1.733	1.984	2.036
$D_2 =$	1.738	2.000	2.042
$D_3 =$	1.744	1.950	2.059
Average diameter (in) $D =$	1.738	1.978	2.046
Height measurements (in) $H_1 =$	1.007	1.103	1.260
$H_2 =$	1.077	1.066	1.219
$H_3 =$	1.025	1.096	1.263
Average height (in) $H =$	1.036	1.088	1.247
Total weight (g) $W =$	88.380	125.320	148.110
Bulk Unit Weight (pcf) $g =$	136.92	142.78	137.66
Dry Unit Weight (pcf) $g_d =$	123.14	131.11	119.79

Prepared by: Jay Date: 6/10/14
Checked by: AF Date: 6/10/14

DENSITY-UNIT WEIGHT DETERMINATION
ASTM D 7263

Client: Parsons Transportation Group, Inc.
Project: US 52 / IL 64 / IL 84 Analyst name: A. Mohammed
WEI Job No: 342-06-02 Test date: June 10, 2014

Sample #:	84-RWB-20 Run 1, 35.0ft	84-RWB-20 Run 2, 40.0ft	
Water content determination			
Mass of tare and wet soil (g) $W_w =$	151.93	198.12	
Mass of tare and dry soil (g) $W_d =$	137.16	182.10	
Mass of tare (g) $W_t =$	31.57	31.13	
Water content $w =$	14%	11%	

Density--Unit Weight

Diameter measurements (in) $D_1 =$	2.049	2.054	
$D_2 =$	2.058	2.049	
$D_3 =$	2.048	2.051	
Average diameter (in) $D =$	2.052	2.051	
Height measurements (in) $H_1 =$	1.044	1.302	
$H_2 =$	1.037	1.293	
$H_3 =$	1.047	1.312	
Average height (in) $H =$	1.043	1.302	
Total weight (g) $W =$	120.360	166.990	
Bulk Unit Weight (pcf) $g =$	133.04	147.83	
Dry Unit Weight (pcf) $g_d =$	116.72	133.65	

Prepared by: Jay Date: 6/10/14
Checked by: AEK Date: 6/10/14

DENSITY-UNIT WEIGHT DETERMINATION
ASTM D 7263

Client: Parsons Transportation Group, Inc.
Project: US 52 / IL 64 / IL 84 Analyst name: A. Mohammed
WEI Job No: 342-06-02 Test date: June 11, 2014

Sample #:	84-RWB-22B Run 1, 35.0ft		
Water content determination			
Mass of tare and wet soil (g) $W_w =$	152.44		
Mass of tare and dry soil (g) $W_d =$	148.71		
Mass of tare (g) $W_t =$	22.49		
Water content $w =$	3%		

Density--Unit Weight

Diameter measurements (in) $D_1 =$	2.045		
$D_2 =$	2.044		
$D_3 =$	2.046		
Average diameter (in) $D =$	2.045		
Height measurements (in) $H_1 =$	0.916		
$H_2 =$	0.906		
$H_3 =$	0.908		
Average height (in) $H =$	0.910		
Total weight (g) $W =$	129.950		
Bulk Unit Weight (pcf) $g =$	165.66		
Dry Unit Weight (pcf) $g_d =$	160.90		

Prepared by: Jay Date: 6/11/14
Checked by: AD Date: 6/10/14

DENSITY-UNIT WEIGHT DETERMINATION
ASTM D 7263

Client: Parsons Transportation Group, Inc.
Project: US 52 / IL 64 / IL 84
WEI Job No: 342-06-02

Analyst name: A. Mohammed
Test date: June 19, 2014

Sample #:	84-RWB-03A Run 2, 32.0ft
Water content determination	
Mass of tare and wet soil (g) $W_w =$	571.10
Mass of tare and dry soil (g) $W_d =$	544.00
Mass of tare (g) $W_t =$	22.06
Water content $w =$	5%
Density--Unit Weight	
Diameter measurements (in) $D_1 =$	2.050
$D_2 =$	2.040
$D_3 =$	2.050
Average diameter (in) $D =$	2.047
Height measurements (in) $H_1 =$	4.074
$H_2 =$	4.094
$H_3 =$	4.102
Average height (in) $H =$	4.090
Total weight (g) $W =$	549.040
Bulk Unit Weight (pcf) $g =$	155.47
Dry Unit Weight (pcf) $g_d =$	147.80

Prepared by: Jay

Date: 6/10/14

Checked by: lit

Date: 6/19/14



Unconfined Compressive Strength of Intact Rock Core Specimens

Project: US 52 / IL 64 / IL 84

Client: Parsons Transportation Group, Inc.

WEI Job No.: 342-06-02

Note: The specimens were sulphur capped for a more uniform break

Field Sample ID	Lab Specimen ID	Depth (ft)	Location	Sample Description	Length(in)		Diameter (in)	Total Load (lbs)	Total Pressure (psi)	Fracture Type*	Break Date	Tested By	Area (in ²)
					Before Capping	After Capping							
84-RWB-01B RUN 3	9656	34.6	IL-84 Wall	Shale	3.99	4.19	2.05	9250	2800	3	5/31/14	AM	3.30
84-RWB-01B RUN 3	9657	38.5	IL-84 Wall	Shale	4.26	4.42	2.05	24970	7570	3	5/31/14	AM	3.30

*** Fracture Types:**

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

Prepared by: *Asifuddin*

Checked by: *L.F. 6/10/14*



Unconfined Compressive Strength of Intact Rock Core Specimens

Project: US 52 / IL 64 / IL 84

Client: Parsons Transportation Group, Inc.

WEI Job No.: 342-06-02

Note: The specimens were sulphur capped for a more uniform break

Field Sample ID	Lab Specimen ID	Depth (ft)	Location	Sample Description	Length (in)		Diameter (in)	Total Load (lbs)	Total Pressure (psi)	Fracture Type*	Break Date	Tested By	Area (in ²)
					Before Capping	After Capping							
84-RWB-20 RUN 2	9522	41.5	IL-84 Wall	Shale	3.78	3.93	2.05	20970	6420	3	5/14/14	AM	3.27
84-RWB-20 RUN 3	9523	44.5	IL-84 Wall	Shale	4.02	4.17	2.05	17170	5250	3	5/14/14	AM	3.27
84-RWB-20 RUN 3	9524	50.5	IL-84 Wall	Shale	3.98	4.11	2.05	25050	7660	3	5/14/14	AM	3.27

*** Fracture Types:**

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

Prepared by: _____

Checked by: *A. F. 4/10/14*



Unconfined Compressive Strength of Intact Rock Core Specimens

Project: US 52 / IL 64 / IL 84

Client: Parsons Transportation Group, Inc.

WEI Job No.: 342-06-02

Note: The specimens were sulphur capped for a more uniform break

Field Sample ID	Lab Specimen ID	Depth (ft)	Location	Sample Description	Length(in)		Diameter (in)	Total Load (lbs)	Total Pressure (psi)	Fracture Type*	Break Date	Tested By	Area (in ²)
					Before Capping	After Capping							
84-RWB-19 RUN 2	9518	33.0	IL-84 Wall	Shale	4.10	4.21	2.03	11700	3630	3	5/14/14	AM	3.22
84-RWB-19 RUN 2	9519	37.5	IL-84 Wall	Shale	3.89	4.04	2.03	23390	7260	3	5/14/14	AM	3.22
84-RWB-19 RUN 3	9520	42.0	IL-84 Wall	Shale	3.90	4.09	2.05	26700	8170	3	5/14/14	AM	3.27
84-RWB-19 RUN 3	9521	46.5	IL-84 Wall	Shale	3.94	4.13	2.05	30780	9420	3	5/14/14	AM	3.27

*** Fracture Types:**

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

Prepared by: Asifdd

Checked by: LS 6/10/14



Unconfined Compressive Strength of Intact Rock Core Specimens

Project: US 52 / IL 64 / IL 84

Client: Parsons Transportation Group, Inc.

WEI Job No.: 342-06-02

Note: The specimens were sulphur capped for a more uniform break

Field Sample ID	Lab Specimen ID	Depth (ft)	Location	Sample Description	Length (in)		Diameter (in)	Total Load (lbs)	Total Pressure (psi)	Fracture Type*	Break Date	Tested By	Area (in ²)
					Before Capping	After Capping							
84-RWB-22B RUN 1	9530	36.0	IL-84 Wall	Shale	3.79	3.93	2.05	16090	4920	3	5/14/14	AM	3.27
84-RWB-22B RUN 1	9531	39.0	IL-84 Wall	Shale	4.26	4.39	2.05	19400	5930	3	5/14/14	AM	3.27
84-RWB-22B RUN 2	9532	40.0	IL-84 Wall	Shale	3.90	4.07	2.05	19490	5960	3	5/14/14	AM	3.27
84-RWB-22B RUN 2	9533	46.0	IL-84 Wall	Shale	3.91	4.09	2.05	20060	6140	3	5/14/14	AM	3.27

*** Fracture Types:**

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

Prepared by: *Asif*

Checked by: *AF 5/10/14*



Unconfined Compressive Strength of Intact Rock Core Specimens

Project: US 52 / IL 64 / IL 84

Client: Parsons Transportation Group, Inc.

WEI Job No.: 342-06-02

Note: The specimens were sulphur capped for a more uniform break

Field Sample ID	Lab Specimen ID	Depth (ft)	Location	Sample Description	Length (in)		Diameter (in)	Total Load (lbs)	Total Pressure (psi)	Fracture Type*	Break Date	Tested By	Area (in ²)
					Before Capping	After Capping							
84-RWB-03A RUN 2	9871	32.0	IL-84 Wall	Shale	4.09	4.12	2.05	3400	1030	3	6/19/14	AM	3.30

*** Fracture Types:**

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

Prepared by: *Asifuddin*

Checked by: *L.P. 6/10/14*



Unconfined Compressive Strength of Intact Rock Core Specimens

Project: US 52 / IL 64 / IL 84

Client: Parsons Transportation Group, Inc.

WEI Job No.: 342-06-02

Note: The specimens were sulphur capped for a more uniform break

Field Sample ID	Lab Specimen ID	Depth (ft)	Location	Sample Description	Length (in)		Diameter (in)	Total Load (lbs)	Total Pressure (psi)	Fracture Type*	Break Date	Tested By	Area (in ²)
					Before Capping	After Capping							
84-RWB-21 RUN 1	9525	40.5	IL-84 Wall	Shale	3.90	4.10	2.05	13570	4150	3	5/14/14	AM	3.27
84-RWB-21 RUN 1	9526	44.5	IL-84 Wall	Shale	3.94	4.18	2.05	11390	3490	3	5/14/14	AM	3.27
84-RWB-21 RUN 2	9527	45.5	IL-84 Wall	Shale	3.91	4.05	2.05	16000	4890	3	5/14/14	AM	3.27
84-RWB-21 RUN 3	9528	54.5	IL-84 Wall	Shale	3.79	3.92	2.05	11750	3590	3	5/14/14	AM	3.27
84-RWB-21 RUN 4	9529	55.5	IL-84 Wall	Shale	3.86	3.95	2.05	9570	2930	3	5/14/14	AM	3.27

*** Fracture Types:**

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

Prepared by: *Asif ddn*

Checked by: *A. F. 6/10/14*



Unconfined Compressive Strength of Intact Rock Core Specimens

Project: US 52 / IL 64 / IL 84

Client: Parsons Transportation Group, Inc.

WEI Job No.: 342-06-02

Note: The specimens were sulphur capped for a more uniform break

Field Sample ID	Lab Specimen ID	Depth (ft)	Location	Sample Description	Length (in)		Diameter (in)	Total Load (lbs)	Total Pressure (psi)	Fracture Type*	Break Date	Tested By	Area (in ²)
					Before Capping	After Capping							
84-RWB-12 RUN 4	9667	56.5	IL-84 Wall	Shale	3.85	3.98	2.05	8610	2610	3	5/31/14	AM	3.30
84-RWB-12 RUN 4	9663	61.5	IL-84 Wall	Shale	3.99	4.20	2.05	3720	1130	3	5/31/14	AM	3.30
84-RWB-16 RUN 3	9659	50.0	IL-84 Wall	Shale	3.89	4.22	2.05	17110	5180	3	5/31/14	AM	3.30
84-RWB-17 RUN 3	9664	50.0	IL-84 Wall	Shale	4.01	4.27	2.05	28630	8670	3	5/31/14	AM	3.30

*** Fracture Types:**

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

Prepared by: Abifadd

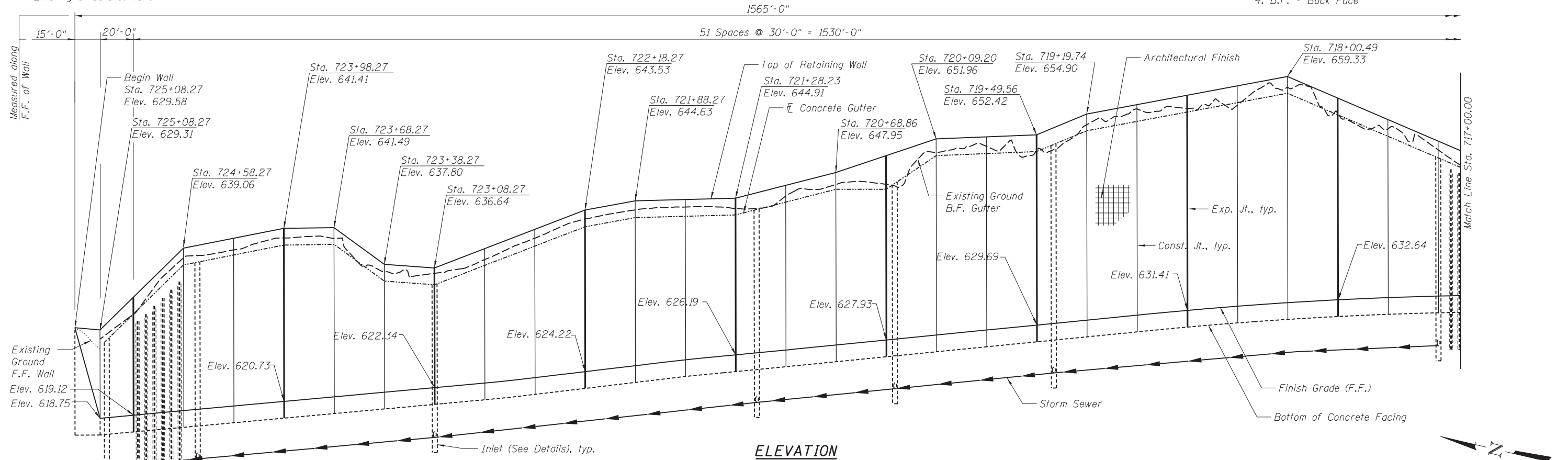
Checked by: hif 6/10/14

APPENDIX C

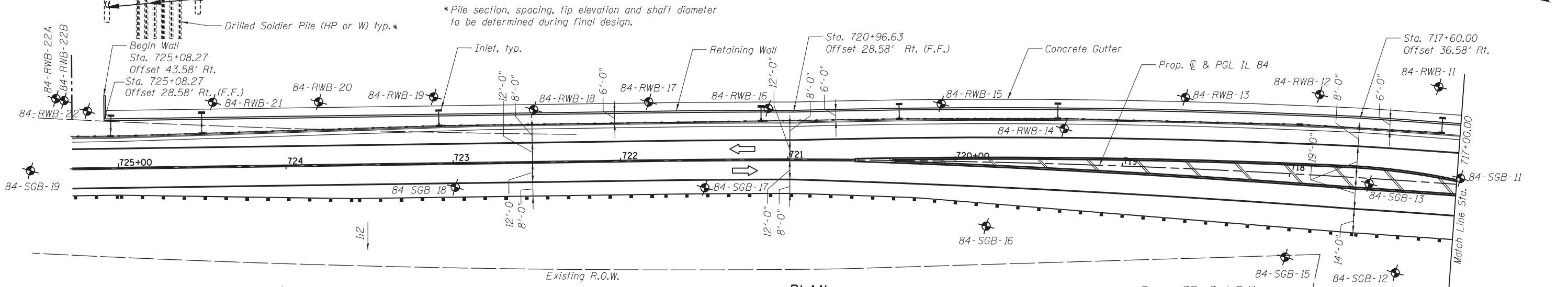
Benchmark:
 BM CP5 - Concrete pedestal set south of the west abutment
 of Illinois River Bridge SN 008-6000 on US 52 @ Savanna @
 Sta. 1560+65.46; Offset 24.85' Lt. NAVD 88 = 597.891 Ft.

Existing Structure: None

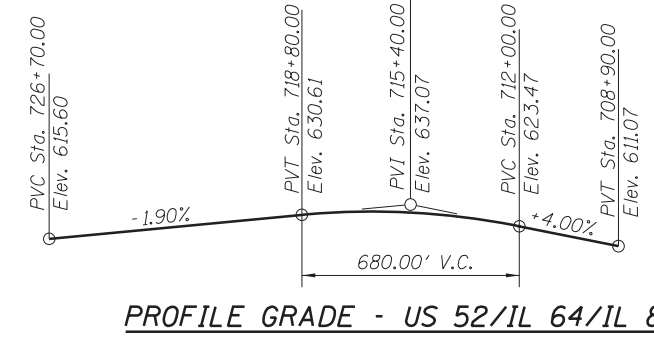
- Notes:
1. All Elevations are given in NAVD 1988 Datum unless noted.
 2. ⦿ Denotes soil boring.
 3. F.F. - Front Face
 4. B.F. - Back Face



ELEVATION



PLAN

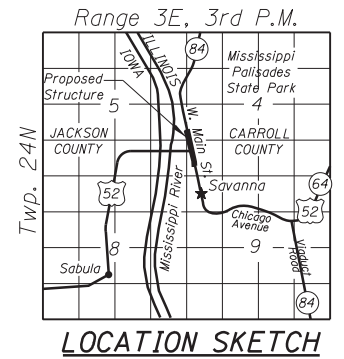


PROFILE GRADE - US 52/IL 64/IL 84

HIGHWAY CLASSIFICATION
 US 52/IL 64/IL 84 (FAP 17/308)
 Functional Class: Other Principal Arterial
 ADT: 4150 (2015); 4350 (2035)
 ADTT: 430 (2015); 450 (2035)
 DHV: 440
 Design Speed: Varies 55 m.p.h. to 45 m.p.h.
 Posted Speed: Varies 55 m.p.h. to 40 m.p.h.
 Two-Way Traffic
 Directional Distribution: 50/50

DESIGN SPECIFICATIONS
 2012 AASHTO LRFD Bridge
 Design Specifications, 6th Edition
 with 2013 Interims

DESIGN STRESSES
 FIELD UNITS
 f'c = 3,500 psi
 fy = 60,000 psi (Reinforcement)
 fy = 50,000 psi (M270 Grade 50)



GENERAL PLAN
US 52/IL 64/IL 84
F.A.P. RTE. 17/308-SEC. 104B-2
CARROLL COUNTY
STATION 725+10.00 TO 709+70.00
STRUCTURE NO. 008-7001



USER NAME = p005313a	DESIGNED - JC	REVISED -
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PLOT SCALE =	DRAWN - SQ	REVISED -
PLOT DATE = 8/13/2014	CHECKED - GH	REVISED -

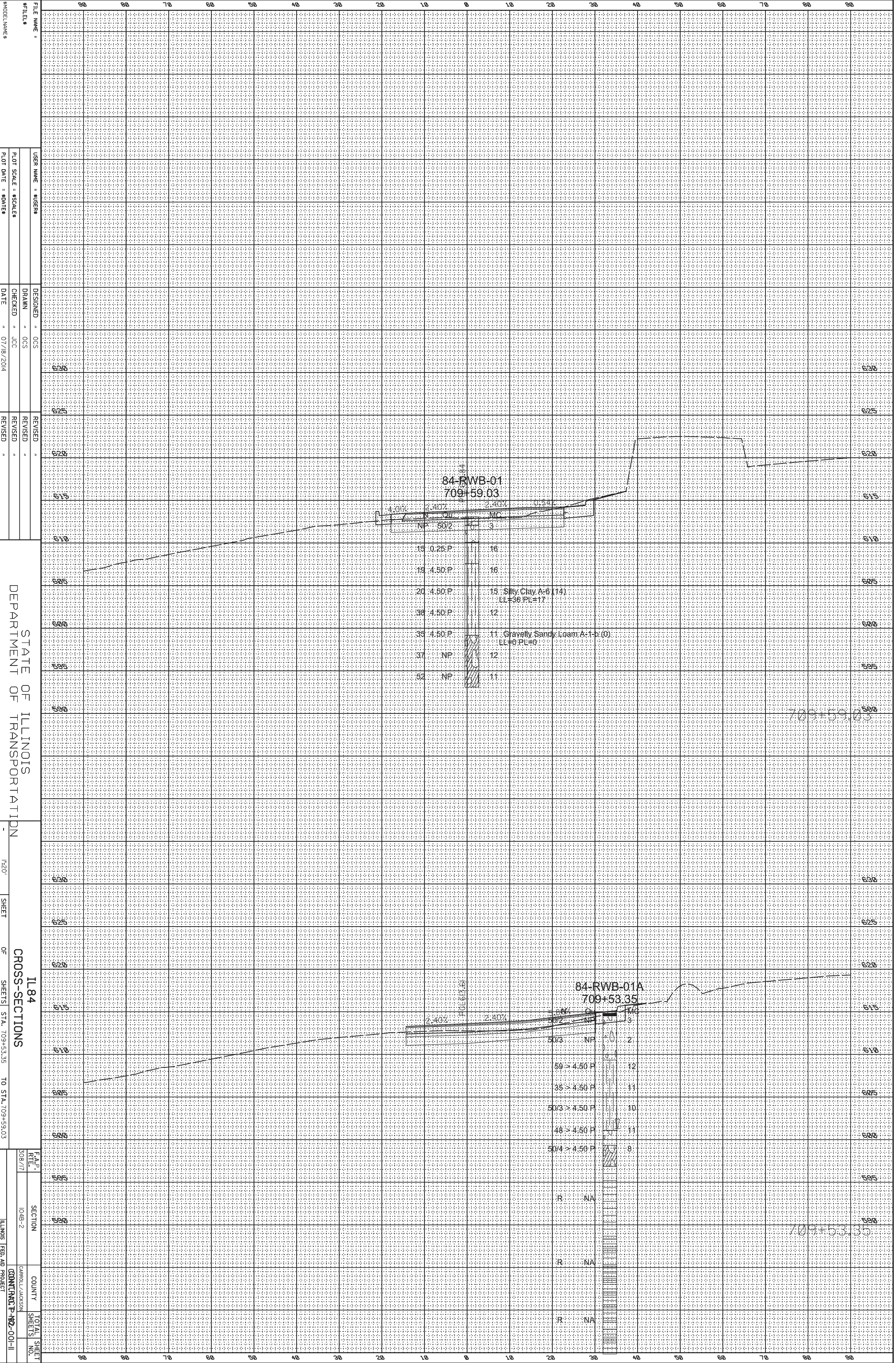
STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
17	104B-2	CARROLL		
CONTRACT NO. 64C59				

APPENDIX D

ORIGINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
	TEMPLATE		
	AREAS		
	AREAS CHECKED		

FINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
	TEMPLATE		
	AREAS		
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 DRAWN = OCS
 CHECKED = JCC
 DATE = 07/18/2014

REVISED =
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

IL 84
 CROSS-SECTIONS
 SHEET OF SHEETS STA. 709+53.35 TO STA. 709+59.03

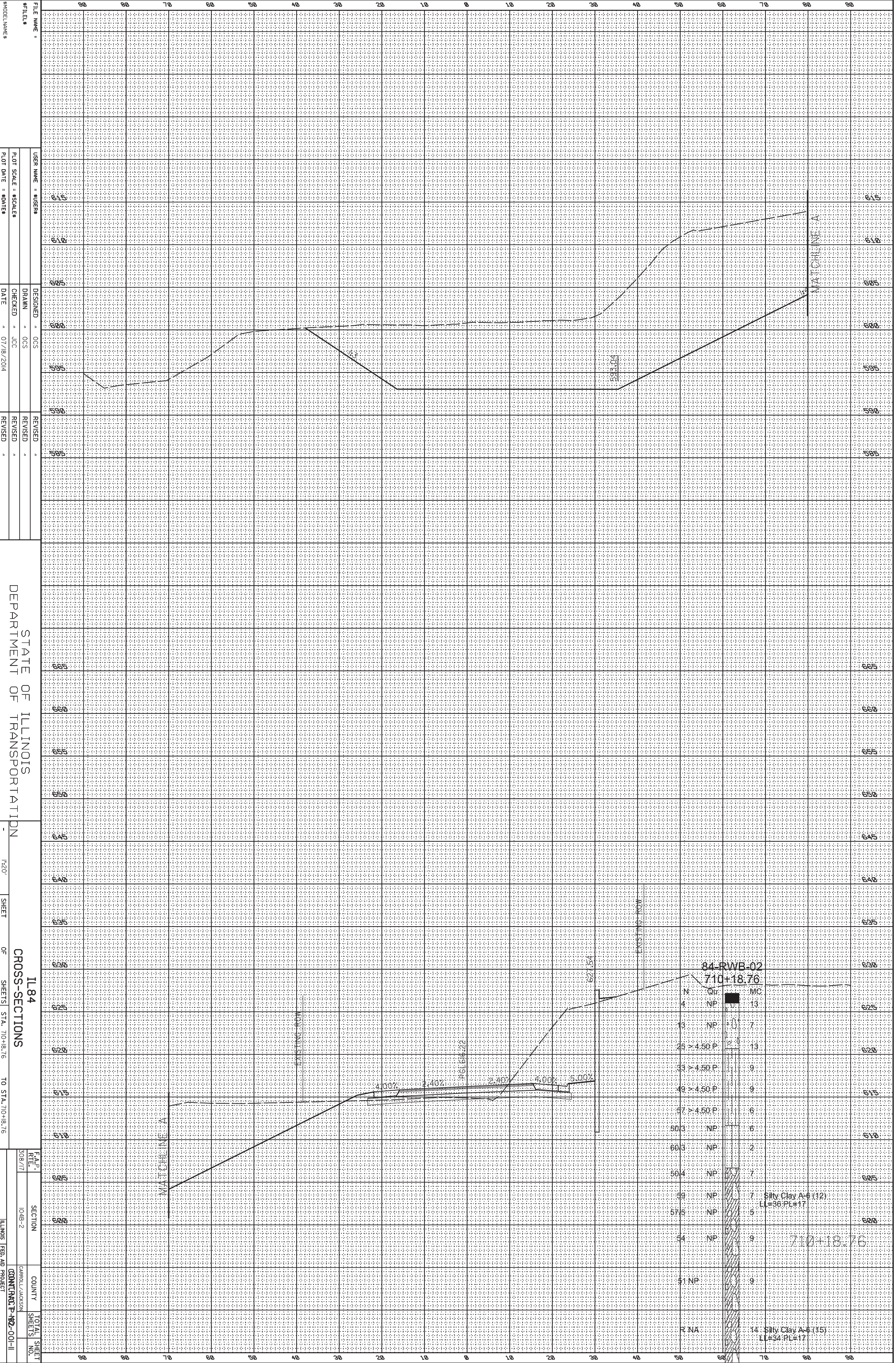
SCALE: 1"=20'

SECTION: I04B-2
 COUNTY: CARROLL/JACKSON
 PROJECT: COUNTY ROAD P-402-001-II

PRELIMINARY PRELIMINARY

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NOTE BOOK	PLOTTED		
	TEMPLATE		
	AREAS		
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FINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
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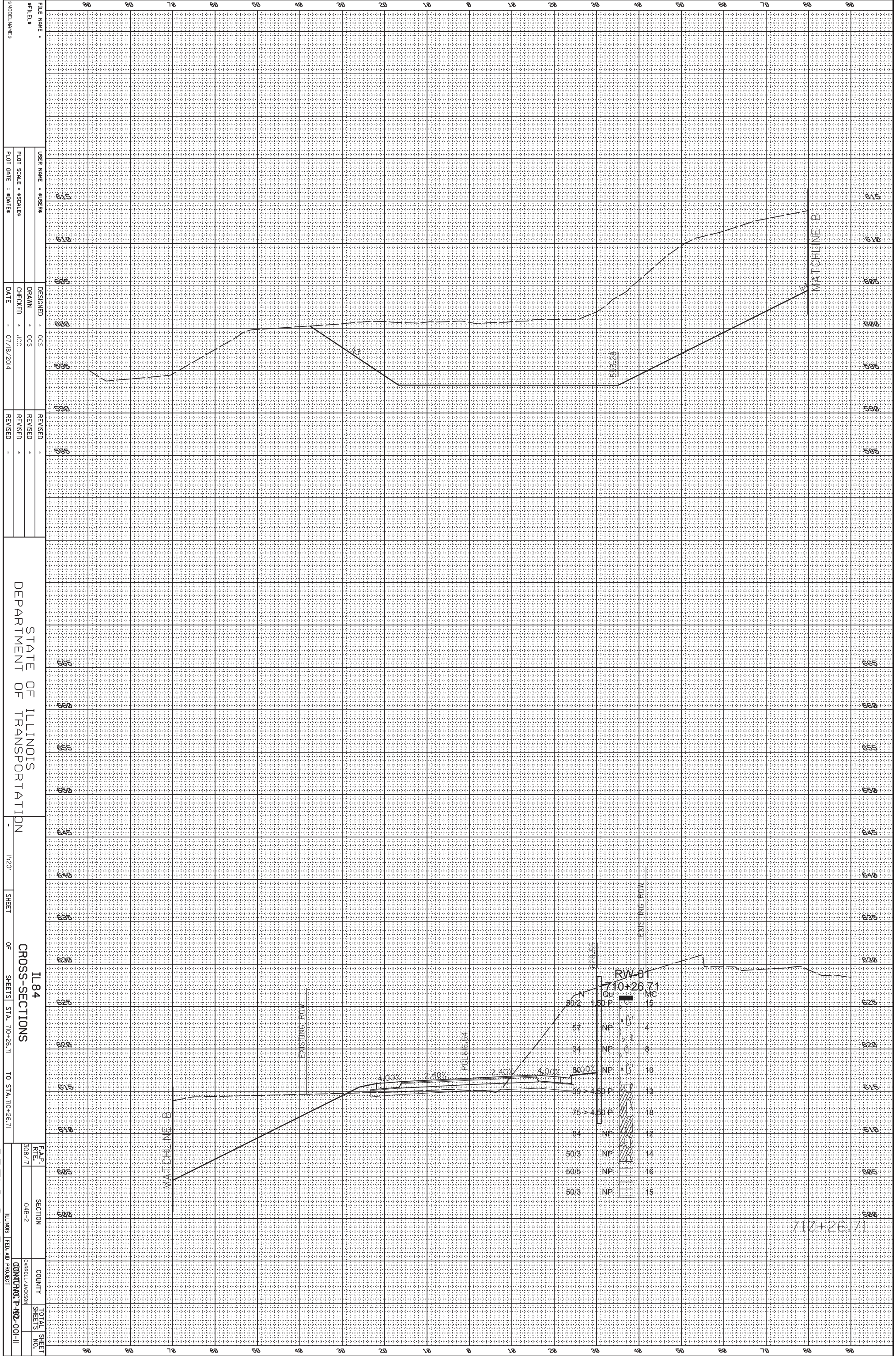
STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

IL 84
 CROSS-SECTIONS
 SHEET OF SHEETS STA. 710+18.76 TO STA. 710+18.76

FEAP. RITE. SECTION COUNTY TOTAL SHEET NO.
 508/17 104B-2 CARROLL/JACKSON 11/11
 ILLINOIS FED. AID PROJECT
 PRELIMINARY PRELIMINARY

ORIGINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
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FINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
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	AREAS CHECKED		



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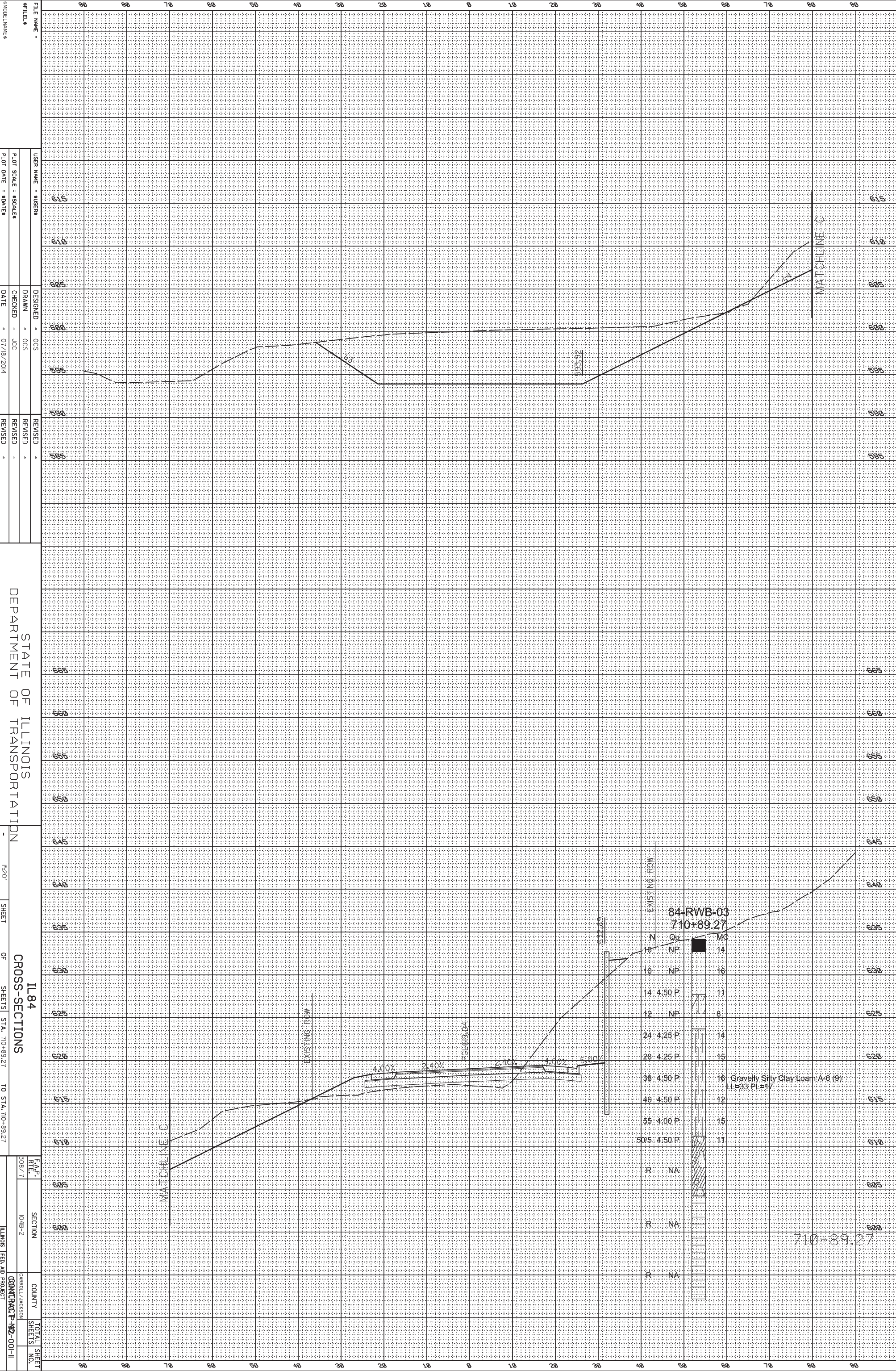
STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

IL 84
 CROSS-SECTIONS
 SHEET OF SHEETS STA. 710+26.71 TO STA. 710+26.71
 PRELIMINARY PRELIMINARY

STA.	ELEV.	DESCRIPTION	THICKNESS
710+26.71	608.55	EXISTING GROUND	
710+26.71	608.55	PROPOSED ROAD	
710+26.71	608.55	30.00% SLOPE	15
710+26.71	608.55	4.00% SLOPE	4
710+26.71	608.55	3.10% SLOPE	8
710+26.71	608.55	2.40% SLOPE	10
710+26.71	608.55	4.00% SLOPE	13
710+26.71	608.55	30.00% SLOPE	16
710+26.71	608.55	30.00% SLOPE	12
710+26.71	608.55	30.00% SLOPE	14
710+26.71	608.55	30.00% SLOPE	16
710+26.71	608.55	30.00% SLOPE	15

ORIGINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
	TEMPLATE		
	AREAS		
	AREAS CHECKED		

FINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

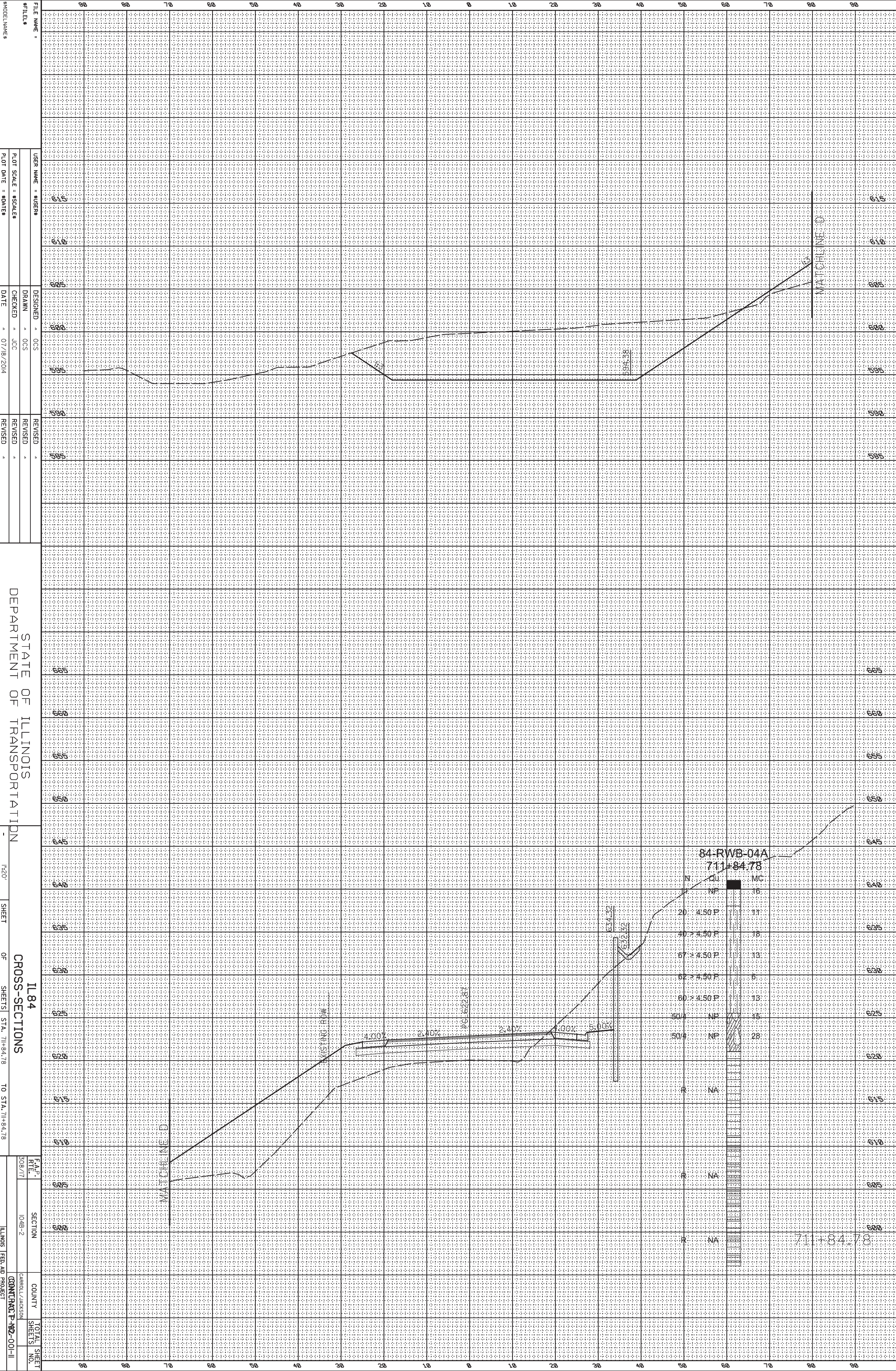
IL 84
 CROSS-SECTIONS
 SHEET OF SHEETS STA. 710+89.27 TO STA. 710+89.27

SECTION 104B-2
 COUNTY CARROLL/JACKSON
 TOTAL SHEET NO. 001-01-11
 PRELIMINARY PRELIMINARY

710+89.27

ORIGINAL SURVEY	SURVEYED	BY	DATE
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FINAL SURVEY	SURVEYED	BY	DATE
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 DEPARTMENT OF TRANSPORTATION
 IL 84
 CROSS-SECTIONS
 SHEET OF SHEETS STA. 71+84.78 TO STA. 71+84.78
 PRELIMINARY PRELIMINARY

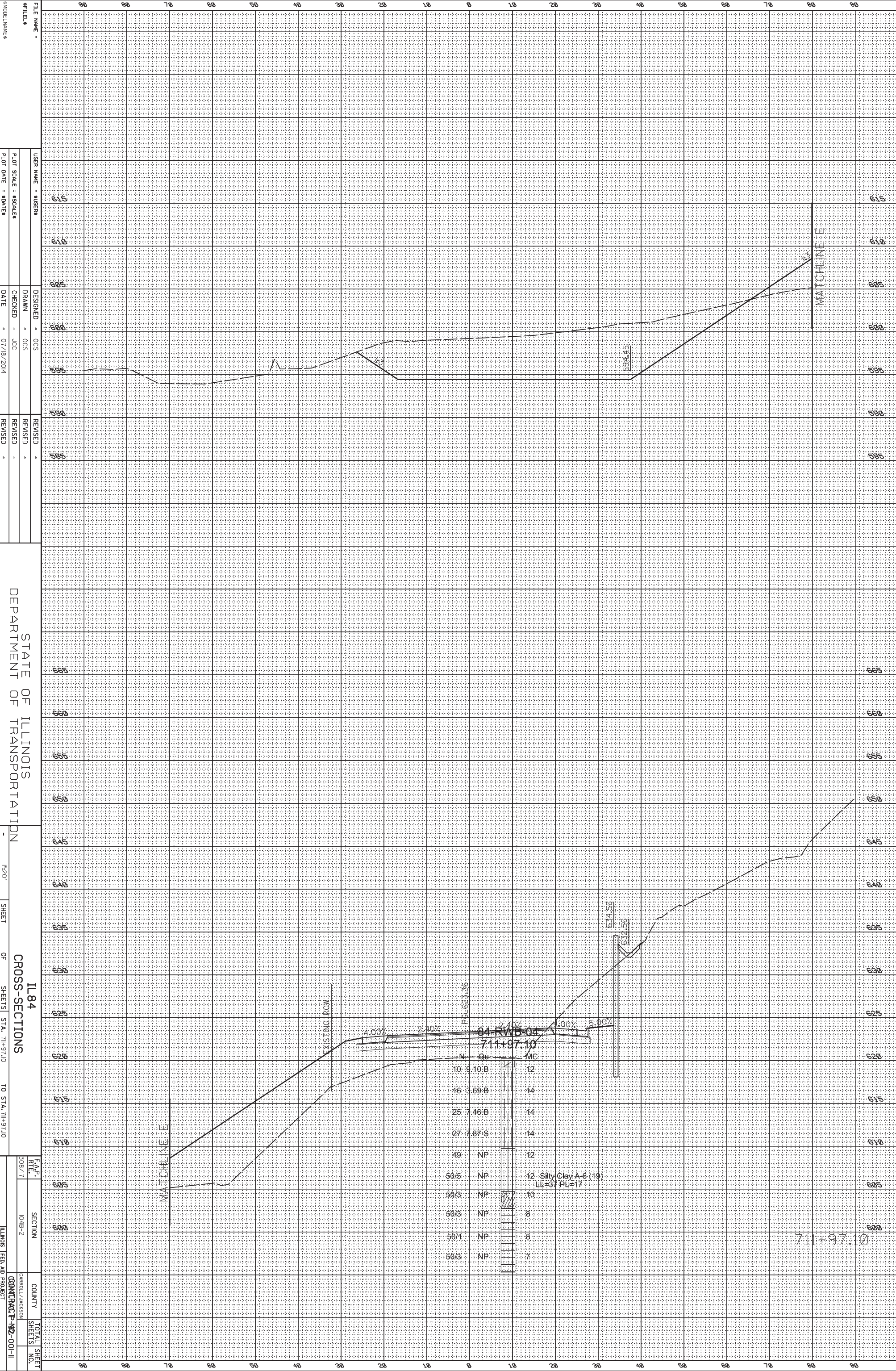
84-RWB-04A
711+84.78

N	CU	MC
	NP	16
20	4.50 P	11
40	4.50 F	18
67	4.50 P	13
62	4.50 F	6
60	4.50 P	13
50	NP	15
50	NP	28
R	NA	
R	NA	
R	NA	

71+84.78

ORIGINAL SURVEY	SURVEYED	BY	DATE
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

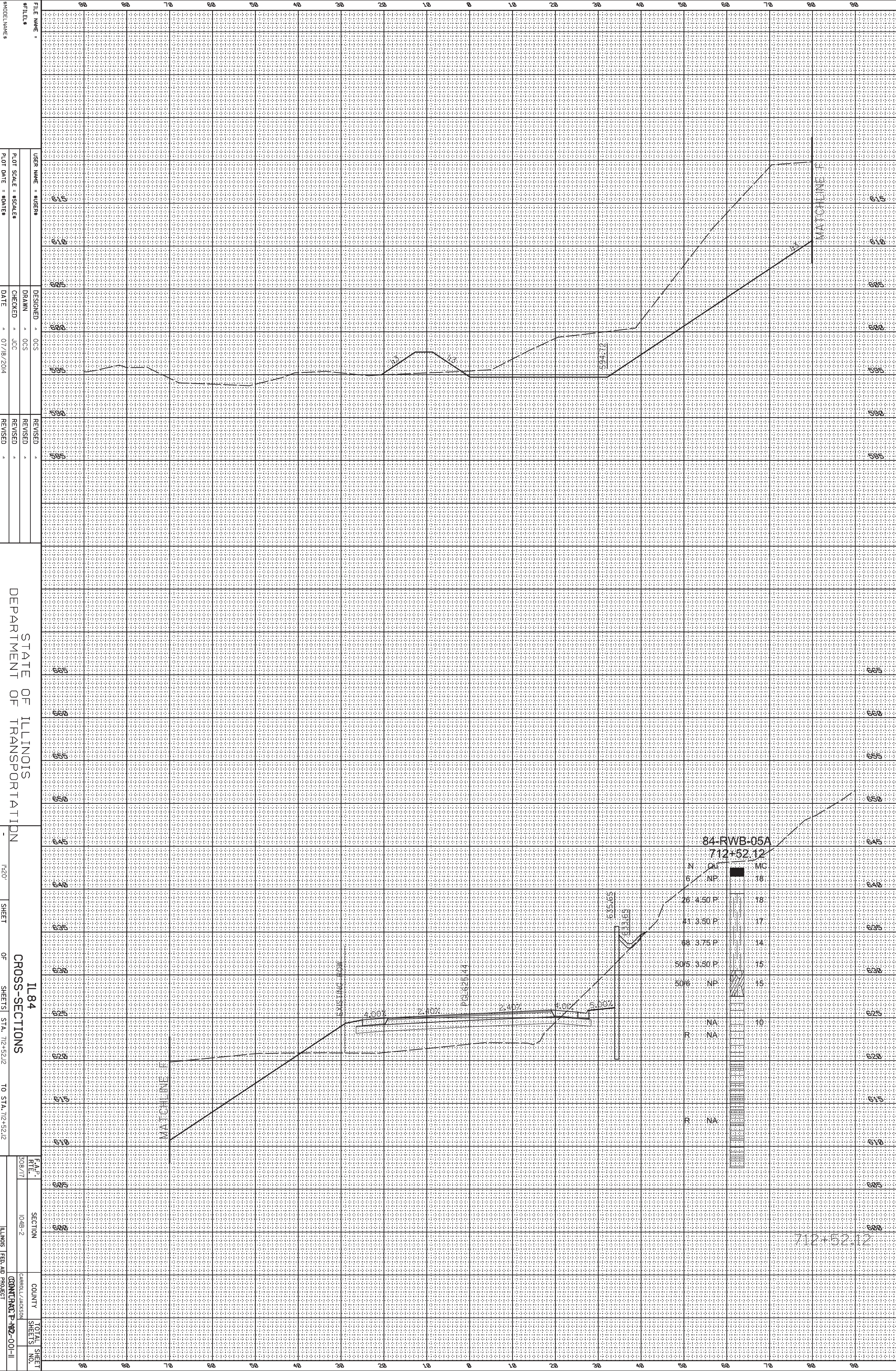
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 SHEET OF SHEETS STA. 711+97.10 TO STA. 711+97.10

IL 84
 CROSS-SECTIONS
 SECTION 104B-2
 COUNTY CARRILL/JACKSON
 TOTAL SHEET NO. 001-01-11
 ILLINOIS FED. AID PROJECT

PRELIMINARY PRELIMINARY

ORIGINAL SURVEY	SURVEYED	BY	DATE
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

1:20' SHEET OF SHEETS STA. 712+52.12 TO STA. 712+52.12

IL 84
 CROSS-SECTIONS
 SECTION 104B-2
 COUNTY CARRILL/JACKSON
 TOTAL SHEET NO. 001-01-11
 ILLINOIS FED. AID PROJECT

84-RWB-05A
 712+52.12

N	NP	MC
6	NP	18
26	4.50 P	18
41	3.50 P	17
68	3.75 P	14
50/5	3.50 P	15
50/6	NP	15
R	NA	10
R	NA	
R	NA	

EXISTING DITCH

635.69

4.00%

2.10%

2.40%

1.0%

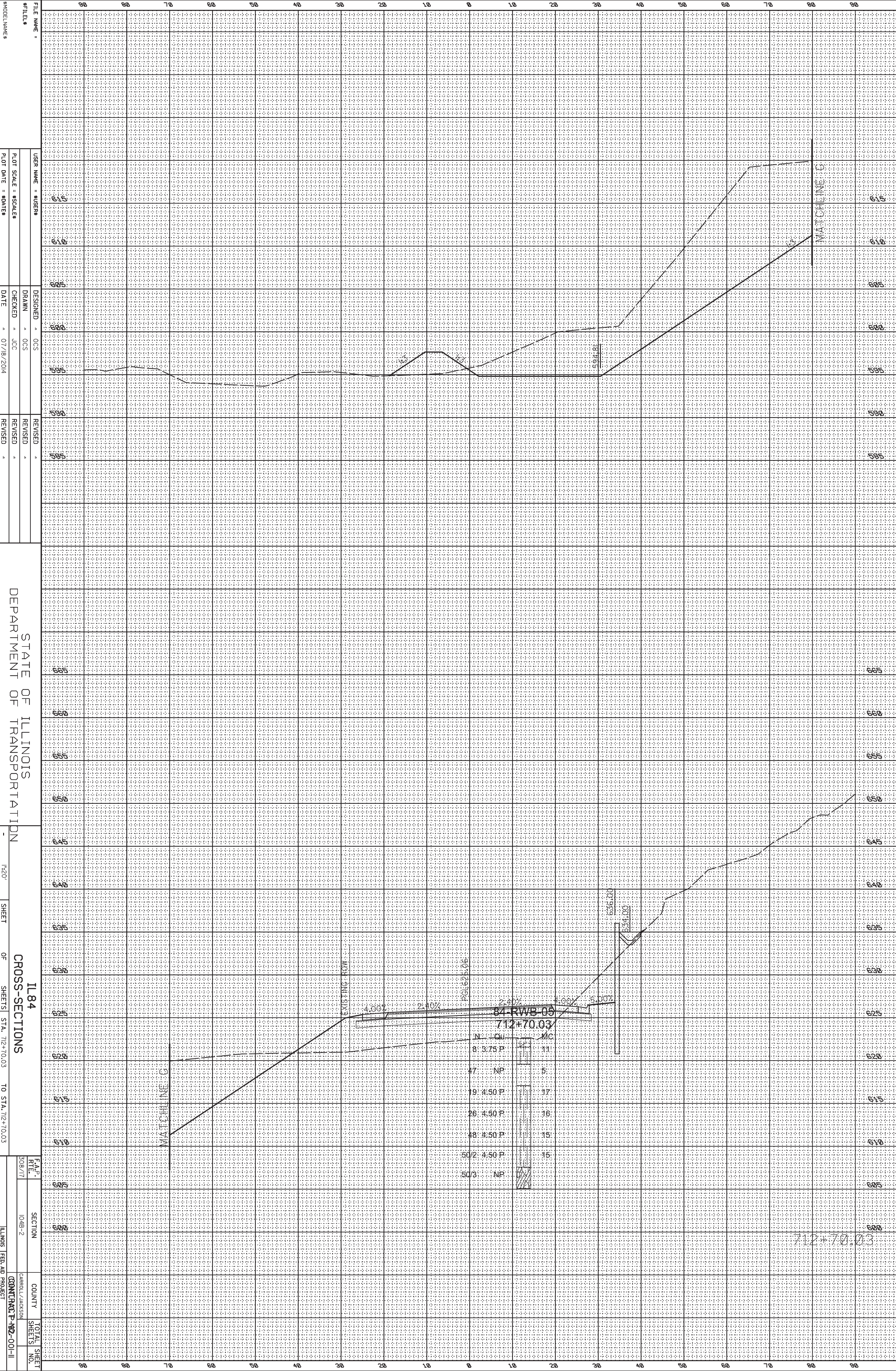
3.00%

712+52.12

PRELIMINARY PRELIMINARY

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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

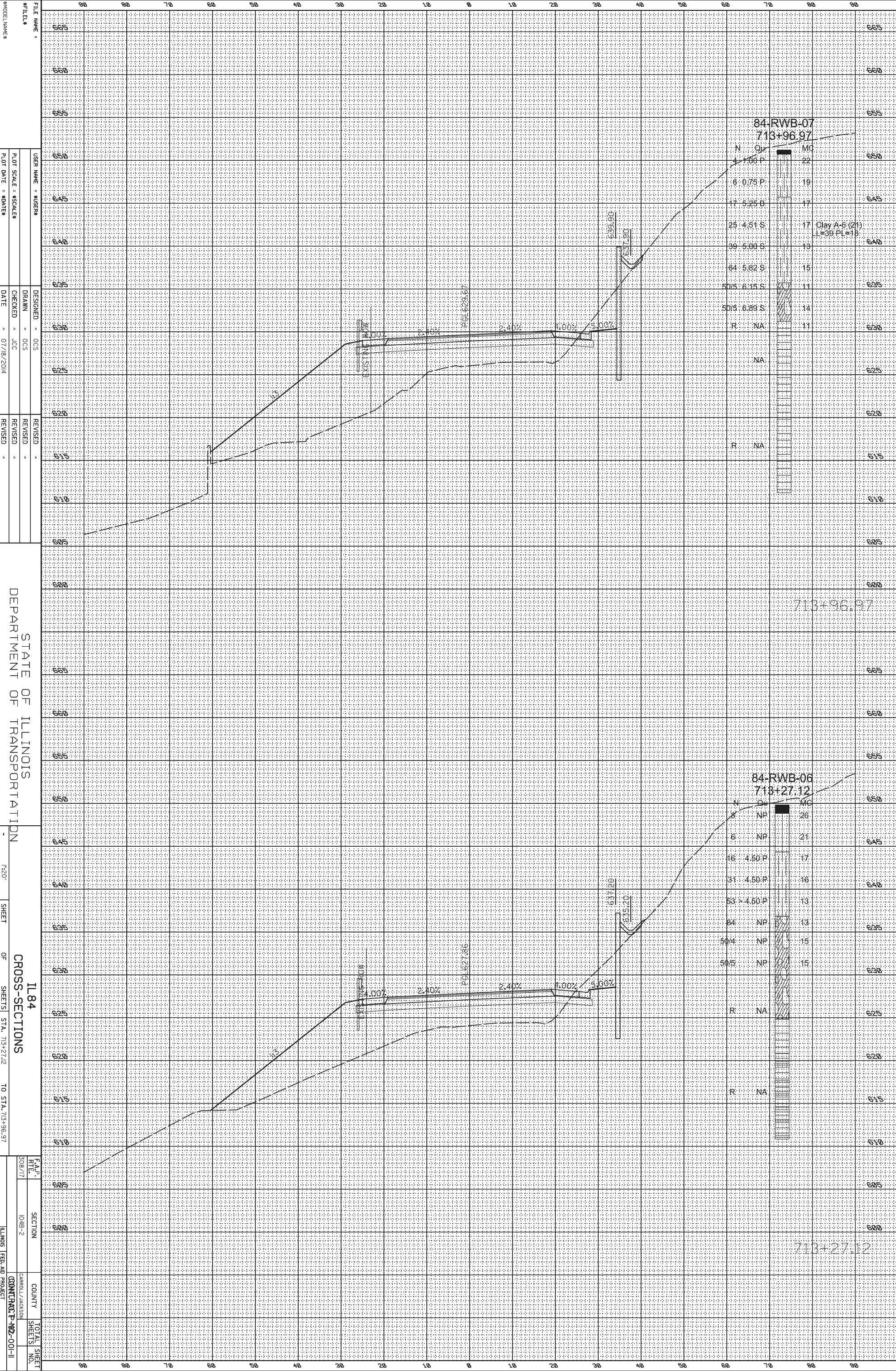
IL 84
 CROSS-SECTIONS
 SHEET OF SHEETS STA. 712+70.03 TO STA. 712+70.03

PRELIMINARY PRELIMINARY
 COUNTY: CARROLL/JACKSON
 PROJECT: COUNTY ROAD P-492-001-II

712+70.03

ORIGINAL SURVEY	SURVEYED	BY	DATE
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FINAL SURVEY	SURVEYED	BY	DATE
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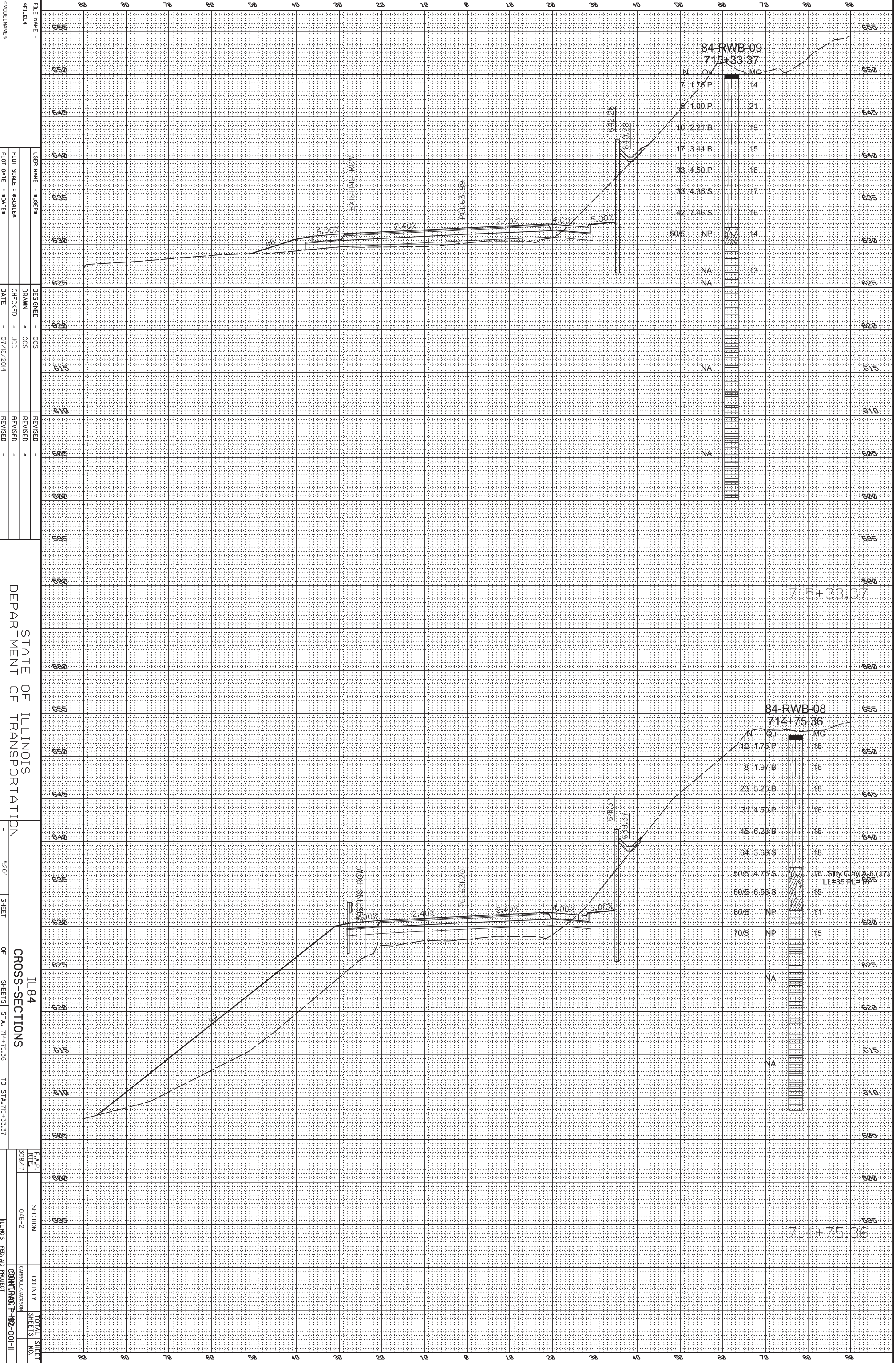
STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

IL 84
 CROSS-SECTIONS
 SHEET OF SHEETS STA. 713+27.12 TO STA. 713+96.97

F.A.P. RILEY SECTION COUNTY TOTAL SHEET NO.
 308/17 IO-4B-2 CARROLL/JACKSON ILLINOIS FED. AID PROJECT
 PRELIMINARY PRELIMINARY

ORIGINAL SURVEY	SURVEYED	BY	DATE
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NOTE BOOK	PLOTTED		
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

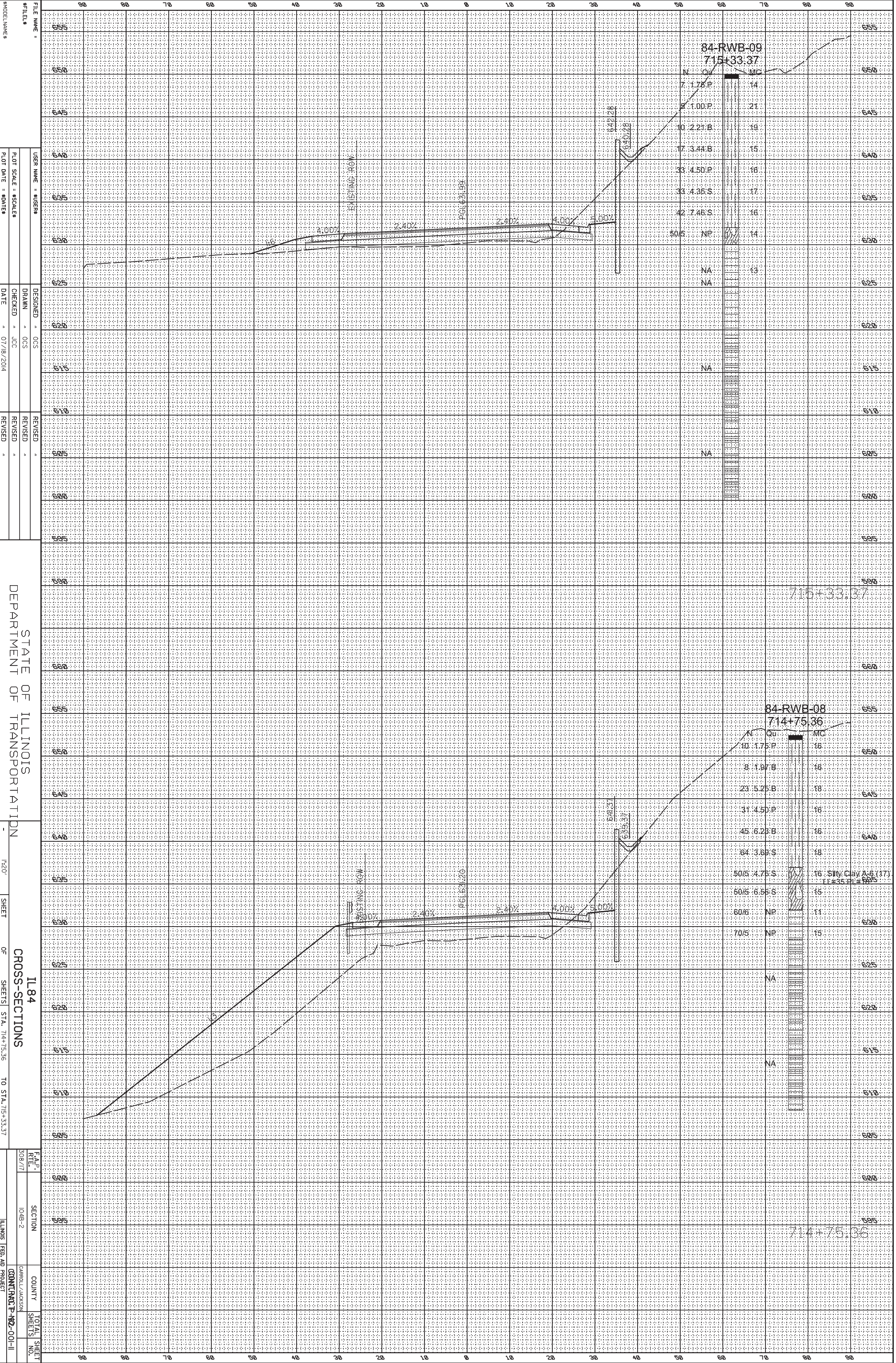
IL 84
CROSS-SECTIONS
SHEET OF SHEETS STA. 714+75.36 TO STA. 715+33.37

F.A.P. RITE	SECTION	COUNTY	TOTAL SHEET NO.
508/17	104B-2	CARROLL/JACKSON	
		CONTRACT # 02-001-II	
		ILLINOIS FED. AID PROJECT	

PRELIMINARY PRELIMINARY

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FINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
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	AREAS		
	AREAS CHECKED		



STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

IL 84
CROSS-SECTIONS
SHEET OF SHEETS STA. 714+75.36 TO STA. 715+33.37

PRELIMINARY PRELIMINARY

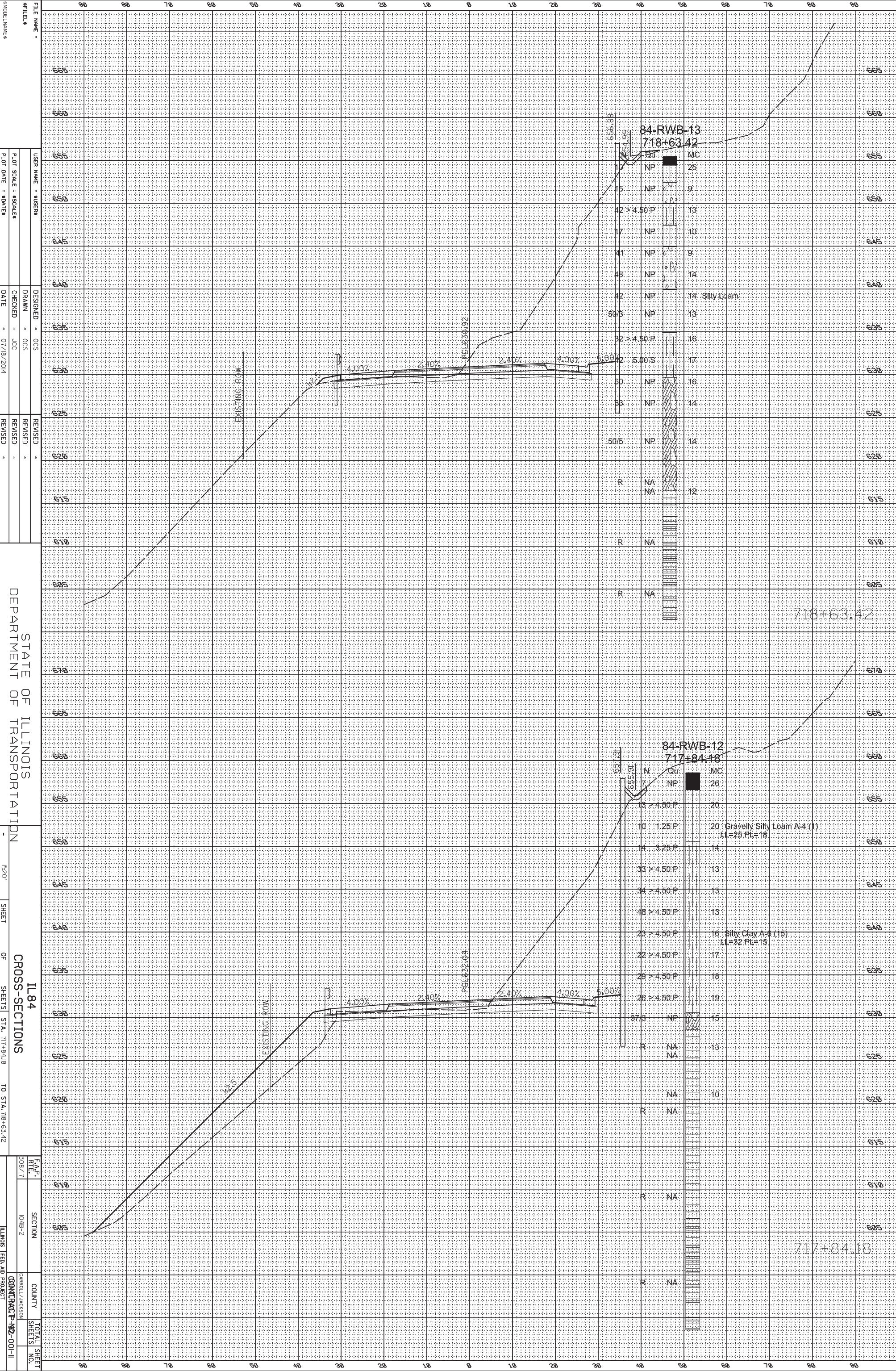
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	DATE =	07/18/2014
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PLT DATE =	REVISED =	

F.A.P. R.T.E.	SECTION	COUNTY	TOTAL SHEET NO.
508/17	104B-2	CARROLL/JACKSON	
		CONTRACT P-102-001-II	
		ILLINOIS FED. AID PROJECT	

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FINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
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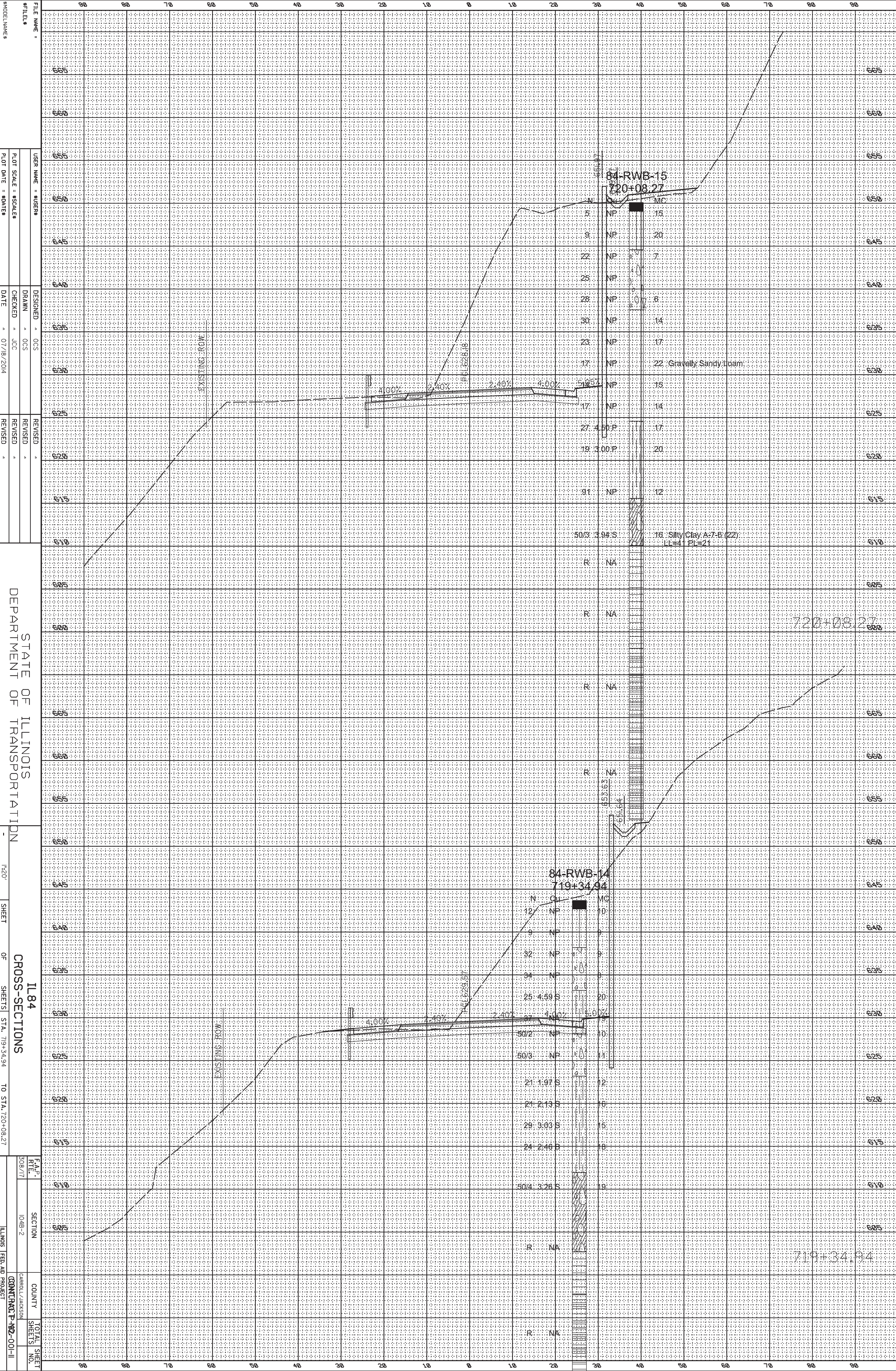
STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

IL 84
 CROSS-SECTIONS
 SHEET OF SHEETS STA. 717+84.18 TO STA. 718+63.42

PRELIMINARY PRELIMINARY
 COUNTY: CARROLL/JACKSON
 SECTION: 104B-2
 TOTAL SHEET NO.:

ORIGINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
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NOTE BOOK	PLOTTED		
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NO. OF SHEETS =		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

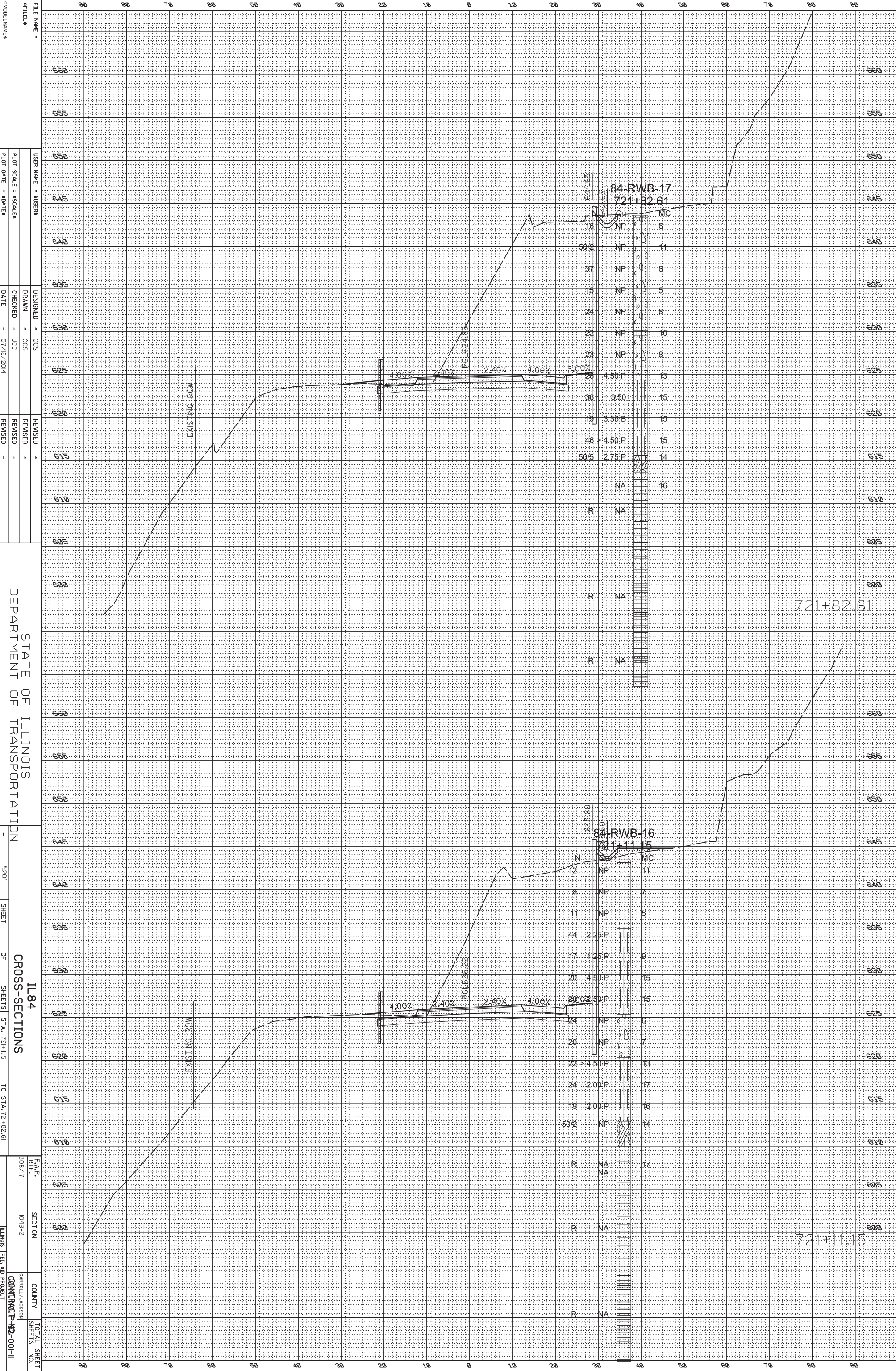
IL 84
CROSS-SECTIONS
SHEET OF SHEETS STA. 719+34.94 TO STA. 720+08.27

F.A.P. R.T.E.	SECTION	COUNTY	TOTAL SHEET NO.
508/17	104B-2	CARROLL/JACKSON	
		COUNTY PROJECT	
		ILLINOIS FED. AID PROJECT	

PRELIMINARY PRELIMINARY

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NOTE BOOK	PLOTTED		
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NOTE BOOK	PLOTTED		
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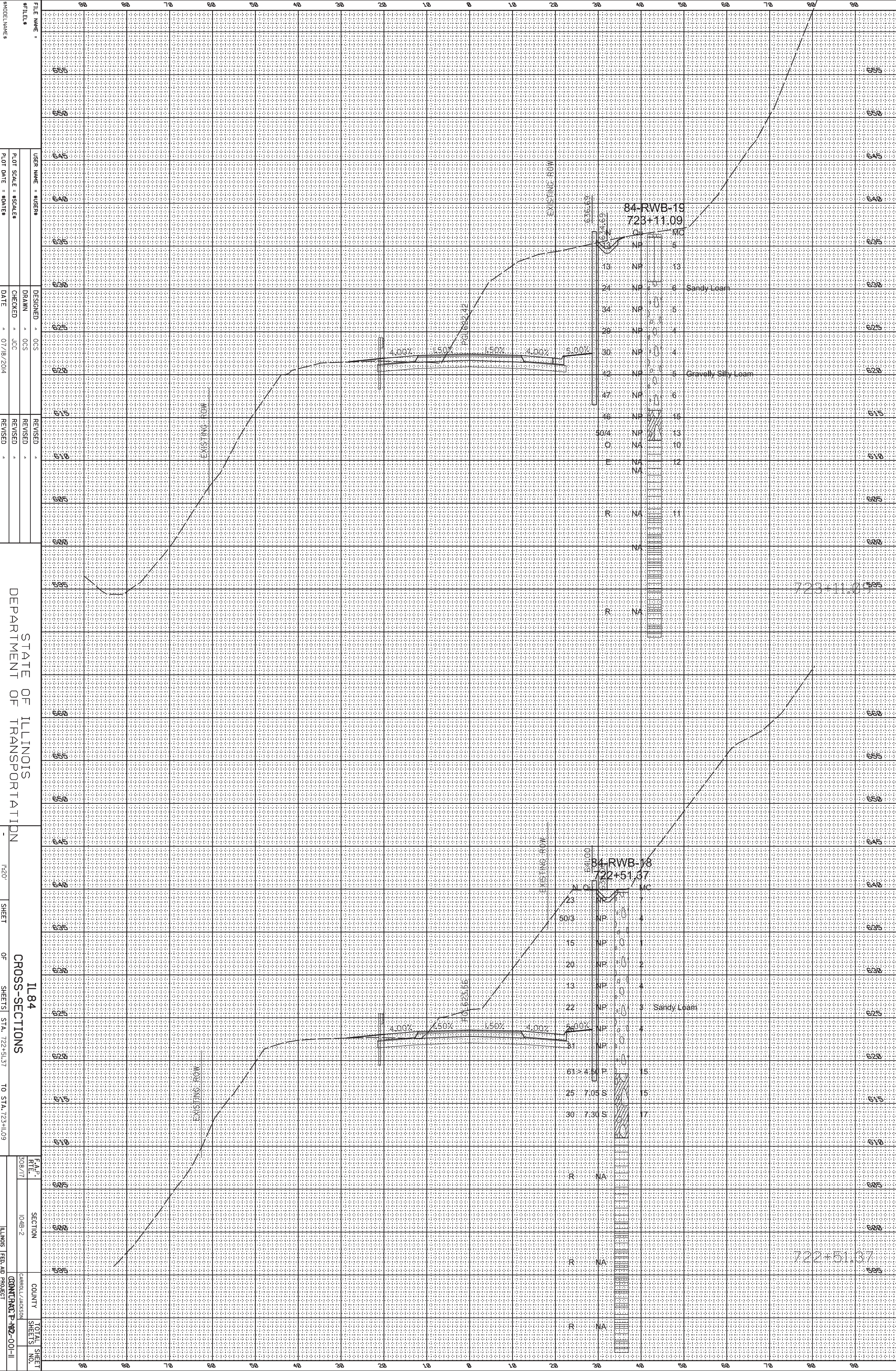
STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

IL 84
 CROSS-SECTIONS
 SHEET OF SHEETS STA. 721+11.5 TO STA. 721+82.61

FEAP. RITE. SECTION COUNTY TOTAL SHEET NO.
 308/17 104B-2 CARROLL/JACKSON ILLINOIS FED. AID PROJECT
 PRELIMINARY PRELIMINARY

ORIGINAL SURVEY	SURVEYED	BY	DATE
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NOTE BOOK	PLOTTED		
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

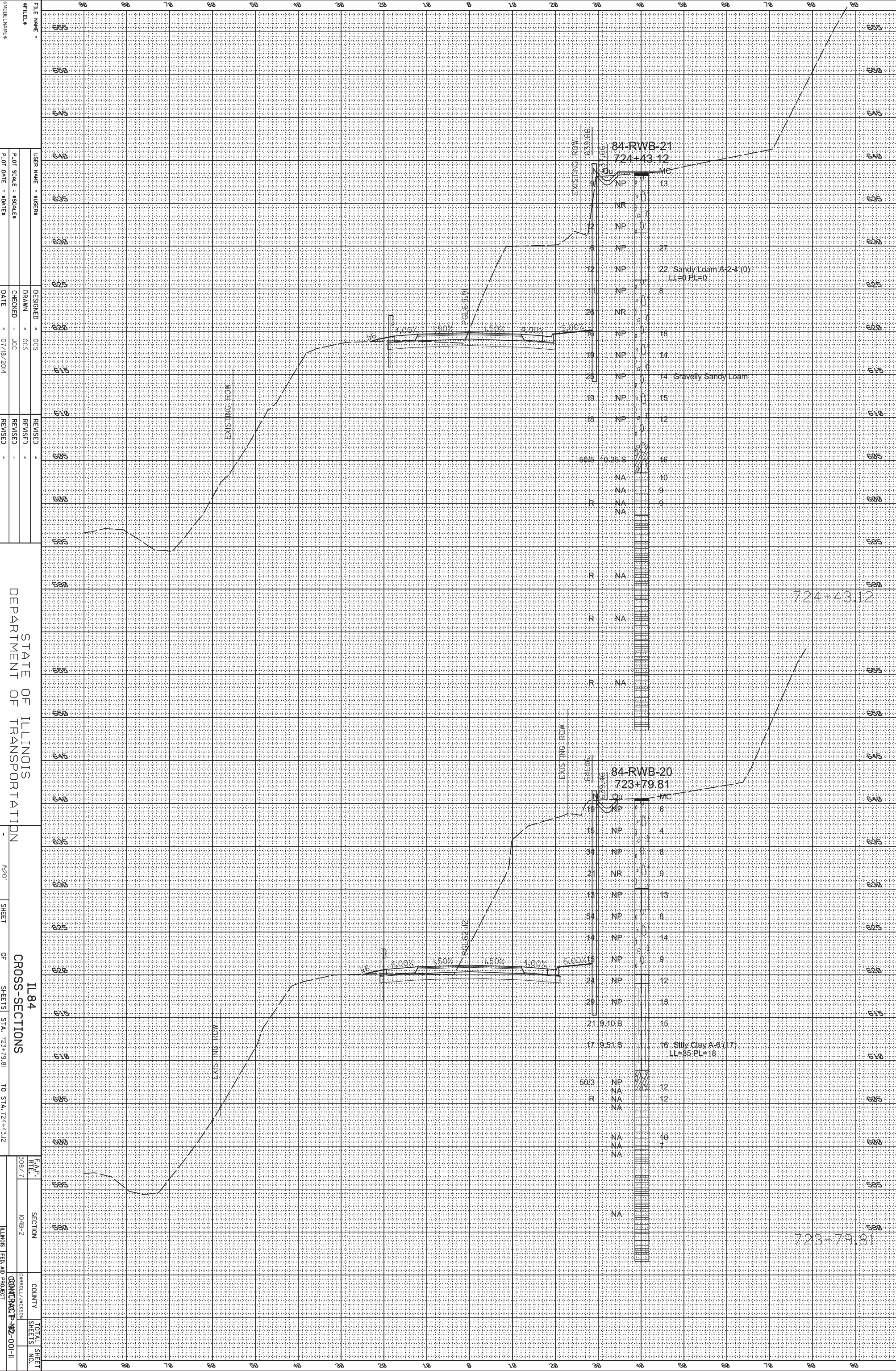
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 SHEET OF SHEETS
 STA. 722+51.37 TO STA. 723+11.09

IL 84
 CROSS-SECTIONS
 SECTION 104B-2
 COUNTY CARROLL/JACKSON
 TOTAL SHEET NO. 002-001-II
 ILLINOIS FED. AID PROJECT

PRELIMINARY PRELIMINARY

ORIGINAL SURVEY	SURVEYED	BY	DATE
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FINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

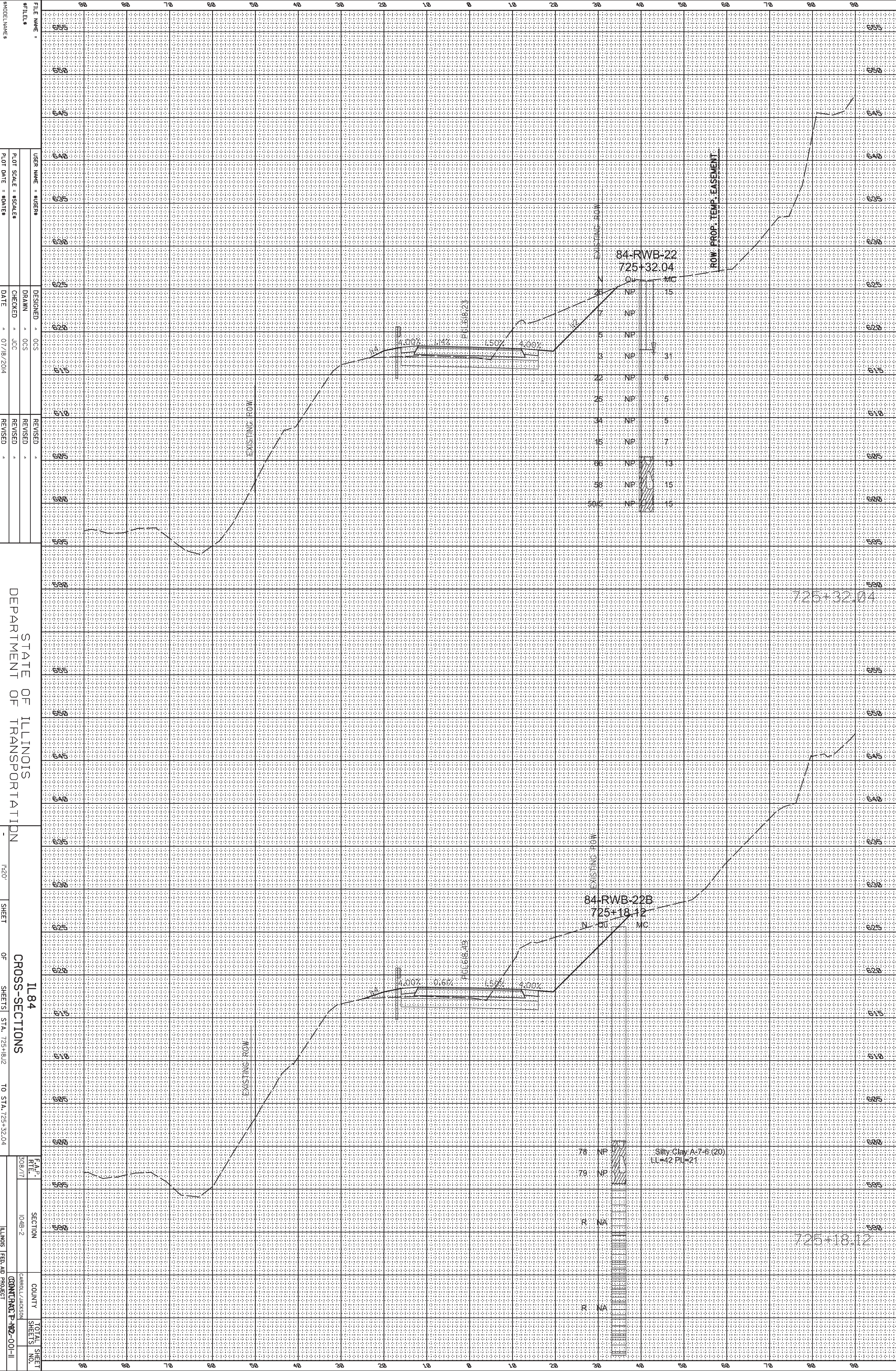
IL 84
 CROSS-SECTIONS
 SHEET OF SHEETS STA. 723+79.81 TO STA. 724+43.12

FEAP
 RTE.
 SECTION
 COUNTY
 TOTAL SHEET NO.
 SHEETS
 ILLINOIS FED. AID PROJECT

PRELIMINARY PRELIMINARY

ORIGINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
	TEMPLATE		
	AREAS		
	AREAS CHECKED		

FINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
	TEMPLATE		
	AREAS		
	AREAS CHECKED		



FILE NAME =	DESIGNED =	REVISIONS
*TITLE#	DRAWN =	REVISIONS
	CHECKED =	REVISIONS
	DATE =	REVISIONS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

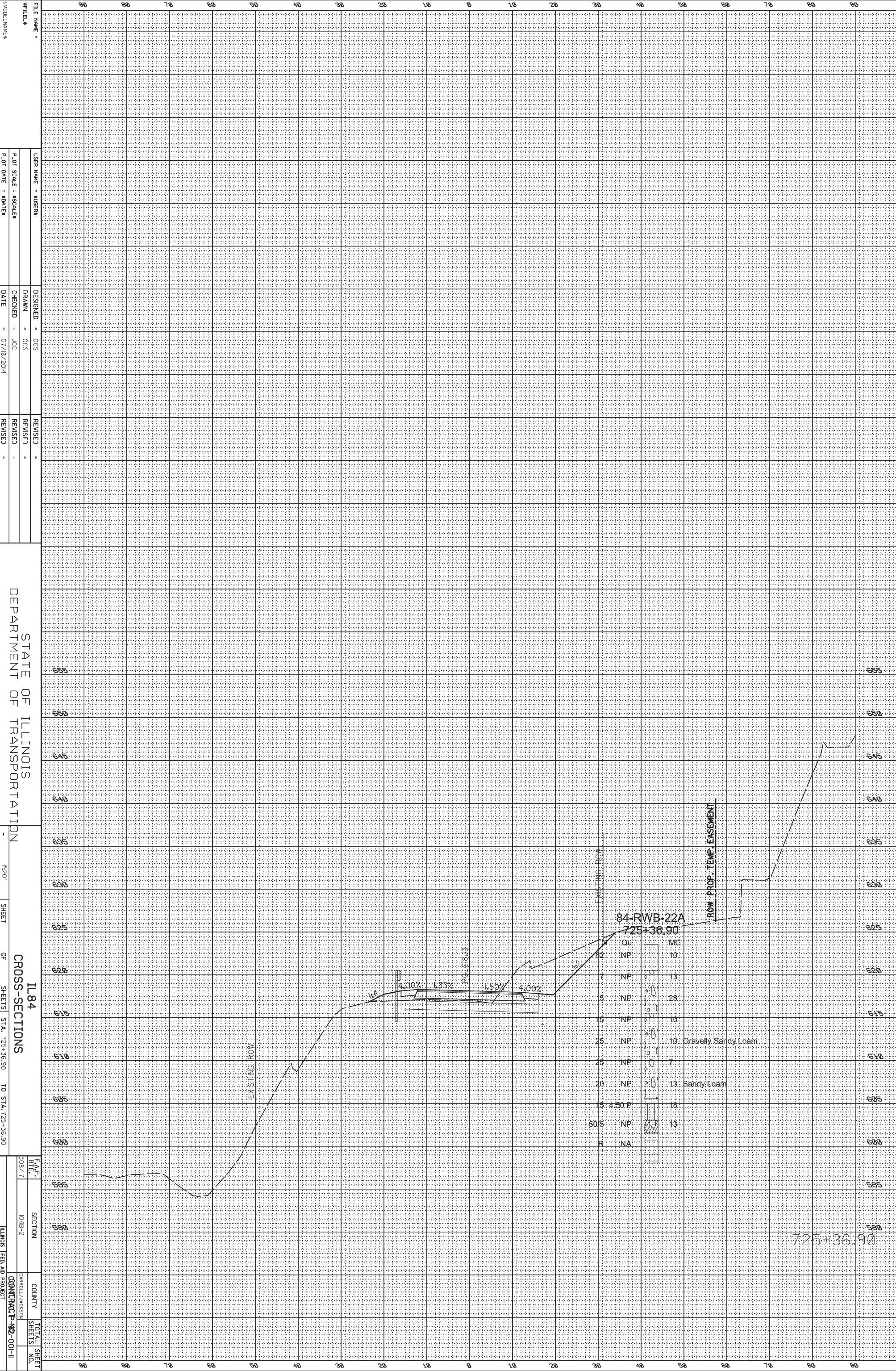
IL 84
CROSS-SECTIONS

FEAP. RITE.	SECTION	COUNTY	TOTAL SHEET NO.
508/17	104B-2	CARROLL/JACKSON	
		ILLINOIS FED. AID PROJECT	

PRELIMINARY PRELIMINARY

ORIGINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
	TEMPLATE		
	AREAS		
	AREAS CHECKED		

FINAL SURVEY	SURVEYED	BY	DATE
NOTE BOOK	PLOTTED		
	TEMPLATE		
	AREAS		
	AREAS CHECKED		



FILE NAME = *USER*
 USER NAME = *USER*
 DESIGNER = OCS
 DRAWN = OCS
 CHECKED = JCC
 DATE = 07/18/2014
 REVISED =
 REVISED =
 REVISED =

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

1:20" SHEET OF SHEETS STA. 725+36.90 TO STA. 725+36.90

IL 84
 CROSS-SECTIONS
 PRELIMINARY PRELIMINARY

84-RWB-22A	MC
725+36.90	10'
2	NP
7	NP
5	NP
5	NP
25	NP
25	NP
20	NP
5	4.50 P
50	NP
B	NA

725+36.90

