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## Geotechnical Design Memorandum

F.A.I. Route 74  
Section 81-1-2  
Rock Island County  
Job No. P-92-032-01  
Contract No. 64C08  
PTB No. N/A  
Retaining Wall IL-RW06  
Structure Number 081-6015

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## 1. Project Description

This report provides geotechnical data and recommendations for the proposed Retaining Wall IL-RW06, which is part of the Central Section of the I-74 over the Mississippi River Project. The project includes reconstruction of I-74 between 14<sup>th</sup> Avenue in Moline, Illinois and Lincoln Road in Bettendorf, Iowa. The retaining wall covered by this structure geotechnical report will be a new structure, constructed to retain fill along Ramp 7<sup>th</sup>-B.

Nearby project features that have an impact on the design or construction of the proposed retaining wall include the I-74 and Ramp 7<sup>th</sup>-A over 19<sup>th</sup> Street Bridges (S.N.'s 081-0179, 081-0180 and 081-0181), the north abutment retaining wall (IL-RW07, S.N. 081-6016), the I-74 roadway, Ramp 7<sup>th</sup>-B roadway, and the 19<sup>th</sup> Street roadway. Geotechnical recommendations for the bridges and Retaining Wall IL-RW07 are presented in separate structure geotechnical reports prepared by Hanson Professional Services Inc. (Hanson). Geotechnical recommendations for the interstate, ramp, and street are contained in soil survey report prepared by Hanson.

This report supersedes the structure geotechnical reports prepared by CH2M HILL in September 2009 and Hanson in June 2012. This memorandum has been prepared to address significant changes to the structure type and project staging.

## 2. Location

The proposed Retaining Wall IL-RW06 is located in the north central portion of Rock Island County, within Sections 32 and 33 of Township 18 North, Range 1 West. It takes a zigzag path along 19<sup>th</sup> Street between approximately Sta. 1927+32 and Sta. 1923+58, and then follows Ramp 7<sup>th</sup>-B between Sta. 534+47.55 and Sta. 522+95.01. The wall separates I-74 and Ramp 7<sup>th</sup>-B on the high side from 19<sup>th</sup> Street on the low side.

## 3. Proposed Structure

The currently proposed structure is significantly different from earlier designs. A study (Modjeski and Masters, 2014) was completed to evaluate several alternative structure types for the I-74 over 19<sup>th</sup> Street grade separation. The new alternatives were selected to conform to the revised project staging. After coordination with IDOT, a preferred alternative was selected and developed further. General plan and elevation drawings for the proposed structures were prepared in August 2014.

The proposed grade separation consists of three separate three-span bridges supported on straddle column piers and individual stub abutments. All three bridges have 0° skews but the abutment locations are staggered by one span to accommodate the angled crossing. Mechanically stabilized earth (MSE) walls follow a zigzag path between the three abutments on both sides of 19<sup>th</sup> Street. The portions of the MSE walls perpendicular to the highway are mixed abutments where the MSE walls resist the horizontal earth pressures and piles support the vertical bridge loads. The portion of the MSE walls parallel to the highway function as wingwalls between the abutments. The wall on the south side of 19<sup>th</sup> Street is the subject of this memorandum.

Retaining Wall IL-RW06 starts at Ramp 7<sup>th</sup>-A Sta. 626+52.05, continues across the three bridge abutments, and then follows Ramp 7<sup>th</sup>-B from Sta. 534+47.55 to Sta. 522+95.01. The top of the proposed MSE wall is generally even with the proposed ramp or mainline pavement. The finished slope from 19<sup>th</sup> Street transitions from 1V:2H to 1V:3H in front of the wall along the right side of Ramp 7<sup>th</sup>-A, then continues at 1V:3H for the remainder of the wall. Due to the wall's widely variable offset from 19<sup>th</sup> Street, the total height of the slope in front of the wall ranges from 0 to more than 35 feet.

A wall using precast panels with the minimum reinforced soil mass width is preferred for cost and construction schedule. The wall will have a height, measured from the theoretical top of leveling pad to the finished grade

line, between 20 and 38 feet where it functions as a mixed abutment and between 5 and 37 feet along the remainder of the wall. With this range of heights, a typical MSE wall section would have an equivalent uniform bearing pressure varying from 2,200 to 5,400 psf across the abutments and 800 to 6,200 psf elsewhere.

The proposed wall will be constructed in stages in order to allow traffic on I-74 and 19<sup>th</sup> Street throughout the construction period. The portion of the wall supporting the Ramp 7<sup>th</sup>-A and WB I-74 bridges will be constructed in the first stage while maintaining I-74 traffic on the existing EB I-74 Bridge. The portion of the wall supporting the new EB I-74 Bridge and the portion along Ramp 7<sup>th</sup>-B will be constructed during the second stage with I-74 traffic on the new WB I-74 Bridge. The new bridge piers will generally be constructed sequentially from north to south with multiple lanes shifts along 19<sup>th</sup> Street. Traffic will be diverted onto temporary pavement located to the south of the current alignment. This will require substantial excavation of the existing bridges' end slopes. The stage line for the wall will be at the west end of the WB I-74 Bridge South Abutment.

Construction of the wall will be governed by a performance specification. The MSE wall supplier will be responsible for the internal stability of the reinforced soil mass. This report provides geotechnical recommendations for external stability and global stability, which are the responsibility of the wall designer.

#### 4. Site Investigation

The project site is located in the steeply sloping terrain of the bluffs along the Mississippi River. 19<sup>th</sup> Street is situated in a natural ravine. There was extensive grading of the proposed bridge site during construction of the existing I-74 alignment. Along the current I-74 centerline, the base of the ravine once was between approximately Sta. 58+00 and Sta. 63+50. 19<sup>th</sup> Street was in the area where the current bridges' north abutment end slopes are located today. The existing bridges' south abutments were constructed on more than 40 feet of fill placed when the highway was constructed. Presently, 19<sup>th</sup> Street slopes down to the northwest at approximately 3% grade, while I-74 slopes down to the north at approximately 3% to 6% grade.

The footprint of the proposed retaining wall generally lies at the base of the existing hillside along the south side of 19<sup>th</sup> Street. Where the wall turns away from Ramp 7<sup>th</sup>-B, the wall is located on the toe of the end slope of the existing Ramp 7-S Bridge. The existing bridge crosses over the wall alignment.

Test boring data was shown on the existing structure plans. It is presumed that these borings were drilled in the early 1970's. Fifteen borings were drilled to depths between 30 and 79 feet below grade. Standard penetration tests were generally performed at 2.5-foot intervals until bedrock was encountered. Although the soil strata logged in the upper part of these borings were disturbed by the original I-74 roadway and bridge construction, these borings do provide some useful information for the design of the new structures.

The field exploration that was completed specifically for the proposed structures was accomplished in five phases. The first two phases were completed in December 2005 and September 2007 to March 2008 by other consultants. IDOT provided the data collected from those two phases, logs for the borings drilled were provided to Hanson in May 2014. The third phase was completed in June 2010 by Hanson. The primary purpose of the third phase was to collect additional samples of the shallow, softer soils for strength and consolidation testing. The fourth phase was completed by IDOT during February to April 2011. The fifth phase was completed in June 2014 by Hanson. The purpose of the fifth phase was to gather additional data closer to the current structure location. A representative from Hanson logged the borings and performed a general site reconnaissance during the third and fifth phases.

Seventeen (17) borings total were drilled in the first two phases, five borings were drilled in the third phase, two borings were drilled during the fourth phase and two borings were drilled during the fifth phase. Locations of the borings were selected to avoid the numerous obstructions currently occupying the site. The borings are generally

located near the current structure location for the portion along Ramp 7<sup>th</sup>-B. Borings for the portion of the structure under the proposed bridges are generally located at the top or bottom of the existing embankment end slopes. Within this area, the closest boring can be more than 50 feet from the current structure location. Standard Penetration Test samples were collected at 2.5 to 10.0 feet intervals in all borings. Several Shelby tube samples were collected at representative locations in cohesive strata. The boring depths ranged from 15.0 to 58.6 feet.

The boring locations are shown on the Boring Location Plan included in the Appendix. Boring logs are included in the Appendix.

## 5. Laboratory Investigation

Soil samples from the first and second phase borings were tested by others. Unconfined strength and moisture content tests were completed on split-spoon samples from approximately two-thirds of the borings. Index testing was completed on representative samples.

The soil samples obtained from the third phase borings were delivered to Hanson's soils laboratory and subjected to a testing program. Natural moisture content and visual classification tests were completed on all samples. Unconfined compressive strength tests, using a Rimac spring tester, were also completed when possible. One unconfined compression tests, one unconsolidated-undrained triaxial test, and one consolidation test were performed on Shelby tube samples.

The locations of the index tests, triaxial test, and consolidation test are indicated on the subsurface data profile. Laboratory test data from triaxial test and consolidation test are included in the Appendix.

## 6. Subsurface Profile

A subsurface data profile is presented in the Appendix for use by the structure designer. The data profile includes borings that were previously and recently drilled near the proposed structure.

The subsurface profile consists of deposits of fill material, alluvial soils, loessial soils, and glacial till overlying bedrock. The fill is generally located in the approach embankments on both sides of the existing structures. Alluvial soils are found at shallow depths beneath 19<sup>th</sup> Street and to the southwest. Loess is found towards the north end of 19<sup>th</sup> Street. Glacial till and bedrock are present at depth over the entire site. Strata elevations and depth were quite variable due to the site's location at the base of the bluff and the significant grading completed during construction of the existing structures.

Bedrock was encountered in nine (9) of the deeper borings drilled for this structure. The bedrock surface varies from Elev. 562.2 to Elev. 587.8 or 26.5 to 42 feet below the existing ground surface. The bedrock encountered was typically a gray to black, very soft clay shale. A gray, hard limestone was encountered below the shale in four borings.

Glacial till was encountered in all of the borings. The top of this stratum was encountered between Elev. 580.1 and Elev. 604.2. It is typically brown to gray, very stiff to hard, silty clay with sand and gravel. Unconfined strengths generally were between 2.5 and 3.5 tsf, although softer, weathered zones were occasionally encountered near the top. Standard Penetration Test (SPT) values were typically between 10 and 16 blows per foot. Natural moisture contents ranged from 12 to 16 percent and averaged approximately 14 percent. Thin sand seams were encountered in a few locations within the otherwise clayey till.

Fill material, alluvial soils, and loess were encountered in all the borings except RW1810, RW1812, and RW1813, which were located closest to the existing hillside. These soils were variable and had little correlation

between borings. They were generally stiff to very stiff clayey soils or loose sand soils. The thickness of these soils ranged from 8 to 20 feet where they were encountered. Softer alluvial soils were encountered in the older borings drilled under the current south approach embankment, but these softer soils were not readily apparent in the more recent borings drilled in the same area. It is possible that the alluvial soils were removed during construction of the existing embankments. They may also have been compressed by the more than 30 feet of fill placed during construction of the highway.

The groundwater conditions encountered in the borings were not consistent across the site. The groundwater elevations recorded on the boring logs are summarized in Table 6.1. Groundwater was not encountered in most of the borings. Stabilized readings were taken in one boring located near 19<sup>th</sup> Street and one boring located at the top of the existing I-74 embankment. These readings indicated groundwater approximately 20 feet below existing ground in the low area and rising towards the higher ground. For comparison, the water level in the Mississippi River, approximately 0.7 miles to the north of the site, is usually about Elev. 561.0.

**Table 6.1 Groundwater Elevations**

<b>Boring No.</b>	<b>During Drilling</b>	<b>At End of Boring</b>	<b>24-hour Reading</b>
19BR-105	580.3	-	-
19BR-107	-	-	-
19BR-108	-	-	-
19BR-109	585.8	-	-
B-2 (2011)	dry	dry	590.8
B-6 (2011)	621.5	-	609.0
ILR0601	569.1	-	-
ILR0603	-	-	-
ILR0604	578.1	-	-
ILR0606	-	-	-
ILR0608	-	-	-
ILR0609	-	-	-
ILR0611	-	-	-
ILR0804	-	-	-
RMP7THB-04	NE	-	-
RMP7THB-05	NE	-	-
RW06-1	593.8	-	-
RW06-2	-	590.6	-
RW06-3	-	-	-
RW06-04	NE	-	-
RW06-05	NE	-	-
RW1007	-	-	-
RW1808	-	-	-
RW1810	-	-	-
RW1812	-	-	-
RW1813	-	-	-

The Illinois State Geological Survey Directory of Coal Mines does not list any mines immediately beneath the site; however, the directory does indicate that past mining has occurred in the general vicinity. Shafts for the

Zeigler, Poston, and Highland Mines were located approximately 1.5 miles to the southeast of the site. These room and pillar mines were operated in the early 1900's.

## 7. Geotechnical Evaluations

The native soils vary significantly along the length of the proposed wall. In general, poor foundation conditions are found in the lower ground near 19<sup>th</sup> Street and much better conditions are found up the natural and embankment slopes to the south. The allowable bearing pressure of the native soils at the toe of the existing end slopes is as low as 2,300 psf, while the allowable bearing pressure of the native soils and existing embankment at the top of the slope is as high as 7,000 psf. The proposed wall is configured such that the highest bearing pressures are applied to the lower strength soils and the lowest bearing pressures are applied to the higher strength soils.

The applied pressures exceed the allowable pressures for a portion of the wingwall and abutment face at each of the three bridges. Typically, the alternative solutions are to either reduce the wall's bearing pressure or to increase the foundation soils' strength. Widening the reinforced soil mass, the use of lightweight aggregate, and raising the wall in stages are not feasible for this wall. The softer soils extend to a depth of approximately 20 ft. below the base of the proposed wall, which makes removal and replacement of the foundation soils infeasible. Vibrator compacted aggregate column ground improvement (ACGI) could increase the allowable bearing capacities above the applied bearing pressures. The aggregate columns would bear in the very stiff, glacial clay found below the wall. Our preliminary analyses indicate that 15 to 25 feet long columns with an area replacement ratio of up to 55 percent would be sufficient. Treatment would only be required under the taller portions of the wall.

Along Ramp 7<sup>th</sup>-B, the native soils are suitable for support of the proposed wall if soft soils are removed near Borings ILR0609, RMP7THB-05, and ILR0604. These soft soils are estimated to extend no more than 6 feet below the base of wall, so they may be easily excavated and replaced with suitable fill.

Slope stability analyses were completed at several representative sections along the wall. These sections were located at 19<sup>th</sup> Street Sta. 1926+30, 1926+00, 1924+00, and 1923+60 and at Ramp 7<sup>th</sup>-B Sta. 529+00. Results of these analyses are included in the Appendix. The 1.81 to 3.01 factors of safety satisfy AASHTO requirements. The section through the east corner of the EB I-74 abutment meets the minimum requirement only if the effects of the ACGI treatment are included.

Estimated settlements vary significantly because of the variable subsurface conditions and the wide range of fill heights along the wall. The more compressible soils and taller fill heights are found beneath the east end of each abutment. The estimated settlements at each abutment corner are 1 inch, ½ inch, 6 inches, ¾ inch, 5 inches, and ½ inch from east to west. The lowest settlements are expected at the Ramp 7<sup>th</sup>-A abutment because it has the shortest height and is located farthest back into the existing end slope. The estimated settlement of the proposed wall along Ramp 7<sup>th</sup>-B ranges from 0 to 2½ inches with the maximum settlement occurring at the tallest point. Most of these settlements are due to compression of the softer soils and are expected to occur within 4 months of wall completion. Up to 0.5 inch of settlement is due to recompression of the glacial till stratum, which could take up to 54 months to be 90 percent complete. The estimated magnitude and duration of settlement are considered acceptable for construction of an MSE wall.

Some differential settlement is anticipated near the proposed stage line. Theoretically, the subgrade soils within approximately 5 feet of the edge of a stage will consolidate 25% to 33% less than the central portion. When the adjacent stage is placed, the edge of the previous stage will settle to a level approximately equal to the central portion. This may be visible in the panel joints on the face of the wall. Due to the relatively small settlement magnitude, this is not expected to be a serious concern for this structure.

The proposed wall will apply additional stress on the existing 72-inch storm sewer that is located a few feet in front of the wall. At the closest point, the centerline of the sewer is approximately 6 feet in front of the wall and 15 feet below ground surface. Assuming an elastic stress distribution, the pipe will feel an additional 600 psf vertical pressure at this point because of the proposed wall. The additional stress will be less where the wall is farther from the pipe. It can be assumed that the wall would have negligible effect on the pipe where the pipe is outside of a 2V:1H slope extending from the base of the wall.

## 8. Design Recommendations

When designing for the external stability of the MSE wall, it should be assumed that the reinforced soil mass will be composed of a granular select backfill and the fill behind the reinforced soil mass will be embankment material as defined by the IDOT Standard Specifications. Both materials should be assumed to have a total unit weight of 125 pcf. The active earth pressure coefficient of the embankment fill could vary greatly depending on the actual material used, but should be assumed to be 0.33 for design. Near the wall corners, where the backfill will be the select material placed behind the other face, an active earth pressure coefficient of 0.28 may be used. In areas with a sloped ground surface on top of the reinforced soil mass, such as within the Ramp 7<sup>th</sup>-B gore, the external stability should be evaluated as shown in Figure 5.8.2c of the AASHTO Standard Specifications. The earth pressure should be calculated using a total unit weight of 125 pcf and a friction angle of 30°.

Aggregate column ground improvement is the recommended treatment option for the area supporting the proposed bridges. The results are highly dependent upon the equipment and techniques used to install the aggregate columns. The contractors that perform this type of work routinely design the improvement to specific geotechnical performance requirements. The lump sum cost of the treatment is expected to be approximately \$600,000.

Hanson recommends that the approximate horizontal limits of the aggregate column ground improvement be defined as an area bounded by a line 4 ft. beyond the perimeter of the reinforced soil mass within the following three areas:

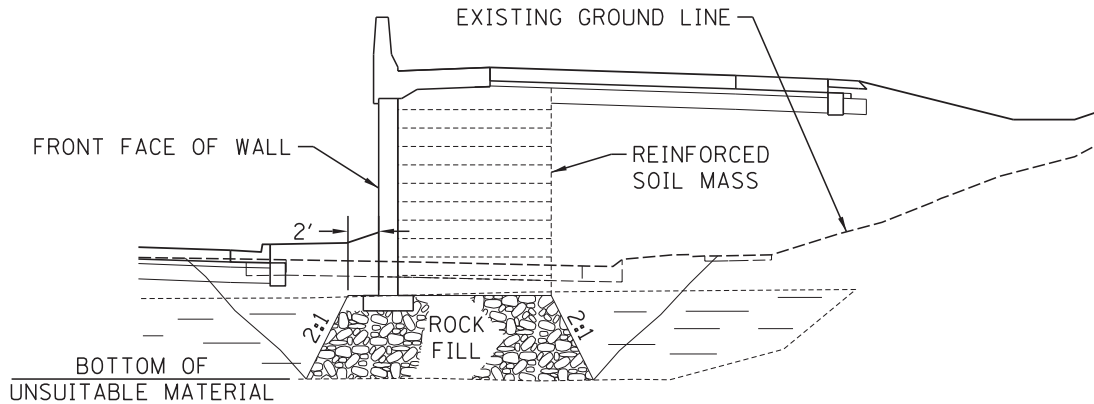
1. From east corner of Ramp 7th-A, 40 feet along wingwall and 35 feet across abutment
2. From east corner of WB I-74, 55 feet along wingwall and 40 feet across abutment
3. From east corner of EB I-74, 70 feet along wingwall and 40 feet across abutment

Within these limits, the contractor should be required to satisfy the following performance requirements:

1. Minimum factor of safety of 1.5 against global slope stability failure of permanent condition.
2. Minimum factor of safety of 2.0 against equivalent uniform service bearing pressure failure if a load test is performed.
3. Minimum factor of safety of 2.5 against equivalent uniform service bearing pressure failure if a load test is not performed.
4. Total settlement measured at the base of the wall not to exceed 4.0 inches.
5. Total settlement measured on the pavement not to exceed 1.0 inch.
6. Differential settlement measured along the base of the wall not to exceed 1/100.

Removal and replacement is recommended for any soft cohesive soils that are located directly beneath the wall along Ramp 7<sup>th</sup>-B. Cohesive soils with an unconfined compressive strength that is less than the applied bearing pressure of the wall should be removed within the lateral limits shown in Figure 8.1. It is anticipated that these soft soils will be encountered at shallow depths over a small portion of the wall's footprint. Backfill and fill placed below the reinforced soil mass should be with rock fill as shown in Figure 8.1. The select fill material used in the reinforced soil mass may be used as an alternative to rock fill.





**Figure 8.1 Lateral Limits of Unsuitable Material Removal and Replacement**

The estimated vertical removal limits for the unsuitable soils are provided in Table 8.1. An estimated base of removal elevation is provided at each boring drilled in the vicinity. It is believed that the soft soils found in the borings beneath this wall are isolated strata. For plan quantities, the extents of the soft soil but should be assumed to extend at a constant elevation half way to the next boring along the wall. The actual limits of removal will be determined during construction based on the materials encountered.

**Table 8.1 Estimated Bottom of Unsuitable Material**

Boring No.	Station	Base of Removal Elevation	Objectionable Material
RW1808	531+43	-	-
ILR0611	529+70	-	-
RMP7THB-04	529+69	-	-
RW06-2	529+20	-	-
RW1810	528+74	-	-
ILR0609	528+35	595.5	soft clay
RMP7THB-05	528+08	596.2	soft clayey silt
ILR0608	527+95	-	-
ILR0606	526+97	-	-
ILR0604	525+97	590.1	soft sandy clay
RW1812	525+47	-	-
ILR0603	524+88	-	-
RW06-3	524+37	-	-
RW1813	523+65	-	-
ILR0601	523+05	-	-

With the ACGI and the removal and replacement of the unsuitable soils, a conventional precast panel MSE wall is feasible. The theoretical top of leveling pad or base of reinforced soil mass may be located at the minimum embedment required by IDOT (3.5 feet below finished grade). Walls should be configured with a 4-foot bench at the face as required by AASHTO 5.8.1. As an alternative in locations with sloped wall, the base of the wall should

be an extra 1.0 foot deeper. Any backfill or fill below the reinforced soil mass should be with either rock fill or select fill to the limits shown in Figure 8.1. Other material outside those limits may be embankment fill in accordance with the IDOT Standard Specifications.

Allowable bearing pressure is 4,200 psf at the end of the Ramp 7<sup>th</sup>-A wingwall increasing to 4,800 psf at the edge of the first treatment area, 4,800 psf within the two untreated areas between Ramp 7<sup>th</sup>-A and EB I-74, and 4,000 psf from the west edge of EB I-74 to Ramp 7<sup>th</sup>-B Sta. 530+35. Along Ramp 7<sup>th</sup>-B, the wall should be proportioned for allowable bearing capacities of 4,000 psf at Sta. 530+35, 5,500 psf at Sta. 529+00, and 2,500 psf at Sta. 523+00. Allowable capacities should be interpolated between the values provided. Sliding stability should be checked against a nominal undrained sliding resistance of one-half of the allowable bearing pressure and a nominal drained sliding resistance of 0.53 times the effective vertical stress. The subgrade should be inspected before fill is placed. Any soft or otherwise unsuitable material should be removed and replaced with compacted porous granular embankment or select fill.

The external stability design should be completed using the parameters defined above. In areas with ground improvement, the applied bearing pressures should not be compared to allowable bearing capacities of the native soils. Instead, the estimated applied bearing pressures will be given as a performance requirement for the aggregate column ground improvement. We recommend limiting the equivalent uniform bearing pressure to approximately 6,200 psf in order to keep the area replacement ratio reasonable. The minimum length to height ratio specified by AASHTO (0.70) will be acceptable for portion of the wall west of EB I-74. A 0.80 length to height ratio is recommended for the remainder of the wall.

The external stability design of the sections where the wall is blistered out for an abutment maskwall also should be completed using the parameters defined above. The length to height ratio should be no less than 0.80, where the height is measured from the top of leveling pad to the roadway grade and the length is measured from the front face of the lower wall. The reinforcement behind the upper wall panels should extend to no less than the back of the lower wall's reinforced soil mass and should be no less than 0.80 times the height of the upper wall.

## 9. Construction Considerations

The second stage of the proposed wall will require excavation immediately in front of the first stage wall supporting the proposed WB I-74 Bridge. This excavation will require temporary support of approximately 20 feet of fill under WB I-74 while slopes are laid back under the proposed EB I-74 shoulder. A temporary MSE wall is suitable for this structure. The temporary wall should be designed using the same recommendations as the adjacent permanent wall.

The construction of MSE walls is not covered by the IDOT Standard Specifications. Guide Bridge Special Provisions No. 38, Mechanically Stabilized Earth Retaining Walls (Revised: July 26, 2013); No. 57, Temporary Mechanically Stabilized Earth Retaining Walls (Revised: July 26, 2013); and No. 71, Aggregate Column Ground Improvement (Revised: October 15, 2011) should be included in the construction documents. These special provisions require that the contractor take responsibility for the final design of much of the structure. The most recent versions of IDOT Guide Bridge Special Provisions No. 38 and No. 57 reference only the AASHTO LRFD Bridge Specifications for design of MSE walls. The previous versions as noted above should be used for this project, because the current wall design and plan details use the AASHTO Standard Specifications for Highway Bridges.

The general contractor will hire a specialty contractor to design and install the aggregate column ground improvement. He will also hire an MSE wall supplier to complete the MSE wall design and furnish the materials. The interdependence of the ground improvement and MSE wall designs must be considered when developing the plans. The MSE wall supplier will typically design a wall with a horizontal base with vertical steps at convenient

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locations. This results in a wall that is slightly taller and wider than the theoretical size shown on the construction plans. Because of these factors, the target bearing pressure for the ground improvement contractor should be 5% to 10% higher than the theoretical value calculated during preliminary design.

The ground improvement contractor will need to assign strength and consolidation properties to the native soils in order to design the aggregate columns. All of the soils laboratory data in the Appendix to this report should be included in the contract documents. Usually, this is accomplished by adding a “Geotechnical Investigation Laboratory Data” section to the special provisions.

The piles for S.N. 081-0179, 081-0180 and 081-0181, which are located within the reinforced soil mass for this wall, will interfere with the placement and compaction of the select backfill. The piles must either be driven prior to placing the select fill or driven through sleeves after placing the select fill. Refer to the current geotechnical design memorandum for those structures for specific recommendations. Construction plans for the wall should require that the ACGI contractor coordinate the aggregate column locations with the pile locations to avoid any interference.

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- U.S. Department of Transportation, Federal Highway Administration (1997, August). *Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines* (Publication No. FHWA-SA-96-071).

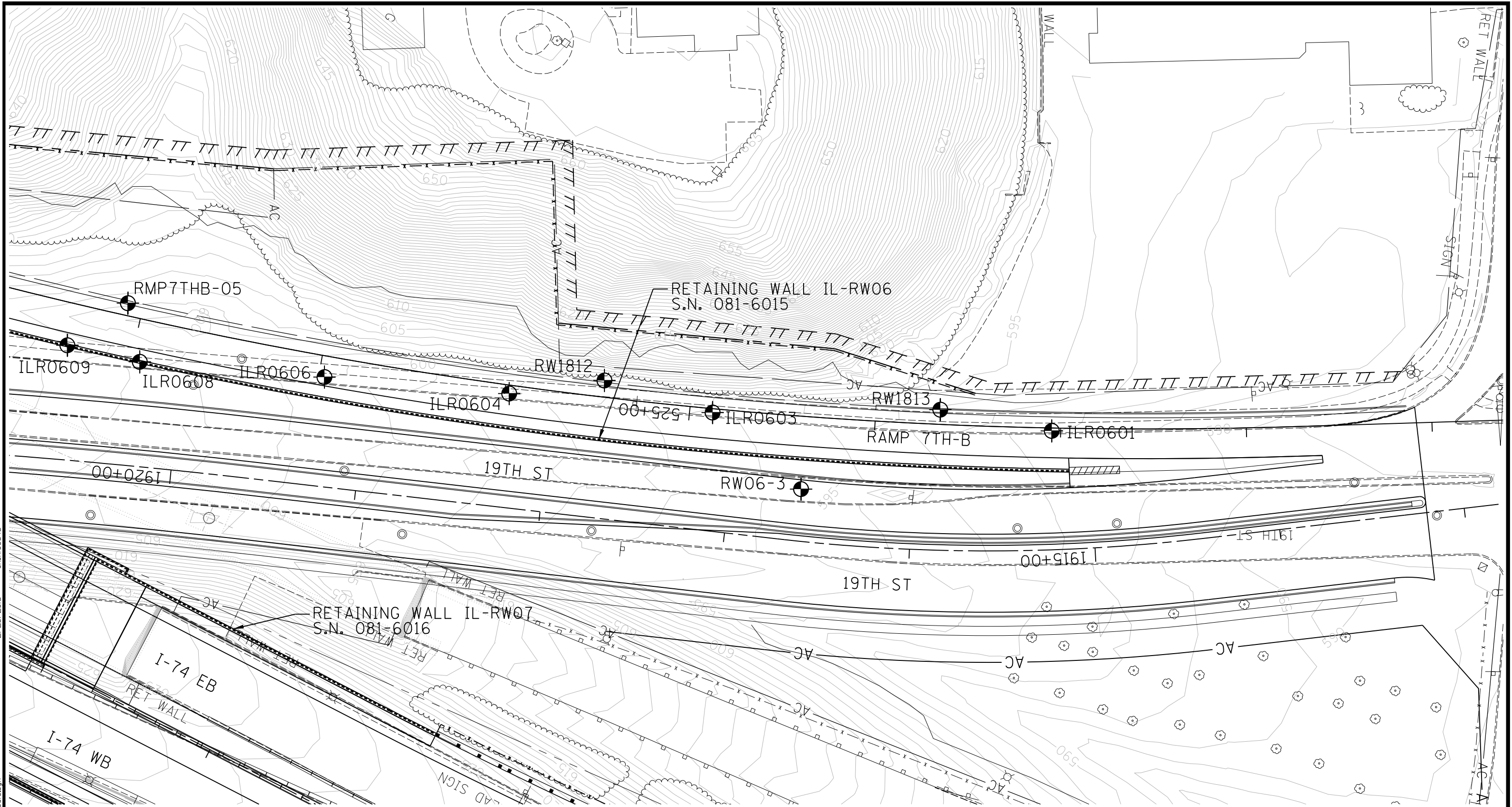
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## Appendix

Boring Location Plan  
Subsurface Data Profile  
Boring Logs  
Soils Laboratory Test Results  
Summary of Slope Stability Analyses

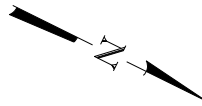


2/26/2015 cbrn00843 ILRW06-A0432-006-Subsurf Ace Datadgn



LEGEND

● RW600 BORING LOCATION



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BORING LOCATION PLAN

I-74 MAINLINE RETAINING WALL IL-RW06  
S.N. 081-6015  
ROCK ISLAND COUNTY, ILLINOIS

08H0120E

2/27/15





STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

RW06-05  
Sta. 62+58, 22' RT

Depth	N	Qu	w%	Notes
644.60				TOPSOIL.
644.35				
14	3.50P	15		FILL - Brown lean CLAY, trace silt, trace sand, with organics.
7	1.75B	23		
18	3.50P	17		
636.10				
11	3.10B	16		FILL - Brown and gray silty lean CLAY, trace sand, trace gravel, with wood debris and brick fragments.
	1.55S	19		
	1.60S	18		
15	3.30S	16		
16	4.46S	16		
16	4.50P	16		
20	2.25S	16		
20	3.30S	18		
21	4.50P	16		
607.60				
15	2.50P	22		FILL - Gray clayey SILT, little sand, trace gravel, with red brick fragments.
16		10		
597.60				
17	3.30S	15		Gray moisy, very stiff, silty lean CLAY, with trace sand and trace gravel.
26	6.01B	12		
584.60				Bottom of hole = 60.0 feet
26	3.69B	15		

19BR-109  
Sta. 627+68, 32' RT

Depth	N	Qu	w%	Notes
614.30				TOPSOIL - (roots) 1" to 2" thick.
614.10				
9	2.3S	12.8		SILT - brown, tan and orange mottled, little clay, slightly to medium plastic, stiff to crumbly, moist
610.80				
11	1.9B	20.4		CLAY - greenish gray and brown, little silt, waxy, medium plastic, stiff, moist.
608.30				
4	0.8B	16.0		CLAY - brown and tan, some to and silt, trace sand, medium plastic, medium stiff, moist.
605.80				
7	0.8S	16.7		SILT - dark brown to brown, little to some clay, trace fine sand, slightly to medium plastic, medium stiff to stiff, moist.
602.30				
6	1.0B	16.6		CLAY - gray and brown mottled, some silt, medium plastic, stiff, moist.
600.80				
10	0.7B	14.2		CLAY - brown and red brown, sandy, grading from clayey silt with fine to coarse sand, trace gravel to very soft wet sandy clay.
595.80				
DD	4	0.5B	18.4	
593.30				
8		13.9		GRAVEL - brown to reddish brown, clayey, angular, saturated.
587.80				
11	3.2B	9.7		CLAY - greenish gray, little to some silt, medium to highly plastic, stiff to very stiff, moist.
	2.9B	14.9		- [Dry unit weight = 120.7 pcf]
				- trace sand at bottom of shelby tube.
583.80				
50/4"		15.4		CLAY SHALE - bluish to greenish gray, clayey, hard, no laminations, slightly weathered, slightly moist to dry.
582.10				
55/3" >4.5P	10.7			CLAY SHALE - bluish to greenish gray, clayey, hard, no laminations, slightly weathered. Intermixed sandy shale and limestone at 30.5'-32.2'.
	Rec. = 86%			
	RQD = 60%			
				LIMESTONE - gray with yellowish brown and iron-staining along fractures in the upper 6 ft, fine grained, occasional stylolites, dense, hard, sound, thin bedded, primarily uneven horizontal to subhorizontal fractures with occasional high angle fractures, slightly weathered to fresh.
				- iron stained fractures at 32.8', 36.0', 36.2', 36.5', 36.8', 38.2'.
				- vertical fracture at 35.4'-35.6', 80° to 60° curvilinear fracture at 36.6'-36.8', 60° jagged brown-stained fracture at 36.4'.
				- fresh rock below 38.2'.
				- [Note: RQD shown for Run 1 is based on length of recovered rock, not on length of run. RQD=40% for entire length of run (including material washed away from augers and ground up during the drilling operations).]
572.00				Bottom of hole = 42.3 feet

19BR-108  
Sta. 61+26, 22' LT


Depth	N	Qu	w%	Notes
611.60				CONCRETE SIDEWALK - 4.5" thick concrete plus base course.
611.00				
6	1.6B	13.8		CLAY - olive brown and gray, some to and silt, trace to little medium to coarse sand, trace fine gravel, very stiff, moist (GLACIAL TILL-FILL).
12	3.0B	18.2		
605.60				
10	0.8B	18.4		SILT - dark brown, little to some clay, trace gravel, trace organics, slightly to medium plastic, medium stiff to stiff, moist
5	0.9B	24.2		
600.60				
5	0.7B	24.1		CLAY - brown, little silt, trace sand, with gravel, to SILT and clay, with gravel or cobble, slightly to medium plastic, medium stiff, moist (LL=21, PI=5)
17		13.9		- cobble at 14.5'-15.0'.
595.60				
2.5B	14.2			CLAY TILL - greenish brown to gray, trace to little medium to coarse sand, trace fine gravel, hard, moist to dry (GLACIAL TILL).
13	3.4B	13.9		- [Dry unit weight = 116.7 pcf]
16	3.1B	14.4		
2.8P				
14	2.9B	14.8		
581.80				
50/3" 2.5P	17.3			- greenish gray and red silty clay till, crumbly, moist.
				CLAY - red, silty, shaly, crumbly, dry to slightly moist (TILL or CLAY SHALE).
578.10				
91	3.5P	14.8		CLAY SHALE - greenish gray, clayey, hard, laminated, slightly to moderately weathered, slightly moist to dry.
				- [Groundwater not observed in soils and shale during drilling operations]
573.90				
	Rec. = 77%			
	RQD = 0%			
				LIMESTONE - gray, fine grained, dense, hard, very thin to thin bedded, horizontal to subhorizontal slightly rough fractures with some high angle (60° to 90°) fractures, slightly weathered with faint iron stains on some fractures, occasional stylolites.
	Rec. = 93%			
	RQD = 23%			
563.70				Bottom of hole = 47.9 feet
	Rec. = 100%			
	RQD = 45%			

LEGEND

- N Standard Penetration Test N (blows/ft)
- Qu Unconfined Strength (tsf)
- w% Natural Moisture Content (%)
- ☐ Unconsolidated Undrained Triaxial Test
- Ⓜ Consolidated Undrained Triaxial Test
- Ⓢ Consolidation Test
- DD Water Surface Elevation Encountered in Boring
- ∇ DD = during drilling
- 24h = 24 hours after completion

SUBSURFACE DATA PROFILE  
STRUCTURE NO. 081-6015

PROFESSIONAL DESIGN FIRM LICENSE #184-001084

 HANSON Hanson Professional Services Inc.	JOB NO. 08H0120E	SHEET NO. 2  9 SHEETS	F.A.I RTE. 74	SECTION 81-1-2	COUNTY ROCK ISLAND	TOTAL SHEETS -	SHEET NO. -
	DATE 2/27/15		CONTRACT NO. 64C08		FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

RW06-1  
Sta. 61+02, 7' LT

Depth	N	Qu	w%	Notes
611.30				CONCRETE
610.80	2.50P	14	17	FILL - Light gray, slightly moist, SILT
608.30	1.80P	13		FILL - Very dark brown, moist, clayey SILT with trace gravel
605.30	17	2.00P	15	FILL - Gray, moist, medium dense, silty, medium-grained SAND with trace gravel, wood, brick and rock fragments
600.30	50/4"		12	Dark brown, moist, stiff, sandy SILT with trace gravel
596.30	8		16	Dark brown, moist, sandy, clayey SILT with trace gravel
595.30	DD	0.50P	12	Dark brown, wet, dense, silty SAND with trace gravel
593.80	DD			
593.30	8	0.54B	18	Gray and brown, moist, medium stiff, silty CLAY with sand and trace gravel
588.80				Gray and brown, moist, very stiff, silty CLAY with sand and gravel
586.30	21	2.61B	14	
Bottom of hole = 25.0 feet				

19BR-105  
Sta. 60+26, 13' LT

Depth	N	Qu	w%	Notes
609.30				CONCRETE - 3" thick concrete plus base course.
608.80	10	1.5P	12.8	SILT - light brown and dark brown, some clay, trace to little gravel, medium plastic, stiff, moist (FILL).
604.80	17	0.8S	12.6	SILT - light brown and gray mottled, little clay, crumbly, slightly to medium plastic, medium stiff, slightly moist to dry.
600.80	4	0.6B	27.4	
598.30	5	0.6S	18.2	SILT - dark brown, little to some clay, crumbly, slightly to medium plastic, medium stiff, slightly moist to dry.
595.30	4	0.4S	16.2	SILT - dark brown, trace to little clay, little fine sand, slight binder, slightly plastic, soft to medium stiff, moist.
590.80	19		4.3	SAND - brown, fine to coarse, clayey, and gravel, loose, moist.
580.30	DD			
580.30	4		5.5	
574.00	6	1.4B	14.4	CLAY TILL - greenish gray, sandy to silty, trace medium to coarse sand, trace fine gravel, slightly to medium plastic, hard, moist (GLACIAL TILL). -[Dry unit weight = 118 pcf]
		1.9B	14.3	
		12	3.1B	13.8
		20	3.3B	12.9
		14	3.3B	15.4
				- contains thin layers of wet/saturated fine sand.
		50/1"	23.9	- greenish gray to bluish gray with limestone fragments, hard.
				Rec. = 46% RQD = 8% LIMESTONE - gray, fine grained, hard, dense, very thin to thin bedded, closely to very closely fractured with possible shale and/or clay seams which were not recovered between 35.3' and 40.7', occasional iron-stains at fractures, slightly weathered, poor quality rock but hard where recovered.
				Rec. = 81% RQD = 0% [Note: driller repeatedly lifted the core barrel while drilling to keep it from jamming. Observation of core pieces suggest numerous near-vertical fractures were encountered, causing core pieces to get stuck in the core catcher and possibly grinding up subsequent rock encountered while drilling.]
				Rec. = 43% RQD = 0%
				Rec. = 77% RQD = 35% - 11" thick layer of very soft green-gray, sandy, gravelly clay at 45.8' to 46.7'. - 13" layer of medium gray "birdseye" texture limestone with vertical fractures at 47.5' to 48.6'.
558.50				Bottom of hole = 50.8 feet

B-2(2011)  
Sta. 601+31, 6' LT

Depth	N	Qu	w%	Notes
610.26		1.8P	14	STIFF gray SILTY CLAY LOAM
	16	2.7S	15	VERY STIFF gray/brown SILTY CLAY LOAM
	18	1.2B	15	STIFF brown SILTY CLAY LOAM
	10	2.3P	21	VERY STIFF dark brown SILTY CLAY LOAM
	6	1.0B	16	STIFF dark brown SILTY CLAY LOAM
	13	1.5P		STIFF brown SANDY LOAM with GRAVEL
596.26	22			No recovery, rock blocking sampler
	11			No recovery
591.26				
590.80	DD			
590.80	15	3.0B	13	VERY STIFF gray CLAY LOAM TILL
	16	2.7B	13	VERY STIFF gray CLAY LOAM TILL
	15	2.7B	13	VERY STIFF gray CLAY LOAM TILL
	16	2.2B	14	VERY STIFF gray CLAY LOAM TILL
	37	2.3S	17	VERY STIFF gray CLAY LOAM TILL
	21	1.3P	27	STIFF gray CLAY TILL with DOLOMITE lenses
575.26	100/6"	52		STIFF gray CLAY TILL
				Rec. = 85% RQD = 15% Dolomite: gray-buff, alphanitic, dense, pitted and mostly fractured with voids evident. f.s.f.: 572.9 to 572.5
570.26				Rec. = 30% RQD = 0% Dolomite: as above, pitted, fractured with macro-voiding apparent throughout.
565.26				Bottom of hole = 45.0 feet

LEGEND

- N Standard Penetration Test N (blows/ft)
- Qu Unconfined Strength (tsf)
- w% Natural Moisture Content (%)
- Q Unconsolidated Undrained Triaxial Test
- R Consolidated Undrained Triaxial Test
- C Consolidation Test
- DD Water Surface Elevation Encountered in Boring
- DD = during drilling
- 24h = 24 hours after completion

SUBSURFACE DATA PROFILE  
STRUCTURE NO. 081-6015

PROFESSIONAL DESIGN FIRM LICENSE #184-001084

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Hanson Professional Services Inc.

JOB NO.  
08H0120E  
DATE  
2/27/15

SHEET NO. 3  
9 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
74	81-1-2	ROCK ISLAND	-	
CONTRACT NO. 64C08				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

19BR-107  
Sta. 59+82, 60' RT

	N	Qu	w%	
609.10				CONCRETE SIDEWALK - concrete (4-1/2" thick) + base course.
608.60	7	1.4B	13.5	CLAY - brown to yellowish brown, some silt, trace gravel, medium plastic, stiff, slightly moist.
605.60	10	1.5B	15.9	SILT - dark brown, little to some clay, trace gravel, crumbly, slight to medium plastic, stiff, moist.
	10	1.3B	15.6	
		1.8P	24.3	- little clay. (LL=28, PI=7)
598.10	5	0.5P	14.4	CLAY TILL - dark brown (to 12.5 ft) to brown, to gray and tan, trace medium to coarse sand, trace fine gravel, stiff, moist (GLACIAL TILL).
	9	2.0B	14.1	- sandy till at 11.0'-12.5'.
		3.3B	14.4	- [Dry unit weight = 119.8 pcf]
590.60	14	2.3B	14.1	CLAY TILL - greenish brown to gray, trace medium to coarse sand, trace fine gravel, hard, moist to dry (GLACIAL TILL).
	20	2.6B	13.8	
	18	2.8B	14.5	
	16	2.7B	13.1	
	14	3.2B	13.9	
		14	3.0P	12.7
570.60	45	>4.5P	14.9	CLAY SHALE - greenish gray to brown, clayey, hard, slightly to moderately weathered, slightly moist to dry.
565.60	86	>4.5P	13.5	CLAY SHALE - black to dark gray, feint to no laminations, hard, slightly moist to dry.
	113/9"	>4.5P	10.9	
	50/5"	>4.5P	10.3	
				- [Note: driller added water to hole to be able to turn augers below 50' depth]
	50/2"	>4.5P	12.8	- soft, laminated, clayey, sticky; falls apart and readily crumbles when moist; becomes sticky clay when wet.
550.50	50/5"		7.9	- light and dark gray shale cuttings.
				Bottom of hole = 58.6 feet

RW06-04  
Sta. 60+68, 63' RT

	N	Qu	w%	
624.70				CONCRETE.
624.45				
	5	4.50P	13	FILL - Dark brown with gray mottles, SILT, little clay, trace sand.
	11	4.50P	19	
	13	3.00P	16	
	22	4.50P	6	
613.70	11	3.30P	18	FILL - Dark gray silty lean CLAY, little sand, trace gravel, with wood fragments.
		2.16B	16	
	9	3.00P	19	
	11	2.50P	22	
602.70				Gray moist, very stiff, silty lean CLAY, with trace sand and gravel.
	15	4.50P	14	
	17	4.30P	15	
589.70	18	4.00P	14	
				Bottom of hole = 35.0 feet

RW1808  
Sta. 531+43, 2' LT


	N	Qu	w%	
634.51	9	3.0P		Clay (CL) - Clay, few sand, trace gravel, red brown and brown, dry to moist, stiff blocky
	11	4.5P		Clay, trace gravel and sand, brown mottled orange brown and gray brown, dry to moist, stiff, blocky
628.51	11	4.5P		Silty Clay, trace gravel, brown to red brown, dry to moist, stiff, blocky
	12	4.5P		Clayey Silt (MH) - Clayey Silt, trace gravel, gray brown, mottled orange brown, dry to moist, medium dense, blocky
	18	3.6S		Clayey Silt, trace gravel, gray brown, mottled orange brown, dry to moist, medium dense, blocky, Gray with no mottling for 1" at 12" from top of sample
	15	2.9P		Clayey Silt to Silty Clay, trace gravel and organics, gray brown, mottled orange brown, medium stiff, stratified
620.51	18	4.5P		Clayey Silt to Clay, trace gravel, little sand, light brown and gray brown, medium stiff to stiff, stratified (gray brown - 11"; light brown - 8")
	15	3.8P		Silty Clay (CL-ML) - Silty Clay, little sand, trace gravel, light brown, dry to moist, stiff, homogenous
	17	3.2P		Silty Clay, little sand, trace gravel, mottled gray brown, dry to moist, stiff, homogenous
609.51	15	2.0P		Clay (CL) - Clay, trace gravel, little sand, light brown mottled gray brown and orange brown, dry to moist, stiff, homogenous
	14	2.5P		Clay, little sand, trace gravel, gray brown, moist, stiff, homogenous - Till - unweathered
	15	2.5P		Clay, little sand, trace gravel, gray brown, moist, stiff, homogenous
	17	2.4P		Clay, little sand, trace gravel, gray brown, moist, stiff, homogenous
	20	3.3P		Clay, little sand, trace gravel, gray brown, moist, stiff, homogenous
584.51	18	3.2P		Clay, little sand, trace gravel, gray brown, moist, stiff, homogenous
				Bottom of hole = 50.0 feet

LEGEND

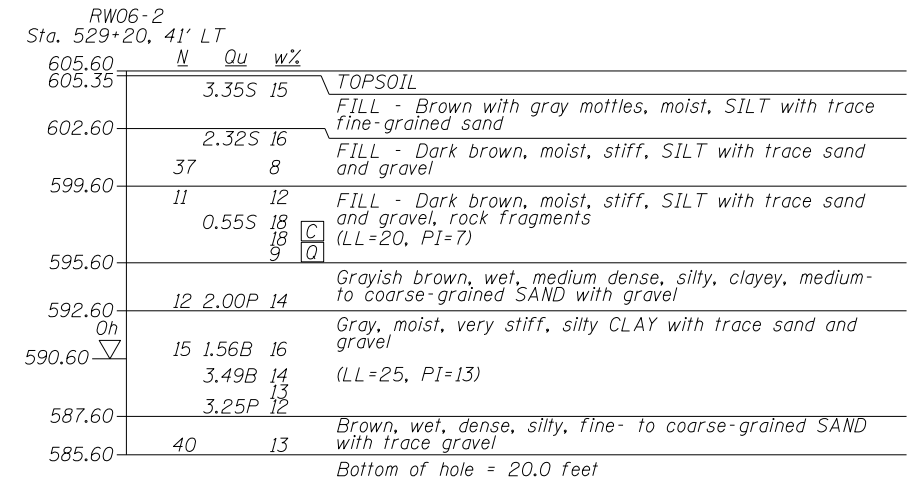
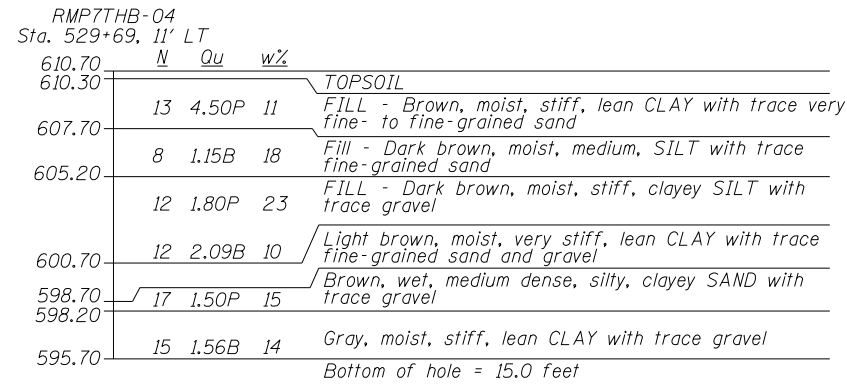
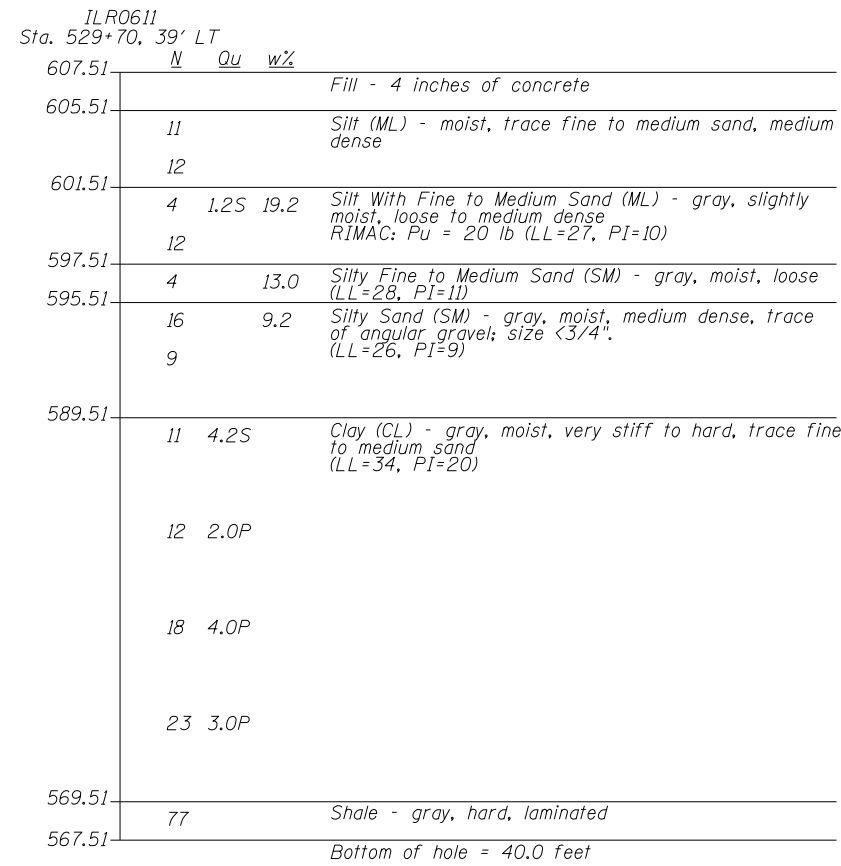
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- Qu Unconfined Strength (tsf)
- w% Natural Moisture Content (%)
- Q Unconsolidated Undrained Triaxial Test
- R Consolidated Undrained Triaxial Test
- C Consolidation Test
- DD Water Surface Elevation Encountered in Boring
- DD = during drilling
- 24h = 24 hours after completion

SUBSURFACE DATA PROFILE  
STRUCTURE NO. 081-6015

PROFESSIONAL DESIGN FIRM LICENSE #184-001084

 HANSON Hanson Professional Services Inc.	JOB NO. 08H0120E	SHEET NO. 4	F.A.I RTE. 74	SECTION 81-1-2	COUNTY ROCK ISLAND	TOTAL SHEETS -	SHEET NO. -
	DATE 2/27/15	9 SHEETS	CONTRACT NO. 64C08		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION




LEGEND

- N Standard Penetration Test N (blows/ft)
- Qu Unconfined Strength (tsf)
- w% Natural Moisture Content (%)
- Unconsolidated Undrained Triaxial Test
- Ⓜ Consolidated Undrained Triaxial Test
- Ⓢ Consolidation Test
- DD Water Surface Elevation Encountered in Boring
- DD = during drilling
- 24h = 24 hours after completion

558.10 ▽

SUBSURFACE DATA PROFILE  
STRUCTURE NO. 081-6015

PROFESSIONAL DESIGN FIRM LICENSE #184-001084

 HANSON Hanson Professional Services Inc.	JOB NO. 08H0120E	SHEET NO. 5	F.A.I RTE. 74	SECTION 81-1-2	COUNTY ROCK ISLAND	TOTAL SHEETS -	SHEET NO.
	DATE 2/27/15	9 SHEETS	CONTRACT NO. 64C08		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

RW1810  
Sta. 528+74, 23' LT

Station	N	Qu	w%	Description
604.24				Silt (MH) - Silt, trace gravel, light brown to brown, dry to moist, medium dense, stratified
602.24	17			Silt to clay, trace gravel and organics, light brown to brown, dry to moist, hard, stratified, till
600.24	25	4.5P		Clay (CL) - Clay, trace gravel, trace organics, light brown to brown, mottled orange brown and gray brown, very stiff to hard
	12			
	15	4.5P		
	10			Fill to 12'-14'
	12	4.5P		
	11	4.5P		
	14	3.2P		
	14	2.5P		
	20	2.2P		
	16	2.6P		1"-thick sandy clay seam in 34.0' sample
	15	2.3P		
564.24				Clay (CL) - trace gravel, little sand, gray brown, wet, very stiff
562.24	16	2.1P		Shale - Clayey Sand (2") to shale, gray brown, wet to moist, loose to hard, stratified
				50/5"
				50/4"
				Shale, dark gray, moist, hard, homogenous Let split spoon fall from 50.0' (50/6" = free fall)
554.24				Bottom of hole = 50.0 feet

ILR0609  
Sta. 528+35, 23' LT

Station	N	Qu	w%	Description
603.53				Silty Fine to Coarse Sand (SM) - grayish brown, moist, medium dense
	16			
599.53	8			Well Graded Sand (SW) - yellowish brown, slightly moist, loose
597.53				Clay (CH) - dark brown, moist, soft
595.53	0.5			Sandy Silt (ML) - yellowish brown, moist, loose
	5	2.0		
	12			
589.53	14	5.4S		Silt (ML) - yellowish brown, moist, medium dense, trace coarse sand (LL=40, PI=24)
	12	3.0P		
583.53				Clay (CL) - gray, moist, very stiff to hard
	13	4.2B		
	14	2.0P		
	16	4.0P		
	94/9"			
562.53				Bottom of hole = 41.0 feet

RMP7THB-05  
Sta. 528+08, 7' RT

Station	N	Qu	w%	Description
602.20				TOPSOIL
601.90	8	2.80P	30	FILL - Dark brown, moist, medium, CLAY with trace silt
599.20	5	0.25B	24	FILL - Dark gray, moist, medium, clayey SILT
596.20	5	0.80P	18	FILL - Gray, moist, loose, silty, fine-grained SAND
594.20	10		18	FILL - Dark grayish brown, moist, stiff, silty CLAY with fine-grained sand
591.70	11	1.50P	17	Brown, moist, stiff, lean CLAY with trace silt
588.20	14	1.36B	15	Gray, moist, stiff, lean CLAY with very fine-grained sand and gravel
587.20				Bottom of hole = 15.0 feet

LEGEND

- N Standard Penetration Test N (blows/ft)
- Qu Unconfined Strength (tsf)
- w% Natural Moisture Content (%)
- Q Unconsolidated Undrained Triaxial Test
- R Consolidated Undrained Triaxial Test
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- DD Water Surface Elevation Encountered in Boring
- DD = during drilling
- 24h = 24 hours after completion

558.10

SUBSURFACE DATA PROFILE  
STRUCTURE NO. 081-6015

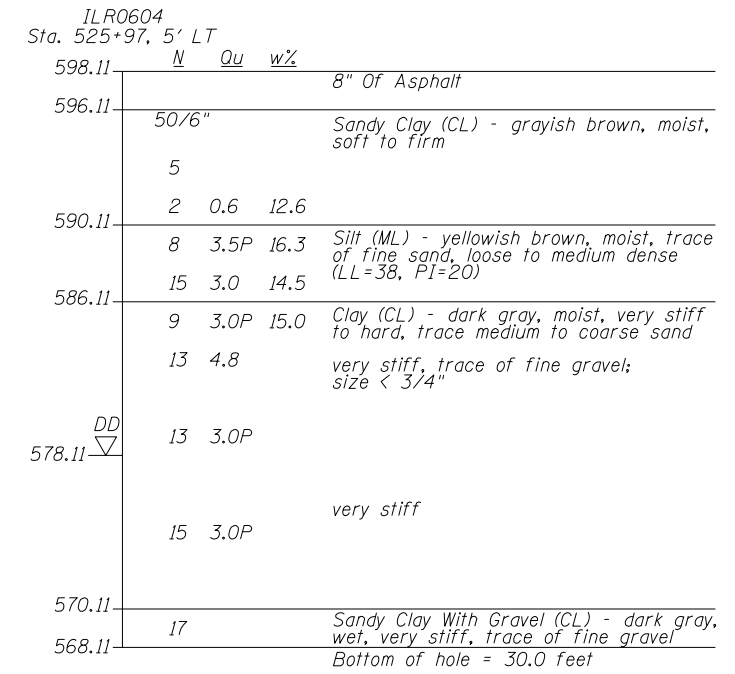
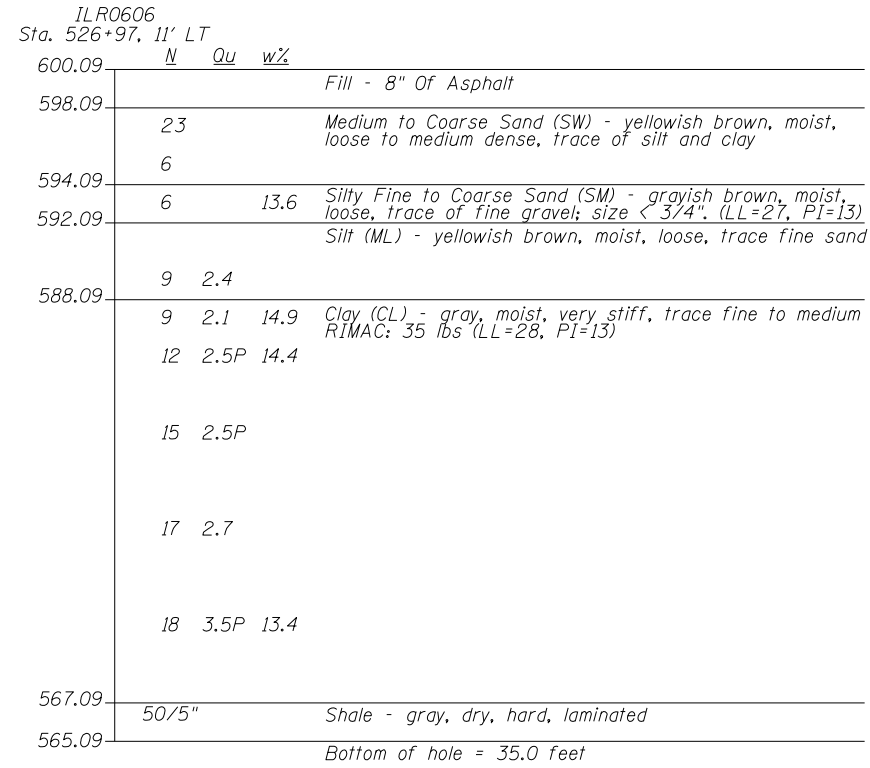
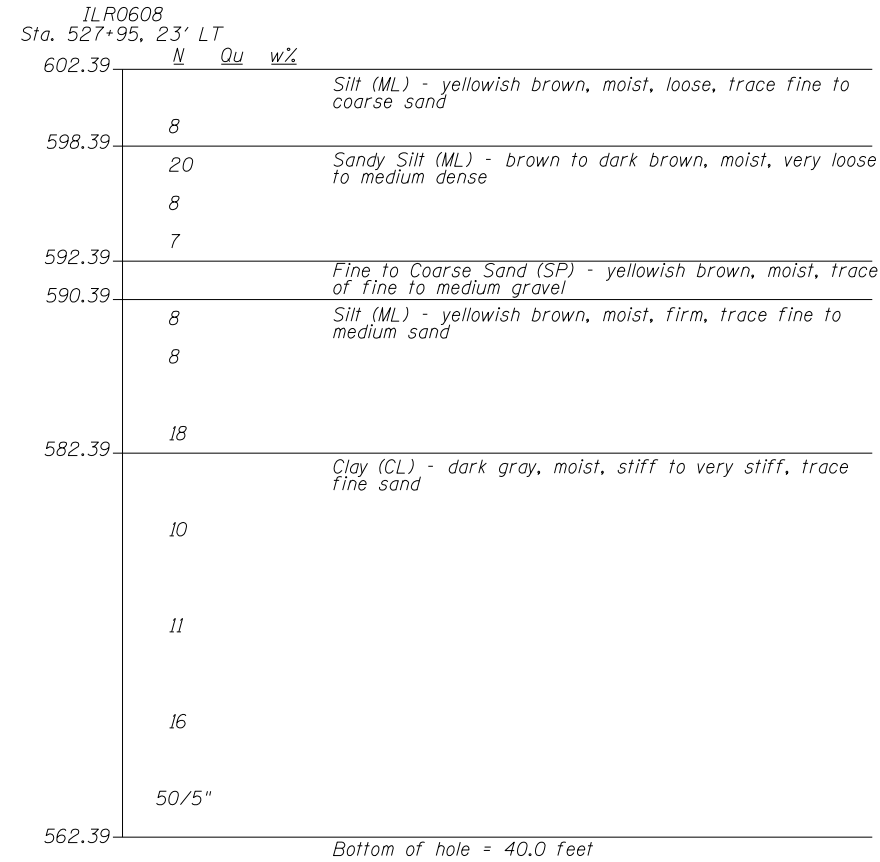
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JOB NO. 08H0120E	SHEET NO. 6	F.A.I RTE. 74	SECTION 81-1-2	COUNTY ROCK ISLAND	TOTAL SHEETS -	SHEET NO.
DATE 2/27/15	9 SHEETS	CONTRACT NO. 64C08				
		FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION




LEGEND

- N Standard Penetration Test N (blows/ft)
- Qu Unconfined Strength (tsf)
- w% Natural Moisture Content (%)
- ☐ Unconsolidated Undrained Triaxial Test
- ☐ Consolidated Undrained Triaxial Test
- ☐ Consolidation Test
- DD Water Surface Elevation Encountered in Boring
- DD = during drilling
- 24h = 24 hours after completion

558.10

SUBSURFACE DATA PROFILE  
STRUCTURE NO. 081-6015

PROFESSIONAL DESIGN FIRM LICENSE #184-001084

 Hanson Professional Services Inc.	JOB NO. 08H0120E	SHEET NO. 7  9 SHEETS	F.A.I RTE. 74	SECTION 81-1-2	COUNTY ROCK ISLAND	TOTAL SHEETS -	SHEET NO.
	DATE 2/27/15		CONTRACT NO. 64C08		FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

RW1812  
Sta. 525+47, 9' RT

Depth	N	Qu	w%	Description
599.00				
12	4.5+P			Clay (CL) - Clay, little gravel, dark brown, dry to moist, very hard, blocky
22				Clay, little gravel, few brick, dark brown, dry to moist, very stiff, blocky
3	13.0			Silty Clay, trace gravel, dark brown, dry to moist, very stiff, blocky 2" of sand at bottom of sample (LL=27, PI=16)
12				
13	4.5+P			Clay, trace gravel, gray brown, moist, hard, homogenous, till
13	4.5+P			Clay, trace gravel, gray brown, moist, hard, homogenous, till
9	2.1P			Clay, trace gravel, gray brown, moist, hard, homogenous, till
15	2.0P			Clay, trace gravel, gray brown, moist, hard, homogenous, till
10	2.0P			Clay, trace gravel, gray brown, moist, hard, homogenous, till
15	2.1P			Clay, trace gravel, gray brown, moist, hard, homogenous, till Clay, trace gravel, gray brown, moist, hard, homogenous, till to shale, (CL-8")
569.00				Shale - Light gray, moist, hard, stratified
568.00				Bottom of hole = 31.0 feet

ILR0603  
Sta. 524+88, 2' LT

Depth	N	Qu	w%	Description
595.87				Fill - 8" Of Asphalt
593.87				Fill - Sample drove a stone
591.87	7			Fill - Sample drove a piece of brick
589.87	9			Fill - Sample drove a piece of brick
10	2.0P			Silt With Fine to Coarse Sand (ML) - yellowish brown, moist, medium dense
11	2.5P			
585.87	12	2.5P		Clay (CL) - gray, moist, very stiff, trace fine to medium grained sand
581.87	8	2.0P		Clay With Trace Of Sand (CL) - gray, moist, very firm, fine to medium sand
11	2.5P			rounded gravel; < 1/2 inches in 18.5' sample
13	1.5P			
567.87				Bottom of hole = 28.0 feet

RW06-3  
Sta. 524+37, 39' LT

Depth	N	Qu	w%	Description
595.20				CONCRETE
594.95				
593.70	11	16	9	FILL - Brown, moist, stiff, fine-grained sandy CLAY FILL - Brown, moist, medium dense, clayey, fine- to medium-grained SAND with trace gravel
	22	10		
587.20	14	14		Gray, moist, stiff, silty CLAY with trace sand
	16	1.77B	15	
580.20	16	1.02S	14	
				Bottom of hole = 15.0 feet


LEGEND

- N Standard Penetration Test N (blows/ft)
- Qu Unconfined Strength (tsf)
- w% Natural Moisture Content (%)
- Q Unconsolidated Undrained Triaxial Test
- R Consolidated Undrained Triaxial Test
- C Consolidation Test
- DD Water Surface Elevation Encountered in Boring  
DD = during drilling  
24h = 24 hours after completion

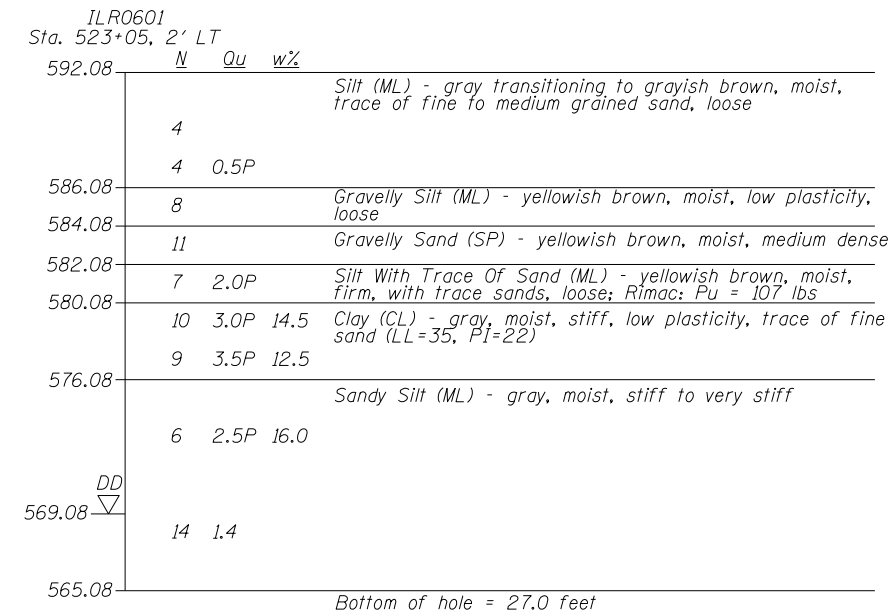
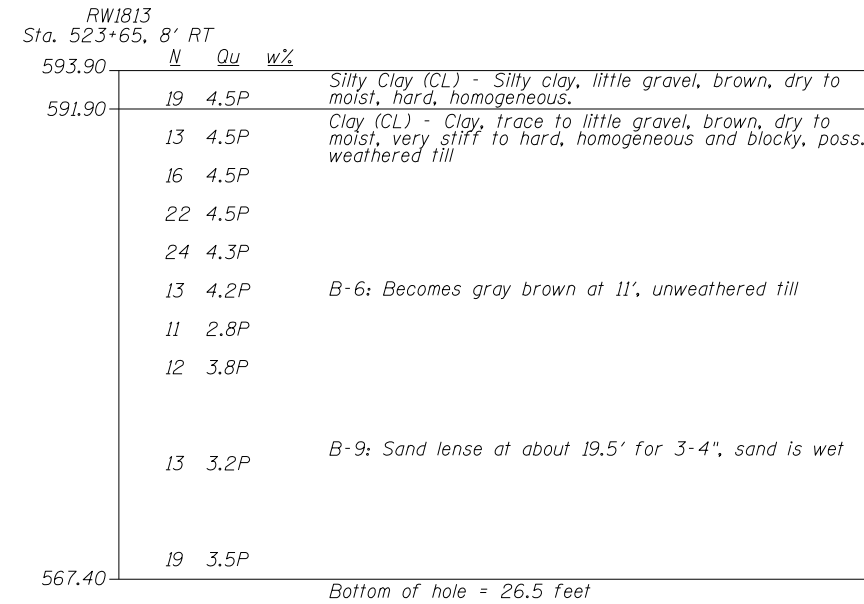
558.10

SUBSURFACE DATA PROFILE  
STRUCTURE NO. 081-6015

PROFESSIONAL DESIGN FIRM LICENSE #184-001084

 Hanson Professional Services Inc.	JOB NO. 08H0120E	SHEET NO. 8	F.A.I RTE. 74	SECTION 81-1-2	COUNTY ROCK ISLAND	TOTAL SHEETS -	SHEET NO.
	DATE 2/27/15	9 SHEETS	CONTRACT NO. 64C08		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



LEGEND

- N Standard Penetration Test N (blows/ft)
- Qu Unconfined Strength (tsf)
- w% Natural Moisture Content (%)
- Q Unconsolidated Undrained Triaxial Test
- R Consolidated Undrained Triaxial Test
- C Consolidation Test
- DD Water Surface Elevation Encountered in Boring
- DD = during drilling
- 24h = 24 hours after completion

SUBSURFACE DATA PROFILE  
STRUCTURE NO. 081-6015

PROFESSIONAL DESIGN FIRM LICENSE #184-001084

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JOB NO.

08H0120E

DATE  
2/27/15

SHEET NO. 9  
9 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
74	81-1-2	ROCK ISLAND	-	
CONTRACT NO. 64C08				
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		





# SOIL BORING LOG

ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY KJB

SECTION \_\_\_\_\_ LOCATION (N=561828.313, E=2459724.286), SEC. 32, TWP. 18N, RNG. 1W, 4<sup>th</sup> PM

COUNTY Rock Island DRILLING METHOD HSA, CME 55 HAMMER TYPE CME AUTOMATIC

STRUCT. NO. Station	DEPTH H	BLOW S	UCS Qu	MOIST T	Surface Water Elev. _____ ft	DEPT H	BLOW S	UCS Qu	MOIST T
BORING NO. <u>19BR-105</u> Station _____ Offset _____	(ft)	(/6")	(tsf)	(%)	Stream Bed Elev. _____ ft	(ft)	(/6")	(tsf)	(%)
Ground Surface Elev. <u>609.30</u> ft					Groundwater Elev.:				
					First Encounter <u>580.3</u> ft ▼				
					Upon Completion _____ ft				
					After _____ Hrs. _____ ft				
CONCRETE - 3" thick concrete plus base course. <u>608.80</u>					CLAY TILL - greenish gray, sandy to silty, trace medium to coarse sand, trace fine gravel, slightly to medium plastic, hard, moist (GLACIAL TILL). (continued) -[Dry unit weight = 118 pcf]				
SILT - light brown and dark brown, some clay, trace to little gravel, medium plastic, stiff, moist (FILL?).		2	1.5	12.8				1.9	14.3
		5	P					B	
		5							
		6					4		
<u>604.80</u>		10	0.8	12.6			5	3.1	13.8
SILT - light brown and gray mottled, little clay, crumbly, slightly to medium plastic, medium stiff, slightly moist to dry.		7	S				7	B	
		3					6		
		2	0.6	27.4			10	3.3	12.9
		2	B				10	B	
<u>600.80</u>		2					4		
SILT - dark brown, little to some clay, crumbly, slight to medium plastic, medium stiff, moist.		2	0.6	18.2		▼	7	3.3	15.4
		3	S				7	B	
		-10					-30		
<u>598.30</u>		2							
SILT - dark brown, trace to little clay, little fine sand, slight binder, slightly plastic, soft to medium stiff, moist.		2	0.4	16.2					
		2	S						
		3					21		
<u>595.30</u>		7		4.3			50/1"		23.9
SAND - brown, fine to coarse, clayey, and gravel, loose, moist.		12							
		-15					-35		
		5							
		2		5.5					
		2							
<u>590.80</u>		1							
		3	1.4	14.4					
		3	B						
		-20					-40		

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY KJB

SECTION \_\_\_\_\_ LOCATION (N=561828.313, E=2459724.286), SEC. 32, TWP. 18N, RNG. 1W, 4<sup>th</sup> PM

COUNTY Rock Island CORING METHOD NQ Core

STRUCT. NO. \_\_\_\_\_ CORING BARREL TYPE & SIZE NQ Wireline

Station \_\_\_\_\_

Core Diameter 1.8 in

BORING NO. 19BR-105

Top of Rock Elev. 574.80 ft

Station \_\_\_\_\_

Begin Core Elev. 574.00 ft

Offset \_\_\_\_\_

Ground Surface Elev. 609.30 ft

DEPTH (ft)	CORE (#)	RECOVERY (%)	R.Q.D. (%)	CORE TIME (min/ft)	STRENGTH (tsf)
574.00	Run 1	46	8	2.8	
-40	Run 2	81	0		
-45	Run 3	43	0	1.7	488.6
-50	Run 4	77	35	4.4	
558.50					
-55					

LIMESTONE - gray, fine grained, hard, dense, very thin to thin bedded, closely to very closely fractured with possible shale and/or clay seams which were not recovered between 35.3' and 40.7', occasional iron-stains at fractures, slightly weathered, poor quality rock but hard where recovered.

[Note: driller repeatedly lifted the core barrel while drilling to keep it from jamming. Observation of core pieces suggest numerous near-vertical fractures were encountered, causing core pieces to get stuck in the core catcher and possibly grinding up subsequent rock encountered while drilling.]

- 11" thick layer of very soft green-gray, sandy, gravelly clay at 45.8' to 46.7'.

- 13" layer of medium gray "birdseye" texture limestone with vertical fractures at 47.5' to 48.6'.

End of Boring

Color pictures of the cores Yes

Cores will be stored for examination until \_\_\_\_\_

The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)





ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY KJB

SECTION \_\_\_\_\_ LOCATION (N=561873.84, E=2459651.753), SEC. 32, TWP. 18N, RNG. 1W, 4<sup>th</sup> PM

COUNTY Rock Island DRILLING METHOD HSA, CME 55 HAMMER TYPE CME AUTOMATIC

STRUCT. NO. _____ Station _____	D E P T H  (ft)	B L O W S  (/6")	U C S  Qu (tsf)	M O I S T  (%)	Surface Water Elev. _____ ft
					Stream Bed Elev. _____ ft
BORING NO. <u>19BR-107</u> Station _____ Offset _____					Groundwater Elev.: First Encounter _____ ft
Ground Surface Elev. <u>609.10</u> ft					Upon Completion _____ ft After _____ Hrs. _____ ft

moist to dry. CLAY SHALE - greenish gray to brown, clayey, hard, slightly to moderately weathered, slightly moist to dry. (continued)					
	565.60				
CLAY SHALE - black to dark gray, feint to no laminations, hard, slightly moist to dry.	16				
	29	>4.5	13.5		
	-45	57	P		
	19				
	58	>4.5	10.9		
	55/3"	P			
	20				
	50/5"	>4.5	10.3		
	-50	P			
- [Note: driller added water to hole to be able to turn augers below 50' depth]					
	33				
- soft, laminated, clayey, sticky; falls apart and readily crumbles when moist; becomes sticky clay when wet.	50/2"	>4.5	12.8		
	-55	P			
- light and dark gray shale cuttings.	550.50	50/5"	7.9		
End of Boring					
	-60				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



# SOIL BORING LOG

ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY KJB

SECTION \_\_\_\_\_ LOCATION (N=561728.148, E=2459730.629), SEC. 32, TWP. 18N, RNG. 1W, 4<sup>th</sup> PM

COUNTY Rock Island DRILLING METHOD HSA, CME 55 HAMMER TYPE CME AUTOMATIC

STRUCT. NO. Station	DEPTH H (ft)	BLOW S (/6")	UCS Qu (tsf)	MOIST T (%)	Surface Water Elev. _____ ft	Stream Bed Elev. _____ ft	GROUNDWATER ELEV. First Encounter _____ ft	Upon Completion _____ ft	After _____ Hrs. _____ ft	DEPTH H (ft)	BLOW S (/6")	UCS Qu (tsf)	MOIST T (%)
CONCRETE SIDEWALK - 4.5" thick concrete plus base course.	611.00												
CLAY - olive brown and gray, some to and silt, trace to little medium to coarse sand, trace fine gravel, very stiff, moist (GLACIAL TILL - FILL?).	4										5		
	2	1.6	13.8								7	3.1	14.4
	4	B									9	B	
	2												
	5	3.0	18.2									2.8	
	-5	7	B							-25		P	
	605.60												
SILT - dark brown, little to some clay, trace gravel, trace organics, slightly to medium plastic, medium stiff to stiff, moist	4										4		
	5	0.8	18.4								6	2.9	14.8
	5	B									8	B	
	2												
	2	0.9	24.2								30		
	-10	3	B							581.80	50/3"	2.5	17.3
												P	
	600.60												
CLAY - brown, little silt, trace sand, with gravel, to SILT and clay, with gravel or cobble, slightly to medium plastic, medium stiff, moist.	WOH												
	2	0.7	24.1										
	3	B											
	3												
	5		13.9							578.10	18		
	-15	12								-35	60	3.5	14.8
												P	
	595.60												
CLAY TILL - greenish brown to gray, trace to little medium to coarse sand, trace fine gravel, hard, moist to dry (GLACIAL TILL). -[Dry unit weight = 116.7 pcf]			2.5	14.2									
			B										
		5											
	5	3.4	13.9							573.90			
	-20	8	B							-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



# ROCK CORE LOG

ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY KJB

SECTION \_\_\_\_\_ LOCATION (N=561728.148, E=2459730.629), SEC. 32, TWP. 18N, RNG. 1W, 4<sup>th</sup> PM

COUNTY Rock Island CORING METHOD NQ Core

STRUCT. NO. \_\_\_\_\_ CORING BARREL TYPE & SIZE NQ Wireline

Station \_\_\_\_\_

Core Diameter 1.8 in

BORING NO. 19BR-108

Top of Rock Elev. 573.90 ft

Station \_\_\_\_\_

Begin Core Elev. 573.90 ft

Offset \_\_\_\_\_

Ground Surface Elev. 611.60 ft

DEPTH (ft)	CORE (#)	RECOVERY (%)	R.Q.D. (%)	CORE TIME (min/ft)	STRENGTH (tsf)	
573.90	Run 1	77	0	3.4		LIMESTONE - gray, fine grained, dense, hard, very thin to thin bedded, horizontal to subhorizontal slightly rough fractures with some high angle (60° to 90°) fractures, slightly weathered with faint iron stains on some fractures, occasional stylolites.
-40						
	Run 2	93	23	4	503.4	
-45						
	Run 3	100	45	3.5		
563.70						
						End of Boring
-50						
-55						

Color pictures of the cores Yes

Cores will be stored for examination until \_\_\_\_\_

The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)





Illinois Department of Transportation

Division of Highways JCI

ROCK CORE LOG

Date 9/12/07

ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY KJB

SECTION LOCATION (N=561568.395, E=2459838.396), SEC. 32, TWP. 18N, RNG. 1W, 4th PM

COUNTY Rock Island CORING METHOD NQ Core

STRUCT. NO. CORING BARREL TYPE & SIZE NQ Wireline

Station

Core Diameter 1.8 in

BORING NO. 19BR-109

Top of Rock Elev. 583.80 ft

Station

Begin Core Elev. 583.80 ft

Offset

Ground Surface Elev. 614.30 ft

DEPTH (ft)

CORE (#)

RECOVERY (%)

R.Q.D. (%)

CORE TIME (min/ft)

STRENGTH (tsf)

CLAY SHALE - bluish to greenish gray, clayey, hard, no laminations, slightly weathered. 583.80 Run 1 86 60 3.3 690.7

- intermixed sandy shale and limestone at 30.5'-32.2'. 582.10

LIMESTONE - gray with yellowish brown and iron-staining along fractures in the upper 6 ft, fine grained, occasional stylolites, dense, hard, sound, thin bedded, primarily uneven horizontal to subhorizontal fractures with occasional high angle fractures, slightly weathered to fresh.

- iron stained fractures at 32.8', 36.0', 36.2', 36.5', 36.8', 38.2'. -35

- vertical fracture at 35.4'-35.6'; 80° to 60° curvilinear fracture at 36.6'-36.8'; 60° jagged brown-stained fracture at 36.4'. Run 2 91 74 2.8

- fresh rock below 38.2'. -40

- [Note: RQD shown for Run 1 is based on length of recovered rock, not on length of run. RQD= 40% for entire length of run (including material washed away from augers and ground up during the drilling operations).] 572.00

End of Boring -45

Color pictures of the cores Yes

Cores will be stored for examination until

The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)





**Illinois Department of Transportation**

Division of Highways  
Illinois Department of Transportation

**SOIL BORING LOG**

Date 2/19/11

ROUTE FAI 74 DESCRIPTION 081-0099, 0100 P92-032-01 I-74 over 19th Street, north of 12th Avenue LOGGED BY M. Jacoby

SECTION 81-1HB LOCATION Moline Twp. - 32SE, SEC., TWP. 18N, RNG. 1W

COUNTY Rock Island DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME-45 Automatic

STRUCT. NO. 081-0099, 0100  
Station \_\_\_\_\_

BORING NO. B-2  
Station 49+75  
Offset 0.00ft off BL - 19th St.  
Ground Surface Elev. 610.26 ft

DEPTH TH (ft)	BLOW S (/6")	UCS Qu (tsf)	MOIST T (%)	Surface Water Elev.	ft	DEPTH TH (ft)	BLOW S (/6")	UCS Qu (tsf)	MOIST T (%)
				Stream Bed Elev.	ft				
				Groundwater Elev.:					
				First Encounter	Dry ft				
				Upon Completion	Dry ft				
				After 24 Hrs.	590.8 ft				
608.26		1.8 P	14	VERY STIFF gray CLAY LOAM TILL (continued)	589.26	7 8	3.0 B	13	
606.76	5 7 9	2.7 S	15	VERY STIFF gray CLAY LOAM TILL	586.76	3 6 10	2.7 B	13	
604.26	2 4 14	1.2 B	15	VERY STIFF gray CLAY LOAM TILL	584.26	2 6 9	2.7 B	13	
601.76	4 5 5	2.3 P	21	VERY STIFF gray CLAY LOAM TILL	581.76	2 6 10	2.2 B	14	
599.26	0 3 3	1.0 B	16	VERY STIFF gray CLAY LOAM TILL	579.26	4 12 25	2.3 S	17	
596.26	4 6 7	1.5 P		STIFF gray CLAY TILL with DOLOMITE lenses	576.76	15 15 6	1.3 P	27	
594.26	12 15 7			STIFF gray CLAY TILL	575.26	100/6"		52	
591.26	2 4 7			Borehole continued with rock coring.					
	4								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)





**Illinois Department of Transportation**

Division of Highways  
Illinois Department of Transportation

**SOIL BORING LOG**

Date 3/23/11

ROUTE FAI 74 DESCRIPTION 081-0099, 0100 P92-032-01 I-74 over 19th Street, north of 12th Avenue LOGGED BY W. Garza

SECTION 81-1HB LOCATION Moline Twp. - 32SE, SEC., TWP. 18N, RNG. 1W

COUNTY Rock Island DRILLING METHOD Hollow Stem Auger HAMMER TYPE B-53 Diedrich Automatic

STRUCT. NO. 081-0099, 0100  
Station \_\_\_\_\_

BORING NO. B-6  
Station 93+38  
Offset 4.00ft Rt BL - NB Ramp  
Ground Surface Elev. 653.98 ft

DEPTH (ft)	BLOWS (/6")	UCS (tsf)	MOIST (%)	Surface Water Elev. _____ ft	DEPTH (ft)	BLOWS (/6")	UCS (tsf)	MOIST (%)
				Stream Bed Elev. _____ ft				
				Groundwater Elev.:				
				First Encounter <u>621.5</u> ft ▼				
				Upon Completion _____ ft				
				After 24 Hrs. <u>609.0</u> ft ▼				
651.48		2.0 P	13		632.48	8, 13, 15	2.8 P	17
649.98	4, 5, 5	3.1 B	14		629.98	6, 6, 13	3.5 S	16
647.48	5, 6, 11	1.7 B	26		627.48	7, 9, 13	2.0 P	18
644.98	3, 5, 6	2.5 B	19		624.98	14, 10, 15	1.5 P	13
642.48	3, 3, 4	2.1 B	15		622.48	8, 12, 13	3.6 P	19
639.48	5, 5, 9	1.7 B	20		619.48	3, 5, 9	2.8 P	21
637.48	6, 7, 12	3.3 B	13		617.48	5, 8, 12	3.7 B	14
634.98	4, 6, 9	3.3 B	17		614.98	2, 5, 9	2.1 B	15

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



**Illinois Department of Transportation**

Division of Highways  
Illinois Department of Transportation

**SOIL BORING LOG**

Date 3/23/11

ROUTE FAI 74 DESCRIPTION 081-0099, 0100 P92-032-01 I-74 over 19th Street, north of 12th Avenue LOGGED BY W. Garza

SECTION 81-1HB LOCATION Moline Twp. - 32SE, SEC., TWP. 18N, RNG. 1W

COUNTY Rock Island DRILLING METHOD Hollow Stem Auger HAMMER TYPE B-53 Diedrich Automatic

STRUCT. NO. 081-0099, 0100  
Station \_\_\_\_\_

BORING NO. B-6  
Station 93+38  
Offset 4.00ft Rt BL - NB Ramp  
Ground Surface Elev. 653.98 ft

DEPTH H S	BL OW S	UCS Qu	MOIST S T	Surface Water Elev. _____ ft	DEPTH H S	BL OW S	UCS Qu	MOIST S T
(ft)	(/6")	(tsf)	(%)	Stream Bed Elev. _____ ft	(ft)	(/6")	(tsf)	(%)
612.48	6 10 16	3.7 B	13	Groundwater Elev.:	592.48	10 17 25	5.0 B	13
				First Encounter <u>621.5</u> ft ▼				
609.98	6 7 12	3.3 B	14	Upon Completion _____ ft	589.98	5 9 13	3.1 B	14
				After <u>24</u> Hrs. <u>609.0</u> ft ▼				
607.48	5 8 13	2.3 S	15		587.48	4 9 15	2.9 B	14
604.98	5 8 12	2.9 B	14		584.98	12 22 28	8.2 B	14
602.48	7 9 16	3.5 B	14		582.48	9 13 17	2.5 B	15
599.98	5 7 12	3.1 B	14		579.98	6 12 23	5.0 B	14
597.48	1 3 7	2.3 B	15		577.48	6 10 15	3.9 B	15
594.98	5 11 18	5.6 B	13		574.98	4 8 14	3.3 B	16

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



**Illinois Department of Transportation**

Division of Highways  
Illinois Department of Transportation

**SOIL BORING LOG**

Date 3/23/11

ROUTE FAI 74 DESCRIPTION 081-0099, 0100 P92-032-01 I-74 over 19th Street, north of 12th Avenue LOGGED BY W. Garza

SECTION 81-1HB LOCATION Moline Twp. - 32SE, SEC. , TWP. 18N, RNG. 1W

COUNTY Rock Island DRILLING METHOD Hollow Stem Auger HAMMER TYPE B-53 Diedrich Automatic

STRUCT. NO. 081-0099, 0100  
Station \_\_\_\_\_

BORING NO. B-6  
Station 93+38  
Offset 4.00ft Rt BL - NB Ramp  
Ground Surface Elev. 653.98 ft

D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)
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Surface Water Elev. \_\_\_\_\_ ft  
Stream Bed Elev. \_\_\_\_\_ ft  
Groundwater Elev.:  
First Encounter 621.5 ft ▼  
Upon Completion \_\_\_\_\_ ft  
After 24 Hrs. 609.0 ft ▼

VERY STIFF gray CLAY LOAM TILL	8 13 18	3.5 B	16	572.48
HARD gray CLAY LOAM TILL	10 17 24	4.5 B	16	569.98
HARD gray CLAY LOAM TILL	8 13 26	4.3 B	15	567.48
VERY STIFF gray SILTY LOAM TILL with SANDSTONE fragments	6 12 21	3.3 P	20	564.48
VERY DENSE gray dirty SAND with medium GRAVEL	62 100/2'			562.48
VERY DENSE gray dirty SAND with DOLOMITE fragments Auger Refusal @ 93.0'	100/2'			560.98
End of Boring				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrator)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



# SOIL BORING LOG

ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY KB

SECTION I-74 Bridge over Mississippi River LOCATION (N=562585.063, E=2459363.329), SEC. 32, TWP. 18N, RNG. 1W, 4<sup>th</sup> PM

COUNTY Rock Island DRILLING METHOD HSA, CME 55 HAMMER TYPE CME AUTOMATIC

STRUCT. NO. Station	BORING NO. Station Offset Ground Surface Elev.	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. Stream Bed Elev.	Groundwater Elev.: First Encounter Upon Completion After Hrs.	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)
	592.08						569.1				
<b>Silt (ML)</b> gray transitioning to grayish brown, moist, trace of fine to medium grained sand, loose			2								
			2								
			2						3		
			2						7	1.4	
			2	0.5					7		
	586.08		2	P				-25			
<b>Gravelly Silt (ML)</b> yellowish brown, moist, low plasticity, loose			3								
			4								
	584.08		4				565.08				
<b>Gravelly Sand (SP)</b> yellowish brown, moist, medium dense			4								
			5								
			6								
	582.08	-10						-30			
<b>Silt With Trace Of Sand (ML)</b> yellowish brown, moist, firm, with trace of sands, loose Rimac: Pu = 107 lbs			2								
			3	2.0							
			4								
	580.08										
<b>Clay (CL)</b> gray, moist, stiff, low plasticity, trace of fine sand			3								
			5	3.0							
			5	P							
			3								
		-15	4	3.5				-35			
			5	P							
	576.08										
<b>Sandy Silt (ML)</b> gray, moist, stiff to very stiff			3								
			3	2.5							
			3	P							
		-20						-40			

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











**Illinois Department of Transportation**  
 Division of Highways  
 CH2M HILL

# SOIL BORING LOG

Date 9/28/07

ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY KB

SECTION I-74 Bridge over Mississippi River LOCATION (N=562128.284, E=2459547.702), SEC. 32, TWP. 18N, RNG. 1W, 4<sup>th</sup> PM

COUNTY Rock Island DRILLING METHOD HSA, CME 55 HAMMER TYPE CME AUTOMATIC

STRUCT. NO. _____ Station _____	D E P T H  (ft)	B L O W S  (/6")	U C S  Qu (tsf)	M O I S T  (%)	Surface Water Elev. _____ ft	D E P T H  (ft)	B L O W S  (/6")	U C S  Qu (tsf)	M O I S T  (%)
BORING NO. <u>ILR0608</u> Station _____ Offset _____ Ground Surface Elev. <u>602.39</u> ft					Stream Bed Elev. _____ ft				
<b>Silt (ML)</b> yellowish brown, moist, loose, trace fine to coarse sand									
		2							
		3							
		5					20		
	598.39						5		
<b>Sandy Silt (ML)</b> brown to dark brown, moist, very loose to medium dense		8					5		
		10							
	-5	10					-25		
		3							
		4							
		4							
		3						3	
		3						4	
		4						7	
	592.39						-30		
<b>Fine to Coarse Sand (SP)</b> yellowish brown, moist, trace of fine to medium gravel									
	590.39								
<b>Silt (ML)</b> yellowish brown, moist, firm, trace fine to medium sand		3							
		3						6	
		5						6	
		3						10	
		4							
	-15	4					-35		
		7						50/5"	
		8							
		10							
	582.39						-40		

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





**Illinois Department of Transportation**

Division of Highways  
CH2M HILL

**SOIL BORING LOG**

Date 10/2/07

ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY KB

SECTION I-74 Bridge over Mississippi River LOCATION (N=562089.377, E=2459557.006), SEC. 32, TWP. 18N, RNG. 1W, 4<sup>th</sup> PM

COUNTY Rock Island DRILLING METHOD HSA, CME 55 HAMMER TYPE CME AUTOMATIC

STRUCT. NO. _____ Station _____	D E P T H  (ft)	B L O W S  (/6")	U C S  Qu (tsf)	M O I S T  (%)	Surface Water Elev. _____ ft	D E P T H  (ft)	B L O W S  (/6")	U C S  Qu (tsf)	M O I S T  (%)
BORING NO. <u>ILR0609</u> Station _____ Offset _____ Ground Surface Elev. <u>603.53</u> ft					Stream Bed Elev. _____ ft				
					First Encounter _____ ft				
					Upon Completion _____ ft				
					After _____ Hrs. _____ ft				
<b>Silty Fine to Coarse Sand (SM)</b> grayish brown, moist, medium dense		3			<b>Clay (CL)</b> gray, moist, very stiff to hard				
		7							
		9				3			
599.53						5	4.2		
<b>Well Graded Sand (SW)</b> yellowish brown, slightly moist, loose		3				8	B		
	-5	4				-25			
		4							
597.53									
<b>Clay (CH)</b> dark brown, moist, soft			0.5						
595.53									
<b>Sandy Silt (ML)</b> yellowish brown, moist, loose							3		
							5	2.0	
							9	P	
	-10	2				-30			
		2	2.0						
		3							
		4							
		5							
		7					3		
589.53							5	4.0	
<b>Silt (ML)</b> yellowish brown, moist, medium dense, trace coarse sand		3					11	P	
	-15	5	5.4			-35			
		9	S						
		3					21		
		5	3.0				44		
		7	P				50/3"		
583.53	-20					-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



# SOIL BORING LOG

ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY KB  
 SECTION I-74 Bridge over Mississippi River LOCATION (N=562089.377, E=2459557.006), SEC. 32, TWP. 18N, RNG. 1W, 4<sup>th</sup> PM  
 COUNTY Rock Island DRILLING METHOD HSA, CME 55 HAMMER TYPE CME AUTOMATIC

STRUCT. NO.	D E P T H  H	B L O W S  S	U C S  Qu	M O I S T  T	Surface Water Elev.
Station					ft
BORING NO. <u>ILR0609</u>					Stream Bed Elev. _____ ft
Station _____					Groundwater Elev.:
Offset _____					First Encounter _____ ft
Ground Surface Elev. <u>603.53</u> ft	(ft)	(/6")	(tsf)	(%)	Upon Completion _____ ft
					After _____ Hrs. _____ ft
Clay (CL) gray, moist, very stiff to hard (continued)	562.53				
End of Boring					
	-45				
	-50				
	-55				
	-60				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)





**Illinois Department of Transportation**

Division of Highways  
CH2M HILL

# SOIL BORING LOG

Date 10/9/07

ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY se, Kaustav/SCO

SECTION I-74 Bridge over Mississippi River LOCATION (N=561497.653, E=2459812.286), SEC. 32, TWP. 18N, RNG. 1W, 4<sup>th</sup> PM

COUNTY Rock Island DRILLING METHOD HSA, CME 55 HAMMER TYPE CME AUTOMATIC

STRUCT. NO. Station	DEPTH (ft)	BLOW COUNT (/6")	UNIFORM SAND (tsf)	MOISTURE CONTENT (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft	DEPTH (ft)	BLOW COUNT (/6")	UNIFORM SAND (tsf)	MOISTURE CONTENT (%)
Clay (CL) gray, moist, very stiff to hard, trace sand and fine angular gravel		1			Clay (CL) gray to greenish gray, moist, trace fine to coarse grained sand, stiff to hard (continued)				
		2	4.1						
		5	S				3		
		2					4	3.0	
		7	2.5				9	P	
	-5	9	P		-25				
	635.39								
Clay (CL) gray to greenish gray, moist, trace fine to coarse grained sand, stiff to hard		1			shale in tip				
		2							
		2					3		
							6	4.5	
							8	P	
	-10				-30				
		2							
RIMAC: Pu = 31lbs (Bulging)		2	1.9			4			
		4	B			10	4.5		
						26	P		
	-15				606.39	-35			
					End of Boring				
		2							
RIMAC: Pu = 68lbs (bulging)		4	4.1						
		6	B						
	-20				-40				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



# SOIL BORING LOG

Date 6/21/10ROUTE F.A.I. 74 DESCRIPTION I-74 Over Mississippi River LOGGED BY JMBSECTION 81B LOCATION SE¼ of SEC. 32, TWP. 18N, RNG. 1W, 4th P.M.COUNTY Rock Island DRILLING METHOD Hollow Stem Auger HAMMER TYPE Auto

STRUCT. NO. \_\_\_\_\_  
 Station \_\_\_\_\_  
 BORING NO. RMP 7th B-04  
 Station 52J+1 J  
 Offset FF' St.  
 Ground Surface Elev. 610.7 ft

D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)
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Surface Water Elev. \_\_\_\_\_  
 Stream Bed Elev. \_\_\_\_\_  
 Groundwater Elev.:  
 First Encounter NE ft  
 Upon Completion \_\_\_\_\_ ft  
 After \_\_\_\_\_ Hrs. \_\_\_\_\_ ft

TOPSOIL	610.30			
FILL - Brown, moist, stiff, lean CLAY with trace very fine- to fine-grained sand	2	4 6 7	4.50P	11
	607.70			
FILL - Dark brown, moist, medium, SILT with trace fine-grained sand	4	5 4 4	1.15B	18
	605.20			
FILL - Dark brown, moist, stiff, clayey SILT with trace gravel	6	3 6 6	1.80P	23
	600.70			
Light brown, moist, very stiff, lean CLAY with trace fine-grained sand and gravel	10	4 6 6	2.09B	10
	598.70			
Brown, wet, medium dense, silty, clayey SAND with trace gravel	12	5 8 9	1.50P	15
	598.20			
Gray, moist, stiff, lean CLAY with trace gravel	14	5 6 9	1.56B	14
	595.70			
End of Boring				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)





# SOIL BORING LOG

Date 6/21/10ROUTE F.A.I. 74 DESCRIPTION I-74 Over Mississippi River LOGGED BY JMBSECTION 81B LOCATION SE¼ of SEC. 32, TWP. 18N, RNG. 1W, 4th P.M.COUNTY Rock Island DRILLING METHOD Hollow Stem Auger HAMMER TYPE Auto

STRUCT. NO. \_\_\_\_\_  
 Station \_\_\_\_\_  
 BORING NO. RMP 7th B-05  
 Station 521 + 61  
 Offset 1' Ut.  
 Ground Surface Elev. 602.2 ft

D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)
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Surface Water Elev. \_\_\_\_\_  
 Stream Bed Elev. \_\_\_\_\_  
 Groundwater Elev.:  
 First Encounter \_\_\_\_\_ NE ft  
 Upon Completion \_\_\_\_\_ ft  
 After \_\_\_\_\_ Hrs. \_\_\_\_\_ ft

TOPSOIL	601.90				
FILL - Dark brown, moist, medium, CLAY with trace silt	2	5 4 4	2.80P	30	
	599.20				
FILL - Dark gray, moist, medium, clayey SILT	4	2 2 3	0.25B	24	
	596.20				
FILL - Gray, moist, loose, silty, Fine-grained SAND	6	2 2 3	0.80P	18	
	594.20				
FILL - Dark grayish brown, moist, stiff, silty CLAY with fine-grained sand	8	6 6 4		18	
	591.70				
Brown, moist, stiff, lean CLAY with trace silt	12	3 5 6	1.50P	17	
	588.20				
Gray, moist, stiff, lean CLAY with very fine-grained sand and gravel	14	5 6 8	1.36B	15	
	587.20				
End of Boring					

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)





# SOIL BORING LOG

Date 6/21/10

ROUTE F.A.I. 74 DESCRIPTION I-74 Over Mississippi River LOGGED BY JMB

SECTION 81-1-2 LOCATION NE¼ of SEC. 32, TWP. 18N, RNG. 1W, 4th P.M.

COUNTY Rock Island DRILLING METHOD Hollow Stem Auger HAMMER TYPE Auto

STRUCT. NO. 081-6015  
 Station \_\_\_\_\_  
 BORING NO. RW 06-2  
 Station 529+20  
 Offset 41' Lt.  
 Ground Surface Elev. 605.6 ft

D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)
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Surface Water Elev. \_\_\_\_\_  
 Stream Bed Elev. \_\_\_\_\_  
 Groundwater Elev.:  
 First Encounter \_\_\_\_\_ ft  
 Upon Completion 590.6 ft ∇  
 After \_\_\_\_\_ Hrs. \_\_\_\_\_ ft

TOPSOIL	605.35				
FILL - Brown with gray mottles, moist, SILT with trace fine-grained sand			3.35S	15	
	2				
	602.60				
FILL - Dark brown, moist, stiff, SILT with trace sand and gravel			2.32S	16	
	4				
		26		8	
		11			
	599.60				
FILL - Dark brown, moist, stiff, SILT with trace sand and gravel, rock fragments	6	15		12	
		8			
		3			
	8				
			0.55S	18	
				18	
				9	
	595.60				
Grayish brown, wet, medium dense, silty, clayey, medium- to coarse-grained SAND with gravel	10				
		8	2.00P	14	
		6			
	12	6			
	592.60				
Gray, moist, very stiff, silty CLAY with trace sand and gravel	14	6	1.56B	16	
		7			
		8			
	∇				
	16				
			3.49B	14	
			5.20B	13	
			3.25P	12	
	587.60				
Brown, wet, dense, silty, fine- to coarse-grained SAND with trace gravel	18				
		11		13	
		18			
		22			
	585.60				
	20				

End of Boring

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



# SOIL BORING LOG

Date 6/21/10ROUTE F.A.I. 74 DESCRIPTION I-74 Over Mississippi River LOGGED BY JMBSECTION 81-1-2 LOCATION SE¼ of SEC. 32, TWP. 18N, RNG. 1W, 4th P.M.COUNTY Rock Island DRILLING METHOD Hollow Stem Auger HAMMER TYPE Auto

STRUCT. NO. 081-6015  
 Station \_\_\_\_\_  
 BORING NO. RW 06-3  
 Station 524+37  
 Offset 39' Lt.  
 Ground Surface Elev. 595.2 ft

D E P T H	B L O W S	U C S  Qu	M O I S T
(ft)	(/6")	(tsf)	(%)

Surface Water Elev. \_\_\_\_\_  
 Stream Bed Elev. \_\_\_\_\_  
 Groundwater Elev.:  
 First Encounter \_\_\_\_\_ NE ft  
 Upon Completion \_\_\_\_\_ ft  
 After \_\_\_\_\_ Hrs. \_\_\_\_\_ ft

CONCRETE	594.95			
FILL - Brown, moist, stiff, fine-grained sandy CLAY	593.70	4		16
FILL - Brown, moist, medium dense, clayey, fine- to medium-grained SAND with trace gravel	2	5		
		6		
				9
	4			
		5		10
	6	10		
		12		
	8			
Gray, moist, stiff, silty CLAY with trace sand	587.20	7		14
		7		
	10	7		
		6	1.77B	15
	12	7		
		9		
	14	6	1.02S	14
		7		
		9		
End of Boring	580.20			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



ROUTE F.A.I. 74 DESCRIPTION I-74 Over Mississippi River LOGGED BY RPD

SECTION 81-1-2 LOCATION SE 1/4 of SEC. 32, TWP. 18N, RNG. 1W, 4th P.M.

COUNTY Rock Island DRILLING METHOD Continuous Flight Auger HAMMER TYPE Auto

STRUCT. NO. 081-6015  
Station \_\_\_\_\_  
BORING NO. RW 06-04  
Station 60+68  
Offset 63' Rt.  
Ground Surface Elev. 624.7 ft

DEPTH H S (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)
				Stream Bed Elev. _____				
				Groundwater Elev.:				
				First Encounter _____ NE ft				
				Upon Completion _____ ft				
				After _____ Hrs. _____ ft				
3.0" CONCRETE. / 624.45				FILL - Dark gray silty lean CLAY, little sand, trace gravel, with wood fragments. (continued from previous page)	6			
FILL - Dark brown with gray mottles, SILT, little clay, trace sand.	2	4.50P	13		22			
	3			Gray moist, very stiff, silty lean CLAY, with trace sand and gravel.				
	2							
					24	3	4.50P	14
	4	4.50P	19			5		
	4					10		
	7							
					26			
	4	3.00P	16					
	5							
	8				28			
	6	4.50P	16			5	4.30P	15
	11					7		
	11				30	10		
FILL - Dark gray silty lean CLAY, little sand, trace gravel, with wood fragments. / 613.70								
	3	3.30P	18					
	5				32			
	6							
					34	5	4.00P	14
		2.16B	16			8		
						10		
					589.70			
				End of Boring				
	3	3.00P	19					
	4							
	5							
	2	2.50P	22					
	5							

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

**HANSON****SOIL BORING LOG**Date 6/25/14ROUTE F.A.I. 74 DESCRIPTION I-74 Over Mississippi River LOGGED BY RPDSECTION 81-1-2 LOCATION SW¼ of SEC. 33, TWP. 18N, RNG. 1W, 4th P.M.COUNTY Rock Island DRILLING METHOD Continuous Flight Auger HAMMER TYPE Auto

STRUCT. NO. 081-6015  
 Station \_\_\_\_\_  
 BORING NO. RW 06-05  
 Station 62+58  
 Offset 22' Rt.  
 Ground Surface Elev. 644.6 ft

D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)
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Surface Water Elev. \_\_\_\_\_  
 Stream Bed Elev. \_\_\_\_\_  
 Groundwater Elev.:  
 First Encounter \_\_\_\_\_ NE ft  
 Upon Completion \_\_\_\_\_ ft  
 After \_\_\_\_\_ Hrs. \_\_\_\_\_ ft

D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)
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3.0" TOPSOIL. _____ 644.35-				FILL - Brown and gray silty lean CLAY, trace sand, trace gravel, with wood debris and brick fragments. (continued from previous page)	9		
FILL - Brown lean CLAY, trace silt, trace sand, with organics.	2	3 7 7	3.50P 15		22		
	4	1 2 5	1.75B 23		24	5 8 12	2.52S 16
	6				26		
	8	5 8 10	3.50P 17		28		
_____ 636.10							
FILL - Brown and gray silty lean CLAY, trace sand, trace gravel, with wood debris and brick fragments.	10	3 5 6	3.10B 16		30	7 9 11	3.30S 18
	12		1.60S 18 1.55S 19		32		
	14	3 6 9	3.30S 16		34	7 8 13	4.50P 16
	16				36		
	18	4 7 9	4.46S 16	38			
	20	5 7	4.50P 16	40	3 6 9	2.50P 22	
				607.60			
				FILL - Gray clayey SILT, little sand, trace gravel, with red brick fragments.			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



ROUTE F.A.I. 74 DESCRIPTION I-74 Over Mississippi River LOGGED BY RPD

SECTION 81-1-2 LOCATION SW¼ of SEC. 33, TWP. 18N, RNG. 1W, 4th P.M.

COUNTY Rock Island DRILLING METHOD Continuous Flight Auger HAMMER TYPE Auto

STRUCT. NO. 081-6015  
Station \_\_\_\_\_  
BORING NO. RW 06-05  
Station 62+58  
Offset 22' Rt.  
Ground Surface Elev. 644.6 ft

D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)
-------------------------------	--------------------------------	----------------------------	------------------------------

Surface Water Elev. \_\_\_\_\_  
Stream Bed Elev. \_\_\_\_\_  
Groundwater Elev.:  
First Encounter \_\_\_\_\_ NE ft  
Upon Completion \_\_\_\_\_ ft  
After \_\_\_\_\_ Hrs. \_\_\_\_\_ ft

FILL - Gray clayey SILT, little sand, trace gravel, with red brick fragments.  
(continued from previous page)

42			
44	5 7 9		10

597.60

Gray moist, very stiff, silty lean CLAY, with trace sand and trace gravel.

48	5 7 10	3.30S	15
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50			
52			

54	6 11 15	6.01B	12
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56			
58			

60	7 11 15	3.69B	15
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584.60

End of Boring

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)







# SOIL BORING LOG

ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY B. Karnik

SECTION I-74 Bridge over Mississippi River LOCATION (N=561446.84, E=2459814.4701), SEC. 32, TWP. 18N, RNG. 1W, 4<sup>th</sup> PM

COUNTY Rock Island DRILLING METHOD HSA, CME 55 HAMMER TYPE CME AUTOMATIC

STRUCT. NO. Station	DEPTH (ft)	BLOW COUNT (/6")	UNIFORM SAND (tsf)	MOISTURE CONTENT (%)	Surface Water Elev. Stream Bed Elev.	DEPTH (ft)	BLOW COUNT (/6")	UNIFORM SAND (tsf)	MOISTURE CONTENT (%)
BORING NO. <u>RW1007</u> Station Offset Ground Surface Elev. <u>649.91</u> ft					Groundwater Elev.: First Encounter Upon Completion After <u>    </u> Hrs.				
<b>Fill Silty Clay (CL)</b> Gray brown, moist, stiff to very stiff, with fine to coarse gravel, and some wood pieces and brick pieces throughout, fill (continued)	5 6 6 6		3.0 P		<b>Sandy Lean Clay Trace Gravel (CL)</b> Gray brown with gray vertical seams, moist, low to medium plasticity, very stiff, fossilized rootlets, trace fine to coarse, weathered till or gumbotil (continued)				
	605.91								
<b>Sandy Lean Clay Trace Gravel (CL)</b> Gray brown with gray vertical seams, moist, low to medium plasticity, very stiff, fossilized rootlets, trace fine to coarse, weathered till or gumbotil	-45 5 7 11 13		3.0 P			-65 5 9 12 14		2.5 P	
	-50					-70			
	4 6 8 10		2.5 P						
	-55					574.91 -75			
	5 6 10 13		2.5 P		<b>Fine to Medium Sand With Silt (SP-SM)</b> Gray, wet, very dense, estimated 5%-12% fines	23 29 33 34			
						572.91			
					<b>Sandy Lean Clay (CL)</b> Gray, moist, stiff, trace fine to coarse gravel, till				
	-60					-80			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)





**Illinois Department of Transportation**

Division of Highways  
CH2M HILL

**SOIL BORING LOG**

Date 11/18/05

ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY L. Hunt

SECTION I-74 Bridge over Mississippi River LOCATION (N=561781.073, E=2459588.053), SEC. 32, TWP. 18N, RNG. 1W, 4<sup>th</sup> PM

COUNTY Rock Island DRILLING METHOD HSA, CME 55 HAMMER TYPE CME AUTOMATIC

STRUCT. NO. Station	DEPTH H (ft)	BLOW S (/6")	UCS Qu (tsf)	MOIST T (%)	Surface Water Elev. _____ ft	Stream Bed Elev. _____ ft	Groundwater Elev.: First Encounter _____ ft	Upon Completion _____ ft	After _____ Hrs. _____ ft	DEPTH H (ft)	BLOW S (/6")	UCS Qu (tsf)	MOIST T (%)
BORING NO. <u>RW1808</u> Station _____ Offset _____ Ground Surface Elev. <u>634.51</u> ft													
<b>Clay (CL)</b> Clay, few sand, trace gravel, red brown and brown, dry to moist, stiff, blocky  Clay, trace gravel and sand, brown mottled orange brown and gray brown, dry to moist, stiff, blocky  Silty Clay, trace gravel, brown to red brown, dry to moist, stiff, blocky  628.51	2												
	4	3.0											
	5	P											
	6												
	5												
	5	4.5											
	6	P											
	6												
	5												
	-5	5	4.5			609.51	-25						
6	P												
7													
<b>Clayey Silt(MH)</b> Clayey Silt, trace gravel, gray brown, mottled orange brown, dry to moist, medium dense, blocky  Clayey Silt, trace gravel, gray brown, mottled orange brown, dry to moist, medium dense, blocky Gray with no mottling for 1" at 12" from top of sample Clayey Silt to Silty Clay, trace gravel and organics, gray brown, mottled orange brown, medium stiff, stratified  Clayey Silt to Clay, trace gravel, little sand, light brown and gray brown, medium stiff to stiff, stratified (gray brown - 11"; light brown - 8") 620.51	5												
	6	4.5											
	6	P											
	5												
	4												
	8	3.6											
	10	S											
	-10	10											
	4												
	7	2.9											
8	P												
10													
7													
8	4.5												
10	P												
12													
<b>Silty Clay(CL-ML)</b> Silty Clay, little sand, trace gravel, light brown, dry to moist, stiff, homogenous  620.51	-15	6	3.8										
	7	P											
	8												
	9												
<b>Silty Clay(CL-ML)</b> Silty Clay, little sand, trace gravel, light brown, moist, stiff, homogenous  Clay, little sand, trace gravel, gray brown, moist, stiff, homogenous  Clay, little sand, trace gravel, gray brown, moist, stiff, homogenous  Till - unweathered  Clay, little sand, trace gravel, gray brown, moist, stiff, homogenous													

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



**Illinois Department of Transportation**

Division of Highways  
CH2M HILL

# SOIL BORING LOG

Date 11/18/05

ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY L. Hunt

SECTION I-74 Bridge over Mississippi River LOCATION (N=561781.073, E=2459588.053), SEC. 32, TWP. 18N, RNG. 1W, 4<sup>th</sup> PM

COUNTY Rock Island DRILLING METHOD HSA, CME 55 HAMMER TYPE CME AUTOMATIC

STRUCT. NO. Station	DEPTH H	BLOW S	UCS Qu	MOIST T	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. <u>RW1808</u> Station _____ Offset _____ Ground Surface Elev. <u>634.51</u> ft	(ft)	(/6")	(tsf)	(%)	Groundwater Elev.: First Encounter _____ ft Upon Completion _____ ft After _____ Hrs. _____ ft
Clay (CL) Clay, trace gravel, little sand, light brown mottled gray brown and orange brown, dry to moist, stiff, homogenous (continued)	5 8 9 11		2.4 P		
Clay, little sand, trace gravel, gray brown, moist, stiff, homogenous					
	-45				
Clay, little sand, trace gravel, gray brown, moist, stiff, homogenous	5 9 11 13		3.3 P		
Clay, little sand, trace gravel, gray brown, moist, stiff, homogenous	5 8 10 13		3.2 P		
584.51	-50				
End of Boring					
	-55				
	-60				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



**Illinois Department of Transportation**

Division of Highways  
CH2M HILL

# SOIL BORING LOG

Date 11/17/05

ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY L. Hunt

SECTION I-74 Bridge over Mississippi River LOCATION (N=562051.32, E=2459565.966), SEC. 32, TWP. 18N, RNG. 1W, 4<sup>th</sup> PM

COUNTY Rock Island DRILLING METHOD HSA, CME 55 HAMMER TYPE CME AUTOMATIC

STRUCT. NO. _____ Station _____	D E P T H  H	B L O W S  S	U C S  Qu	M O I S T  T	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft	D E P T H  H	B L O W S  S	U C S  Qu	M O I S T  T
BORING NO. <u>RW1810</u> Station _____ Offset _____ Ground Surface Elev. <u>604.24</u> ft	(ft)	(/6")	(tsf)	(%)	Groundwater Elev.: First Encounter _____ ft Upon Completion _____ ft After _____ Hrs. _____ ft	(ft)	(/6")	(tsf)	(%)
<b>Silt (MH)</b> Silt, trace gravel, light brown to brown, dry to moist, medium dense, stratified 602.24	6 9 8 11				<b>Clay (CL)</b> Clay, trace gravel, trace organics, light brown to brown, mottled orange brown and gray brown, very stiff to hard (continued)	3 6 8 10		2.5 P	
Silt to clay, trace gravel and organics, light brown to brown, dry to moist, hard, stratified, till 600.24	7 14 11 11		4.5 P						
<b>Clay (CL)</b> Clay, trace gravel, trace organics, light brown to brown, mottled orange brown and gray brown, very stiff to hard	6 -5 7 5 6 6 7 8 10 5 5 5 -10 4					6 -25 9 11 14		2.2 P	
Fill to 12'-14'	5 5 5 5 -10 4 5 5 7 7 5 5 6 7 -15 6 6 8 9		4.5 P  4.5 P			5 6 10 11		2.6 P	
					1"-thick sandy clay seam in 34.0' sample	3 -35 6 9 12		2.3 P	
	-20					-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)





PROJECT NUMBER: <b>158835.AA.GS.01</b>	BORING NUMBER: <b>RW1812</b>	SHEET 1 OF 1
<b>SOIL BORING LOG</b>		

PROJECT : I-74 Bridge over Mississippi River, Quad Cities IA/IL      LOCATION : I-74 Ramp 7th-B (562357.1 N, 2459445.8 E)

ELEVATION : 599.0 ft MSL      DRILLING CONTRACTOR : Terracon

DRILLING METHOD AND EQUIPMENT : CME 550, Hollow Stem Auger

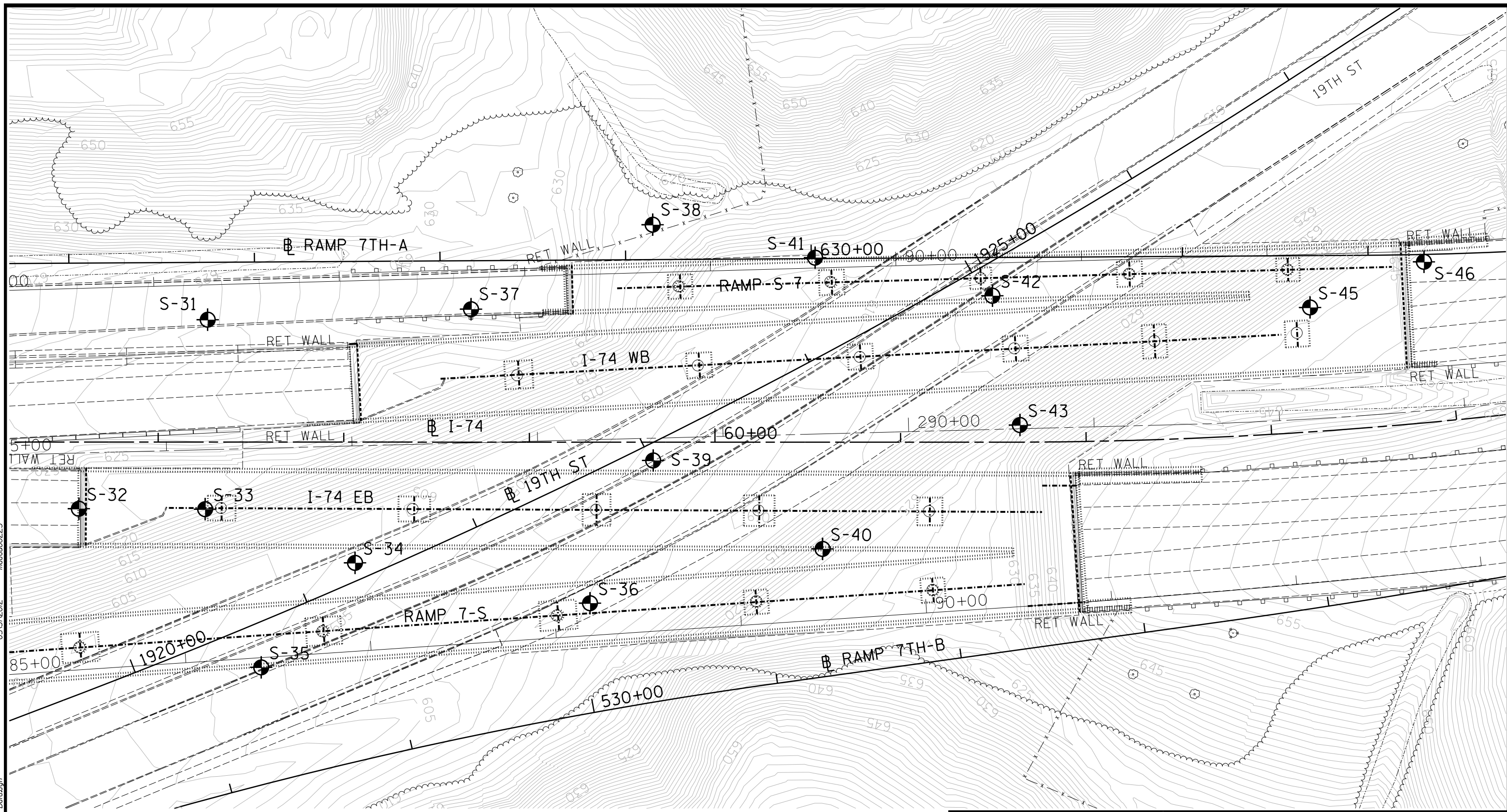
WATER LEVELS : ---      START : 11/15/05 14:27      END : 11/15/05 15:34      LOGGER : L. Hunt

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)			STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION	
	RECOVERY (in)	#TYPE	6"-6"-6"-6" (N)					
599.0	0.0	16.0	B-1-SS	3-6-6-6 (12)	Clay (CL) Clay, little gravel, dark brown, dry to moist, very hard, blocky	PP: 4.5+tsf		
	2.0			6-9-13-6 (22)				
	4.0			3-2-1-2 (3)				
5 594.0	6.0	10.0	B-3-SS	2-4-8-9 (12)			Silty Clay, trace gravel, dark brown, dry to moist, very stiff, blocky	2" of sand at bottom of sample Wc=13% LL: 27, PL: 16
	8.0	0.0	B-4-SS	7-6-7-10 (13)				
	10.0			6-6-7-8 (13)			Clay, trace gravel, gray brown, moist, hard, homogenous, till	PP: 4.5+tsf
10 589.0	12.0	24.0	B-6-SS	4-4-5-7 (9)				
	14.0			4-7-8-10 (15)			Clay, trace gravel, gray brown, moist, hard, homogenous, till	PP: 2.1tsf
	16.0	24.0	B-8-SS	3-4-6-8 (10)				
	19.0			4-7-8-9 (15)			Clay, trace gravel, gray brown, moist, hard, homogenous, till	PP: 2.0tsf
20 579.0	21.0	24.0	B-9-SS					
	24.0			4-7-8-9 (15)	Clay, trace gravel, gray brown, moist, hard, homogenous, till	PP: 2.1tsf		
25 574.0	26.0	24.0	B-10-SS					
	29.0				Clay, trace gravel, gray brown, moist, hard, homogenous, till to shale. (CL-8")	PP: 2.1tsf		
30 569.0	31.0	13.0	B-11-SS					
					Shale Light gray, moist, hard, stratified Bottom of Boring at 31.0 ft below ground surface on 11/15/05 15:34	Bottom of borehole at 31.0'; auger apparatus broke down, spitting ball bearing as it turned		
35								



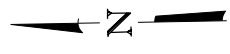


0810179-A0326-000-SubsurfLocs\_Data.dwg 05/31/2012 macdu00223



**LEGEND**

⊕ RW600 BORING LOCATION



<b>BORING LOCATION PLAN</b>	
EXISTING I-74, RAMP 7-S, & RAMP S-7 OVER 19TH STREET ROCK ISLAND COUNTY, ILLINOIS	
08H0120E	5/30/12

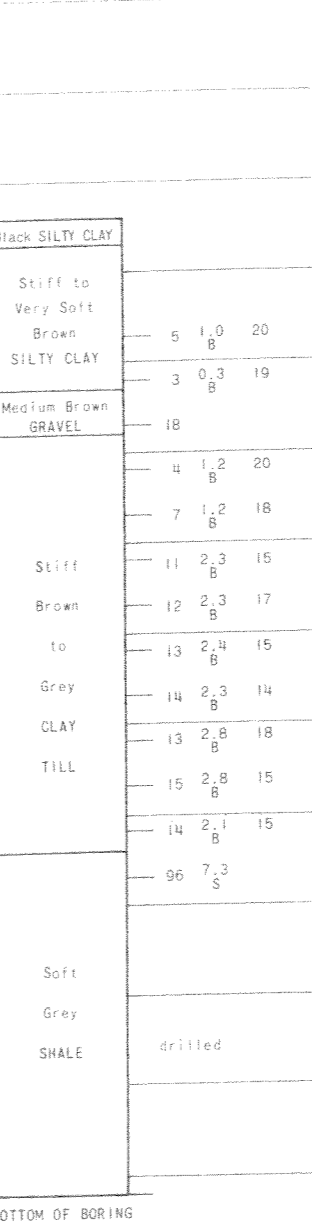
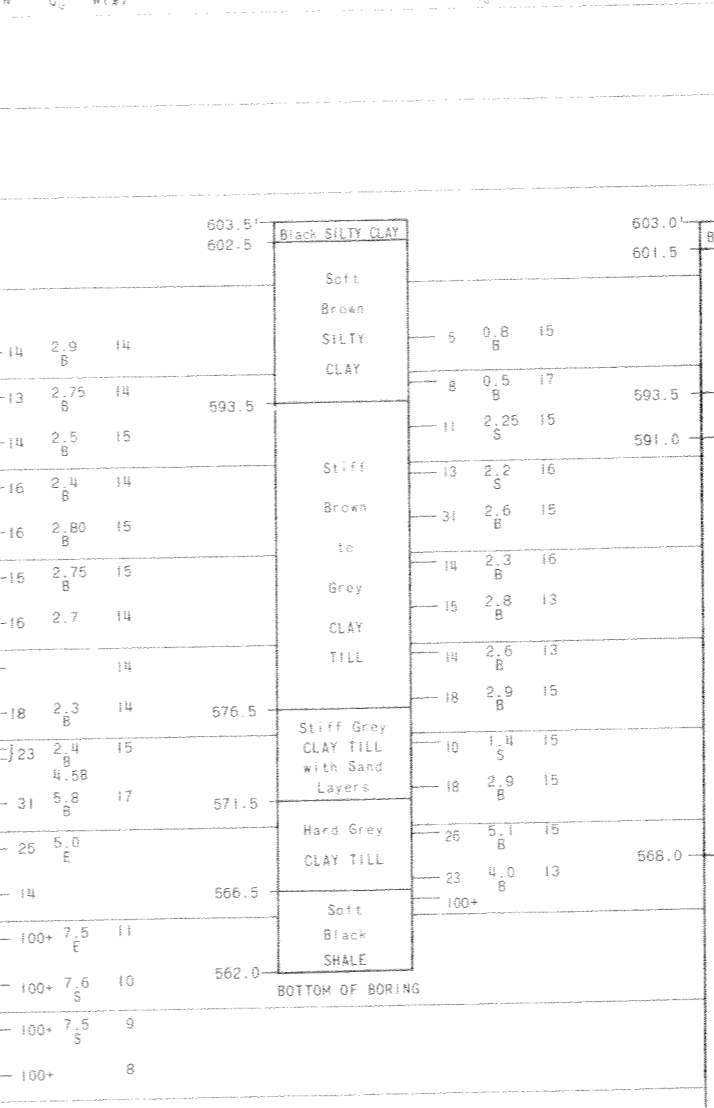
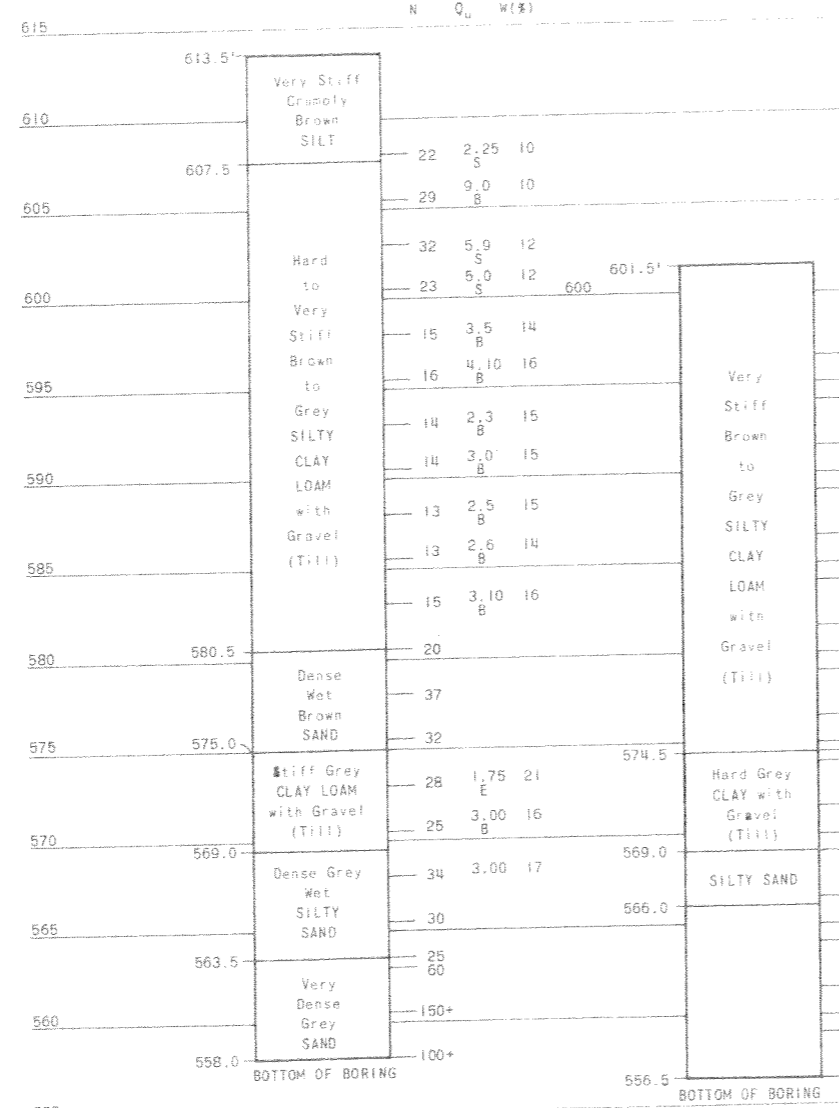
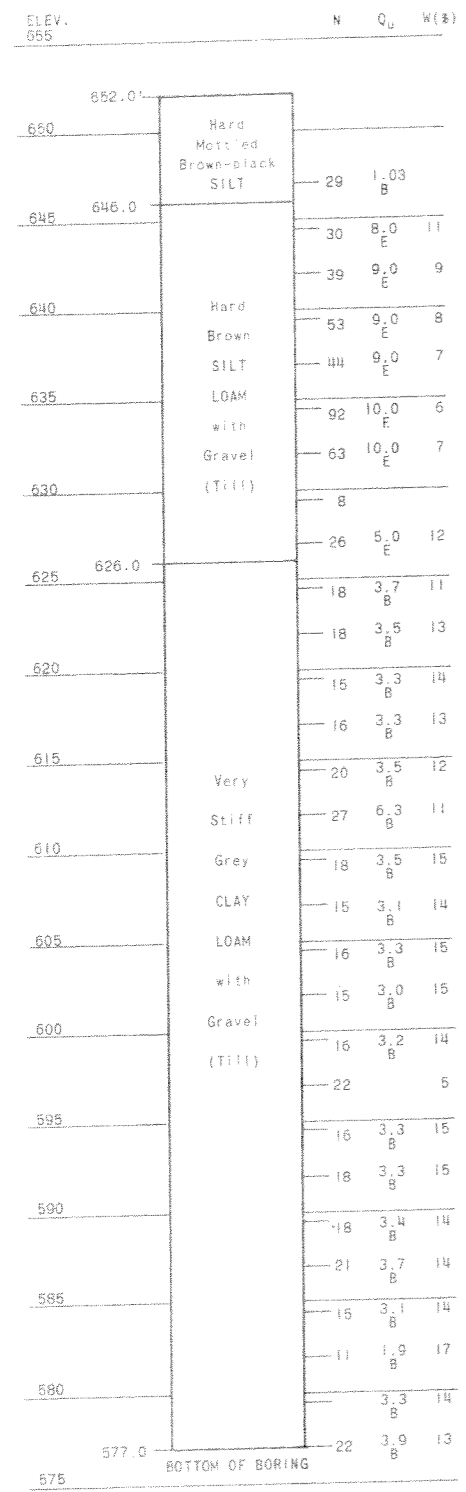
TEST BORING  
NO. S-31  
STATION 286+24 - 70' LT.

TEST BORING  
NO. S-32  
STATION 285+52 - 30' RT. Q

TEST BORING  
NO. S-33  
STATION 286+20 - 32' RT. Q

TEST BORING  
NO. S-34  
STATION 287+00 - 63' RT. Q

TEST BORING  
NO. S-35  
STATION 286+48 - 118' RT. Q



DE LEUW, CATHER & COMPANY ENGINEERS  
 DESIGNED BY M. VADKERTY  
 DRAWN BY H. DE PERCZEL  
 CHECKED G. C. WAY  
 IN CHARGE E. S. MARTINS  
 APPROVED W. G. HORN

TEST BORINGS  
 F.A.I. 74-SECTION 81-118  
 F.A.I. 74 RAMP OVER RELOC. 19TH ST.  
 ROCK ISLAND COUNTY  
 STATION 289+23.09  
 SCALE: AS NOTED DATE:

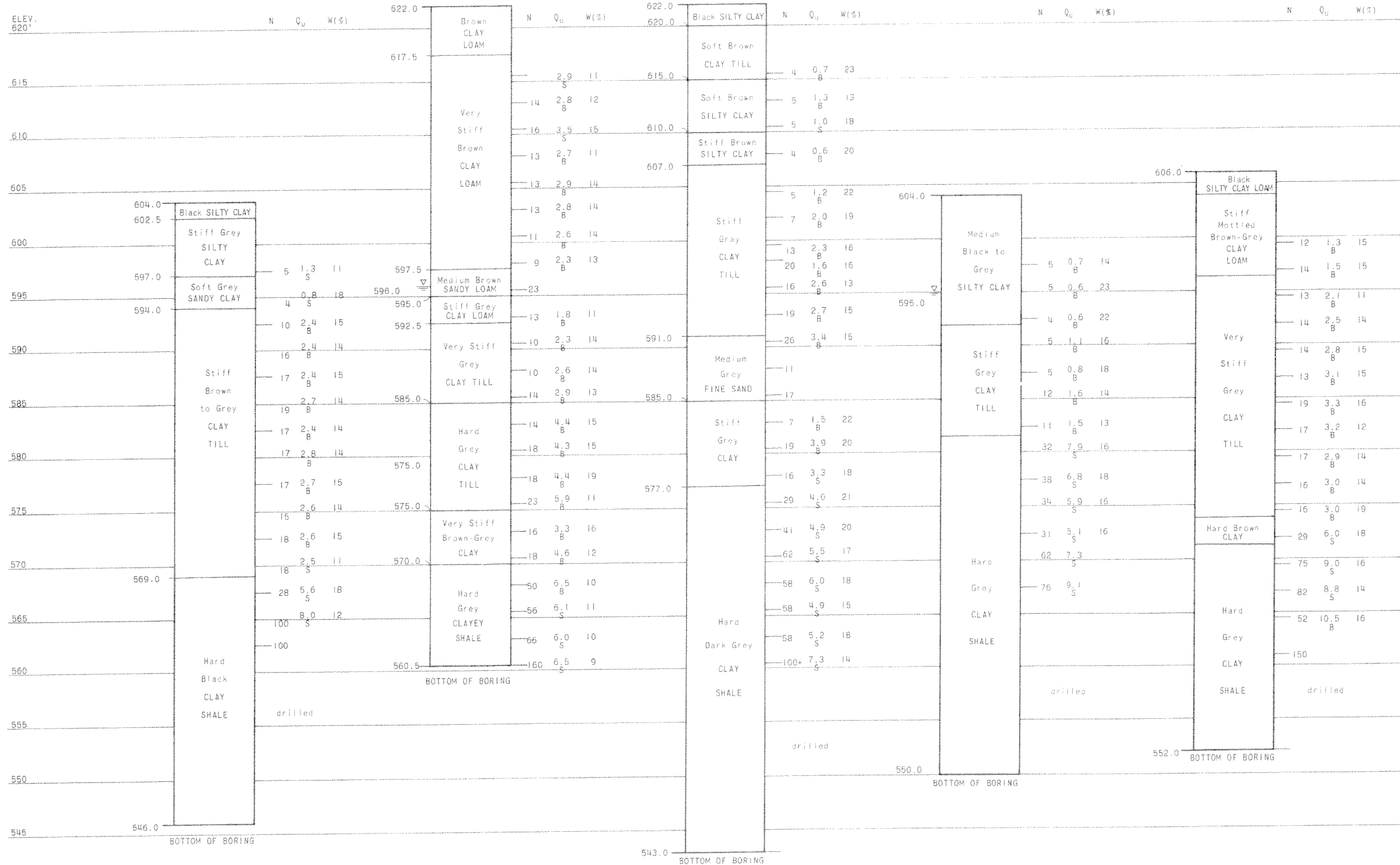
TEST BORING  
NO. S-36  
STATION 288+26 - 88' RT. ☺

TEST BORING  
NO. S-37  
STATION 287+66 - 72' LT.

TEST BORING  
NO. S-38  
STATION 288+65 - 115' LT.

TEST BORING  
NO. S-39  
STATION 288+62 - 12' RT. ☺

TEST BORING  
NO. S-40  
STATION 289+52 - 62' RT.



DE LEUW, CATHER & COMPANY ENGINEERS  
 DESIGNED BY M. VADKERTY  
 DRAWN BY H. DE PERCZEL  
 CHECKED G. C. WAY  
 IN CHARGE E. S. MARTINS  
 APPROVED W.G. HORN

TEST BORINGS  
 F.A.I. 74-SECTION 81-1HB  
 F.A.I. 74 B RAMPS OVER RELOC. 19TH ST.  
 ROCK ISLAND COUNTY  
 STATION 289 + 23.09

SCALE: AS NOTED DATE:

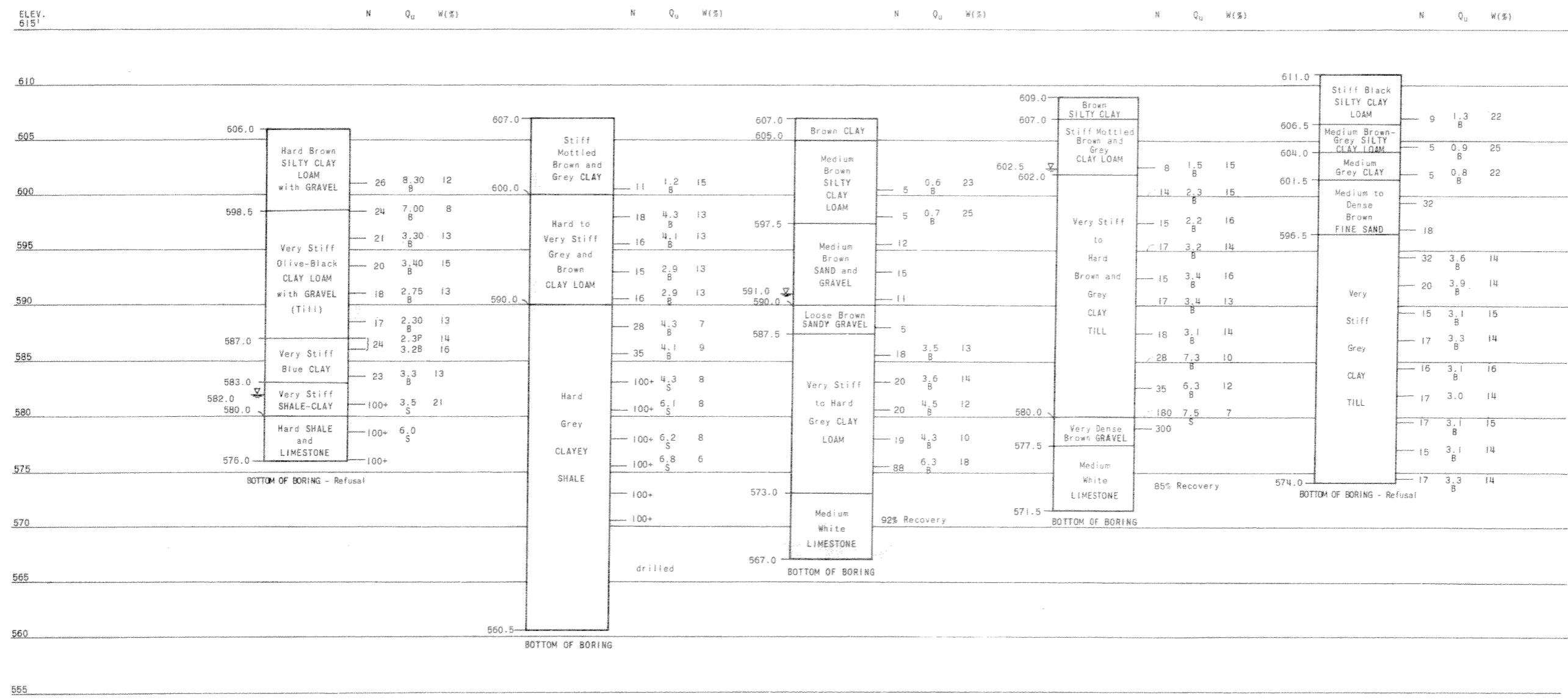
TEST BORING  
NO. S-41  
STATION 289+52 - 95' LT.

TEST BORING  
NO. S-42  
STATION 290+47 - 72' LT.

TEST BORING  
NO. S-43  
STATION 290+60 - 2' LT.

TEST BORING  
NO. S-45  
STATION 292+20 - 60' LT.

TEST BORING  
NO. S-46  
STATION 292+85 - 80' LT.



DE LEUW, CATHAR & COMPANY ENGINEERS  
 DESIGNED BY M. VADKERTY  
 DRAWN BY H. DE PERCZEL  
 CHECKED G. C. WAY  
 IN CHARGE E. S. MARTINS  
 APPROVED W.G. HORN

TEST BORINGS  
 F.A.I. 74-SECTION 81-IHB  
 F.A.I. 74 B RAMP OVER RELOC. 19TH ST.  
 ROCK ISLAND COUNTY  
 STATION 289+23.09  
 SCALE: AS NOTED DATE:

**Hanson Professional Services Inc.**  
**Unconfined Compression Test Report (ASTM D2166)**

Date 8/31/10

Checked By JCC

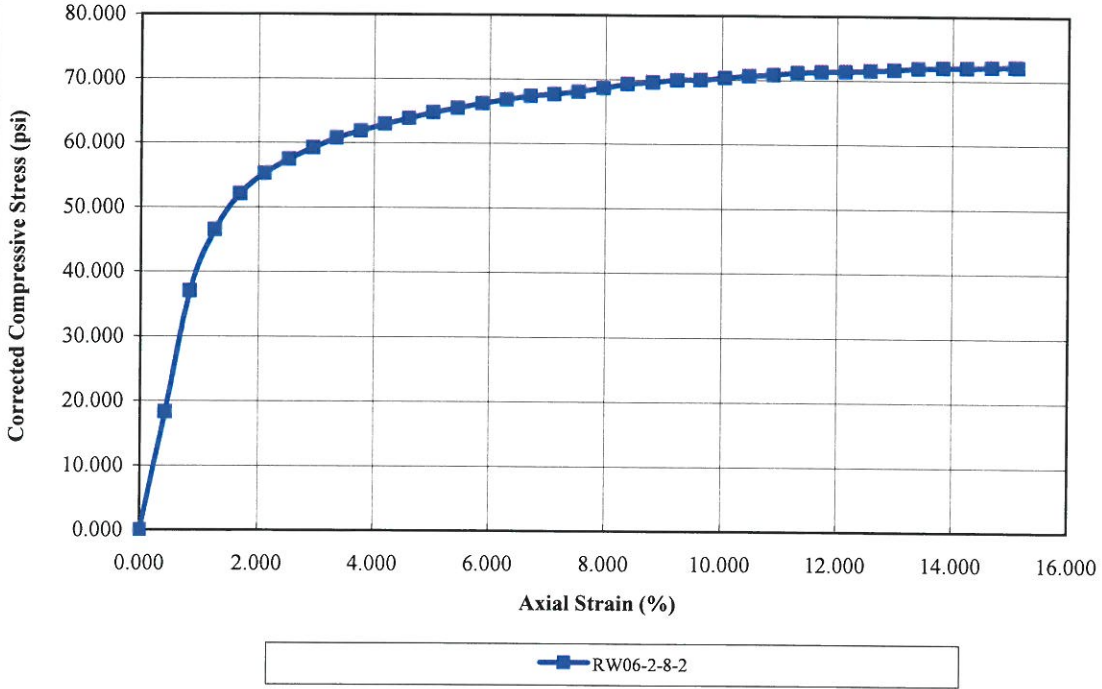
Date

Computed By

Date 8/12/10

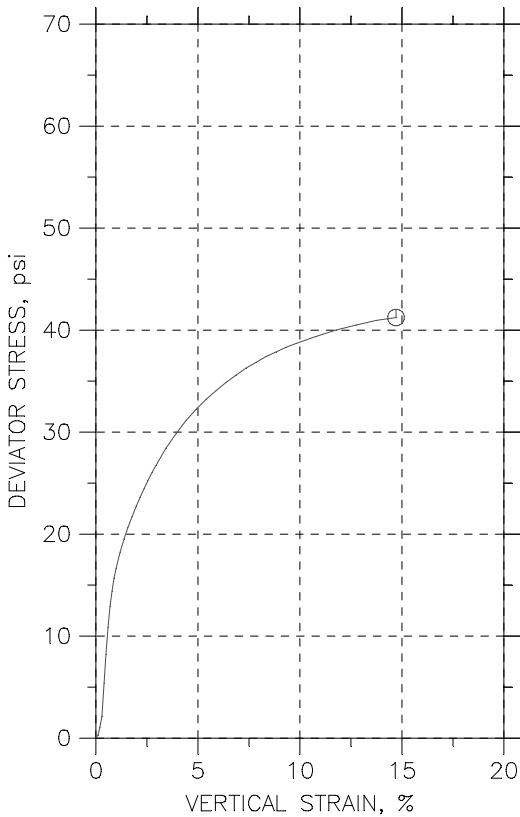
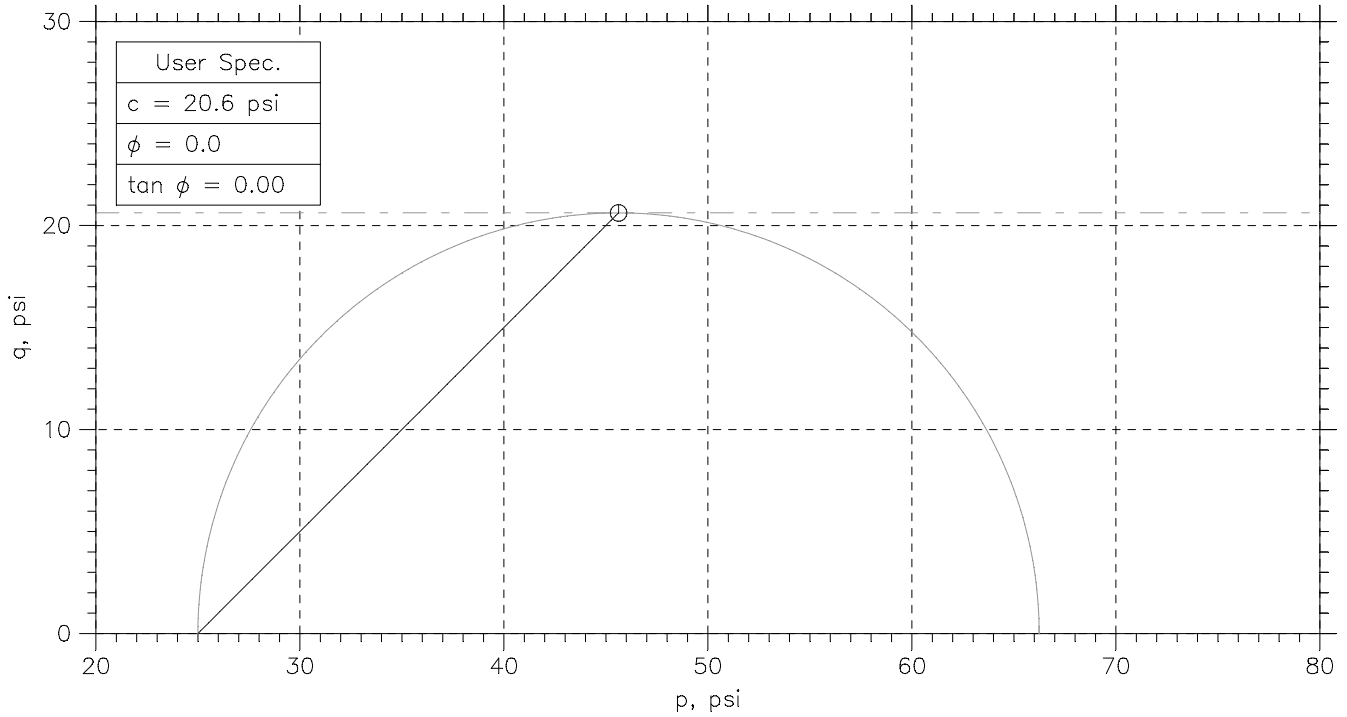
Tested By Rin

**Compressive Stress Axial Strain Curve**



Before Test	Specimen			
	A	B	C	D
Water Content (%)		12.60		
Dry Density (pcf)		124.100		
Saturation (%)		100.21		
Void Ratio		0.33		
Diameter (in)		2.886		
Height (in)		5.909		
Test Data	A	B	C	D
Unconfined Strength (psi)		72.205		
Undrained Shear Strength (tsf)		2.599		
Undrained Shear Strength (psi)		36.102		
Rate of Strain (in/min)		0.075000		
Strain at Failure (%)		15.08		
Description				
Project Information		Specimen Description		
Project Num	08H0120E			
Project	I-74 Mississippi River Bridge	RW06-2-8-2	Gray vf. sandy silty clay (tr. c. sand).	
Depth	16.5-17.0			
Sample #	8-2			
Client	<b>Test Variables</b>			
	Specific Gravity	2.65		
	Liquid Limit:			
	Plastic Limit:			
Remarks				

# UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850



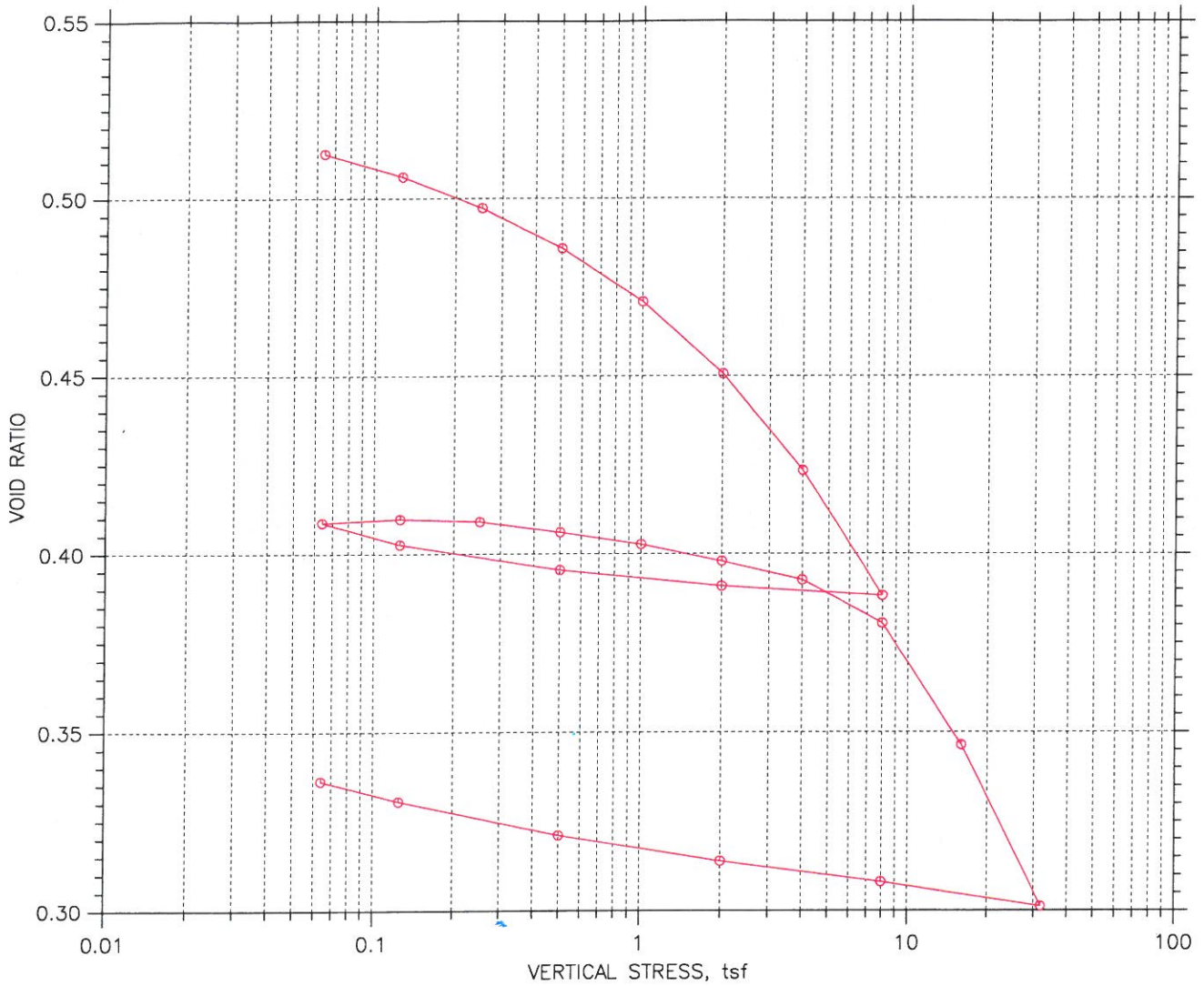
Symbol	⊕			
Sample No.	5-3			
Test No.	1			
Depth	8.7-9.2			
Tested by	RIN			
Test Date	8/17/10			
Checked by	JCC			
Check Date				
Diameter, in	2.827			
Height, in	5.601			
Water Content, %	9.3			
Dry Density, pcf	121.2			
Saturation, %	67.7			
Void Ratio	0.365			
Confining Stress, psi	25			
Undrained Strength, psi	20.62			
Max. Dev. Stress, psi	41.24			
Strain at Failure, %	14.7			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.65			
Liquid Limit	0			
Plastic Limit	0			
Plasticity Index	0			

	Project: I-74 Mississippi River				
	Location: Quad Cities				
	Project No.: 08H0120E				
	Boring No.: RW06-2				
	Sample Type: Tube				
	Description: Brn. gray f. sandy clayey silt / so. sm. gravel.				
Remarks: 2500 # Load Cell Loadtrac II # 258112 LVDT55306					

Phase calculations based on start of test.

# CONSOLIDATION TEST DATA

## SUMMARY REPORT



		Before Test	After Test
Overburden Pressure, tsf:		18.27	13.92
Preconsolidation Pressure, tsf:		108.92	123.79
Compression Index:		93.33	109.66
Diameter: 2.5 in	Height: 0.994 in	Void Ratio	
LL: 0	PL: 0	0.52	0.34
PI: 0	GS: 2.65		

Project: 174 Mississippi River		Location: Quad Cities	Project No.: 08H0120E
Boring No.: RW06-2		Tested By: RIN	Checked By: JCC
Sample No.: 5-2		Test Date: 8/24/10	Depth: 8.5-8.7
Test No.: 1		Sample Type: Tube	Elevation: N/A
Description: Brn. gray f. sandy clayey silt.			
Remarks:			

CONSOLIDATION TEST DATA

Project: I74 Mississippi River  
 Boring No.: RW06-2  
 Sample No.: 5-2  
 Test No.: 1

Location: Quad Cities  
 Tested By: RIN  
 Test Date: 8/24/10  
 Sample Type: Tube

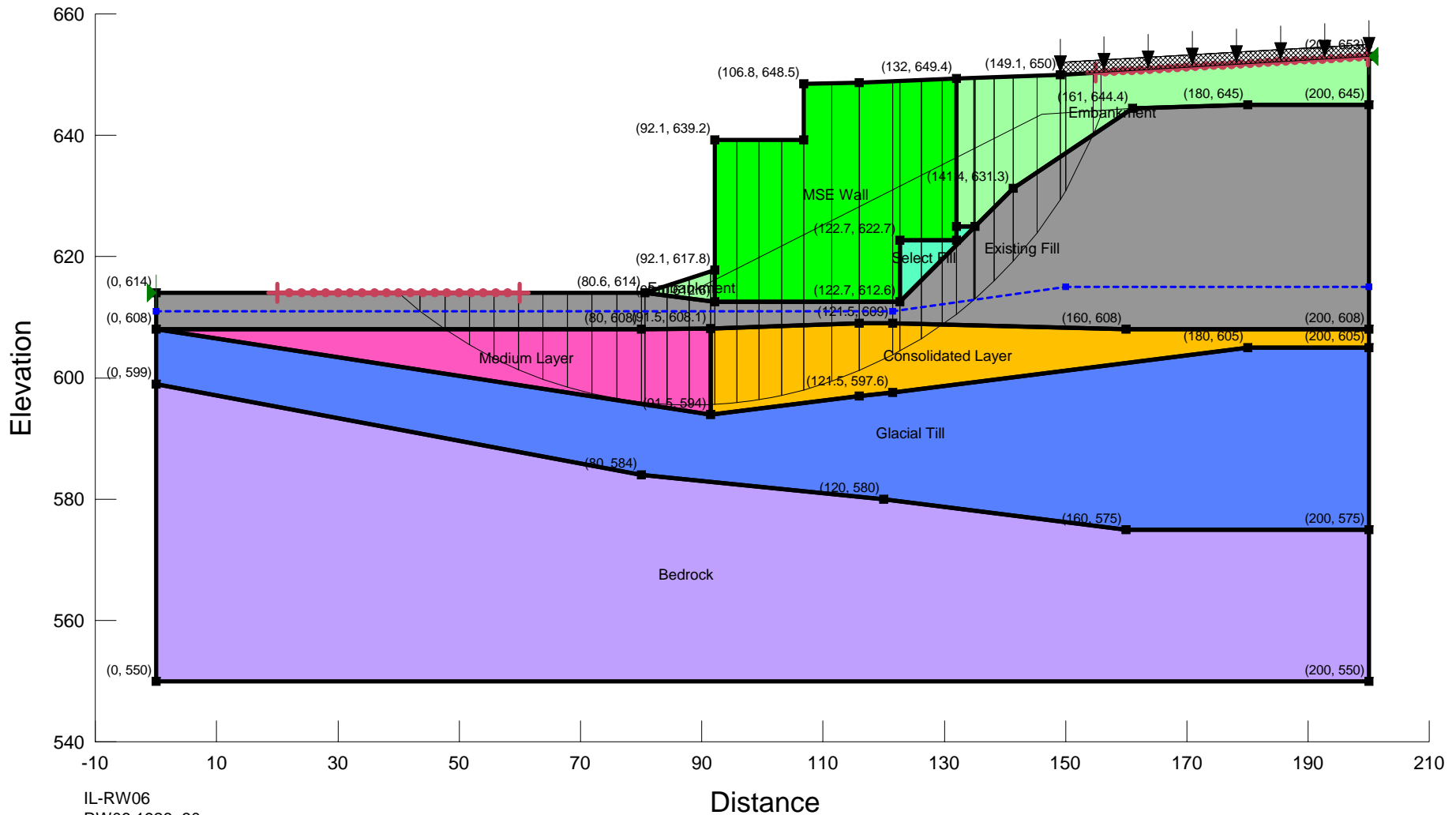
Project No.: 08H0120E  
 Checked By: JCC  
 Depth: 8.5-8.7  
 Elevation: N/A

Soil Description: Brn. gray f. sandy clayey silt.  
 Remarks: LT107 2000# 2009 Calibration

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. in <sup>2</sup> /sec	Log in <sup>2</sup> /sec	Ave. in <sup>2</sup> /sec
1	0.064	0.004151	0.512	0.42	0.5	0.2	1.64e-003	4.12e-003	2.34e-003
2	0.125	0.008409	0.506	0.85	1.9	0.0	4.28e-004	0.00e+000	4.28e-004
3	0.25	0.01414	0.497	1.42	1.8	0.0	4.38e-004	0.00e+000	4.38e-004
4	0.5	0.02164	0.486	2.18	0.9	0.0	8.44e-004	0.00e+000	8.44e-004
5	1	0.03148	0.471	3.17	0.5	0.0	1.69e-003	0.00e+000	1.69e-003
6	2	0.04471	0.450	4.50	0.3	0.1	2.21e-003	9.58e-003	3.59e-003
7	4	0.06251	0.423	6.29	0.5	0.0	1.60e-003	2.45e-002	3.01e-003
8	8	0.08551	0.388	8.60	0.2	0.0	3.79e-003	3.38e-002	6.81e-003
9	2	0.08375	0.391	8.43	0.0	0.0	1.53e-001	0.00e+000	1.53e-001
10	0.5	0.08077	0.395	8.13	0.1	0.0	5.63e-003	4.51e-002	1.00e-002
11	0.125	0.07608	0.403	7.65	1.9	0.0	3.57e-004	0.00e+000	3.57e-004
12	0.064	0.07204	0.409	7.25	28.4	0.0	2.45e-005	0.00e+000	2.45e-005
13	0.125	0.07141	0.410	7.18	0.0	0.0	1.66e-002	1.59e-002	1.63e-002
14	0.25	0.07189	0.409	7.23	0.4	0.0	1.61e-003	0.00e+000	1.61e-003
15	0.5	0.07386	0.406	7.43	0.5	0.0	1.52e-003	1.81e-002	2.81e-003
16	1	0.07609	0.403	7.65	0.1	0.0	8.30e-003	3.32e-002	1.33e-002
17	2	0.07918	0.398	7.97	0.0	0.0	2.17e-002	6.01e-002	3.19e-002
18	4	0.08263	0.393	8.31	0.0	0.0	4.16e-002	7.79e-002	5.43e-002
19	8	0.09055	0.380	9.11	0.1	0.0	8.68e-003	0.00e+000	8.68e-003
20	16	0.1128	0.346	11.35	0.1	0.0	5.81e-003	4.59e-002	1.03e-002
21	32	0.1424	0.301	14.32	0.1	0.0	7.93e-003	4.73e-002	1.36e-002
22	8	0.1379	0.308	13.87	0.0	0.0	6.28e-002	0.00e+000	6.28e-002
23	2	0.1341	0.314	13.49	0.0	0.0	3.13e-002	1.70e+001	6.25e-002
24	0.5	0.1294	0.321	13.01	0.9	0.0	6.72e-004	0.00e+000	6.72e-004
25	0.125	0.1231	0.331	12.39	7.3	0.0	8.43e-005	0.00e+000	8.43e-005
26	0.064	0.1194	0.336	12.01	14.4	0.0	4.35e-005	0.00e+000	4.35e-005



2.13



IL-RW06  
 RW06 1926+30  
 File Name: RW06 1926+30.gsz  
 Last Edited By: Robert Chantome  
 Date: February 2015

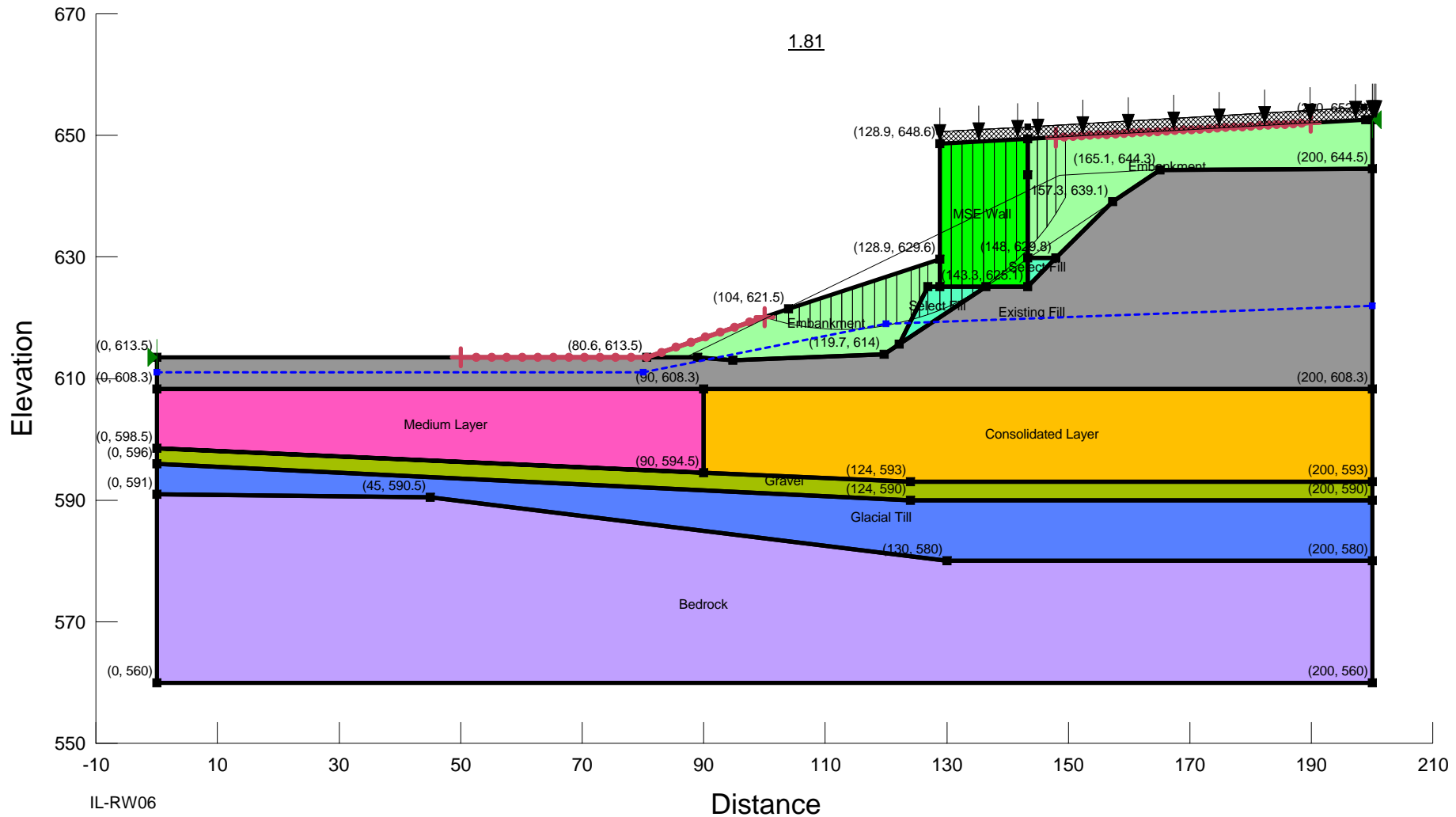
FS = 2.13

Material Properties

Name: Glacial Till Model: Mohr-Coulomb Unit Weight: 135 pcf Cohesion': 3,500 psf Phi': 0 °  
 Name: MSE Wall Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion': 0 psf Phi': 34 °  
 Name: Medium Layer Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion': 760 psf Phi': 0 °  
 Name: Bedrock Model: Mohr-Coulomb Unit Weight: 145 pcf Cohesion': 10,000 psf Phi': 0 °  
 Name: Existing Fill Model: Mohr-Coulomb Unit Weight: 130 pcf Cohesion': 3,000 psf Phi': 0 °  
 Name: Embankment Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion': 1,000 psf Phi': 0 °  
 Name: Consolidated Layer Model: Spatial Mohr-Coulomb Unit Weight: 125 pcf Cohesion Fn: consol layer Phi': 0 °  
 Name: Select Fill Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion': 0 psf Phi': 34 °

I-74 OVER THE MISSISSIPPI RIVER  
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 ROCK ISLAND COUNTY, ILLINOIS





IL-RW06  
 RW06 1926+00  
 File Name: RW06 1926+00.gsz  
 Last Edited By: Robert Chantome  
 Date: February 2015

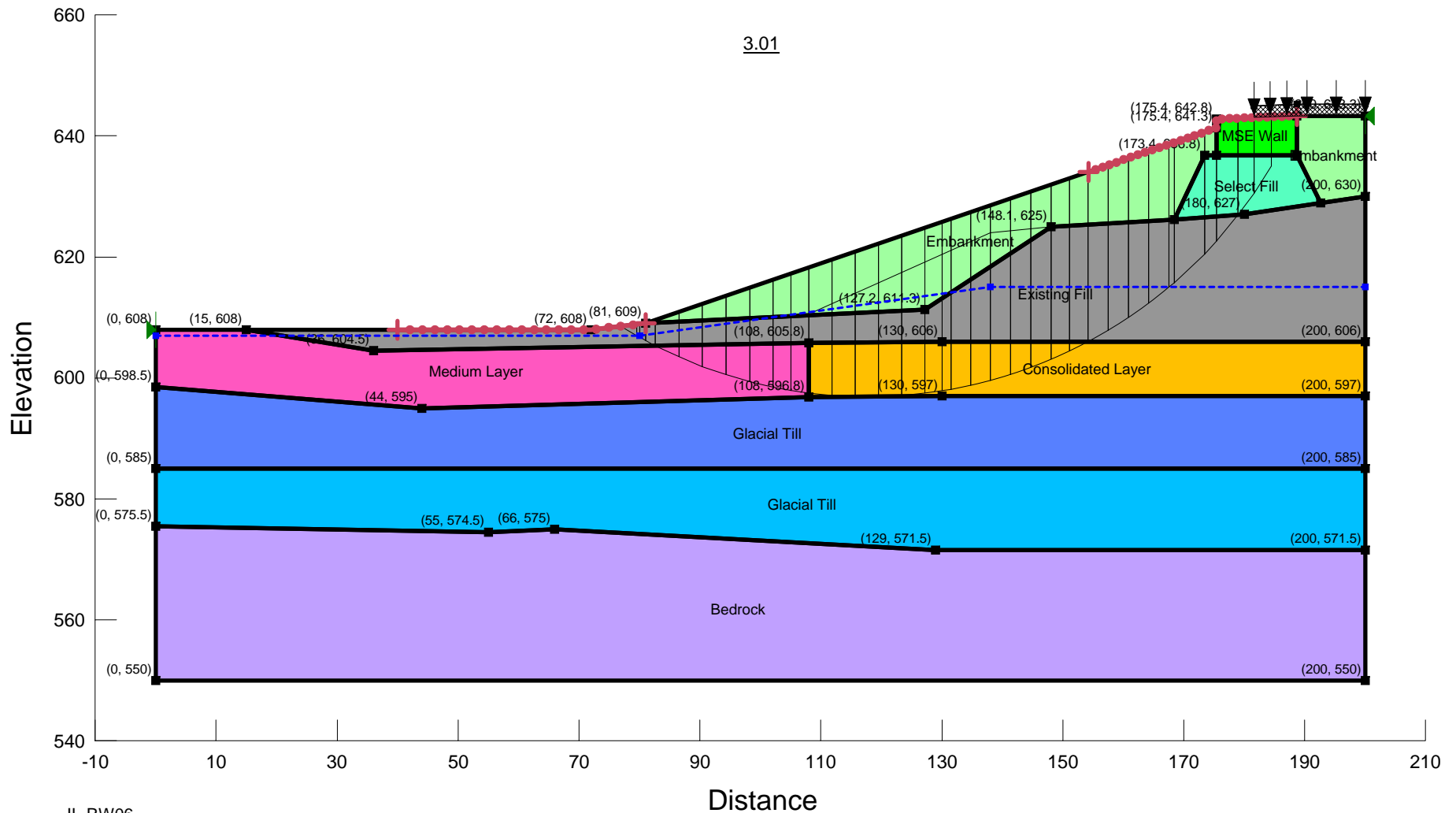
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Material Properties

Name: Glacial Till Model: Mohr-Coulomb Unit Weight: 135 pcf Cohesion: 3,050 psf Phi: 0 °  
 Name: MSE Wall Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 0 psf Phi: 34 °  
 Name: Medium Layer Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 680 psf Phi: 0 °  
 Name: Bedrock Model: Mohr-Coulomb Unit Weight: 145 pcf Cohesion: 10,000 psf Phi: 0 °  
 Name: Existing Fill Model: Mohr-Coulomb Unit Weight: 130 pcf Cohesion: 3,300 psf Phi: 0 °  
 Name: Embankment Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 1,000 psf Phi: 0 °  
 Name: Consolidated Layer Model: Spatial Mohr-Coulomb Unit Weight: 125 pcf Cohesion Fn: consol layer Phi: 0 °  
 Name: Select Fill Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 0 psf Phi: 34 °  
 Name: Gravel Model: Mohr-Coulomb Unit Weight: 110 pcf Cohesion: 0 psf Phi: 30 °

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 ROCK ISLAND COUNTY, ILLINOIS





IL-RW06  
 RW06 1923+60  
 File Name: RW06 1923+60.gsz  
 Last Edited By: Robert Chantome  
 Date: February 2015

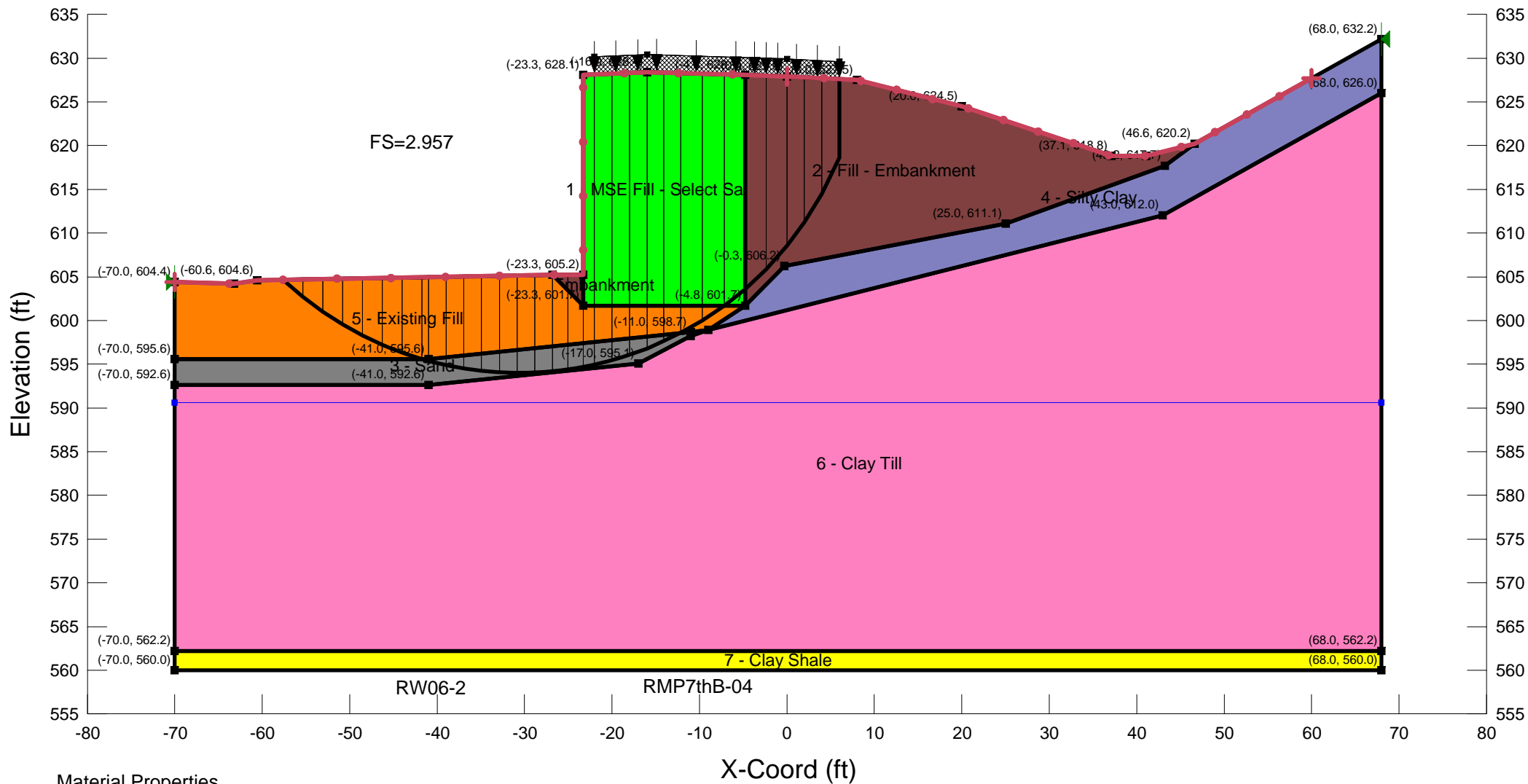
FS = 3.01

**Material Properties**

Name: Glacial Till Model: Mohr-Coulomb Unit Weight: 135 pcf Cohesion': 4,900 psf Phi': 0 °  
 Name: MSE Wall Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion': 0 psf Phi': 34 °  
 Name: Medium Layer Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion': 600 psf Phi': 0 °  
 Name: Bedrock Model: Mohr-Coulomb Unit Weight: 145 pcf Cohesion': 10,000 psf Phi': 0 °  
 Name: Existing Fill Model: Mohr-Coulomb Unit Weight: 130 pcf Cohesion': 3,500 psf Phi': 0 °  
 Name: Embankment Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion': 1,000 psf Phi': 0 °  
 Name: Consolidated Layer Model: Spatial Mohr-Coulomb Unit Weight: 125 pcf Cohesion Fn: consol layer Phi': 0 °  
 Name: Select Fill Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion': 0 psf Phi': 34 °  
 Name: Glacial Till Model: Mohr-Coulomb Unit Weight: 135 pcf Cohesion': 1,650 psf Phi': 0 °

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**Material Properties**

Name: 1 - MSE Fill - Select Sand Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 0 psf Phi: 34 °  
 Name: 2 - Fill - Embankment Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 1000 psf Phi: 0 °  
 Name: 3 - Sand Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 0 psf Phi: 30 °  
 Name: 4 - Silty Clay Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 3000 psf Phi: 0 °  
 Name: 5 - Existing Fill Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 2800 psf Phi: 0 °  
 Name: 6 - Clay Till Model: Mohr-Coulomb Unit Weight: 136 pcf Cohesion: 2700 psf Phi: 0 °  
 Name: 7 - Clay Shale Model: Bedrock (Impenetrable)

SN 081-6015 - IL-RW06  
 Case 1 - Sta 529+00 - Circle  
 File Name: I-74 081-6015 Sta 529.gsz  
 Last Edited By: Robert Chantome  
 Date: 5/16/2012 5:13:26 PM

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 CENTRAL SECTION FINAL DESIGN  
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