Structure Geotechnical Report

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-RW05
Structure Number 081-6014

October 2011

Prepared for:
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1. Project Description

This report provides geotechnical data and recommendations for the proposed Retaining Wall IL-RW05, which is part of the Central Section of the I-74 over the Mississippi River Project. The project includes reconstruction of I-74 between 14th Avenue in Moline, Illinois and Lincoln Road in Bettendorf, Iowa. The retaining wall covered by this structure geotechnical will replace the existing Retaining Wall S-7 and the south abutment of the existing Illinois Viaduct

Nearby project features that have an impact on the design or construction of the proposed retaining wall include the WB I-74 over 19th Street Bridge (S.N. 081-0179), the Ramp 7th-A over 19th Street Bridge (S.N. 081-0181), the Illinois Viaduct (S.N.'s 081-0177 and 081-0178), the I-74 roadway, Ramp 7th-A roadway, and the 7th Avenue roadway. Geotechnical recommendations for the bridges at 19th Street will be presented in separate structure geotechnical reports to be prepared by Hanson Professional Services Inc. (Hanson). The geotechnical data and recommendations for the Illinois Viaduct are presented in a structure geotechnical report prepared by Jacobs Civil Inc. in June 2008. Geotechnical recommendations for the roadways will be contained in a soil survey report to be prepared by Hanson.

This report supersedes the structure geotechnical report prepared by CH2M HILL in September 2009.

2. Location

The proposed Retaining Wall IL-RW05 is located in the north central portion of Rock Island County, within Sections 32 and 33 of Township 18 North, Range 1 West. It is located between I-74 Sta. 49+07 and 59+05. The wall separates I-74 on the high side from Ramp 7th-A and 7th Avenue on the low side.

3. Existing Structures

The existing Illinois Viaduct structures (S.N. 081-0142 and S.N. 081-0143) and the existing Retaining Wall S-7 were constructed in 1973. The bridges share a closed abutment supported by a spread footing. The height of the abutment ranges from 31.5 to 34.7 feet. The retaining wall is a conventional semi-gravity structure that separates WB I-74 from the 7th Avenue exit ramp. The wall runs between the north abutment of the existing I-74 over 19th Street Bridge and the south abutment of the existing Illinois Viaduct. It is supported by either spread footings or piles, depending upon the location along the wall. The wall is between 11.9 and 33.6 feet tall, with the taller end being closest to the Illinois Viaduct. Portions of the existing structure plans are included in the Appendix for reference.

The existing retaining wall is supported on piles between approximately Sta. 54+40 and 52+10. It is assumed that this area was a ravine when the existing I-74 alignment was constructed, because the design plans show a large fill in this general vicinity. Vertical and battered timber piles with 38 to 46 kip allowable capacities were used. The pile tips bear in very stiff glacial clay or dense sand approximately 14 to 17 feet below the pile caps.

The remainder of the retaining wall and the entire bridge abutment are supported on spread footings. The plans show maximum toe pressures of 7,500 psf at the abutment, 6,000 to 8,000 psf north of the pile-supported segment, and 3,400 to 4,200 psf south of the pile-supported segment. Due to these high applied bearing pressures, it is assumed that the footings bear on very stiff to hard glacial clay.

4. Proposed Structure

The proposed structure will be a mechanically stabilized earth (MSE) wall, as determined by a previous value engineering study. A wall using precast panels with the minimum reinforced soil mass width is preferred for cost

and construction schedule. The wall will have an overall length of 1,279 feet. The south end of the wall will be located at the north abutment of I-74 over 19th Street. From there, it will traverse to the north 1,050 feet along the outside shoulder of WB I-74. At the south abutment of the Illinois Viaduct, the wall will turn to the west and continue for 139 feet under the bridge. The final leg of the J-shaped wall will turn to the south for 90 feet along the outside shoulder of EB I-74.

The proposed wall will be located in front of the existing wall. The offset between the front face of the new wall and the front face of the proposed wall is 10 to 28 feet along the WB I-74 segment. At the bridge abutment, the offset is 150 to 200 feet. These offsets are large enough to allow the proposed wall to be constructed without removing the existing structure.

The bridge and wall geometry are configured for a mixed abutment, where the vertical bridge loads are supported by piles passing through the reinforced soil mass. The MSE wall will resist lateral loads applied to the bridge abutments. Based on information provided by the structure designer, the bridge's lateral load applied to the abutment by the superstructure will be approximately 0.9 kips per foot width.

The wall will have a height, measured from the theoretical top of leveling pad to the finished grade line, between 34.6 and 36.6 feet along the abutment and between 6.3 and 36.5 feet along the wings. With this range of heights, a typical MSE wall section would have an equivalent uniform bearing pressure varying from 5,100 to 5,400 psf under the bridges and 1,200 to 6,600 psf along the wings.

The proposed wall will be constructed in three stages in order to allow traffic on I-74 throughout the construction period. The west leg of the wall, located in the current exit ramp, will be constructed first, followed by the middle portion of the bridge abutment, then the east leg along EB I-74.

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.

5. Site Investigation

The project site is located at the north edge of the steeply sloping terrain of the bluffs along the Mississippi River. The ground surface at the top of the bluffs to the east of the highway is at approximately Elev. 690 feet, while 7th Avenue to the north of the existing bridge abutment is at approximately Elev. 584 feet. Existing I-74, the 7th Avenue ramps, and 19th Street were excavated near a natural ravine sloping down from the bluffs to the Mississippi River valley. The south abutment of the existing Illinois Viaduct appears to be located at the natural edge of the bluffs. The proposed south abutment location is located in the natural river valley.

The footprint of the proposed retaining wall generally lies within the existing 7th Avenue exit ramp and the infield area under the existing Illinois Viaduct. Presently, the 7th Avenue ramp slopes down to the north at approximately 5% grade, while I-74 slopes down to the north at approximately 2% grade. Existing ground surface elevations range from 634 to 584 feet along the ramp and 634 to 619 feet along I-74. The area under the Illinois Viaduct is approximately 585 to 591 feet.

No test boring data was available from the design and construction of the existing retaining wall and Illinois Viaduct.

The field exploration that was completed specifically for the proposed structure was accomplished in three phases. The first two phases were completed in December 2005 and October 2007 by another consultant. IDOT provided the data collected from those two phases. 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. A representative from Hanson logged the boring and performed a general site reconnaissance during the third phase.

Eleven borings were drilled in the first two phases and three borings were drilled in the third phase. Locations of the borings were selected to avoid the numerous obstructions currently occupying the site. The typical spacing between borings was approximately 100 feet. Standard Penetration Test samples were collected at 2.5 ft. to 10.0 ft. intervals in all borings. Several Shelby tube samples were collected at representative locations in cohesive strata. An 11.6 to 28.4 ft. long core sample of the bedrock was collected in Borings ILR0501, ILR1801, RW403, VIAIL-125, and VIAIL-126. The boring depths ranged from 7.0 ft. to 55.9 ft.

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

6. Laboratory Investigation

Soil samples from the first and second phase borings were tested by others. The testing of samples collected from the first and second phase borings does not meet IDOT's current minimum requirements for structure borings. Unconfined strength and moisture content tests were completed on a fraction of the samples. Index testing was completed on representative samples. A consolidated-undrained triaxial test envelope was performed on one sample from Boring RW403. A consolidation test was performed on one sample from Boring ILR0501.

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 competed on all samples. Unconfined compressive strength tests, using a Rimac spring tester, were also completed when possible. Two unconfined compression tests, four unconsolidated undrained triaxial tests, and two consolidation test were performed on Shelby tube samples.

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

7. Subsurface Profile

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

The soils encountered in the borings south of the bluff line are markedly different than the soils encountered in the borings near 7th Avenue. The native soils to the south are primarily of glacial origin, while those to the north are of alluvial origin. There is an apparent transitional zone near the existing bridge abutment.

The subsurface profile from Boring ILR0504 to the south end of the proposed wall consists a thin layer of loess or fill over gray clay till and shale bedrock. The upper layer extended from the ground surface to a maximum of 8 feet deep. It was a stiff to very stiff, gray-brown, sandy, silty clay. The till stratum is typically very stiff, gray sandy lean clay with isolated sand layers. Typical unconfined strengths were between 2.0 and 3.0 tsf. Standard Penetration Test (SPT) values were typically between 9 and 32 blows per foot. Natural moisture contents ranged from 12 to 15 percent. Shale was encountered at depths of 48 and 38 feet in Borings ILR0506 and ILR0505, respectively.

The four borings drilled near 7th Avenue encountered similar strata. A layer of soft to stiff clay with sand seams extended from the ground surface to approximately 18 feet depth. This layer had unconfined strengths between

100 and 1,500 psf, with an average value of 800 psf. Natural moisture contents were 16 to 35 percent. A 5-foot layer of medium dense to dense, fine to coarse sand was encountered below the clay. Bedrock was encountered below the sand at approximately Elev. 562.

The groundwater elevations recorded on the boring logs are summarized in Table 7.1. Stabilized readings were not taken in any of the borings. For comparison, the water level in the Mississippi River, approximately 0.5 miles to the north of the site, is usually about Elev. 561.0.

Table 7.1 Groundwater Elevations

Boring No.	During Drilling	At End of Boring	24-hour Reading
ILR0501	576.5	-	-
ILR0502	571.7	-	-
ILR0504	-	-	-
ILR0505	581.8	-	-
ILR0506	568.2	-	-
ILR0507	570.2	-	-
ILR0508	-	-	-
ILR1801	-	-	-
RW05-1	577.1	581.1	-
RW05-2	-	584.5	-
RW05-3	dry	-	-
RW403	-	-	-
VIAIL-125	573.8	-	-
VIAIL-126	572.4	-	-

The Illinois State Geological Survey Directory of Coal Mines does not list any mines in the immediate vicinity of the site.

8. Geotechnical Evaluations

A previous value engineering study determined that an MSE wall was preferred at this site. Due to the interdependence of this structure and the Illinois Viaduct, other types of retaining wall construction were not considered during the development of this SGR.

The allowable bearing capacity of the native soils varies along the wall alignment. To the south of I-74 Sta. 53+00, the allowable bearing pressure is 4,500 psf. The bearing capacity of the native soils generally decreases beyond this point. Near the proposed abutment, the allowable bearing pressure is 1,500 psf. These capacities consider all soil layers within the zone of influence. The native soils have an undrained sliding resistance of 2,100 psf south of Sta. 53+00, then decreasing to 700 psf at the abutment. The drained sliding resistance is 0.53 times the effective vertical stress for the entire wall. The proposed wall would meet the Standard Specifications for Highway Bridges (AASHTO) requirements for bearing pressure and sliding stability only along the portion south of Sta. 53+00. The taller portions of the wall would exceed the allowable bearing capacity by as much as 5,200 psf.

Slope stability analyses of the wall's highest points along the abutment and along Ramp 7th-A were completed to determine the overall stability of the wall. Results of those analyses are included in the Appendix. The 1.03 and 1.04 factors of safety do not satisfy AASHTO requirements.

The estimated total settlement under the weight of the proposed wall ranges up to 1.0 inch along the segment of wall that is south of the existing bridge abutment. At the proposed abutment location, where the native soils are considerable weaker, the estimated total settlement is 5.0 inches. The estimated time for the primary consolidation to be 90 percent complete is 7 months south of the existing abutment and 1 month north of the abutment. These magnitudes and durations of settlement would not preclude construction of an MSE wall.

Some differential settlement is anticipated near the proposed stage lines. Theoretically, the subgrade soils within approximately 5' 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 of the previous stage. This would affect pavement constructed on top of the first stage and may be visible in the panel joints on the face of the wall.

The native cohesive soils found to the north of Sta. 53+00 are relatively weak and will not support the weight of a conventional MSE wall. Typically, the alternative solutions are to either reduce the wall's bearing pressure or to increase the foundation soils' strength. Several potential treatment options were considered. Widening the reinforced soil mass, the use of lightweight aggregate, and raising the wall in stages are not feasible for this wall. Removal and replacement of the foundation soils and ground improvement with aggregate columns are possible solutions.

The softer soils extend to a depth of approximately 15 ft. below the base of the proposed wall. Removal of these soils would require extensive temporary earth retention near the existing structures. When the cost of the excavation, disposal, replacement material, and shoring are all considered, the removal and replacement alternative is uneconomical when compared to the other possible solutions.

Vibrator compacted aggregate columns could increase the allowable bearing capacities above the applied bearing pressures. These columns would bear in the very stiff, gray glacial clay, dense sand, or bedrock found below the wall. Our preliminary analyses indicate that 16 to 17 ft. long columns with an area replacement ratio of 5 to 42 percent would be sufficient. A relatively low replacement ratio will generally be required to the south of the existing abutment. The area beneath the existing bridge, where the soils are weakest, will require much more improvement. Although ground improvement with tamper compacted aggregate columns was not expressly investigated, it is expected that the wall also could be successfully constructed using that technology. The cost of aggregate column ground improvement is expected to be lower than the other feasible solutions.

9. Design Recommendations

The existing semi-gravity retaining wall, located immediately behind the proposed MSE wall, will initially support a large portion of the earth pressures that would normally be resisted by the reinforced soil mass of the new MSE wall. The long-term performance of the existing structure is uncertain. It is recommended that the proposed wall be designed for full earth pressures, ignoring any contribution from the existing wall.

When designing for the external stability of the proposed 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 for Road and Bridge Construction (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 0.36 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.

Aggregate column ground improvement is the recommended treatment option. 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 $900,000. This cost includes approximately $400,000 for treatment of the embankment interior where temporary MSE walls will be located.

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, including any temporary MSE walls along the stage lines. Where these limits overlap the existing wall footing, the treatment limits should be truncated at the edge of the existing footing. The limits along the wall should begin at Sta. 53+00 and continue to the south, across the face of the abutment, and along the west wingwall. 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 1.5 against global slope stability failure of temporary condition at end of Stage 1.
3. Minimum factor of safety of 1.5 against global slope stability failure of temporary condition at end of Stage 2.
4. Minimum factor of safety of 2.0 against equivalent uniform service bearing pressure failure if a load test is performed.
5. Minimum factor of safety of 2.5 against equivalent uniform service bearing pressure failure if a load test is not performed.
6. Total settlement measured at the base of the wall not to exceed 4.0 inches.
7. Total settlement measured on the pavement not to exceed 1.0 inch.
8. Differential settlement measured along the base of the wall not to exceed 1/100.
9. Primary consolidation of the soil within the depth of the ACGI to be at least 90 percent complete when the bridge piles are to be driven. Any required waiting periods shall be coordinated with the bridge construction schedule.

It should be noted that the total settlement performance requirement could be satisfied with minimal improvement to the native subgrade. Global stability and bearing pressure requirements will control the design of the aggregate column ground improvement. The provision allowing for a lower factor of safety if a load test is performed has been included for consistency with other walls on the I-74 project. It may allow a more economical design considering the high replacement ratios that are anticipated.

Along the wall south of Sta. 53+00, where ground improvement is not required, the wall should be proportioned for an allowable bearing capacity of 4,500 psf. Sliding stability should be checked against a nominal undrained sliding resistance of 2,100 psf and a nominal drained sliding resistance of 0.53 times the effective vertical stress. The native soils should be inspected when the excavation reaches the base of the proposed wall. Any soft or otherwise unsuitable material should be removed and replaced with compacted porous granular embankment.

With the ground improvement, a conventional precast panel MSE wall is feasible. Due to the anticipated settlements, it will be difficult to align a horizontal pattern across the stage lines. If the appearance of the wall is a major concern, a cast-in-place facing should be considered along the abutment face. The cast-in-place facing could be constructed during the final stage, after any differential settlements have occurred.

The theoretical top of leveling pad or base of reinforced soil mass may be located at the minimum embedment required by IDOT (3'-6" below finished grade). Any removals or other excavation below the reinforced soil mass should be backfilled with either the select backfill used in the reinforced soil mass or the granular material used as

a drainage layer or working platform for the aggregate column ground improvement design. Other material outside the limits of the reinforced soil mass may be embankment fill in accordance with the IDOT Standard Specifications.

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 5,600 psf in order the keep the area replacement ratio reasonable. To accomplish this, the minimum length to height ratios listed in Table 9.1 should be specified. The minimum length to height ratio specified by AASHTO (0.70) will be acceptable for the segment of the wall that does not require ground improvement and the segment of the wall along the abutment.

Table 9.1 Minimum Length to Height Ratios for External Stability

Wall Station Range	L/H
59+05 to 53+00	0.70
53+00 to 50+54	0.80
50+54 to 48+69	1.00
48+69 to 49+08	0.70
49+08 to 50+00	0.80

Along the west wingwall where the base of the reinforced soil mass is above existing grade, porous granular embankment should be used below the wall. The limits of this material should be from 2 ft. in front of the wall to the back of the reinforced soil mass, then widening along 2V:1H slopes to the existing ground surface.

In areas where the footprint of the proposed MSE wall lies over the footing of the existing semi-gravity wall, the existing structure may remain. Some settlement of the soils under the existing wall should be expected. The settlement under the existing footing should be less than the total estimated settlement of the adjacent new MSE wall segment.

The substructures of the existing bridge piers near Sta. 49+00 conflict with the new MSE wall. The pile caps should be completely removed where they fall within the footprint of the reinforced soil mass. Portions of the existing piles that are at least 2 ft. below the reinforced soil mass may remain, provided that they do not interfere with the proposed aggregate column ground improvement. Any pile holes should be backfilled with compacted native material.

10. Construction Considerations

The construction of MSE walls and aggregate column ground improvement are not covered by the IDOT Standard Specifications. Guide Bridge Special Provisions No. 38, Mechanically Stabilized Earth Retaining Walls (Revised: October 15, 2011), 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 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 locations. This results in a wall that is slightly taller and wider than the theoretical size shown on the construction plans. The wall supplier may also use different assumptions for unit weight and lateral earth pressure on the reinforced soil mass. 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.

Obstructions, such as old footings, pavements, utilities, etc., that are within the area to be treated with aggregate column ground improvement generally should be removed. Although it is possible to predrill the columns through large obstructions or space the columns around smaller obstructions, this increases the cost and reduces the effectiveness of the ground improvement.

The first and second stages of construction will require temporary vertical faces along the west side of the reinforced soil mass, parallel to Ramp 7th-A. These faces are too tall to be supported by cantilever sheetpiling. Temporary, wire-faced MSE walls are recommended along the stage lines. The temporary walls should be designed using the same earth pressures, allowable bearing, and ground improvement recommendations as the permanent walls. To accomplish this, a length to height ratio of 0.70 for the first stage wall and 0.80 for the second stage wall will be required. Guide Bridge Special Provision No. 57, Temporary Mechanically Stabilized Earth Retaining Walls (Revised: October 4, 2010), should be included in the construction documents.

The staged removal of the existing piers near Sta. 49+00 should be considered during the design of the temporary MSE walls. These removals will require nearly vertical excavation 2 to 3 ft. below the base of the adjacent temporary wall. Lowering the base of the earlier stages may be necessary to provide adequate support of the temporary wall during the pier removal.

The piles for the Illinois Viaduct (S.N. 081-0177 and 081-0178), 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 backfill or driven through sleeves after placing the select backfill. Refer to the structure geotechnical report for that structure for specific recommendations.

References

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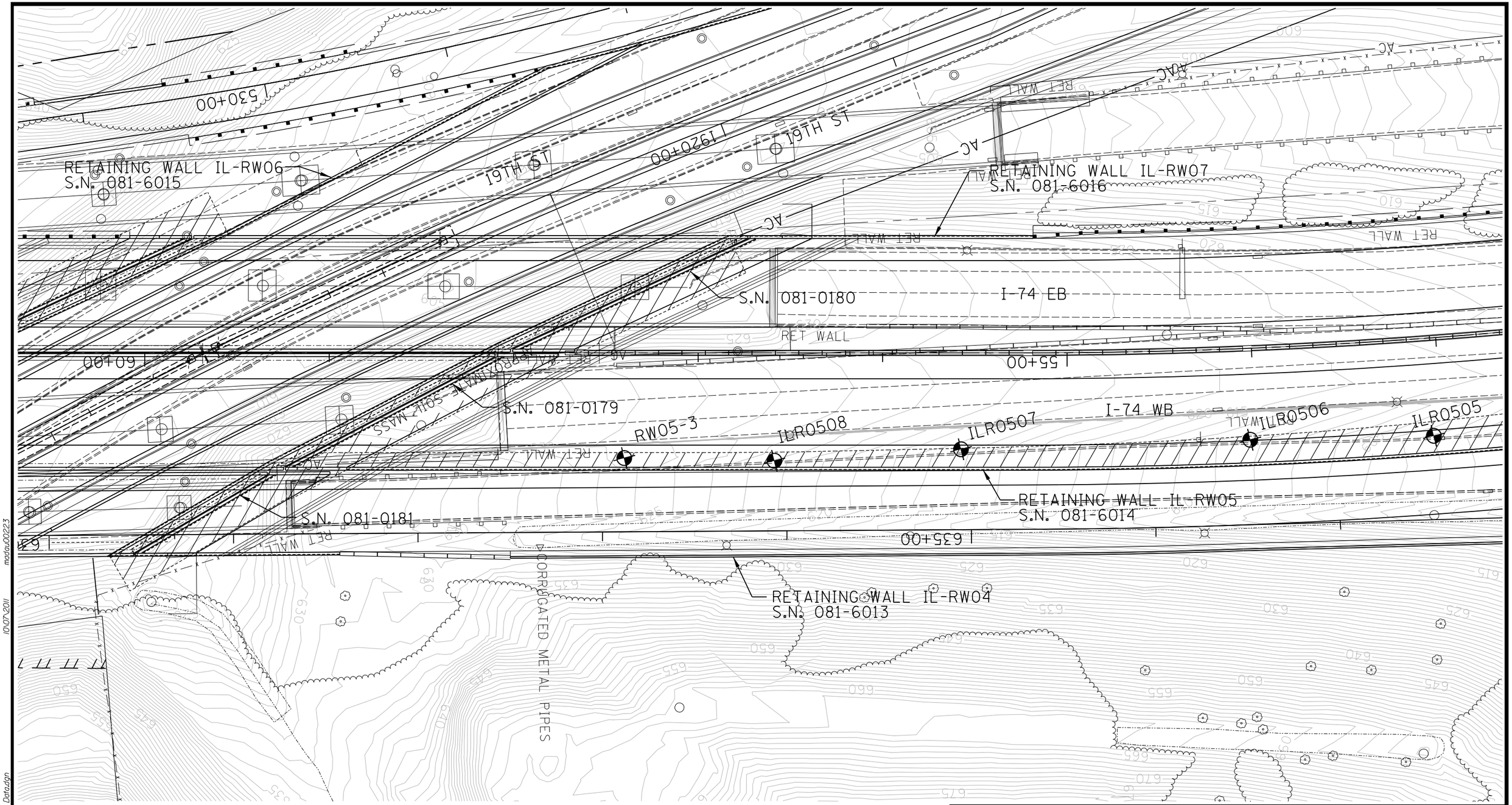
Appendix

Boring Location Plan
Subsurface Data Profile
Boring Logs
Soils Laboratory Test Results
Summary of Slope Stability Analysis
Existing Structure Plans



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ILRW05-A0432-005-Subsurface Datadgn

LEGEND

RW600 BORING LOCATION

0 50 100
SCALE IN FEET

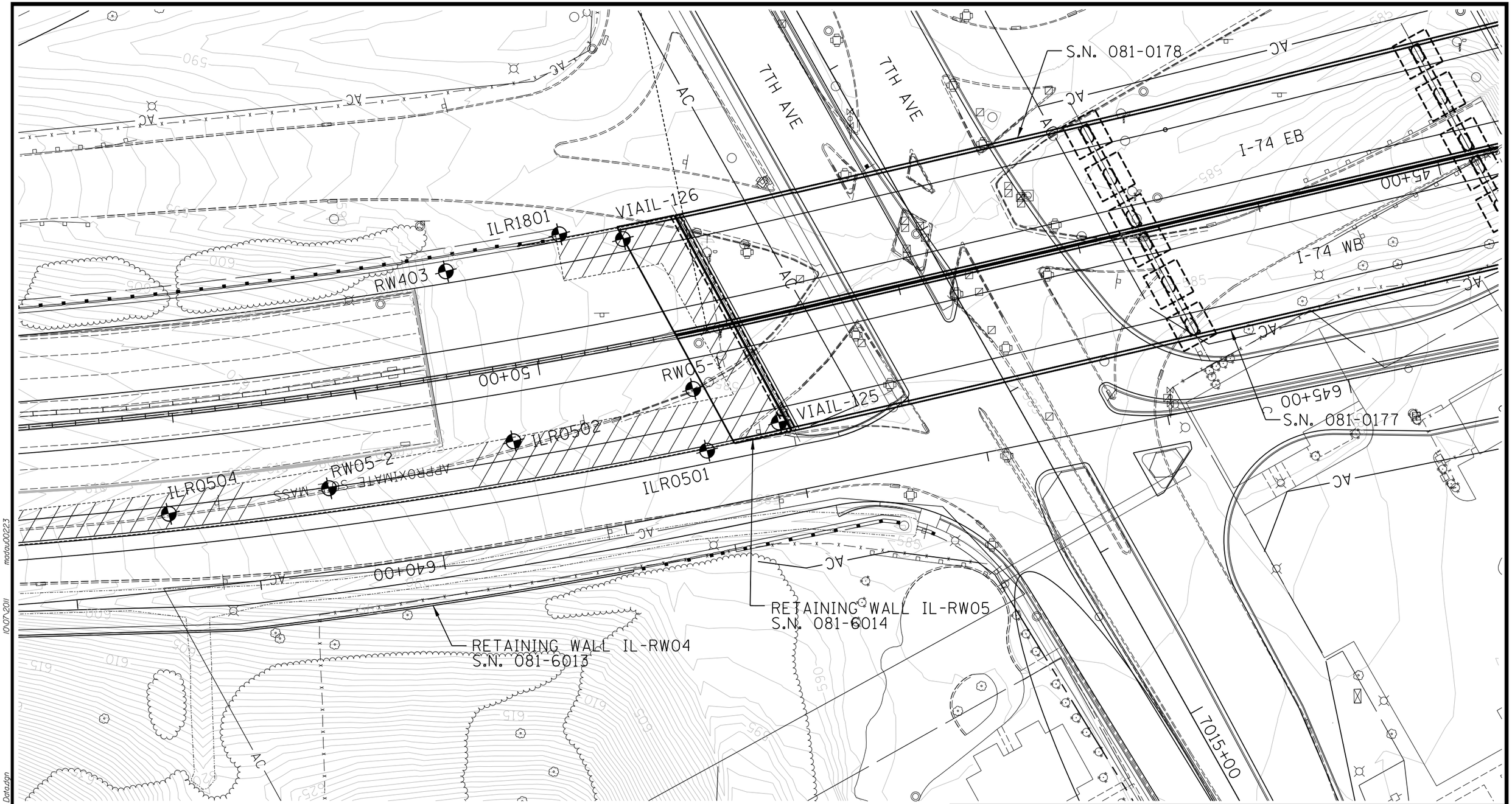
N

HANSON

BORING LOCATION PLAN

I-74 MAINLINE RETAINING WALL IL-RW05
S.N. 081-6014
ROCK ISLAND COUNTY, ILLINOIS

08H0120E 10/7/11



LEGEND

RW600 BORING LOCATION

0 50 100
SCALE IN FEET

N

HANSON

BORING LOCATION PLAN

I-74 MAINLINE RETAINING WALL IL-RW05
S.N. 081-6014
ROCK ISLAND COUNTY, ILLINOIS

08H0120E 10/7/11

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

RW05-3
Sta. 57+40, 57' LT

	N	Qu	w%	
625.60				
		2.25B	17	FILL - Brownish gray, moist, silty CLAY with fine-grained sand
		2.42B	13	
622.60				
				Gray with brown mottles, moist, stiff, silty CLAY with sand and trace gravel
	13	3.80P	13	
			12	[Q]
		2.33B	14	(LL=29, PI=15)
618.10				
				Gray, moist, stiff, silty CLAY with sand and trace gravel
615.60	13	1.88B	14	
				Bottom of hole = 10.0 feet

ILR0508
Sta. 56+59, 58' LT

	N	Qu	w%	
621.93				
				Silt and Fine to Coarse Sand (ML, SM) - brownish gray, moist, trace fine to coarse sand, medium dense
	10			Sample 1: grain size analysis performed
	11			
	2			
613.93				
	9		14.1	Lean Clay (CL) - gray, moist, stiff to hard, trace to little fine to coarse sand
				Sample 4: grain size analysis performed
	22	3.5P		Sample 5: Atterberg limits (LL=27, PI=14) test performed
	17	2.4		
	18	3.0P		Sample 7: Atterberg limits (LL=30, PI=14) test performed
	25	2.1	15.0	Sample 8: Atterberg limits (LL=30, PI=17) test performed
	18	3.5P		
	23	1.2	13.2	
	32	4.3P		
	25	2.5P		
	25	3.0P		
	34	2.1		
571.93				
				Bottom of hole = 50.0 feet

ILR0507
Sta. 55+57, 52' LT

	N	Qu	w%	
617.19				
				Lean Clay (CL) - brown, moist, little to some fine to medium sand
	9			Sample 1: Atterberg limits (LL=25, PI=11) test performed, grain size analysis performed
	7			
611.19				
	9	4.0P	14.6	Lean Clay (CL) - gray, moist, stiff to hard, little fine sand
				Sample 3: grain size analysis performed
	10	3.0P	13.9	Sample 4: Atterberg limits (LL=30, PI=15) test performed
	8	1.7	14.0	Sample 5: Atterberg limits (LL=34, PI=19) test performed
	9	1.3		
	17	2.0P		Sample 7: Atterberg limits (LL=30, PI=17) test performed
600.19				
				Silt and Fine to Coarse Sand (ML, SM) - Trace gravel, gray, medium dense
	12		15.7	Sample 8: grain size analysis performed
597.19				
				Sandy Lean Clay (CL) - dark brown, moist, stiff
	17	1.7	12.6	Sample 9: Atterberg limits (LL=31, PI=15) test performed
592.19				
				Lean Clay (CL) - gray, moist, stiff to very stiff
				Rimac: Pu = 91 lbs
	20	1.3		Sample 10: Atterberg limits (LL=35, PI=17) test performed
	21	1.3		
	21	2.0P		
	57			
572.19				
				Clayey Fine to Medium Sand (SC) - gray, wet, very dense
570.19	DD			
569.19				
	20			Silty Fine to Medium Sand (SM) - gray, wet, medium dense
567.19				
				Bottom of hole = 50.0 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 ▽ 558.10	Water Surface Elevation Encountered in Boring DD = during drilling 24h = 24 hours after completion

SUBSURFACE DATA PROFILE
STRUCTURE NO. 081-6014

PROFESSIONAL DESIGN FIRM LICENSE #184-001084

HANSON
Hanson Professional Services Inc.

JOB NO. 08H0120E
DATE 10/7/11
SHEET NO. 1
5 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

ILR0506
Sta. 54+03, 50' LT

	N	Qu	w%	
609.17				Silty Fine to Coarse Sand (SM) - grayish brown, moist, loose
	10			
605.17				
	11	1.5P		Silt (ML) - grayish brown, moist, medium dense
603.17				
	12	1.8		Lean Clay (CL) - dark gray, moist, stiff to hard, trace fine to medium sand
	11	3.0P	15.0	Rimac: Pu = 94 lbs
				Sample 3: Atterberg limits (LL=31, PI=16) test performed
	12	3.0P	13.9	Sample 4: Atterberg limits (LL=34, PI=21) test performed
	13	1.5P	13.7	Sample 5: Atterberg limits (LL=38, PI=22) test performed
	14	1.3		
	16	3.0P		
	50/5"	4.5P		
DD ▽	17			Top: same as above, very stiff Bottom: Clayey sand (SL) grey, medium dense, fine to medium sand, low plasticity fines
568.17				Clayey Sand (SC) - dark gray, wet, hard, fine to medium grained, low plasticity
	29			
561.17	50/5"			Shale - Gray, wet, very hard
559.17				Bottom of hole = 50.0 feet

ILR0505
Sta. 53+05, 53' LT

	N	Qu	w%	
603.80				Lean Clay (CL) - Little sand, grayish brown, moist, loose, trace coarse sand
	7	3.0P		Sample 1: Atterberg limits (LL=25, PI=11) test performed
	5	1.1		Rimac: Pu = 61 lbs
597.80				
	9	2.0P	13.9	Lean Clay (CL) - gray, moist, very stiff, trace fine, sand, trace gravel
		2.5P		
	9	3.0P	14.6	Sample 5: Atterberg limits (LL=31, PI=17) test performed
	10	3.0P		
	11		12.9	Sample 7: grain size analysis performed
				Sample 8: Atterberg limits (LL=24, PI=13) test performed
585.55				
	64			Fine to Medium Sand (SP) - grayish brown, moist, very dense, trace silt
DD ▽ 581.80				
580.80				
	32	3.0		Silt (ML) - gray, moist, hard, trace fine sand, medium dense
				Sample 9: Atterberg limits (LL=29, PI=14) test performed
575.80				
	14			Silty Fine to Medium Sand (SP) - gray, wet, medium dense, trace fine gravel
	22			
565.80				Shale - gray, hard
565.47	43			Sandy Clay (poss. Weathered Shale) (CL) - gray, wet, hard, fine grained, moderate plasticity
				Sample 12: Atterberg limits (LL=27, PI=13) test performed
560.80				Bottom of hole = 43.0 feet

ILR0504
Sta. 52+08, 54' LT

	N	Qu	w%	
598.28				Silt (ML) - yellowish brown, moist, trace fine to coarse sand, loose
	7	2.0P		
	6	2.0P		
591.28				Bottom of hole = 7.0 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 ▽ 558.10	Water Surface Elevation Encountered in Boring DD = during drilling 24h = 24 hours after completion

SUBSURFACE DATA PROFILE
STRUCTURE NO. 081-6014

PROFESSIONAL DESIGN FIRM LICENSE #184-001084

HANSON
Hanson Professional Services Inc.

JOB NO. 08H0120E
DATE 10/7/11
SHEET NO. 2
5 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

RW05-2
Sta. 51+21, 51' LT

	N	Qu	w%		
593.50					FILL - Brown, moist, stiff, silty CLAY with trace sand
	12	2.07B	14		(LL=32, PI=17)
		3.00P	17	Q	
			15	C	
588.00					Brown, wet, stiff, very fine- to medium-grained sandy SILT with clay
	14	1.04B	21		
585.50					Gray, moist, soft to very stiff, very fine- to fine-grained sandy SILT with trace clay
584.50 ▽ Oh	28	0.46S	13		
		2.64B	13		
581.70		2.98B	21		Dark gray, moist, very stiff, silty CLAY (LL=36, PI=18)
	24	2.82B	19		
578.50					Bottom of hole = 15.0 feet

ILR0502
Sta. 50+20, 40' LT

	N	Qu	w%	
588.73				Silty Fine to Medium Sand (SM) - light brown, moist, loose
	7			
584.73				
	6	0.3P		Clay (CL) - gray, moist, soft to very stiff, trace sand
				Rimac: Pu = 115 lbs
	10	2.1		Sample 3: Atterberg limits (LL=44, PI=25) tests performed
	14	3.0P		
	17	1.9		Rimac: Pu = 102 lbs
	11	2.5P		
574.73				
571.93 DD ▽	12	1.3		Sandy Clay (CL) - dark gray, moist, stiff
				Rimac: Pu = 72 lbs
571.73	25			Silty Fine to Medium Sand (SM) - yellowish brown, wet, medium dense to dense
	45			Sample 9: grain size analysis performed
	50/5"			
559.73				Bottom of hole = 29.0 feet

ILR0501
Sta. 49+20, 65' LT

	N	Qu	w%		
585.55					Concrete
584.55	9	2.5P			Fill Very Silty Fine to Coarse Sand (SM, ML) - Little gravel, olive gray with brown, dry to moist, loose
	9	2.3P	17.0		Trace coarse to fine sands, scattered sand seams
					Sample 2 (3'-5'): grain size analysis and Atterberg limits (LL=25, PI=9) test performed
579.55					
DD ▽	5	0.4	16.1		Lean Clay (CL) - Gray to olive gray, moist, low to medium plasticity, very soft to stiff, loess; Rimac: Pu = 20 lbs
576.55					Sample 3 (6'-8'): Atterberg limits (LL=36, PI=18) test performed
		1.5P	24.0	C	Sample 8'-10' (ST): consolidation test performed (Cc=0.11, Cr=0.01)
	3	0.1	29.2		Trace medium to fine sand; Rimac: Pu = 7 lbs
					Sample 4 (11'-13'): Atterberg limits (LL=32, PI=11) test performed
571.05					Clayey Fine to Medium Sand With Silt (SC) - olive gray, wet
569.55					Silty Clay Trace Gravel (CL-ML) - moist, poss. gumbotil
567.55	14				Fine to Medium Sand With Silt (SP-SM) - Olive gray to dark greenish gray, wet, medium dense, trace coarse gravel
562.55					
	50/3"	4.5P			Silty Fine to Medium Sand (poss. Weathered Rock) (SM) - Light gray, dry, very dense, trace gravel, possible completely weathered rock
559.72					
	Rec. = 84%				Limestone - Light gray, fine grained, Top 16", 53" to 77" and bottom 10" of sample remainder slight vuggy, very vuggy appearanced indicating water action, slightly to modergtely weathered, medium strong to strong rock, crushed zones at 1" to 5", 20" to 24", 38" to 43" and 60" to 69", 73" to 75", 91" to 93"; 25.83' - Horizontal to vertical fractures, slightly to extremely fractured, extremely clost to rough and irregular discontinuous fracture surface, little greenish gray clay infilling that has slightly healed vertically at 33" to 36" and 52" to 66" from top, surface stain greenish gray clay infilling at vugs, most of infilling probably washed away while coring; 20" to 23" other surface have slightly altered joint walls with little or no infilling material, sandy clay mineral infilling 9" from top and 9" from bottom, mixed with crushed rock or crushed zones; bit plugged occasionally possibly due to infilling momentary fluid loss
	RQD = 25%				
	Rec. = 100%				Inner barrel jammed, stopped run at 38'
	RQD = 53%				continued run
					vuggy appearance, fine grained, medium strong to strong rock, crushed zone 12" to 14" from top
544.72					Bottom of hole = 40.83 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 ▽ 558.10	Water Surface Elevation Encountered in Boring DD = during drilling 24h = 24 hours after completion

SUBSURFACE DATA PROFILE
STRUCTURE NO. 081-6014

PROFESSIONAL DESIGN FIRM LICENSE #184-001084

HANSON
Hanson Professional Services Inc.

JOB NO. 08H0120E
DATE 10/7/11

SHEET NO. 3
5 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

VIAIL-125
Sta. 48+79, 58' LT

	N	Qu	w%	
585.80				CONCRETE + Base Course
584.80	5	0.9B		CLAY - black to dark brown, some silt, slightly to medium plastic, medium stiff to very stiff, moist
	4	0.7B	20.4	
	5	0.7B	18.9	- brownish orange to greenish gray, with a black clay seam at 8.5'
	4	0.7B	23.1	
DD				
573.80	4	0.7B	23.3	- orange brown fine grained sand interbed in a silt and clay matrix, saturated at 12.3'
		0.8P	35.1	- slightly plastic (LL=29, PI=6)
	3	0.4B	29.9	
				- maroon, little silt, medium plastic
566.60	12	0.5B		SAND - maroon to bright greenish yellow, fine to medium grained, conglomeratic with fine gravel
564.50	38		14.2	- olive, fine grained sand, moist at 21'
	24		18.2	WEATHERED SHALE - medium gray, clay-like to soft rock-like, severely weathered.
	50/5"			
558.30	Rec. = 100% RQD = 41%			LIMESTONE - medium to light brownish gray, occasional pitting and locally vuggy, with partings, seams, and clasts of green clay-like shale, hard to moderately hard, thin to medium bedded, primarily horizontal to very low angle fractures with localized high angle fractures, fracture surfaces are planar to irregular and slightly rough to rough, fresh to slightly weathered.
	Rec. = 98% RQD = 40%			-clay-like shale intebed at 30.9'-31.7'
				- mixed shale and limestone layer with high angle to vertical fractures at 31.9'-33.4'
	Rec. = 100% RQD = 98%			- light to medium gray, locally pitted and vuggy at 33.3', clay-like to soft rock-like green shale partings and inclusions in irregular patterns at 45° to vertical at 36.4'-36.9'
				- light gray, stylolitic
	Rec. = 100% RQD = 75%			- very light gray, fine grained, fresh, very minor pitting and occasional stylolites
				- very thin bedded, occasional shale partings, moderate pitting and vuggy at 44.3'-45.9'
	Rec. = 100% RQD = 88%			
537.60				LIMESTONE - medium gray, fine to medium, pitted, "birdseye" texture, occasional shale partings, medium bedded, fractures range from medium (45°) to high (80°) angled, fresh to slightly weathered. Pitting and "birdseye" texture diminish with depth.
	Rec. = 100% RQD = 100%			
529.90				Bottom of hole = 55.9 feet

RW05-1
Sta. 49+20, 30' LT

	N	Qu	w%	
585.60				FILL - Dark brown, moist, soft, clayey SILT
584.10	9		12	FILL - Brown, moist, loose, silty, medium-grained SAND with silty clay
581.10 ▽	Oh			Hard drilling, augered to 5.0 ft and continued sampling
	7		25	FILL - Brown, moist, medium, silty CLAY with trace sand and gravel
579.10				
577.10 ▽	DD	0.75P	22	Q Brownish gray, moist, soft, sandy SILT with clay (LL=23, PI=6)
	4	0.50P	21	
			24	Q (LL=25, PI=8)
		1.18S	25	
572.10		0.85S	23	Gray, wet, soft, clayey, fine-grained SAND
570.10			23	C Brown, wet, soft, sandy CLAY
568.10				Gray, wet, fine- to coarse-grained SAND with gravel
566.60	43		14	Brown, wet, dense, silty, fine- to coarse-grained SAND with trace gravel
562.10				
	50/5"	4.00P	8	Gray, slightly moist, hard, WEATHERED SILTSTONE
560.60				Bottom of hole = 25.0 feet

VIAIL-126
Sta. 49+42, 57' RT

	N	Qu	w%	
586.40				SILT - dark gray, some clay, non to slightly plastic, stiff, slightly moist.
	12	1.5B		- slightly to medium plastic
582.60	6	1.3B	19.3	CLAY - greenish gray to orange brown, some silt, sand seams, slightly to medium plastic, stiff to medium stiff, moist.
	6	0.5B	19.9	- slightly plastic (LL=25, PI=4)
	4	0.7B	20.0	[Upon completion of boring, offset 10' south, augered to 11' depth, and took Shelby tube sample at 11'-13']
DD	3	0.8P	22.3	-medium gray, medium to highly plastic, with brown fine grained sand seams at 9.2', 11.3' and 13.7'
572.40 ▽	2	0.8B	26.0	- some silt, saturated
				[Note: attempted Shelby tube sample at 16'-18'; no recovery, followed-up with SPT sample]
	2	0.5B	24.6	- vertical fracture at 47.3'-47.9'
				- red brown to maroon, medium to highly plastic
567.10	6	0.6B		SAND - medium gray, fine grained, trace to little silt, trace fine to medium coarse gravel (1/2 inch minus), loose, saturated.
	50/4"			
562.90	50/1"			WEATHERED SHALE - light gray, clay-like to soft rock-like, severely weathered
560.40	Rec. = 100% RQD = 76%			LIMESTONE - medium to light brown gray, fine to medium grained, hard, thin to medium bedding, occasional pitting, fractures are primarily horizontal, planar to slightly irregular, smooth to slightly rough, fresh to very slightly weathered except at vugs.
				- occasional pitting at 26'-27.5'; vuggy at 27.6'-28.3' with pits to 2" length
	Rec. = 98% RQD = 92%			- from 31' to 45': occasional vuggy with clay-like shale filling in voids, occasional stylolites, pitting, very thin to thin bedded
	Rec. = 100% RQD = 91%			
	Rec. = 100% RQD = 92%			
540.40	Rec. = 100% RQD = 100%			LIMESTONE - medium brownish gay, fine to medium grained, pitted, "birdseye" texture, moderately hard, horizontal and slightly irregular, rough fracture.
				- vertical fracture at 47.3'-47.9' with 1/2 "birdseye" texture and 1/2 gray fine limestone
535.40				Bottom of hole = 51.0 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 ▽ 558.10	Water Surface Elevation Encountered in Boring DD = during drilling 24h = 24 hours after completion

SUBSURFACE DATA PROFILE
STRUCTURE NO. 081-6014

PROFESSIONAL DESIGN FIRM LICENSE #184-001084

HANSON
Hanson Professional Services Inc.

JOB NO. 08H0120E
DATE 10/7/11
SHEET NO. 4
5 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

ILR1801
Sta. 49+76, 66' RT

	N	Qu	w%	
587.70				
586.70				Grass Matter - followed by brown silty clay with sand, topsoil embedded with root matter
	12	4.5P		Silty Clay With Sand (CL-ML) - uniform brown, dry, stiff, non plastic, little to few medium to fine sands, trace coarse sands, strong cementation, crumbly, possible native soil
584.70				
	5	2.0P		Sandy Lean Clay (CL) - olive gray with orange brown stains, dry to moist, non plastic, medium stiff, slightly oxidized, occasional soft root matter at bottom of sample, possible transition soil, few coarse to fine sands, occasional sand seams; Rimac: Pu = 19 lbs
581.70				
	4	1.5P		same as above, crumbly, slightly oxidized, few coarse to fine sands, medium stiff, occasional sand seams, possible gumbotil
	push			same as above, some coarse to fine sands, moist, non plastic, very sandy at bottom of tube Tried to push ST from 8.0'-10.0' recorded in bag sample but soil was too sandy at 9.0' bgs
576.70				
	2	1.75P		Silty Clay (CL-ML) - gray with little light brown with dark gray streaks, moist to wet, medium plasticity, soft, slightly oxidized, trace fine sands, slow dilatancy, occasional sand lenses, very sundry at top 1" of sample; Rimac: Pu = 11 lbs.
574.70				
573.20 ▽	DD			
	push		<1.0P	Bottom of Tube: uniform gray, moist medium plasticity, soft, unweathered, possible loess
572.70				
571.70				Lean Clay (CL) - uniform gray, very wet, medium plasticity, soft, unweathered, trace fine sands, few silt
	push			Tried to obtain ST from 15.0'-17.0' but sample fell out of tube during extraction, pushed tube to obtain sample
569.70				
	11			Well Graded Sand With Silt (SW-SM) - uniform gray with light gray coarse sands, coarse to fine sands, trace silt, possible old alluvial deposits
566.70				
565.20				Poorly graded Sand With Silt (SP-SM) - olive gray with gray, wet, medium dense, medium to fine sands with few silt and trace coarse rounded sands scattered clay strands, possible old alluvium submerged in water table
564.90				
564.70				loose, medium dense, medium sands with trace fine and coarse sands, possible old alluvium
	50/3"	4-4.5P		Silty Clay (CL-ML) - uniform dark gray, medium stiff to stiff, moist, low plasticity, trace fine sands, moderate to strong cementation, slightly crumbly, possible transition zone
561.90				
				Clayey Sand With Gravel (SC) -dark gray, dry to moist, crumbly, coarse to fine sands with little clay and silt and little fine gravels, possible residual soil
				Sandy Lean Clay With Gravel (poss. Weathered Rock) (CL) - gray at top to light gray to white at bottom, moist to wet, strong cementation, hard, harder as depth increases, clay and sand (50%), coarse to fine angular to subangular sands, trace fine gravels, possible residual soil to completely weathered rock Weathered rock zone at 23.0'-24.0'; Top of rock at 24.0'
				Limestone - light gray, medium to fine grained, vuggy appearance indicating water action, moderately weathered at top 16", remainder slightly weathered to unweathered, medium strong to strong or very strong, crushed rock zones at 7" to 13", 20" to 23" and from top 74" to 77"; 25.8' - sound to moderately fractured, extremely fractured at crushed zones, rough and irregular discontinuous fracture surfaces, moderate to close discontinuites, 45° from 54" from top, and 60° discontinuities at 66" and 71" from top, no rock wall contact at 90% of fractures due to crushed rock thick enough to prevent contact, little or no greenish gray clay infilling at fractures, surfaces stained dark gray to greenish gray, possibly due to little infilling, tightly healed at 73" from top; Occasional jamming of core barrel; Jammed barrel at 39"-52"; Extracted sample and continued run; Top of rock at 33.0'-87"
552.10				
				Bottom of hole = 35.6 feet

RW403
Sta. 50+41, 56' RT

	N	Qu	w%	
590.20				
	10	4.5P+		Clay (CL) - Clay, trace gravel, brown and dark brown, dry to moist, hard, blocky to homogeneous.
588.20				
	10	4.5P+		Clay, brown, mottled dark brown to dark brown, moist, stiff to hard, blocky.
586.20				
	7	1.0P		Sandy Clay (CL) - Sandy Clay, trace gravel, dark gray brown, moist, soft to medium stiff, homogeneous.
	push	4.5P+	14.0 [R]	UW=115 pcf, (LL=20 PI=3)
582.20				
	11	4.4P		Clay (CL) - Clay, brown, mottled dark braown, gray brown, and orange brown, dry to moist, very stiff, homogeneous. 2" of sand, gravel, and clay at top of sample.
580.20				
	14	4.5P		Clay, orange brown, gray brown, mottled dark brown, moist to dry, stiff to very stiff, homogeneous.
	11	3.6P		Clay, dark brown to black, moist, stiff to very stiff, lensed and homogeneous.
	13	2.6P		Clay, dark gray brown, moist, stiff to very stiff, homogeneous. 1" of sand at about 13.5' (19" from top of split spoon).
DD				
568.20 ▽	14	1.6P		Clay, dark gray brown, moist to wet, very stiff, homogeneous. 4" of sand at 21.67' (bottom 4" of sample).
565.20				
	13	1.5P		Sandy Clay (CL) - Sandy Clay, dark gray brown, wet, medium stiff to stiff, homogeneous to lensed. Silt to Shale for 4" at bottom of sample.
	50/3"			No Sample.
559.20				
	Rec. = 47% RQD = 23%			Limestone - Limestone, dark gray, fine grained, highly weathered, weak to medium strength, laminated to thin beds. 31' - Horizontal fractures, extremely fractured, extremely close to close discontinuity, rough (undulating and planar) joints, stiff to very stiff clay mineral coatings with >1/4" thick rock wall separation. Auger refusal at 31'; begin rock coring at 31' at 11:04; Coring rate slow and smooth; no rod drops. At 33' coring water started running darker.
	Rec. = 28% RQD = 0%			
	Rec. = 100% RQD = 35%			Limestone, gray, fine grained, highly weathered, strong rock, laminated to very thin beds, vugs present (1/8" to 1/4" in diameter). 33.5' - Horizontal fractures, extremely fractured to moderately fractured, extremely close to very close discontinuity, rough (undulating) joints, very stiff clay mineral coatings with >1/4" thick rock wall separation.
	Rec. = 100% RQD = 50%			Limestone, gray, fine grained, highly weathered, medium to very weak rock, laminated to thin beds. 35' - Horizontal fractures, extremely fractured to slightly fractured, extremely close to close discontinuity, rough to smooth (undulating and planar) joints, tightly healed to crushed rock and very stiff clay mineral coatings with >1/4" thick rock wall separation; at 37.08' vertical fractures; first 8" of rock core-shale and crushed rock. R-1 to R-3: Coring bit keeps getting clogged as a result of clay/shale content in limestone. No coring water loss during entire coring process.
	Rec. = 96% RQD = 54%			Limestone, light gray, fine grained, slightly to moderately weathered, medium strength, laminated to medium beds, vugs present (not many--<1/2" in diameter). 39.5' - Horizontal fractures, extremely fractured to sound, extremely close to moderate discontinuity, rough (undulating) to smooth (planar) joints, tightly healed (<3/4" thick) to soft clay mineral and sandy coatings with <1/4" thick rock wall separation.
	Rec. = 100% RQD = 42%			Limestone, light gray, fine grained, slightly to moderately weathered, very strong rock, laminated to thin beds, very few vugs present (<1/4" in diameter). 44.5' - Horizontal fractures, extremely fractured to sound, extremely close to moderate discontinuity, smooth (planar) joints, tightly healed (<1/2" thick) to sandy/gravelly mixture in fractures, no significant rock wall separation; at 46.5' black clay and gravel in fractures for 2-3".
539.70				
				Limestone, light gray, fine grained, slightly to moderately weathered, medium strength, laminated to thin beds, very few vugs present (<1/4" in diameter). 48.5' - Horizontal fractures, extremely fractured to sound, extremely close to moderate discontinuity, smooth (planar) joints, tightly healed (<1/2" thick) to sandy/gravelly mixture in fractures; no significant rock wall separation.
				Bottom of hole = 50.5 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 ▽ 558.10	Water Surface Elevation Encountered in Boring DD = during drilling 24h = 24 hours after completion

SUBSURFACE DATA PROFILE
STRUCTURE NO. 081-6014

PROFESSIONAL DESIGN FIRM LICENSE #184-001084

HANSON
Hanson Professional Services Inc.

JOB NO.	SHEET NO. 5	F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
08H0120E		74	81-1-2	ROCK ISLAND	-	
DATE 10/7/11	5 SHEETS			CONTRACT NO. 64C08		
		FED. ROAD DIST. NO. -	ILLINOIS	FED. AID PROJECT		

Illinois Department of Transportation
Division of Highways
CH2M HILL

SOIL BORING LOG

Date 9/26/07

ROUTE I-74 DESCRIPTION New I-74 Bridge Over Mississippi River - Illinois Approach LOGGED BY F. Abreu

SECTION I-74 Bridge over Mississippi River LOCATION (N=562943.909, E=2459732.885), SEC. 32, TWP. 18N, RNG. 1W, 4th PM

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

STRUCT. NO. _____
Station _____

BORING NO. ILR0501
Station _____
Offset _____
Ground Surface Elev. 585.55 ft

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

Groundwater Elev.:
First Encounter 576.6 ft ▼
Upon Completion _____ ft
After _____ Hrs. _____ ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				Concrete
				584.55
	4			**Fill Very Silty Fine to Coarse Sand (SM, ML)**
	5	2.5		Little gravel, olive gray with brown,
	4	P		dry to moist, loose
	5			
	3			Trace coarse to fine sands,
	4	2.3		scattered sand seams
	5	P		
-5	3			Sample 2 (3'-5'): grain size analysis and Atterberg limits (LL=25, PI=9) test performed
				579.55
	3			**Lean Clay (CL)**
	2	0.4		Gray to olive gray, moist, low to
	3			medium plasticity, very soft to stiff,
	3			loess□Rimac: Pu = 20 lbs
				Sample 3 (6'-8'): Atterberg limits (LL=36, PI=18) test performed
▼		1.5		
		P		Sample 8'-10' (ST): consolidation test performed (Cc=0.11, Cr=0.01)
-10				
	2			Trace medium to fine sand
	1	0.1		Rimac: Pu = 7 lbs
	2			
	1			Sample 4 (11'-13'): Atterberg limits (LL=32, PI=11) test performed
				571.05
-15				**Clayey Fine to Medium Sand With Silt (SC)**
				olive gray, wet
				569.55
				Silty Clay Trace Gravel (CL-ML),
				moist, poss. gumbotil
				567.55
	5			
	6			
	8			
-20	27			

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				Fine to Medium Sand With Silt (SP-SM)
				Olive gray to dark greenish gray,
				wet, medium dense, trace coarse
				gravel *(continued)*
				562.55
	9			**Silty Fine to Medium Sand (poss. Weathered Rock) (SM)**
	50/3	4.5		Light gray, dry, very dense, trace
		P		gravel, possible completely
-25				weathered rock
				559.72
				Borehole continued with rock coring.
-30				
-35				
-40				

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

Illinois Department of Transportation
Division of Highways
CH2M HILL

ROCK CORE LOG

Date 9/26/07

ROUTE I-74 **DESCRIPTION** New I-74 Bridge Over Mississippi River - Illinois Approach **LOGGED BY** F. Abreu

SECTION I-74 Bridge over Mississippi River **LOCATION** (N=562943.909, E=2459732.885), **SEC.** 32, **TWP.** 18N, **RNG.** 1W, 4th **PM**

COUNTY Rock Island **CORING METHOD** Double tube, 10 ft core barrel, NQ wireline, diamond bit

STRUCT. NO. _____
Station _____

BORING NO. ILR0501
Station _____
Offset _____
Ground Surface Elev. 585.55 ft

CORING BARREL TYPE & SIZE _____
Core Diameter _____ in
Top of Rock Elev. 559.72 ft
Begin Core Elev. 559.72 ft

DEPTH (ft)	CORE (#)	RECOVERY (%)	R.Q.D. (%)	CORE TIME (min/ft)	STRENGTH (tsf)
559.72	NQ-R1	84	25		
-30					
-35					
	NQ-R2	100	53		
-40					
544.72					
-45					

Limestone
Light gray, fine grained, Top top 16", 53" to 77" and bottom 10" of sample remainder slight vuggy, very vuggy appearanced indicating water action, slightly to moderately weathered, medium strong to strong rock, crushed zones at 1" to 5", 20" to 24", 38" to 43" and 60" to 69", 73" to 75', 91" to 93"□25.83' - Horizontal to vertical fractures, slightly to extremely fractured, extremely clost to rough and irregular discontinuous fracture surface, little greenish gray clay infilling that has slightly healed verticaly at 33" to 36" and 52" to 66" from top, surface stain greenish gray and brown, greenish gray clay infilling at vugs most of infilling probably washed away while coring 20" to 23" other surface have slightly altered joint walls with little or no infilling material, sandy clay mineral infilling 9" form top and 9" from bottom, mixed with crushed rock or curshed zones□bit plugged occasionally possibly due to infilling momentary fluid loss
Inner barrel jammed, stopped run at 38'
continued run

vuggy appearance, fine grained, medium strong to strong rock, crushed zone 12" to 14" from top

End of Boring

Color pictures of the cores _____
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
CH2M HILL

SOIL BORING LOG

Date 9/20/07

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

SECTION I-74 Bridge over Mississippi River **LOCATION** (N=562839.058, E=2459725.968), **SEC.** 32, **TWP.** 18N, **RNG.** 1W, 4th **PM**

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

STRUCT. NO. _____
Station _____

BORING NO. ILR0502
Station _____
Offset _____
Ground Surface Elev. 588.73 ft

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

Groundwater Elev.:
First Encounter 571.7 ft ▼
Upon Completion _____ ft
After _____ **Hrs.** _____ ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Silty Fine to Medium Sand (SM) light brown, moist, loose		3		
		4 3		
584.73				
Clay (CL) gray, moist, soft to very stiff, trace sand		2		
	-5	2 4	0.3 P	
Rimac: Pu = 115 lbs		3		
Sample 3: Atterberg limits (LL=44, PI=25) tests performed		4 6	2.1	
		4		
		7 7	3.0 P	
	-10			
Rimac: Pu = 102 lbs		4		
		7 10	1.9	
		2		
		4 7	2.5 P	
574.73				
Sandy Clay (CL) dark gray, moist, stiff		4		
Rimac: Pu = 72 lbs	-15	5 7	1.3	
		7		
571.93 ▼		10 15		
Silty Fine to Medium Sand (SM) yellowish brown, wet, medium dense to dense		7		
Sample 9: grain size analysis performed		15 30		
	-20			

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Silty Fine to Medium Sand (SM) yellowish brown, wet, medium dense to dense *(continued)*				
		50/5"		
	-25			
559.73				
End of Boring				
	-30			
	-35			
	-40			

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

Illinois Department of Transportation

Division of Highways
CH2M HILL

SOIL BORING LOG

Date 9/29/07

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=562651.568, E=2459761.977), SEC. 32, TWP. 18N, RNG. 1W, 4th PM

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

STRUCT. NO. _____
Station _____

BORING NO. ILR0504
Station _____
Offset _____
Ground Surface Elev. 598.28 ft

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

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

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				Silt (ML) yellowish brown, moist, trace fine to coarse sand, loose
	3			
	3 4	2.0 P		
	2			
-5	3 3	2.0 P		
591.28				End of Boring
-10				
-15				
-20				

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

Illinois Department of Transportation
Division of Highways
CH2M HILL

SOIL BORING LOG

Date 9/27/07

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

SECTION I-74 Bridge over Mississippi River **LOCATION** (N=562552.708, E=2459768.225), **SEC.** 32, **TWP.** 18N, **RNG.** 1W, 4th **PM**

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

STRUCT. NO. _____
Station _____

BORING NO. ILR0505
Station _____
Offset _____
Ground Surface Elev. 603.80 ft

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

Groundwater Elev.:
First Encounter 581.8 ft ▼
Upon Completion _____ ft
After _____ **Hrs.** _____ ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				Lean Clay (CL) Little sand, grayish brown, moist, loose, trace coarse sand Sample 1: Atterberg limits (LL=25, PI=11) test performed
	3			
	3 4	3.0 P		
				Rimac: Pu = 61 lbs
	2			
-5	2 3	1.1		
597.80				
				Lean Clay (CL) gray, moist, very stiff, trace fine sand, trace gravel
	3			
	3 6	2.0 P		
				Sample 5: Atterberg limits (LL=31, PI=17) test performed
		2.5 P		
-10				
	3			
	3 6	3.0 P		
	4			
	5 5	3.0 P		
	3			Sample 7: grain size analysis performed
-15	5 6			
				Sample 8: Atterberg limits (LL=24, PI=13) test performed
				Sample 9: Atterberg limits (LL=29, PI=14) test performed
585.55				
	22			**Fine to Medium Sand (SP)** grayish brown, moist, very dense, trace silt
	30 34			
-20				

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				Fine to Medium Sand (SP) grayish brown, moist, very dense, trace silt *(continued)*
▼				
580.80				
	10			**Silt (ML)** gray, moist, hard, trace fine sand, medium dense
	13 19	3.0		
-25				
575.80				
	3			**Silty Fine to Medium Sand (SP)** gray, wet, medium dense, trace fine gravel
	4 10			
-30				
	10			
	11 11			
-35				
565.80				
565.47	13			**Shale** gray, hard
	20 23			
-40				

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

Illinois Department of Transportation
Division of Highways
CH2M HILL

SOIL BORING LOG

Date 9/27/07

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=562552.708, E=2459768.225), SEC. 32, TWP. 18N, RNG. 1W, 4th PM

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

STRUCT. NO. _____
Station _____

BORING NO. ILR0505
Station _____
Offset _____
Ground Surface Elev. 603.80 ft

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

Groundwater Elev.:
First Encounter 581.8 ft ▼
Upon Completion _____ ft
After _____ Hrs. _____ ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Sandy Clay (poss. Weathered Shale) (CL) gray, wet, hard, fine grained, moderate plasticity Sample 12: Atterberg limits (LL=27, PI=13) test performed *(continued)* 560.80				
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 9/24/07

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=562453.163, E=2459768.622), **SEC.** 32, **TWP.** 18N, **RNG.** 1W, 4th **PM**

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

STRUCT. NO. _____
Station _____

BORING NO. ILR0506
Station _____
Offset _____
Ground Surface Elev. 609.17 ft

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

Groundwater Elev.:
First Encounter 568.2 ft ▼
Upon Completion _____ ft
After _____ **Hrs.** _____ ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				Silty Fine to Coarse Sand (SM) grayish brown, moist, loose
	4			
	5 5			
605.17				
	3			**Silt (ML)** grayish brown, moist, medium dense
-5	5 6	1.5 P		
603.17				
	5			**Lean Clay (CL)** dark gray, moist, stiff to hard, trace fine to medium sand
	6 6	1.8		
	3			Rimac: Pu = 94 lbs
	5 6	3.0 P		
-10	4			
	5 7	3.0 P		
	3			Sample 3: Atterberg limits (LL=31, PI=16) test performed
	5 8	1.5 P		
-15				
-20				

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				Lean Clay (CL) dark gray, moist, stiff to hard, trace fine to medium sand *(continued)*
	3			
	6 8	1.3		
-25				
	5			
	7 9	3.0 P		
-30				Sample 4: Atterberg limits (LL=34, PI=21) test performed
	10			Sample 5: Atterberg limits (LL=38, PI=22) test performed
	50/5"	4.5 P		
-35				
	4			
	7 10			
-40				

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

Illinois Department of Transportation
Division of Highways
CH2M HILL

SOIL BORING LOG

Date 9/24/07

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=562453.163, E=2459768.622), SEC. 32, TWP. 18N, RNG. 1W, 4th PM

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

STRUCT. NO. _____
Station _____

BORING NO. ILR0506
Station _____
Offset _____
Ground Surface Elev. 609.17 ft

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

Groundwater Elev.:
First Encounter 568.2 ft ▼
Upon Completion _____ ft
After _____ Hrs. _____ ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Top: Same as above, very stiff Bottom: Clayey sand (SL) grey, medium dense, fine to medium sand, low plasticity fines	568.17 ▼			
Clayey Sand (SC) dark gray, wet, hard, fine to medium grained, low plasticity		15 16 13		
	564.17 -45			
	561.17	16		
Shale Gray, wet, very hard		50/5		
	559.17 -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 9/20/07

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=562296.289, E=2459771.026), **SEC.** 32, **TWP.** 18N, **RNG.** 1W, 4th **PM**

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

STRUCT. NO. _____
Station _____

BORING NO. ILR0507
Station _____
Offset _____
Ground Surface Elev. 617.19 ft

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

Groundwater Elev.:
First Encounter 570.2 ft ▼
Upon Completion _____ ft
After _____ **Hrs.** _____ ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Lean Clay (CL) brown, moist, little to some fine to medium sand			
Sample 1: Atterberg limits (LL=25, PI=11) test performed, grain size analysis performed	3		
	4		
	5		
	2		
-5	3		
	4		
611.19			
Lean Clay (CL) gray, moist, stiff to hard, little fine sand	0		
Sample 3: grain size analysis performed	4	4.0	
Sample 4: Atterberg limits (LL=30, PI=15) test performed	5	P	
Sample 5: Atterberg limits (LL=34, PI=19) test performed	3		
Sample 7: Atterberg limits (LL=30, PI=17) test performed	5	3.0	
-10	5	P	
	3		
	4	1.7	
	4		
	4		
	4	1.3	
	5		
	3		
-15	7	2.0	
	10	P	
600.19			
Silt and Fine to Coarse Sand (ML, SM) Trace gravel, gray, medium dense	4		
Sample 8: grain size analysis performed	5		
	7		
597.19 -20			

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Sandy Lean Clay (CL) dark brown, moist, stiff			
Sample 9: Atterberg limits (LL=31, PI=15) test performed	4		
	7	1.7	
	10		
592.19 -25			
Lean Clay (CL) gray, moist, stiff to very stiff Rimac: Pu = 91 lbs			
Sample 10: Atterberg limits (LL=35, PI=17) test performed	7		
	10	1.3	
	10		
-30			
	7		
	10	1.3	
	11		
-35			
	10		
	10	2.0	
	11	P	
-40			

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

Illinois Department of Transportation
Division of Highways
CH2M HILL

SOIL BORING LOG

Date 9/20/07

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

SECTION I-74 Bridge over Mississippi River LOCATION (N=562296.289, E=2459771.026), SEC. 32, TWP. 18N, RNG. 1W, 4th PM

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

STRUCT. NO. _____
Station _____

BORING NO. ILR0507
Station _____
Offset _____
Ground Surface Elev. 617.19 ft

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

Groundwater Elev.:
First Encounter 570.2 ft ▼
Upon Completion _____ ft
After _____ Hrs. _____ ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Lean Clay (CL) gray, moist, stiff to very stiff Rimac: Pu = 91 lbs Sample 10: Atterberg limits (LL=35, PI=17) test performed *(continued)*		12 20 37		
572.19	-45			
Clayey Fine to Medium Sand (SC) gray, wet, very dense	▼			
569.19		10		
Silty Fine to Medium Sand (SM) gray, wet, medium dense		10 10		
567.19	-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 9/21/07

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=562195.058, E=2459775.498), **SEC.** 32, **TWP.** 18N, **RNG.** 1W, 4th **PM**

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

STRUCT. NO. _____
Station _____

BORING NO. ILR0508
Station _____
Offset _____
Ground Surface Elev. 621.93 ft

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

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

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material Description
				Silt and Fine to Coarse Sand (ML, SM) brownish gray, moist, trace fine to coarse sand, medium dense
	4			
	4 6			
	3			Sample 1: grain size analysis performed
-5	6 5			
	0			
	0 2			
613.93				
	3			**Lean Clay (CL)** gray, moist, stiff to hard, trace to little fine to coarse sand
	3 6			
-10	7			Sample 4: grain size analysis performed
	10 12	3.5 P		Sample 5: Atterberg limits (LL=27, PI=14) test performed
	4			
	7 10	2.4		Sample 7: Atterberg limits (LL=30, PI=17) test performed
	7			
-15	7 11	3.0 P		Sample 8: Atterberg limits (LL=30, PI=17) test performed
	7			
	10 15	2.1		
-20				
				Lean Clay (CL) gray, moist, stiff to hard, trace to little fine to coarse sand
				Sample 4: grain size analysis performed
	4			Sample 5: Atterberg limits (LL=27, PI=14) test performed
	8 10	3.5 P		Sample 7: Atterberg limits (LL=30, PI=17) test performed
-25				Sample 8: Atterberg limits (LL=30, PI=17) test performed *(continued)*
	5			
	10 13	1.2		
-30				
	10			
	15 17	4.3 P		
-35				
	10			
	12 13	2.5 P		
-40				

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

Illinois Department of Transportation
Division of Highways
CH2M HILL

SOIL BORING LOG

Date 9/21/07

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=562195.058, E=2459775.498), **SEC.** 32, **TWP.** 18N, **RNG.** 1W, 4th **PM**

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

STRUCT. NO. _____
Station _____

BORING NO. ILR0508
Station _____
Offset _____
Ground Surface Elev. 621.93 **ft**

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

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

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Lean Clay (CL) gray, moist, stiff to hard, trace to little fine to coarse sand Sample 4: grain size analysis performed Sample 5: Atterberg limits (LL=27, PI=14) test performed		5 10 15	3.0 P	
Sample 7: Atterberg limits (LL=30, PI=17) test performed	-45			
Sample 8: Atterberg limits (LL=30, PI=17) test performed *(continued)*		9 15 19	2.1	
571.93	-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)

PROJECT NUMBER:	BORING NUMBER:	
158835.AA.GS.01	ILR1801	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : I-74 Bridge over Mississippi River, Quad Cities IA/IL — LOCATION : Retaining wall 4/5 (562865.8 N, 2459614.2 E)

ELEVATION : 587.7 ft MSL — DRILLING CONTRACTOR : Terracon

DRILLING EQUIPMENT AND METHOD : CME 550 Truck Mounted Rig, 140 lb Auto Hammer, SS SPT — ORIENTATION : Vertical

WATER LEVELS : --- — START : 10/4/07 15:45 — END : 10/4/07 18:45 — LOGGER : F. Abreu

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (in)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	PP (TSF)	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
587.7					**Grass Matter**			
	1.0				followed by brown silty clay with sand, topsoil embedded with root matter			
		21.0	S-1SS	4-6-6-5 (12)	**Silty Clay With Sand (CL-ML)** uniform brown, dry, stiff, non plastic, little to few medium to fine sands, trace coarse sands, strong cementation, crumbly, possible native soil		4.5	
	3.0							
		16.0	S-2SS	2-3-2-3 (5)	**Sandy Lean Clay (CL)** olive gray with orange brown stains, dry to moist, non plastic, medium stiff, slightly oxidized, occasional soft root matter at bottom of sample, possible transition soil, few coarse to fine sands, occasional sand seams		2	
5	5.0							
582.7								
	6.0				same as above, crumbly, slightly oxidized, few coarse to fine sands, medium stiff, occasional sand seams, possible gumbotil			Rimac: Pu = 19 lbs
		17.0	S-3SS	1-2-2-3 (4)			1.5	
	8.0							
		1.0	S-4SS	push	same as above, some coarse to fine sands, moist, non plastic, very sandy at bottom of tube			Tried to push ST from 8.0'-10.0' recorded in bag sample but soil was too sandy at 9.0' bgs
10	10.0							
577.7								
	11.0				**Silty Clay (CL-ML)**			Rimac: Pu = 11 lbs
		23.0	S-5SS	0-0-2-1 (2)	gray with little light brown with dark gray streaks, moist to wet, medium plasticity, soft, slightly oxidized, trace fine sands, slow dilatancy, occasional sand lenses, very sundry at top 1" of sample		1.75	
	13.0							
		4.0	T-1ST	push	Bottom of Tube: uniform gray, moist, medium plasticity, soft, unweathered, possible loess		<1	Water encountered at 14'6" bgs while sampling
15	15.0							
572.7					**Lean Clay (CL)**			Tried to obtain ST from 15.0'-17.0' but sample fell out of tube during extraction, pushed tube to obtain sample
		16.0	S-6SS	push	uniform gray, very wet, medium plasticity, soft, unweathered, trace fine sands, few silt			
	17.0				**Well Graded Sand With Silt (SW-SM)** uniform gray with light gray coarse sands, coarse to fine sands, trace silt, possible old alluvial deposits			
	18.0				**Poorly Graded Sand With Silt (SP-SM)**			
		20.0	S-7SS	2-5-6-5 (11)	olive gray with gray, wet, medium dense, medium to fine sands with few silt and trace coarse rounded sands scattered clay strands, possible old alluvium submerged in water table			
20	20.0							
567.7								
	21.0				loose, medium dense, medium sands with trace fine and coarse sands, possible old alluvium			
		24.0	S-8SS	2-4-5-20 (9)			1.75	
	23.0				**Silty Clay (CL-ML)**			
	23.8	7.0	S-9SS	4-50/3 (50/3")	uniform dark gray, medium stiff to stiff, moist, low plasticity, trace fine sands, moderate to strong cementation, slightly crumbly, possible transition zone		4-4.5	Weathered rock zone at 23.0'-24.0'
					Clayey Sand With Gravel (SC) dark gray, dry to moist, crumbly, coarse to fine sands with little clay and silt and little fine gravels, possible residual soil			Top of rock at 24.0'
25								
562.7					**Sandy Lean Clay With Gravel (poss. Weathered Rock) (CL)** gray at top to light gray to white at bottom, moist to wet, strong cementation, hard, harder as depth increases, clay and sand (50%), coarse to fine angular to subangular sands, trace fine gravels, possible residual soil to completely weathered rock			
30								

PROJECT NUMBER:	BORING NUMBER:	
158835.AA.GS.01	ILR1801	SHEET 2 OF 2

ROCK CORE LOG

PROJECT : I-74 Bridge over Mississippi River, Quad Cities IA/IL — LOCATION : Retaining wall 4/5 (562865.8 N, 2459614.2 E)

ELEVATION : 587.7 ft MSL — DRILLING CONTRACTOR : Terracon

CORING EQUIPMENT AND METHOD : CME 550 Truck Mounted Rig, Double tube, 10 ft core barrel, NQ wireline, diamond bit,Vertical — ORIENTATION : Vertical

WATER LEVELS : --- — START : 10/4/07 15:45 — END : 10/4/07 18:45 — LOGGER : F. Abreu

DEPTH AND ELEVATION BELOW SURFACE (ft)	CORE RUN, LENGTH, AND RECOVERY (%)	DISCONTINUITIES: R Q D (%)	DISCONTINUITIES: FRACTURES PER FOOT	DISCONTINUITIES: DESCRIPTION (DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS)	SYMBOLIC LOG	LITHOLOGY (ROCK TYPE, COLOR, MINERALOGY, TEXTURE, WEATHERING, HARDNESS, AND ROCK MASS CHARACTERISTICS)	COMMENTS (SIZE AND DEPTH OF CASING, FLUID LOSS, CORING RATE AND SMOOTHNESS, CAVING ROD DROPS, TEST RESULTS, ETC.)
			10+	25.8' - sound to moderately fractured, extremely fractured at crushed zones, rough adn irregular discontinuous fracture surfaces, moderate to close discontinuities, 45° from 54" from top, and 60° discontinuities at 66" and 71" from top, no rock wall contact at 90% of fractures due to crushed rock thick enough to prevent contact, little or no greenish gray clay infilling at fractures, surfaces stained dark gray to greenish gray, possibly due to little infilling, tightly healed at 73" from top		**Limestone** light gray, medium to fine grained, vuggy appearance indicating water action, moderately weathered at top 16", remainder slightly weathered to unweathered, medium strong to strong or very strong, crushed rock zones at 7" to 13", 20" to 23" and from top 74" to 77"	Occasional jamming of core barrel Jammed barrel at 39"-52" Extracted sample and continued run
			5+				
			4+				
30 557.7			1				
			3+				
			0				
			10+				Top of rock at 33.0'-87"
			3+				
35 552.7			0				
						Bottom of Boring at 35.6 ft bgs on 10/4/07 18:45	End of Boring at 35.6' bgs at 18:45
40 547.7							
45 542.7							
50 537.7							
55 532.7							

HANSON

SOIL BORING LOG

Date 6/24/10

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

SECTION 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. 081-6014
Station
BORING NO. RW 05-1
Station 49+20
Offset 30' Lt.
Ground Surface Elev. 585.6 ft

Surface Water Elev.
Stream Bed Elev.
Groundwater Elev.:
First Encounter 577.1 ft ▼
Upon Completion 581.1 ft ▽
After Hrs. ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material Description
				FILL - Dark brown, moist, soft, clayey SILT
	4		12	
584.10				
2	5			FILL - Brown, moist, loose, silty, medium-grained SAND with silty clay
	4			
				Hard drilling, augered to 5.0 ft and continued sampling
4				
581.10 ▽				FILL - Brown, moist, medium, silty CLAY with trace sand and gravel
	7		25	
6	3			
	4			
579.10				Brownish gray, moist, soft, sandy SILT with clay
8 ▼				
		0.75P	22	
10				
	2	0.50P	21	
12	2			
	2			
			24	
572.10		1.18S	25	
		0.85S	23	Gray, wet, soft, clayey, fine-grained SAND
14				
570.10				
				Brown, wet, soft, sandy CLAY
16				
			23	
568.10				
				Gray, wet, fine- to coarse-grained SAND with gravel
18				
566.60	12		14	
	18			
	25			
20				
				Brown, wet, dense, silty, fine- to coarse-grained SAND with trace gravel
				(continued from previous page)
22				
562.10				
	50/5"	4.00P	8	Gray, slightly moist, hard, WEATHERED SILTSTONE
24				
560.60				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)

HANSON

SOIL BORING LOG

Date 6/24/10

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. 081-6014
Station
BORING NO. RW 05-2
Station 51+21
Offset 51' Lt.
Ground Surface Elev. 593.5 ft

Surface Water Elev.
Stream Bed Elev.

Groundwater Elev.:
First Encounter ft
Upon Completion 584.5 ft ▽
After Hrs. ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
FILL - Brown, moist, stiff, silty CLAY with trace sand				
	2	woh 5 7	2.07B	14
			3.00P	17
	4			15
588.00				
Brown, wet, stiff, very fine- to medium-grained sandy SILT with clay	6	4 7 7	1.04B	21
585.50	8			
Gray, moist, soft to very stiff, very fine- to fine-grained sandy SILT with trace clay	▽	5 16 12	0.46S	13
	10			
			2.64B	13
581.70			2.98B	21
Dark gray, moist, very stiff, silty CLAY	12			
	14	7 12 12	2.82B	19
578.50				
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)

HANSON

SOIL BORING LOG

Date 6/24/10

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

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

COUNTY Rock Island **DRILLING METHOD** Hollow Stem Auger **HAMMER TYPE** Auto

STRUCT. NO. 081-6014
Station
BORING NO. RW 05-3
Station 57+40
Offset 57' Lt.
Ground Surface Elev. 625.6 **ft**

Surface Water Elev.
Stream Bed Elev.

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

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
FILL - Brownish gray, moist, silty CLAY with fine-grained sand				
			2.25B	17
			2.42B	13
	2			
622.60				
Gray with brown mottles, moist, stiff, silty CLAY with sand and trace gravel		5 6 7	3.80P	13
	4			
	6			12
			2.33B	14
618.10				
Gray, moist, stiff, silty CLAY with sand and trace gravel	8			
		5 6 7	1.88B	14
615.60	10			
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)

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
158835.AA.GS.01	RW403 SHEET 1 OF 3

SOIL BORING LOG

PROJECT : I-74 Bridge over Mississippi River, Quad Cities IA/IL
LOCATION : VIADUCT, MAINLINE (562804.7 N, 2459633.2 E)

ELEVATION : 590.2 ft MSL
DRILLING CONTRACTOR : Terracon

DRILLING EQUIPMENT AND METHOD : CME-550, HOLLOW STEM AUGER
ORIENTATION : VERTICAL

WATER LEVELS : 22.0 ft bgs
START : 11/11/05 09:53
END : 11/11/05 14:43
LOGGER : L. Hunt

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (in)	#TYPE	STANDARD PENETRATION TEST RESULTS 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
590.2	0.0						
		20.0	B1SS	3-5-5-6 (10)	**Clay (CL)** Clay, trace gravel, brown and dark brown, dry to moist, hard, blocky to homogeneous.		PP: 4.5+ tsf
	2.0						
		20.0	B2SS	3-5-5-5 (10)	Clay, brown, mottled dark brown to dark brown, moist, stiff to hard, blocky.		PP: 4.5+ tsf
	4.0						
5					**Sandy Clay (CL)**		PP: 1.0 tsf
585.2		18.0	B3SS	3-3-4-4 (7)	Sandy Clay, trace gravel, dark gray brown, moist soft to medium stiff, homogeneous.		
	6.0						
		21.0	B4ST	push			Wc=14%; UW=115 pcf PP: 4.5+ tsf, LL: 20, PL: 17
	8.0						
		20.0	B5SS	3-4-7-7 (11)	**Clay (CL)** Clay, brown, mottled dark brown, gray brown, and orange brown, dry to moist, very stiff, homogeneous.		B-5: 2" of sand, gravel, and clay at top of sample. PP: 4.4 tsf
10	10.0						
580.2		20.0	B6SS	4-7-7-6 (14)	Clay, orange brown, gray brown, mottled dark brown, moist to dry, stiff to very stiff, homogeneous.		PP: 4.5 tsf
	12.0						
		24.0	B7SS	3-4-7-8 (11)	Clay, dark brown to black, moist, stiff to very stiff, lensed and homogeneous.		PP: 3.6 tsf
	14.0						B-7: 1" of sand at about 13.5' (19" from top of split spoon).
15		24.0	B8SS	3-5-8-8 (13)	Clay, dark gray brown, moist, stiff to very stiff, homogeneous.		PP: 2.6 tsf
575.2	16.0						
20							
570.2	20.0						
		24.0	B9SS	4-7-7-6 (14)	Clay, dark gray brown, moist to wet, very stiff, homogeneous.		B-9: 4" of sand at 21.67' (bottom 4" of sample) PP: 1.6 tsf
	22.0						Water at 22' while drilling
25							
565.2	25.0				**Sandy Clay (CL)**		B-10: Silt to Shale for 4" at bottom of sample.
		18.0	B10SS	6-6-7-8 (13)	Sandy Clay, dark gray brown, wet, medium stiff to stiff, homogeneous to lensed.		PP: 1.5 tsf
	27.0						
30							

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
158835.AA.GS.01	RW403 SHEET 2 OF 3

SOIL BORING LOG

PROJECT : I-74 Bridge over Mississippi River, Quad Cities IA/IL LOCATION : VIADUCT, MAINLINE (562804.7 N, 2459633.2 E)

ELEVATION : 590.2 ft MSL DRILLING CONTRACTOR : Terracon

DRILLING EQUIPMENT AND METHOD : CME-550, HOLLOW STEM AUGER ORIENTATION : VERTICAL

WATER LEVELS : 22.0 ft bgs START : 11/11/05 09:53 END : 11/11/05 14:43 LOGGER : L. Hunt

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (in)	#TYPE	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
560.2	30.0 31.0	0.0	B11SS	50/3 (50/3")	No Sample. Begin Rock Coring at 31.0 ft bgs See the next sheet for the rock core log		
35 555.2							
40 550.2							
45 545.2							
50 540.2							
55 535.2							
60							

PROJECT NUMBER:	BORING NUMBER:	
158835.AA.GS.01	RW403	SHEET 3 OF 3

ROCK CORE LOG

PROJECT : I-74 Bridge over Mississippi River, Quad Cities IA/IL — LOCATION : VIADUCT, MAINLINE (562804.7 N, 2459633.2 E)

ELEVATION : 590.2 ft MSL — DRILLING CONTRACTOR : Terracon

CORING EQUIPMENT AND METHOD : CME-550, NQ DOUBLE BARREL DIAMOND TIP — ORIENTATION : VERTICAL

WATER LEVELS : 22.0 ft bgs — START : 11/11/05 09:53 — END : 11/11/05 14:43 — LOGGER : L. Hunt

DEPTH AND ELEVATION BELOW SURFACE (ft)	CORE RUN, LENGTH, AND RECOVERY (%)	DISCONTINUITIES: R Q D (%)	DISCONTINUITIES: FRACTURES PER FOOT	DISCONTINUITIES: DESCRIPTION (DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS)	SYMBOLIC LOG	LITHOLOGY (ROCK TYPE, COLOR, MINERALOGY, TEXTURE, WEATHERING, HARDNESS, AND ROCK MASS CHARACTERISTICS)	COMMENTS (SIZE AND DEPTH OF CASING, FLUID LOSS, CORING RATE AND SMOOTHNESS, CAVING ROD DROPS, TEST RESULTS, ETC.)
	31.0		10+	31' - Horizontal fractures, extremely fractured to slightly fractured, extremely close to close discontinuity, rough (undulating and planar) joints, stiff to very stiff clay mineral coatings with >1/4" thick rock wall separation.		**Limestone** Limestone, dark gray, fine grained, highly weathered, weak to medium strength, laminated to thin beds.	Auger refusal at 31'; begin rock coring at 31' at 11:04 Coring rate slow and smooth; no rod drops. At 33' coring water started running darker.
	R1NQ 2.5 ft 47%	23	10+				
	33.5		NR				
	R2NQ 1.5 ft 28%	0	10+	33.5' - Horizontal fractures, extremely fractured to moderately fractured, extremely close to very close discontinuity, rough (undulating) joints, very stiff clay mineral coatings with >1/4" thick rock wall separation.		Limestone, gray, fine grained, highly weathered, strong rock, laminated to very thin beds, vugs present (1/8" to 1/4" in diameter).	
35	35.0		NR				
555.2			10+			Limestone, gray, fine grained, highly weathered, medium to very weak rock, laminated to thin beds.	
	R3NQ 4.5 ft 100%	35	10+	35' - Horizontal fractures, extremely fractured to slightly fractured, extremely close to close discontinuity, rough to smooth (undulating and planar) joints, tightly healed to crushed rock and very stiff clay mineral coatings with >1/4" thick rock wall separation; at 37.08' vertical fractures; first 8" of rock core-shale and crushed rock.			R-1 to R-3: Coring bit keeps getting clogged as a result of clay/shale content in limestone. No coring water loss during entire coring process.
			10+				
	39.5		10+				
40			10+				
550.2			10+	39.5' - Horizontal fractures, extremely fractured to sound, extremely close to moderate discontinuity, rouh (undulating) to smooth (planar) joints, tightly healed (<3/4" thick) to soft clay mineral and sandy coatings with <1/4" thick rock wall separation.		Limestone, light gray, fine grained, slightly to moderately weathered, medium strength, laminated to medium beds, vugs present (not many--<1/2" in diameter).	
	R4NQ 5 ft 100%	50	10+				
			10+				
			10+				
	44.5		10+				
45			2	44.5' - Horizontal fractures, extremely fractured to sound, extremely close to moderate discontinuity, smooth (planar) joints, tightly healed (<1/2" thick) to sandy/gravelly mixture in fractures no significant rock wall separation; at 46.5' black clay and gravel in fractures for 2-3".		Limestone, light gray, fine grained, slightly to moderately weathered, very strong rock, laminated to thin beds, very few vugs present (<1/4" in diameter).	
545.2			10+				
	R5NQ 4 ft 96%	54	10+				
			10+				
	48.5						
	R6NQ 2 ft 100%	42	10+	48.5' - Horizontal fractures, extremely fractured to sound, extremely close to moderate discontinuity, smooth (planar) joints, tightly healed (<1/2" thick) to sandy/gravelly mixture in fractures no significant rock wall separation.		Limestone, light gray, fine grained, slightly to moderately weathered, medium strength, laminated to thin beds, very few vugs present (<1/4" in diameter).	
50			10+				
540.2	50.5					Bottom of Boring at 50.5 ft bgs on 11/11/05 14:43	End of core run at 50.5'.
55							
535.2							
60							
530.2							

Illinois Department of Transportation
Division of Highways
JCI

SOIL BORING LOG

Date 9/13/07

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

SECTION _____ **LOCATION** (N=562983.081, E=2459718.225), **SEC.** 32, **TWP.** 18N, **RNG.** 1W, 4th **PM**

COUNTY Rock Island **DRILLING METHOD** HSA, CME 550X **HAMMER TYPE** CME AUTOMATIC

STRUCT. NO. _____
Station 48+91
BORING NO. VIAIL-125
Station _____
Offset _____
Ground Surface Elev. 585.80 ft

Surface Water Elev. _____ ft
Stream Bed Elev. _____ ft
Groundwater Elev.:
First Encounter 573.8 ft ▼
Upon Completion _____ ft
After _____ **Hrs.** _____ ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				CONCRETE + Base Course
				584.80
	4			CLAY - black to dark brown, some silt, slightly to medium plastic, medium stiff to very stiff, moist
	3	0.9		
	2	B		
	2			
	2	0.7		
-5	2	B		
	2			- brownish orange to greenish gray, with a black clay seam at 8.5'
	2	0.7		
	3	B		
	2			
	2	0.7		
-10	2	B		
	1			
▼	2	0.7		
	2	B		- orange brown fine grained sand interbed in a silt and clay matrix, saturated at 12.3'
				- slightly plastic
		0.8	35.1	
-15		P		
	0			
	2	0.4		
	1	B		
	1			
				- maroon, little silt, medium plastic 566.60
	5	0.5		
-20	7	B		

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				SAND - maroon to bright greenish yellow, fine to medium grained, conglomeratic with fine gravel. 564.50 *(continued)*
	13			
	25			- olive, fine grained sand, moist at 21'
	13			
				WEATHERED SHALE - medium gray, clay-like to soft rock-like, severely weathered.
	13			
	11			
-25	13			
	15			
	18			
	50/5"			558.30
				Borehole continued with rock coring.
-30				
-35				
-40				

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

BBS, from 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
JCI

ROCK CORE LOG

Date 9/13/07

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

SECTION _____ **LOCATION** (N=562983.081, E=2459718.225), **SEC.** 32, **TWP.** 18N, **RNG.** 1W, 4th **PM**

COUNTY Rock Island **CORING METHOD** NQ Core

STRUCT. NO. _____
Station 48+91

BORING NO. VIAIL-125
Station _____
Offset _____
Ground Surface Elev. 585.80 **ft**

CORING BARREL TYPE & SIZE NQ Wireline
Core Diameter 1.8 **in**
Top of Rock Elev. 564.50 **ft**
Begin Core Elev. 558.30 **ft**

	DEPTH (ft)	CORE (#)	RECOVERY (%)	R.Q.D. (%)	CORE TIME (min/ft)	STRENGTH (tsf)
LIMESTONE - medium to light brownish gray, occasional pitting and locally vuggy, with partings, seams, and clasts of green clay-like shale, hard to moderately hard, thin to medium bedded, primarily horizontal to very low angle fractures with localized high angle fractures, fracture surfaces are planar to irregular and slightly rough to rough, fresh to slightly weathered. 558.30	-30	Run 1	100	41	1.5	
- clay-like shale interbed at 30.9'-31.7'		Run 2	98	40	1.2	933.4
- mixed shale and limestone layer with high angle to vertical fractures at 31.9' - 33.4'						
- light to medium gray, locally pitted and vuggy at 33.3', clay-like to soft rock-like green shale partings and inclusions in irregular patterns at 45° to vertical at 36.4' -36.9'	-35					
		Run 3	100	98	1.2	
- light gray, stylolitic	-40					
- very light gray, fine grained, fresh, very minor pitting and occasional stylolites		Run 4	100	75	1.2	
- very thin bedded, occasional shale partings, moderate pitting and vuggy at 44.3'-45.9'	-45					
		Run 5	100	88	0.8	

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 9/13/07

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

SECTION _____ **LOCATION** (N=562983.081, E=2459718.225), **SEC.** 32, **TWP.** 18N, **RNG.** 1W, 4th **PM**

COUNTY Rock Island **CORING METHOD** NQ Core

STRUCT. NO. _____
Station 48+91

BORING NO. VIAIL-125
Station _____
Offset _____
Ground Surface Elev. 585.80 **ft**

CORING BARREL TYPE & SIZE NQ Wireline
Core Diameter 1.8 **in**
Top of Rock Elev. 564.50 **ft**
Begin Core Elev. 558.30 **ft**

DEPTH (ft)	CORE (#)	RECOVERY (%)	R.Q.D. (%)	CORE TIME (min/ft)	STRENGTH (tsf)
537.60					
LIMESTONE - medium gray, fine to medium, pitted, "birdseye" texture, occasional shale partings, medium bedded, fractures range from medium (45°) to high (80°) angled, fresh to slightly weathered. Pitting and "birdseye" texture diminish with depth.					
-50					
	Run 6	100	100	0.8	
-55					
529.90					
End of Boring					
-60					
-65					

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

SOIL BORING LOG

Date 9/12/07

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

SECTION _____ **LOCATION** (N=562900.26, E=2459617.358, **SEC.** 32, **TWP.** 18N, **RNG.** 1W, 4th **PM**

COUNTY Rock Island **DRILLING METHOD** HSA, CME 550X **HAMMER TYPE** CME AUTOMATIC

STRUCT. NO. _____
Station 48+91

BORING NO. VIAIL-126
Station _____
Offset _____
Ground Surface Elev. 586.40 ft

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

Groundwater Elev.:
First Encounter 572.4 ft ▼
Upon Completion _____ ft
After _____ **Hrs.** _____ ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				SILT - dark gray, some clay, non to slightly plastic, stiff, slightly moist.
	5			
	6	1.5		
	6	B		
	3			- slightly to medium plastic
582.60				
	3	1.3	19.3	CLAY - greenish gray to orange brown, some silt, sand seams, slightly to medium plastic, stiff to medium stiff, moist.
-5	3	B		
	2			- slightly plastic
	3	0.5	19.9	
	3	B		
	2			
	2	0.7	20.0	
-10	2	B		
	1			[Upon completion of boring, offset 10' south, augered to 11' depth, and took Shebly tube sample at 11'-13']
	1	0.8	22.3	- medium gray, medium to highly plastic, with brown fine grained sand seams at 9.2', 11.3' and 13.7
	2	P		
▼	1			- some silt, saturated
	1	0.8	26.0	
-15	1	B		
	0			[Note: attempted Shelby tube sample at 16'-18'; no recovery; followed-up with SPT sample]
	1	0.5	24.6	
	1	B		
				- vertical fracture at 47.3'-47.9'
	1			- red brown to maroon, medium to highly plastic
567.10				
	2	0.6		
-20	4	B		

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				SAND - medium gray, fine grained, trace to little silt, trace fine to medium coarse gravel (1/2 inch minus), loose, saturated. *(continued)*
	31			
	48			
	50/4"			
562.90				
				WEATHERED SHALE - light gray, clay-like to soft rock-like, severely weathered.
-25	50/1"			
560.40				
				Borehole continued with rock coring.
-30				
-35				
-40				

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

BBS, from 137 (Rev. 8-99)

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** SL

SECTION _____ **LOCATION** (N=562900.26, E=2459617.358, **SEC.** 32, **TWP.** 18N, **RNG.** 1W, 4th **PM**

COUNTY Rock Island **CORING METHOD** NQ Core

STRUCT. NO. _____
Station 48+91

BORING NO. VIAIL-126
Station _____
Offset _____
Ground Surface Elev. 586.40 **ft**

CORING BARREL TYPE & SIZE NQ Wireline
Core Diameter 1.8 **in**
Top of Rock Elev. 562.90 **ft**
Begin Core Elev. 560.40 **ft**

	DEPTH (ft)	CORE (#)	RECOVERY (%)	R.Q.D. (%)	CORE TIME (min/ft)	STRENGTH (tsf)
LIMESTONE - medium to light brown gray, fine to medium grained, hard, thin to medium bedding, occasional pitting, fractures are primarily horizontal, planar to slightly irregular, smooth to slightly rough, fresh to very slightly weathered except at vugs.	560.40	Run 1	100	76	1.4	
- occasional pitting at 26'-27.5'; vuggy at 27.6'-28.3' with pits to 2" length	-30					
-from 31' to 45': occasionally vuggy with clay-like shale fillings in voids, occasional stylolites, pitting, very thin to thin bedded		Run 2	98	92	1	350.2
	-35					
		Run 3	100	91	1	
	-40					
		Run 4	100	92	0.8	
	-45					
	540.40					

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** SL

SECTION _____ **LOCATION** (N=562900.26, E=2459617.358, **SEC.** 32, **TWP.** 18N, **RNG.** 1W, 4th **PM**

COUNTY Rock Island **CORING METHOD** NQ Core

STRUCT. NO. _____
Station 48+91

BORING NO. VIAIL-126
Station _____
Offset _____
Ground Surface Elev. 586.40 **ft**

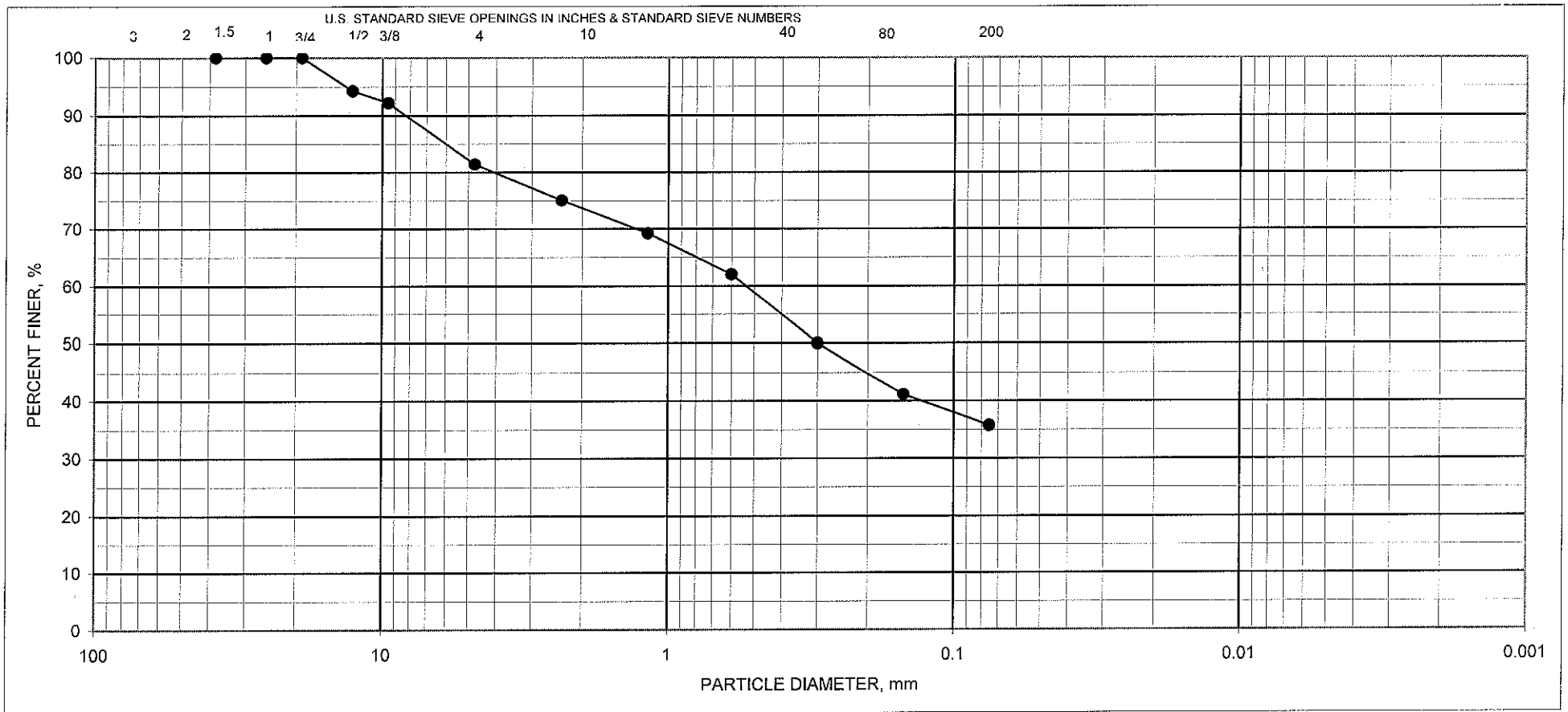
CORING BARREL TYPE & SIZE NQ Wireline
Core Diameter 1.8 **in**
Top of Rock Elev. 562.90 **ft**
Begin Core Elev. 560.40 **ft**

DEPTH (ft)	CORE (#)	RECOVERY (%)	R.Q.D. (%)	CORE TIME (min/ft)	STRENGTH (tsf)
LIMESTONE - medium brownish gray, fine to medium grained, pitted, "birdseye" texture, moderately hard, horizontal and slightly irregular, rough fracture.	Run 5	100	100	1	
- vertical fracture at 47.3'-47.9' with 1/2 "birdseye" texture and 1/2 gray fine limestone					
-50					
535.40					
End of Boring					
-55					
-60					
-65					

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)

SUMMARY OF LABORATORY TEST RESULTS FOR SOIL

Boring	Sample No.	Depth From	Depth To		Moisture Content %	Dry Unit Weight pcf	Atterberg Limits LL %	Atterberg Limits PL %	Atterberg Limits PI %	Grain Size Passing 4 %	Grain Size Passing 10 %	Grain Size Passing 40 %	Grain Size Passing 200 %	Compressive Strength tsf
	SS-6	13.5	15.0		24.2									
	SS-9	21.0	22.5		28.3									
	SS-10	23.5	25.0		27.3									
VIAIL-123	SS-2	3.5	5.0		18.6									
	SS-3	6.0	8.0		22.9									
	ST-1	8.5	10.5		21.1	107	26	17	9					0.80
	SS-4	11.0	12.5		23.9									
	SS-5	13.5	15.0		26.4									
	SS-6	16.0	17.5		28.4									
	SS-7	18.5	20.0		29.5									
VIAIL-124	SS-2	3.5	5.0		18.1									
	SS-3	6.0	7.5		19.4									
	SS-4	8.5	10.0		19.9									
	ST-1	11.0	13.0		25.8	101	29	22	7					0.84
	SS-5	13.5	15.0		24.2									
	SS-6	16.0	17.5		25.0									
	SS-7	18.5	20.0		27.4									
VIAIL-125	SS-2	3.5	5.0		20.4									
	SS-3	6.0	7.5		18.9									
	SS-4	8.5	10.0		23.1									
	SS-5	11.0	12.5		23.3									
	ST-1	13.5	15.5		35.1		29	23	6					
	SS-6	16.0	17.5		29.9									
	SS-8	21.0	22.5		14.2									
	SS-9	23.5	25.0		18.2									
VIAIL-126	SS-2	3.5	5.0		19.3									
	SS-3	6.0	7.5		19.9		25	21	4					
	SS-4	8.5	10.0		20.0									
	SS-5	11.0	12.5		22.3									
	SS-6	13.5	15.0		26.0									
	SS-7	16.0	17.5		24.6									
	SS-9	21.0	22.5							96	92	35	10	



GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0501	2	3-5	Sandy Silt with Clay	CL	17.0	25	16	9

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

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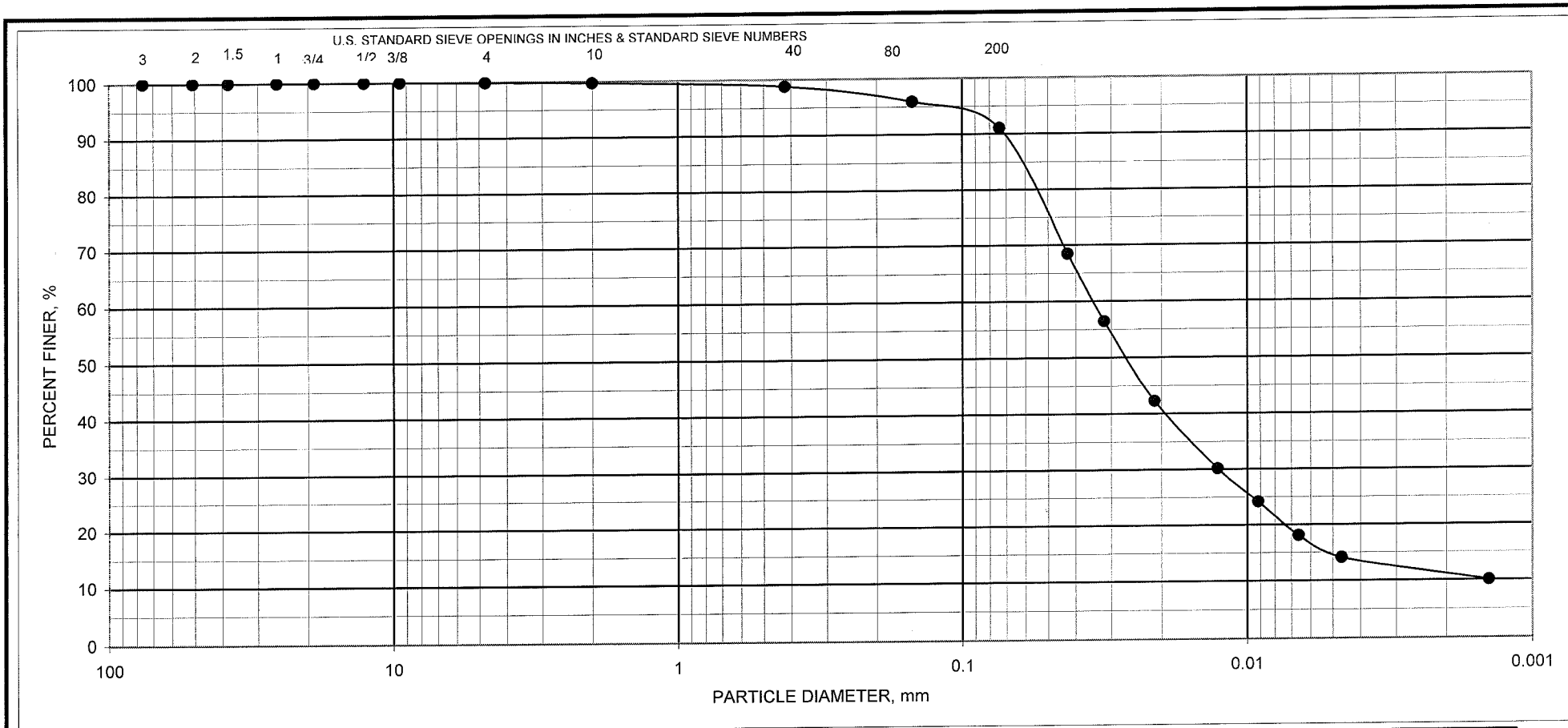

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	ASTM DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0501	3	6-8			16.1	36	18	18

PROJECT I-74 Corridor

Moline, IL JOB NO. 07045052 DATE 2/21/2008

Terracon

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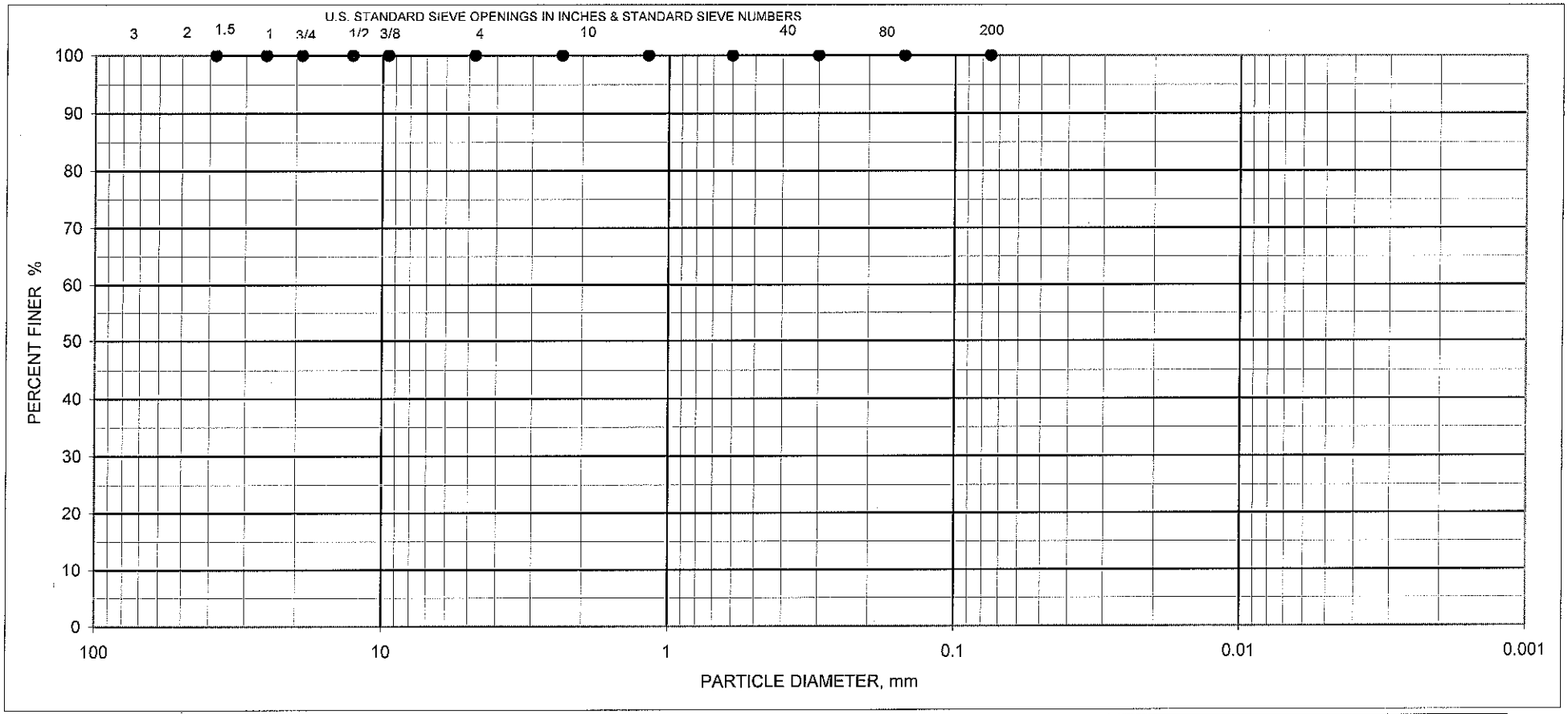

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0501	4	11-13	Silty Clay	CL	29.2	32	21	11

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

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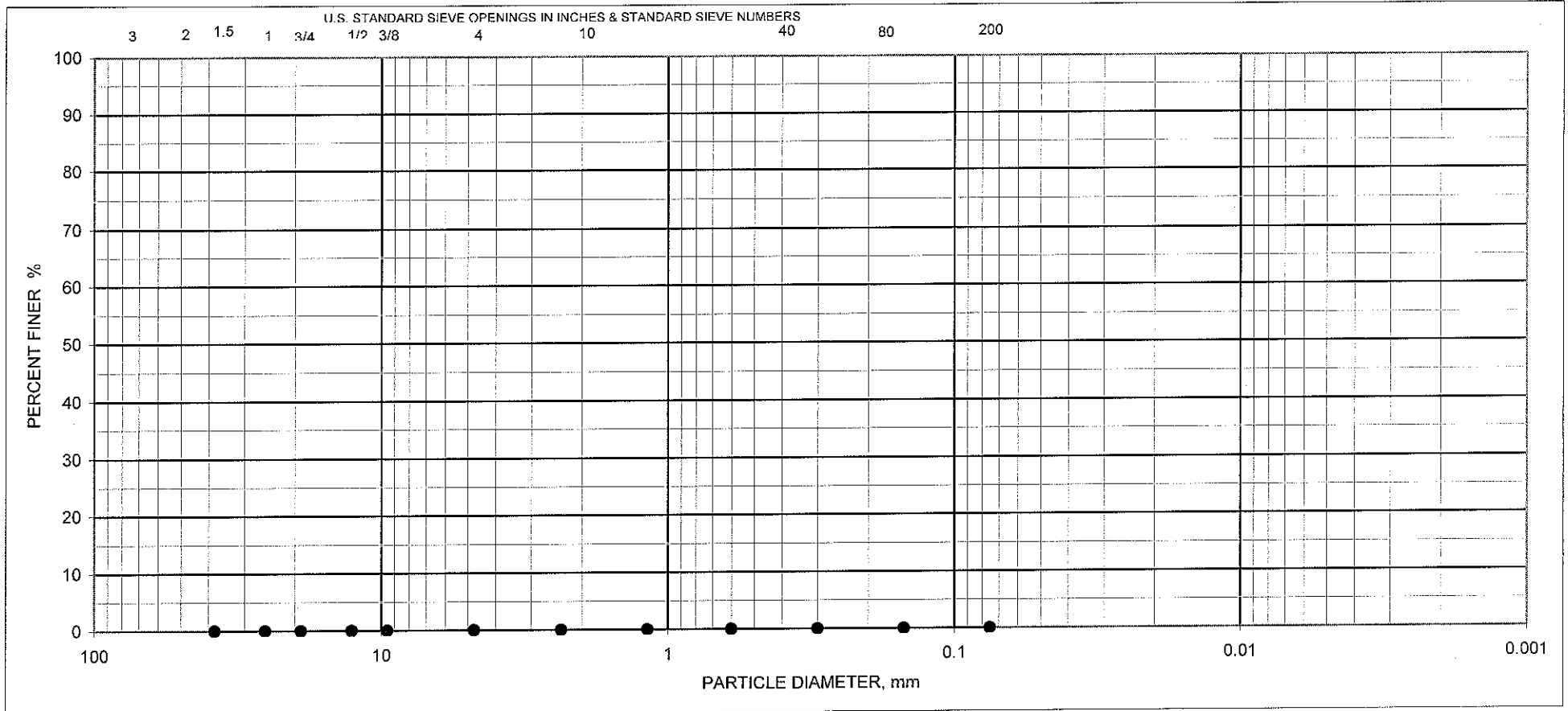

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0502	3	6-8	Clay	CL		44	19	25

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

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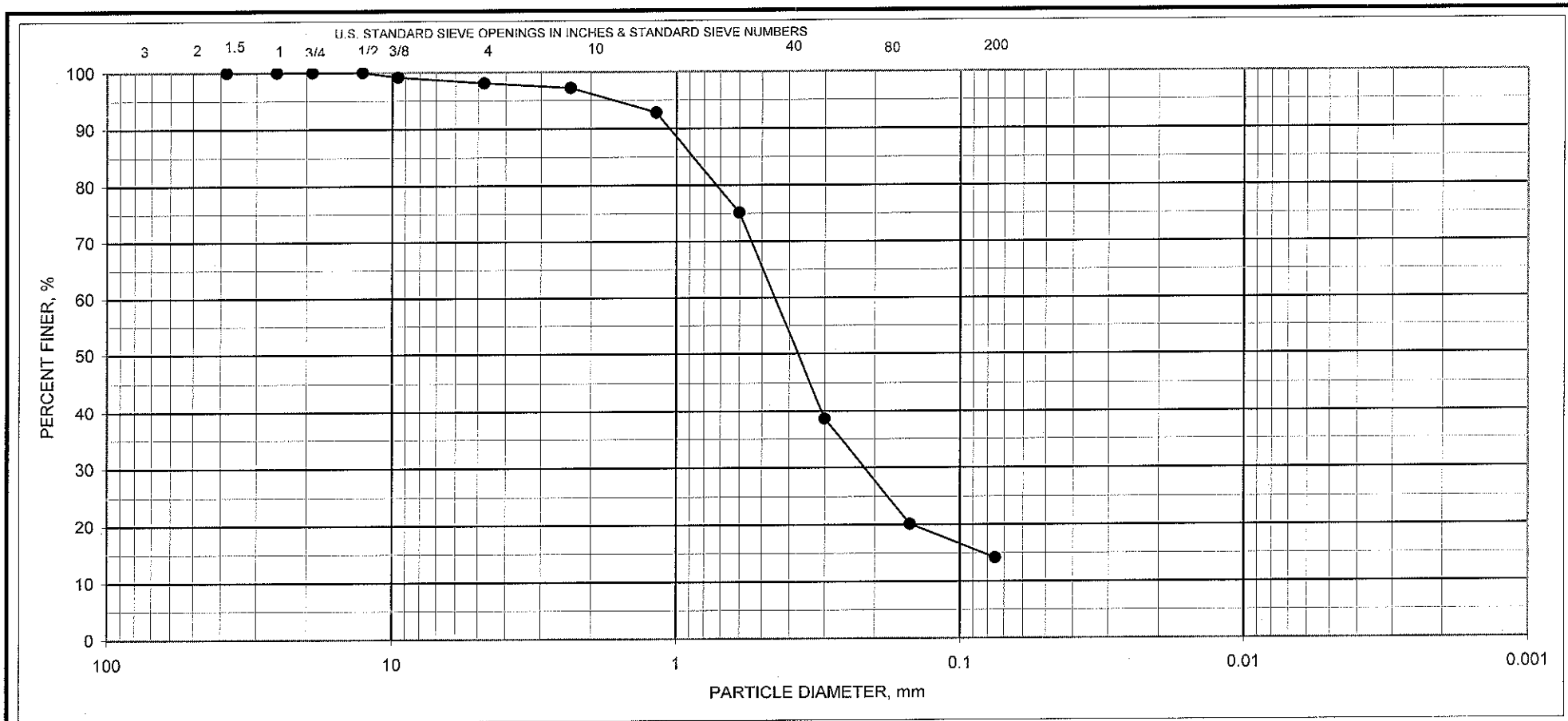

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0502	9	20	Silty Sand					

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

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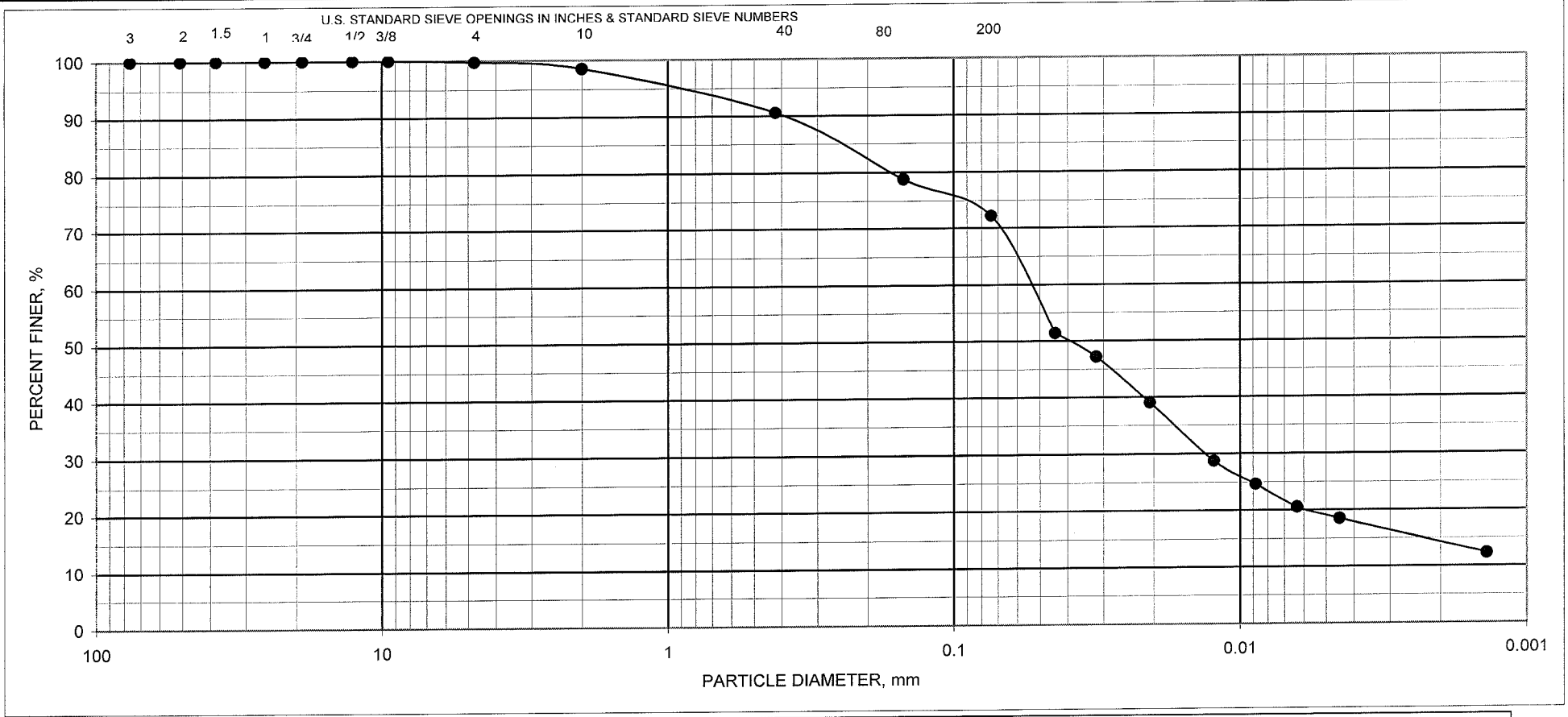

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	ASTM DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0505	1	2				25	14	11

PROJECT I-74 Corridor

Moline, IL JOB NO. 07045052 DATE 2/21/2008

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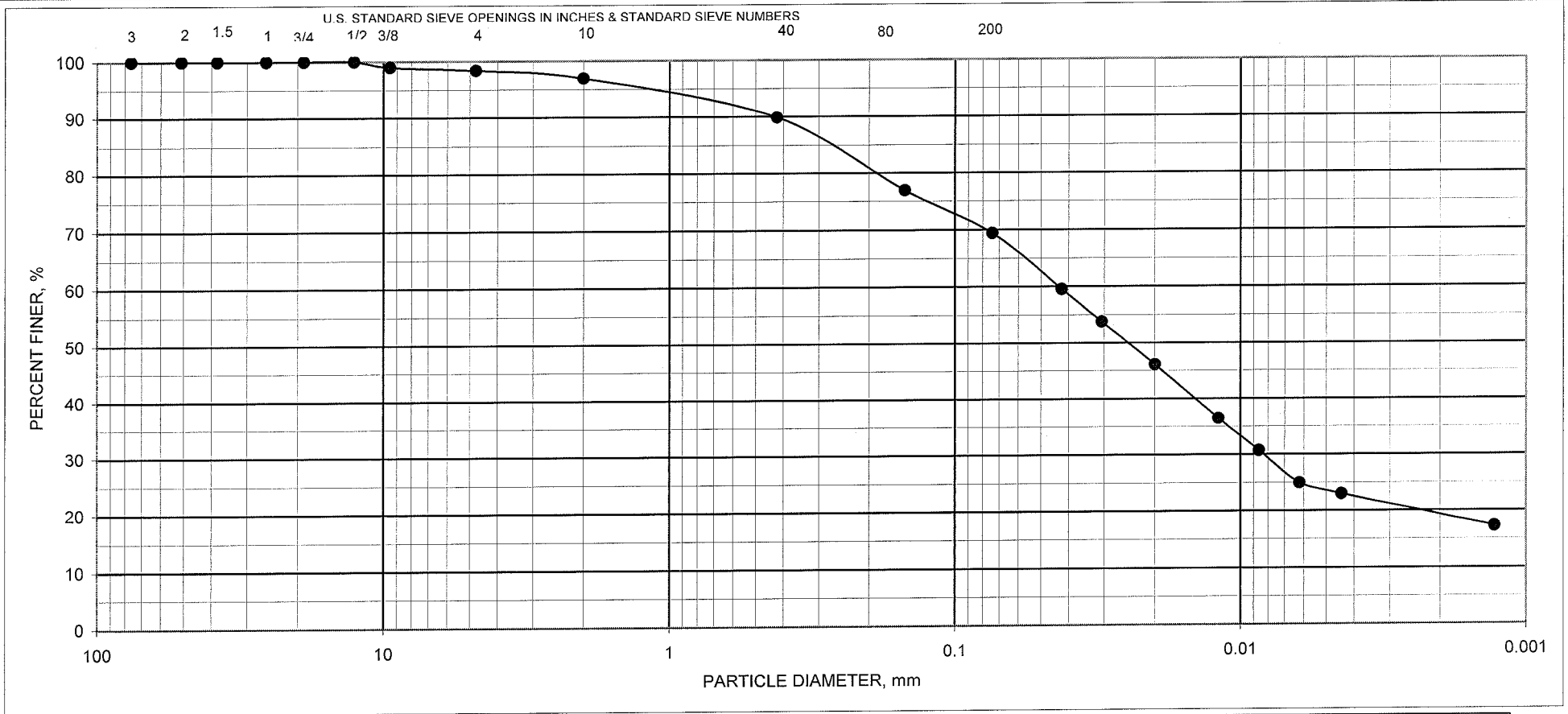

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	ASTM DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0505	3	6			13.9			

PROJECT I-74 Corridor

Moline, IL JOB NO. 07045052 DATE 2/15/2008

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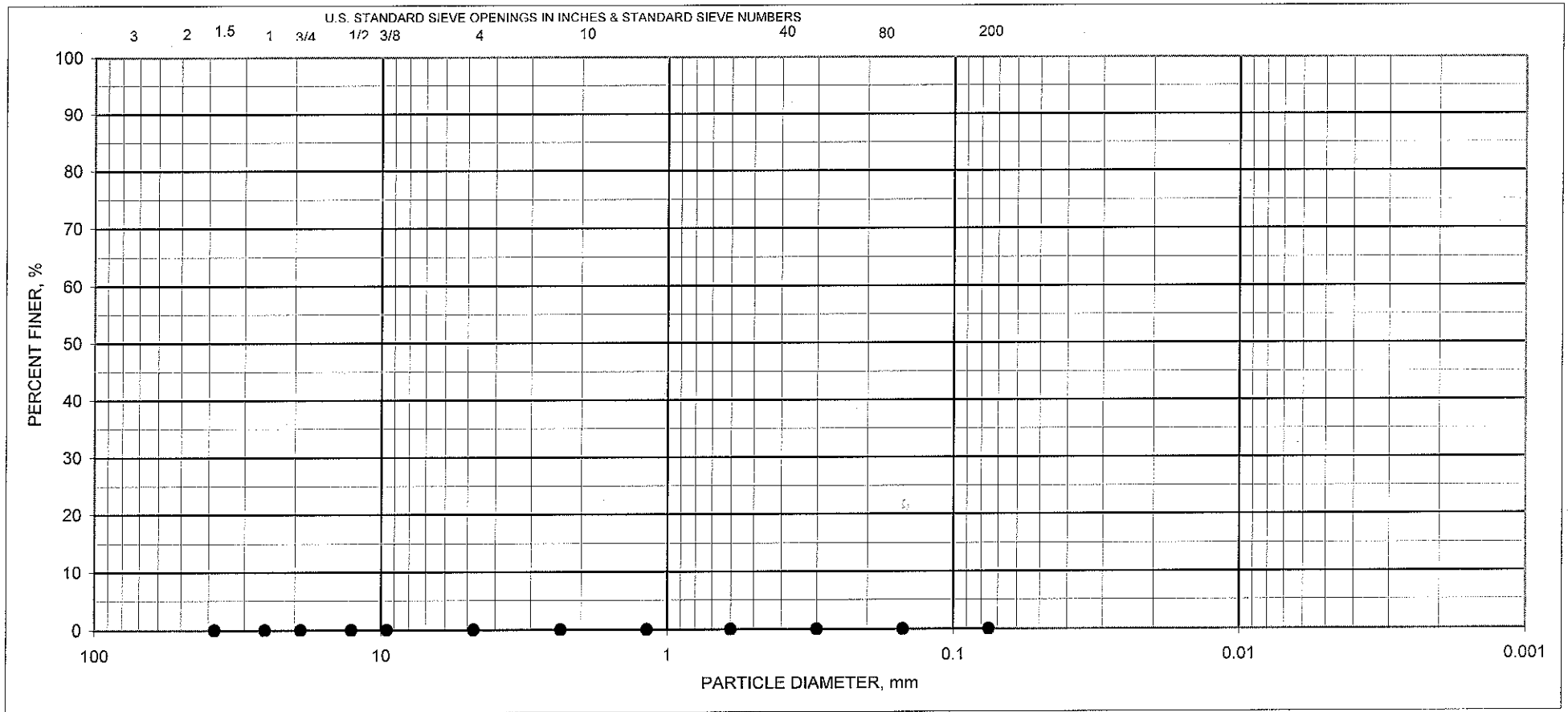

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0505	5	10	Clay	CL	14.6	31	14	17

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

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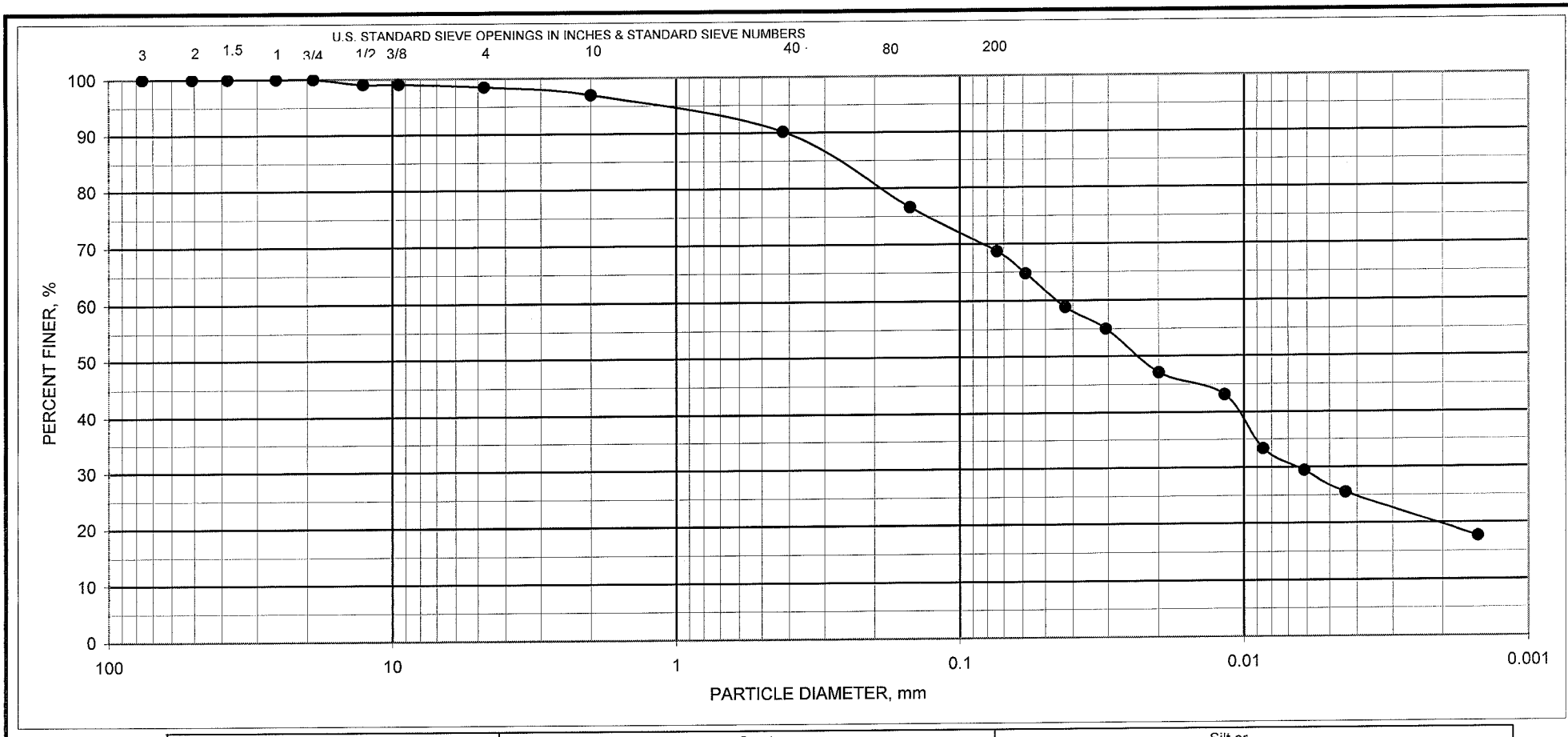

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	ASTM DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0505	7	14			12.9			

PROJECT I-74 Corridor

Moline, IL JOB NO. 07045052 DATE 2/14/2008

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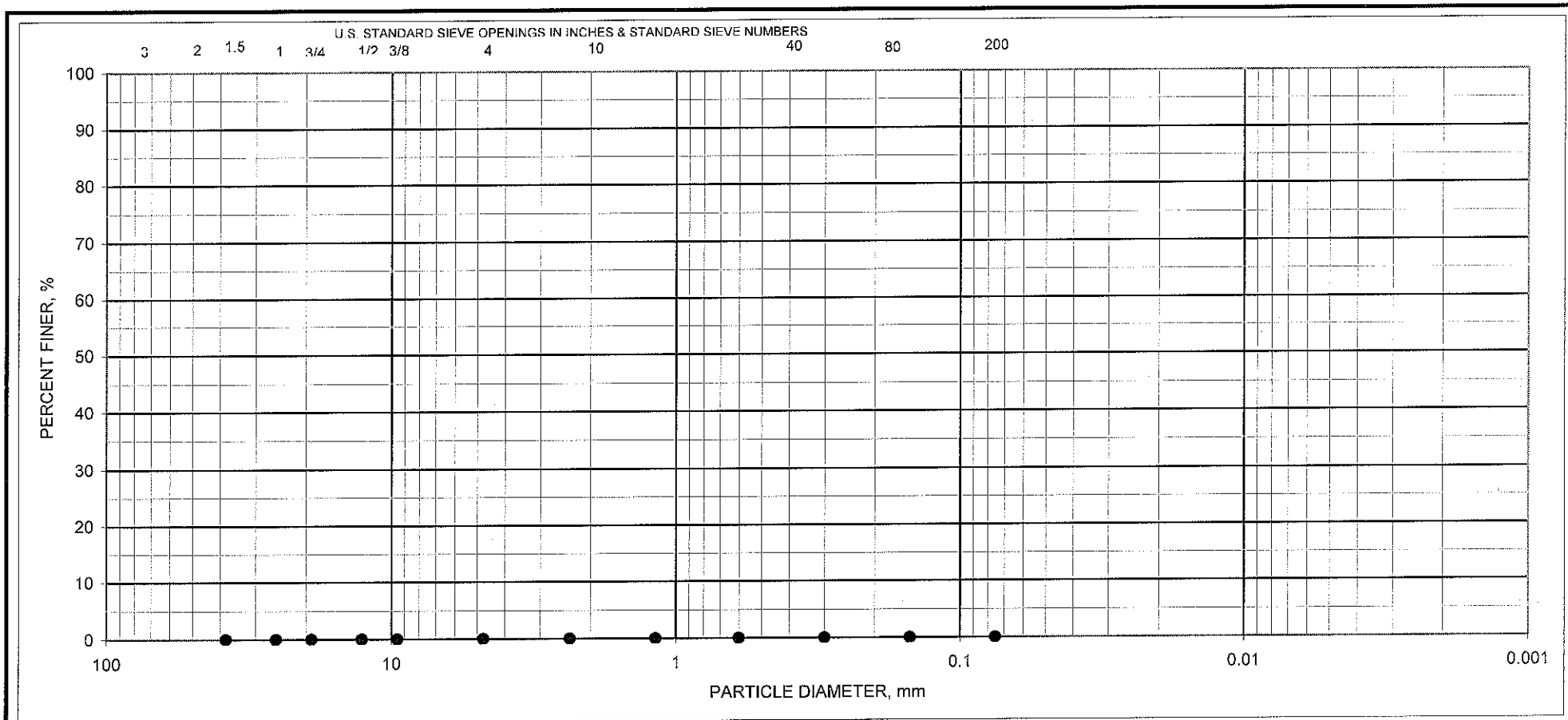

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0505	8	20	Clay	CL		24	11	13

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/21/2008

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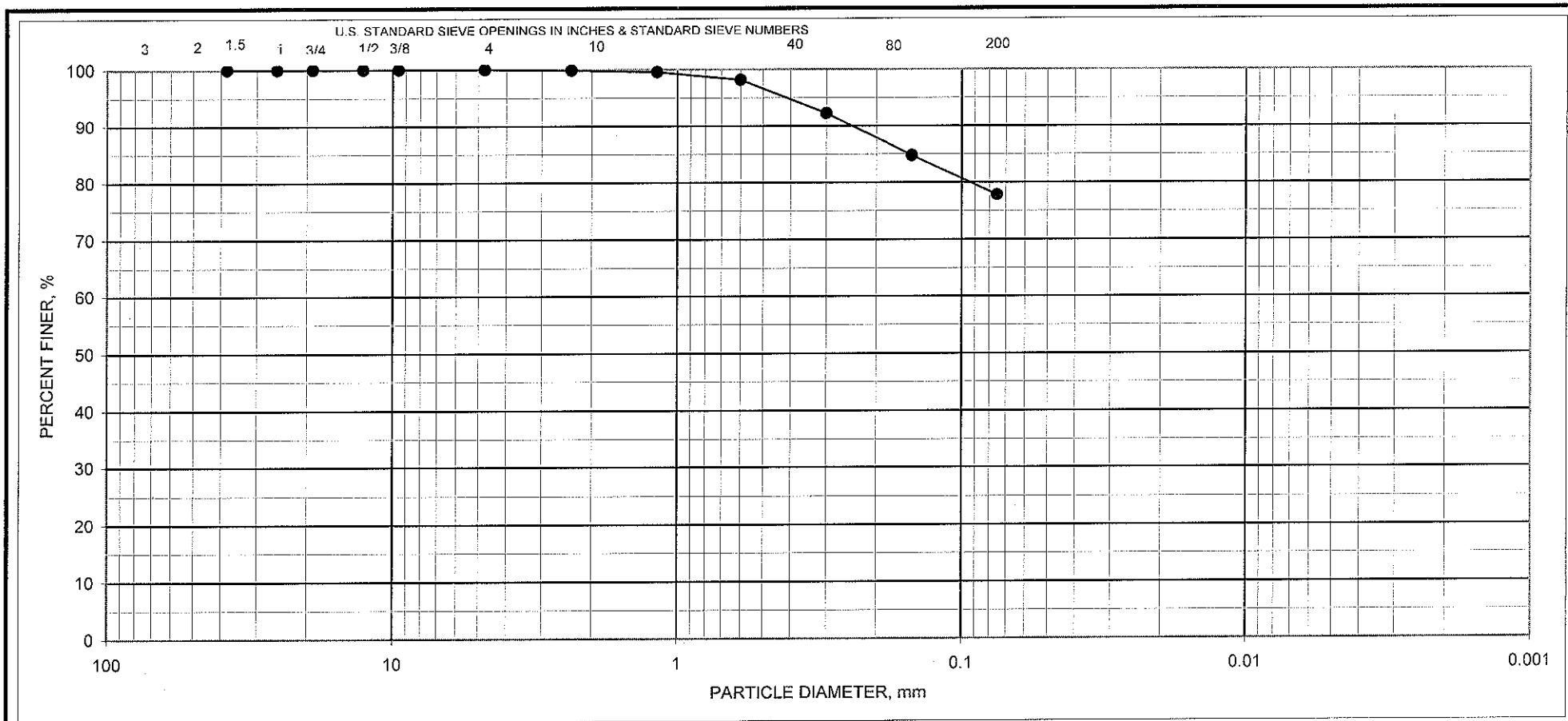

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0505	9	25	Silt	CL		29	15	14

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/21/2008

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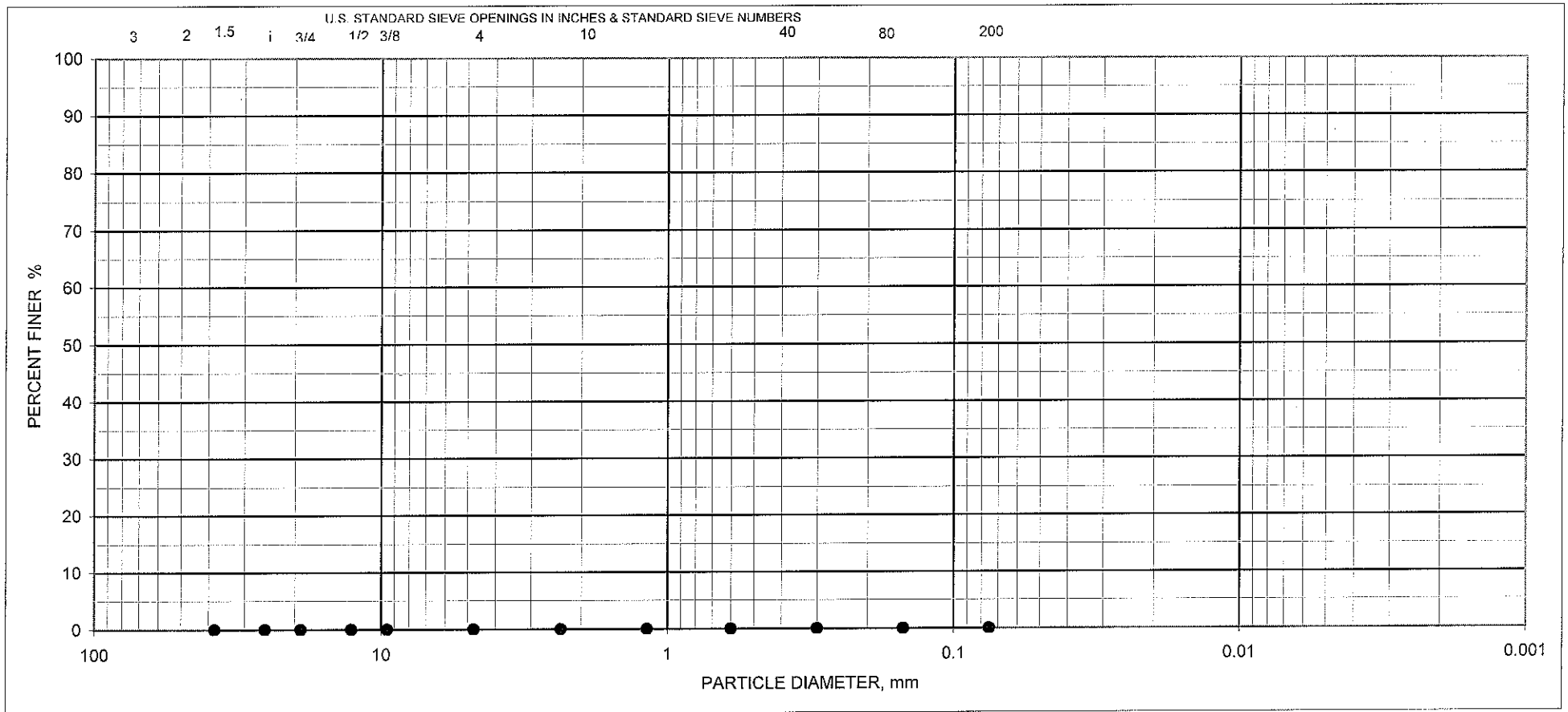

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0505	12	40		CL		27	14	13

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

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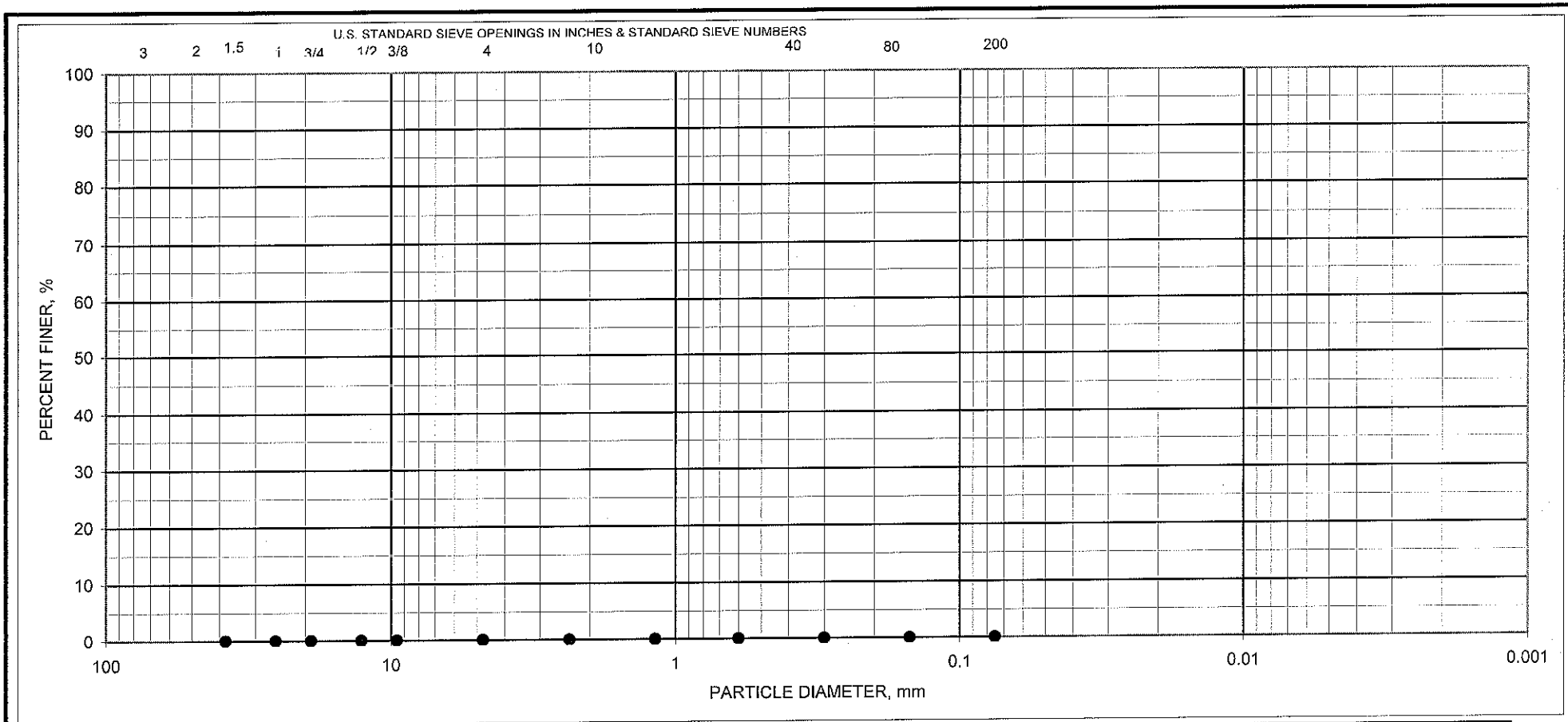

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0506	3	6	Clay	CL	15.0	31	15	16

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

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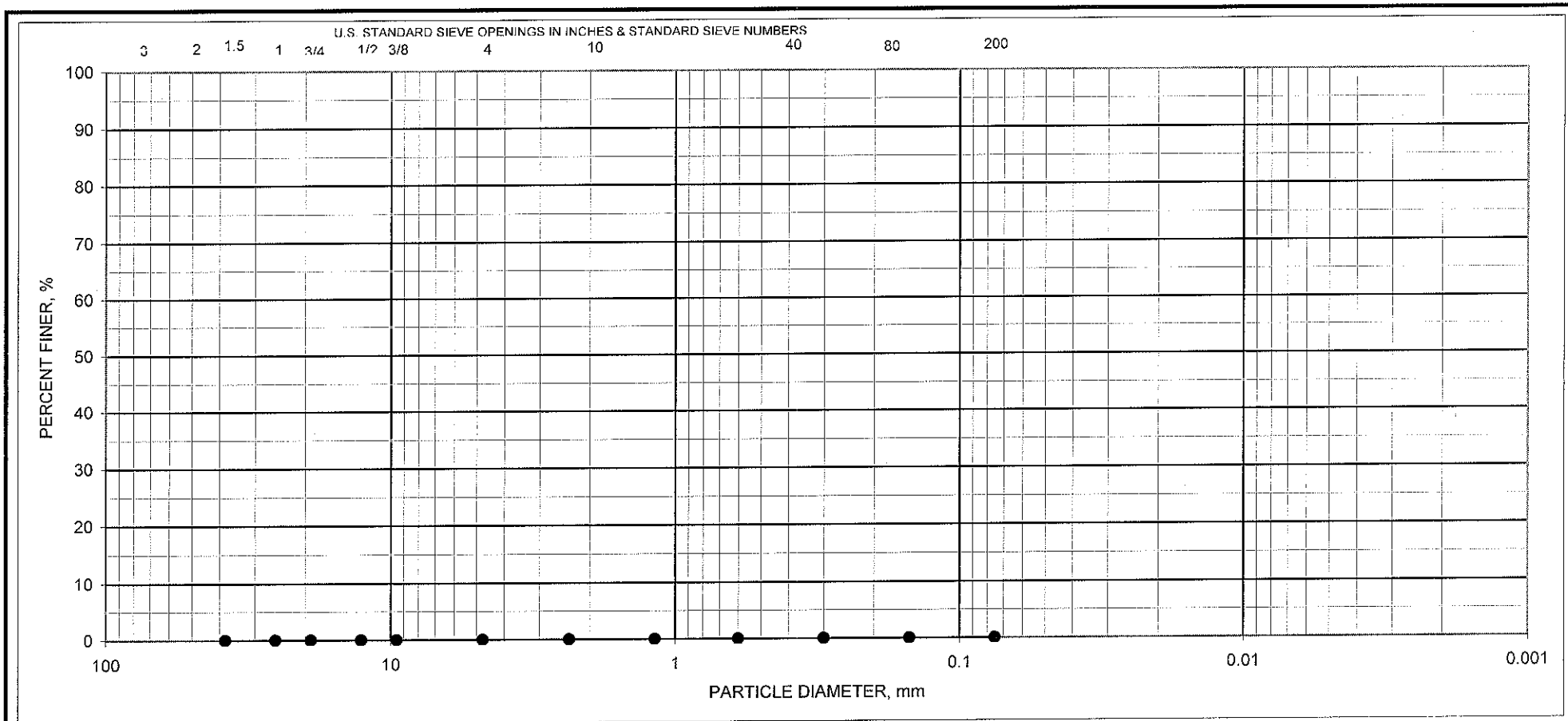

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0506	4	8		CL	13.9	34	13	21

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

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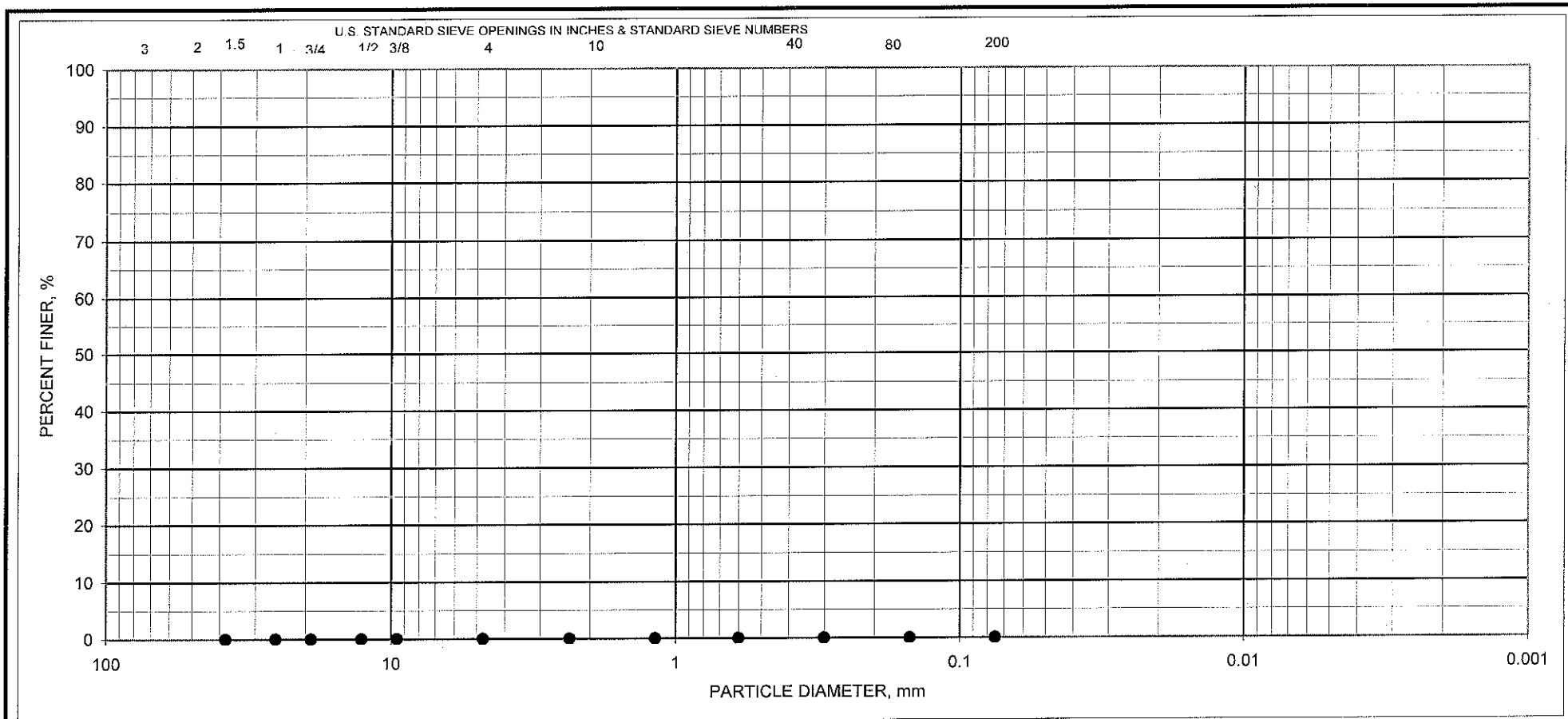

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0506	5	10	Clay	CL	13.7	38	15	22

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

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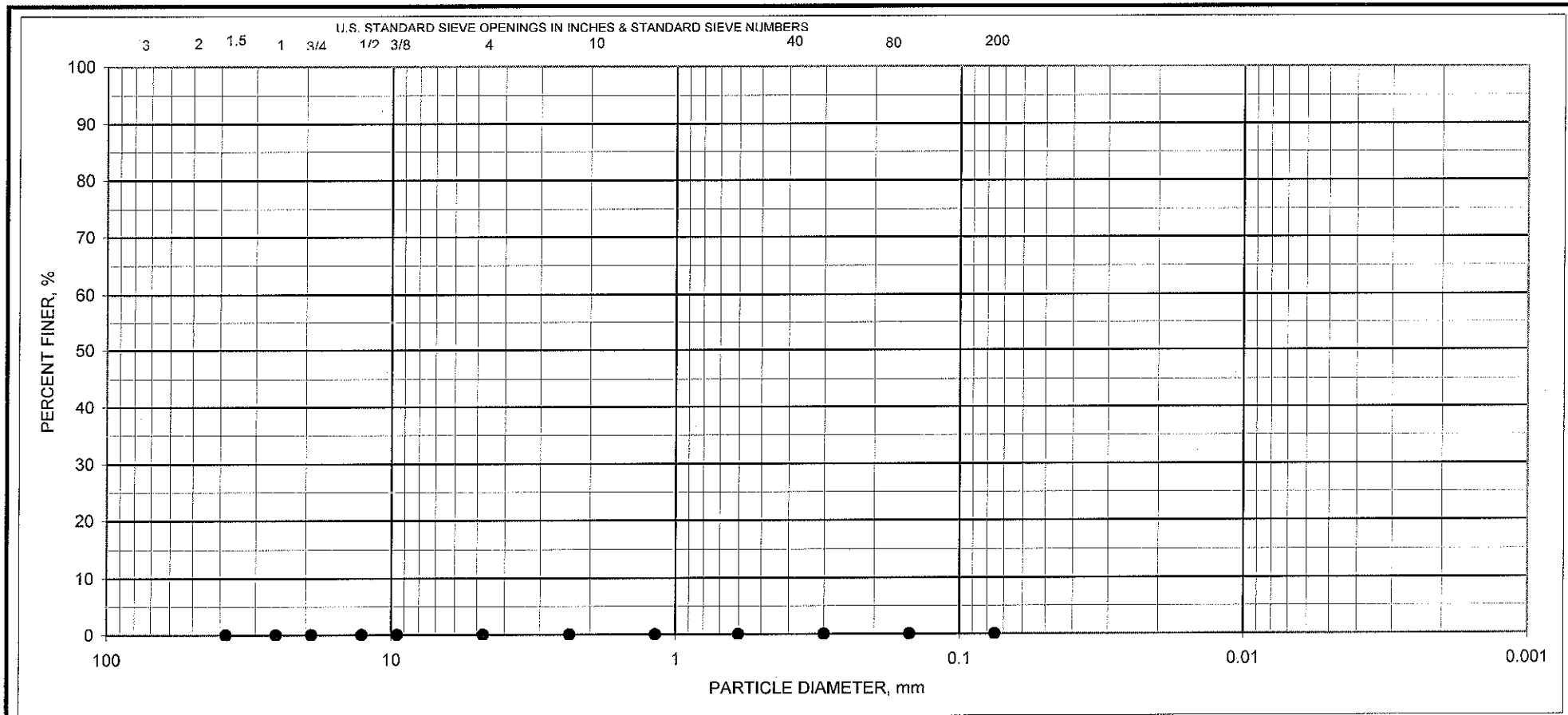

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0506	7	14	Clay	CL	14.8	30	13	17

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

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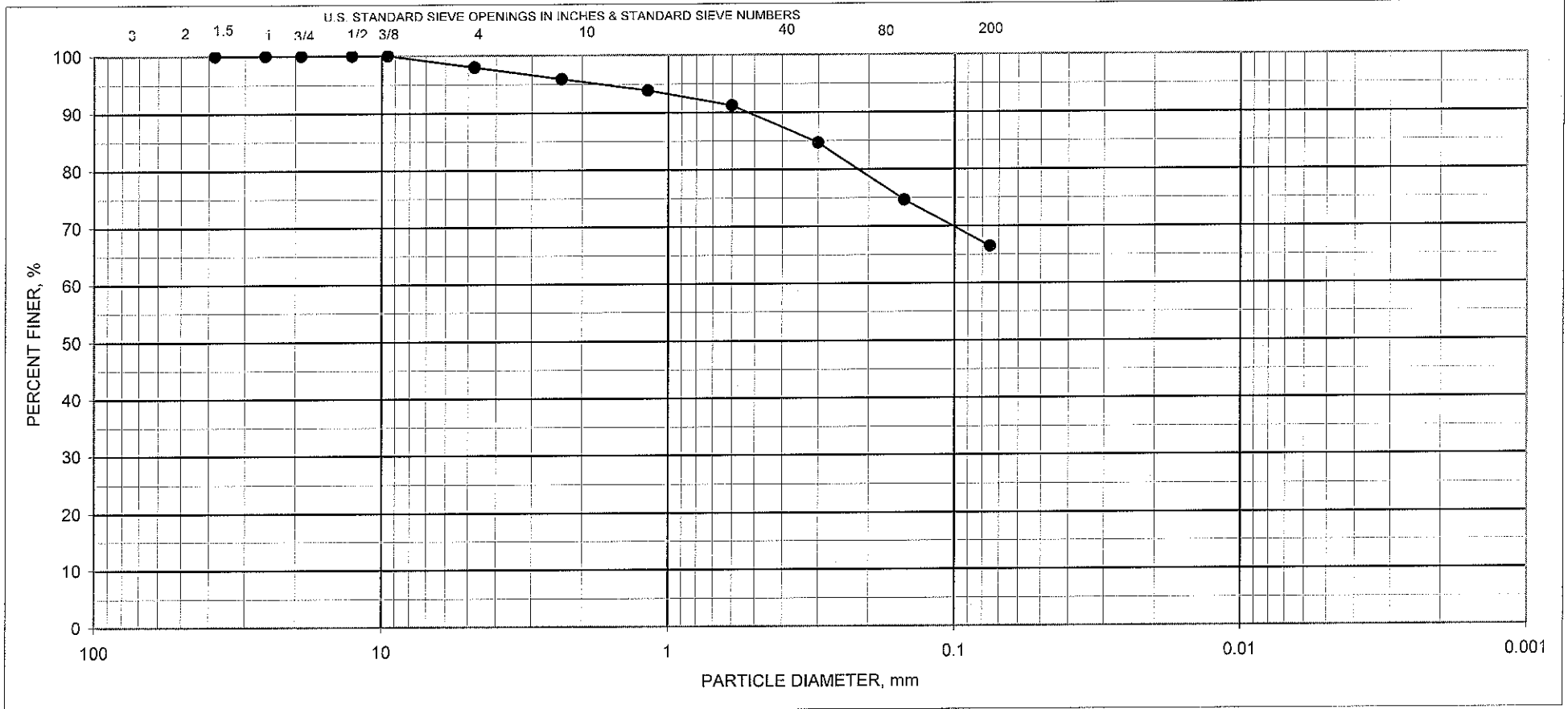

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0507	i	2	Silt	CL		25	14	11

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/21/2008

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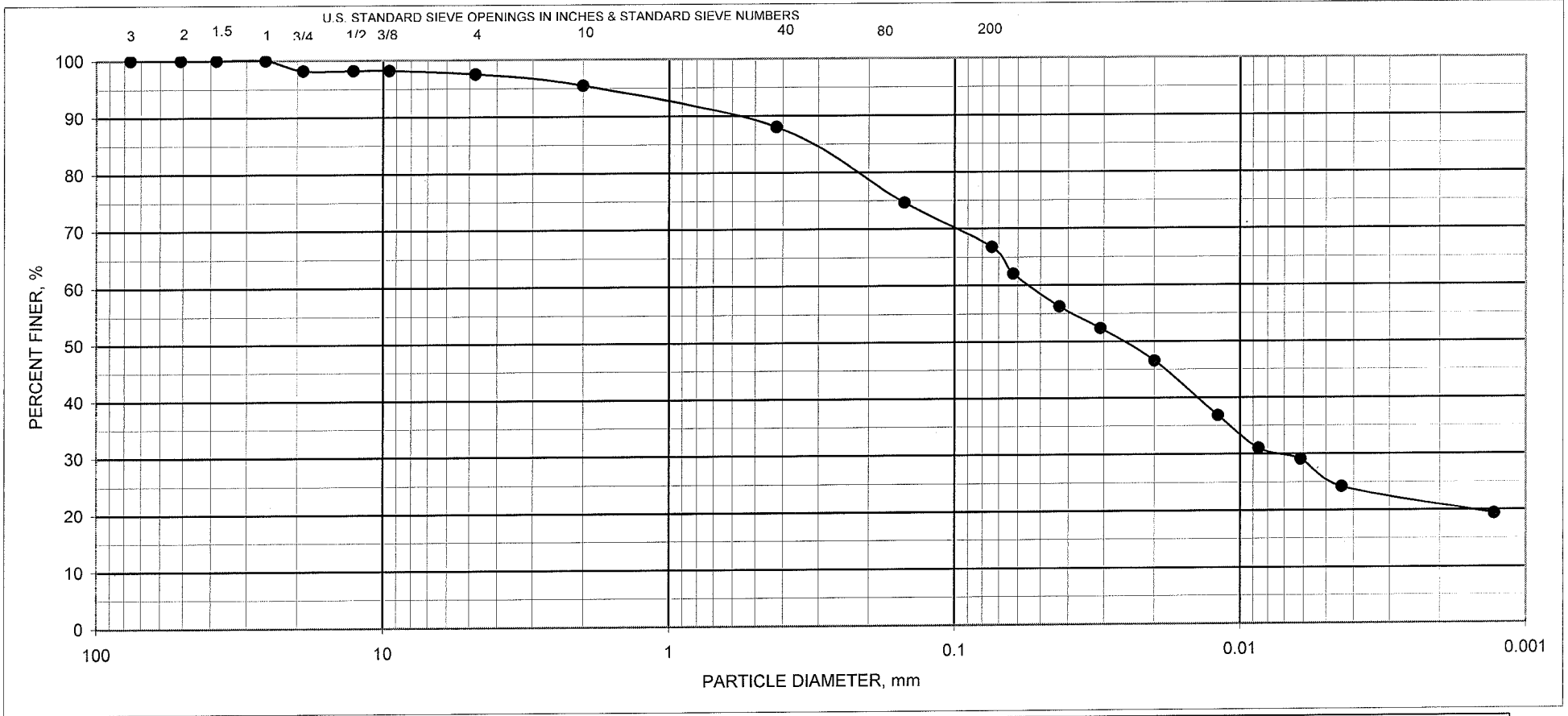

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	ASTM DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0507	3	6-8			14.6			

PROJECT I-74 Corridor

Moline, IL JOB NO. 07045052 DATE 2/15/2008

Terracon

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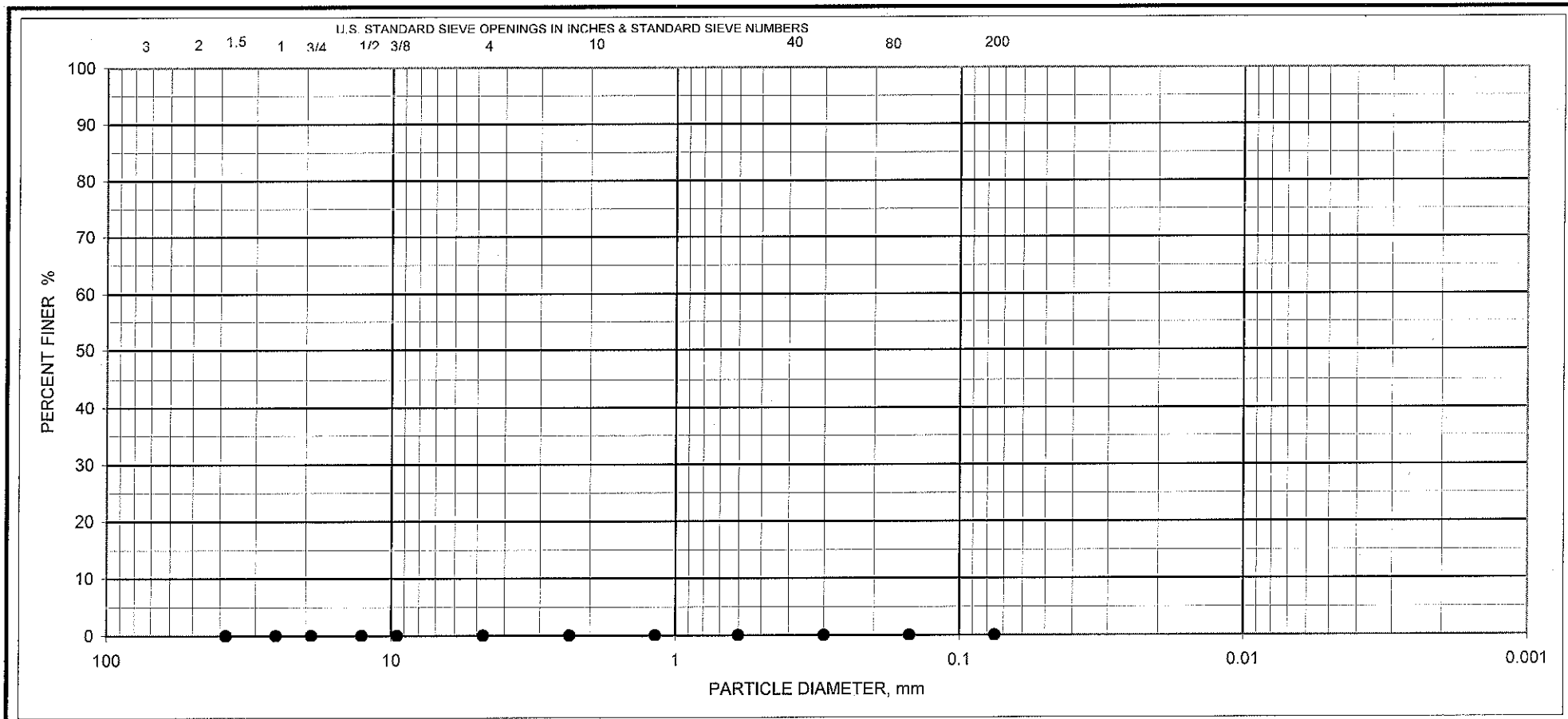

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR00507	4	8-10	Clay	CL	13.9	30	15	15

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

N:\Projects\2004\07045052\lab data\Grain Size Distribution\[ILR0507 S-4.xls]ACT DATA

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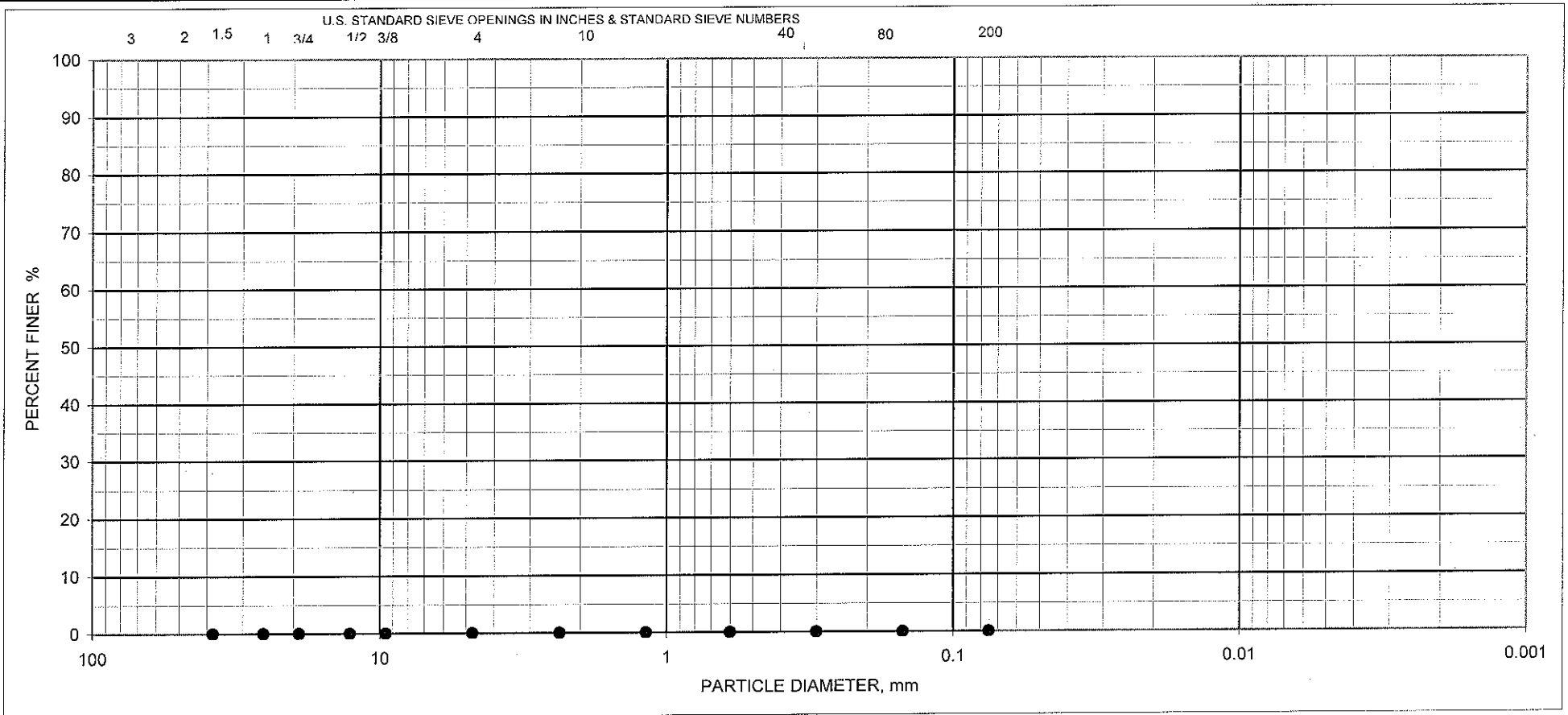

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0507	5	10		CL	14.0	34	15	19

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

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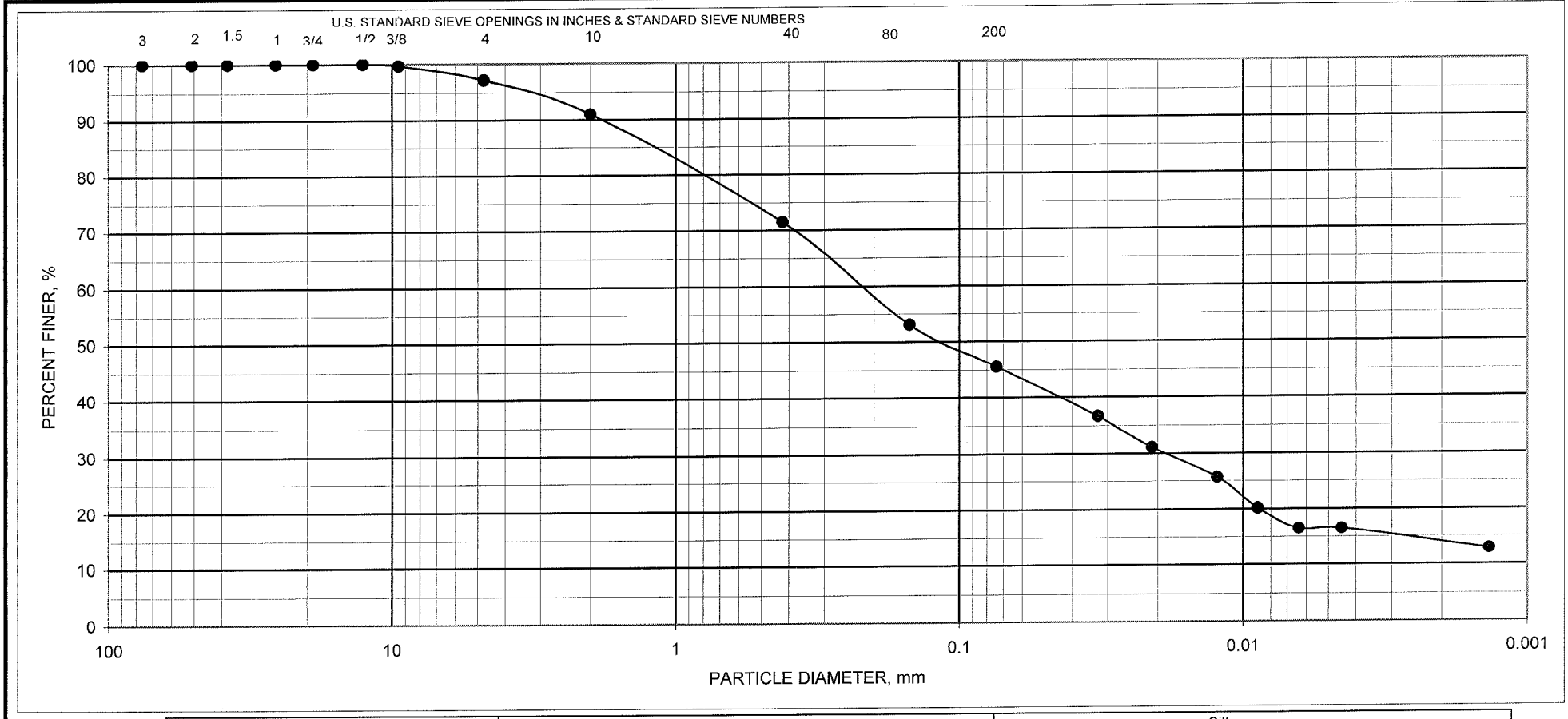

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	ASTM DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0507	8	20-22			15.7			

PROJECT I-74 Corridor

Moline, IL JOB NO. 07045052 DATE 2/15/2008

N:\Projects\2004\07045052\lab data\Hydrometer\[ILR0507 S-8.xls]ACT DATA

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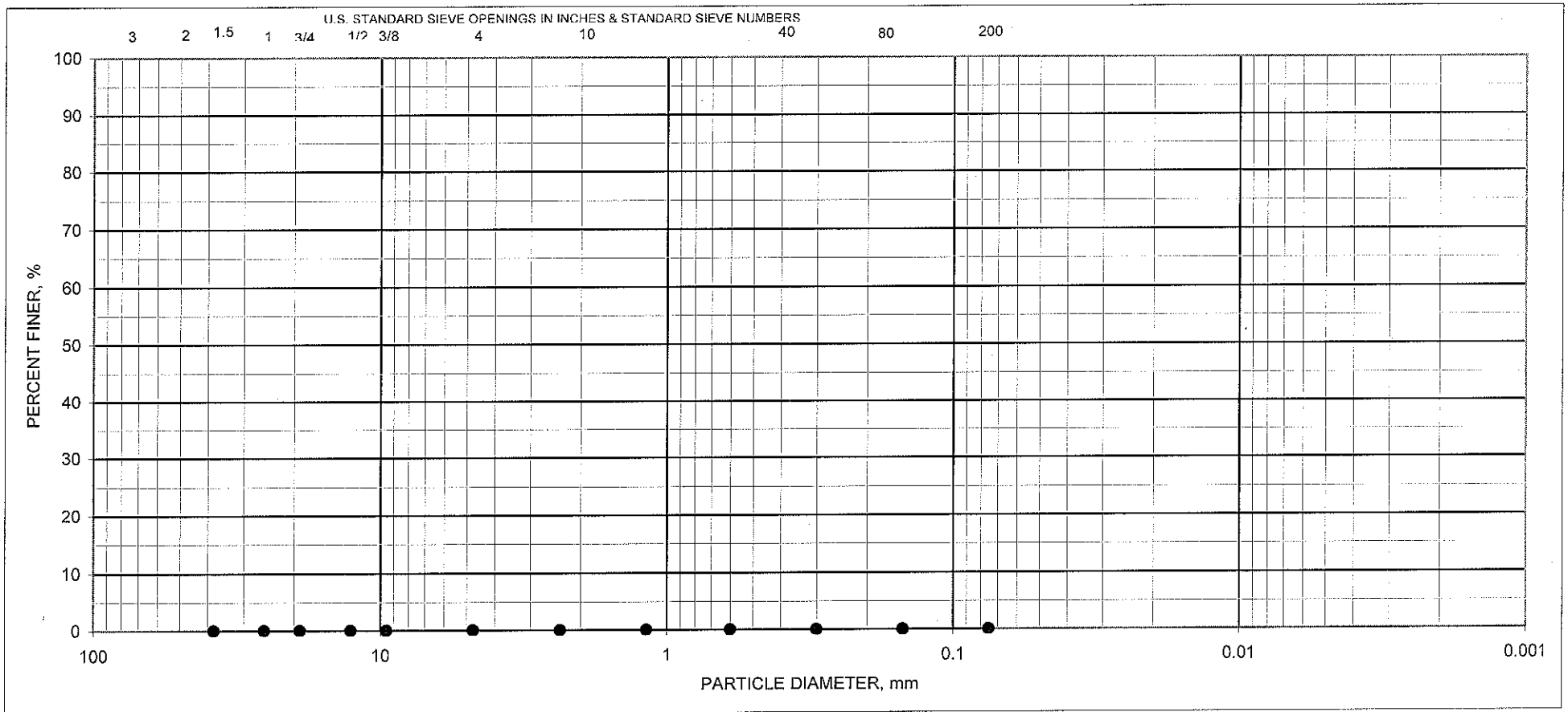

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0507	9	25		CL	12.6	31	16	15

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

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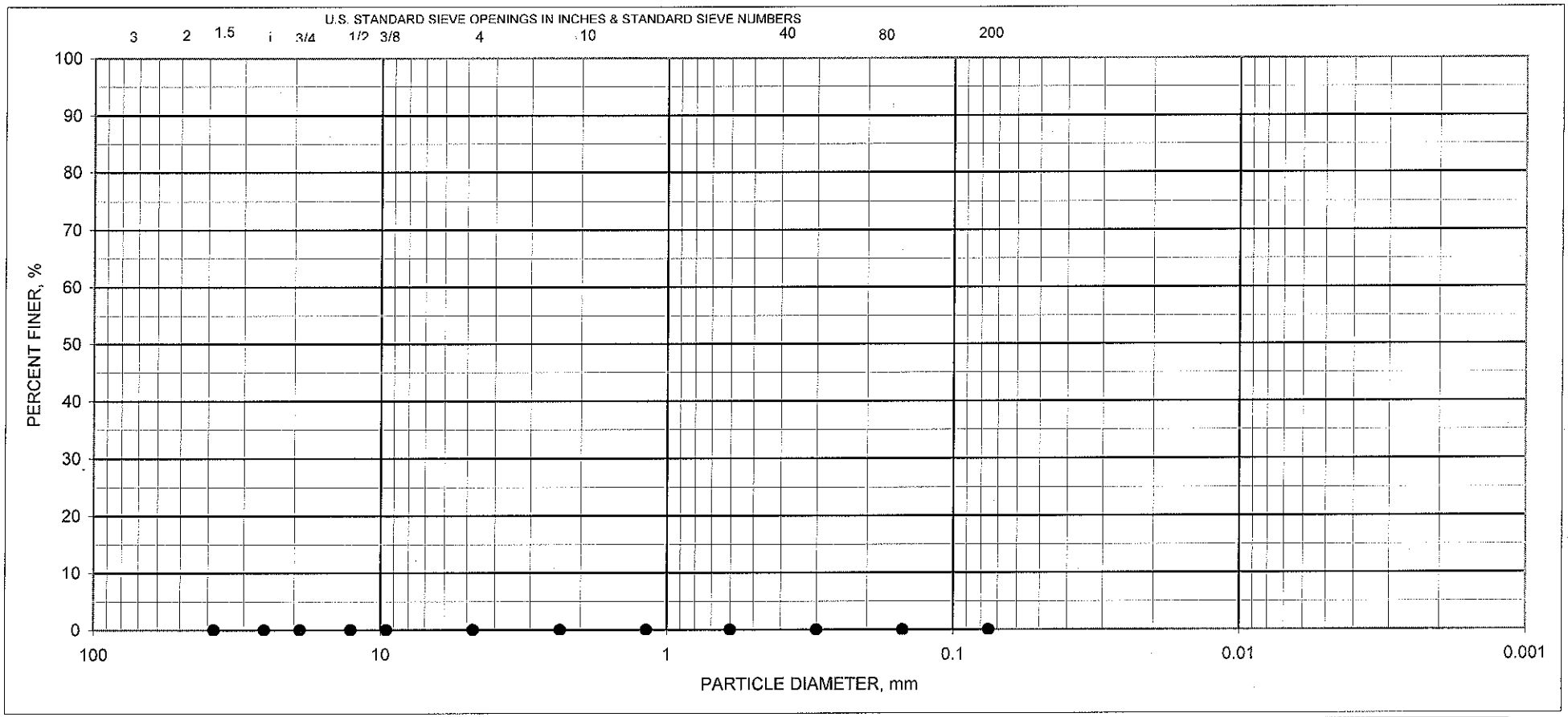

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0507	10	30	Clay	CL		35	18	17

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

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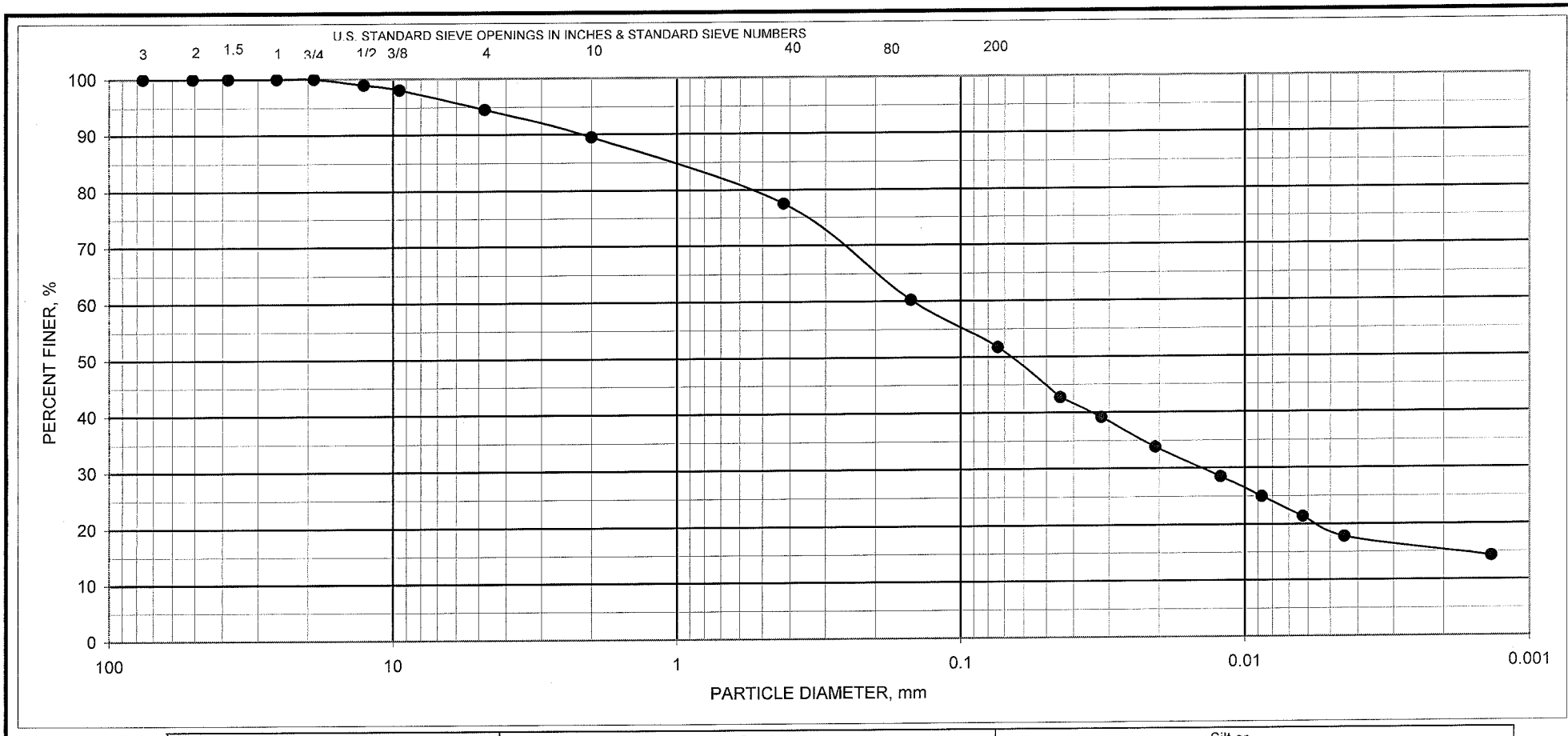

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	ASTM DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0508	1	2						

PROJECT I-74 Corridor

Moline, IL JOB NO. 07045052 DATE 2/21/2008

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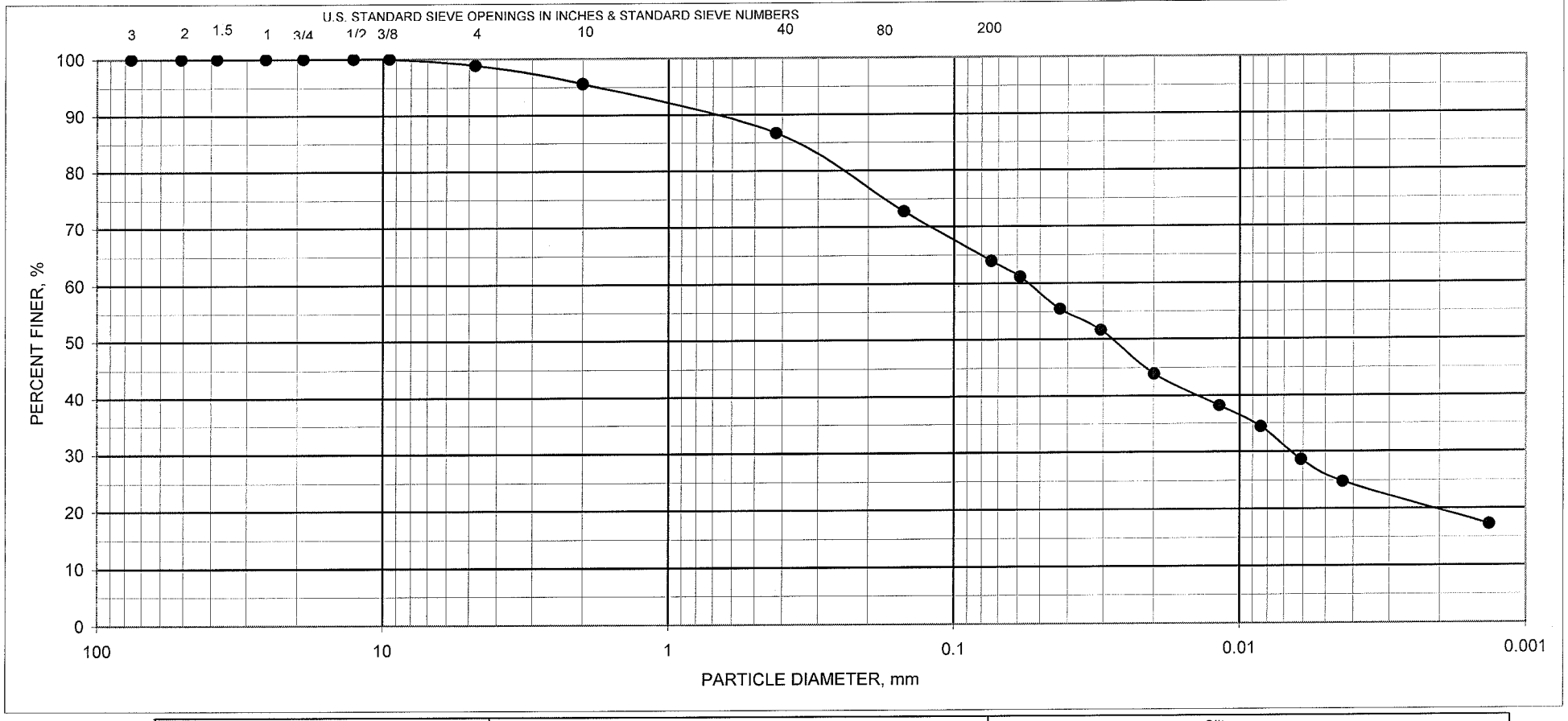

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	ASTM DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0508	4	8			14.1			

PROJECT I-74 Corridor

Moline, IL JOB NO. 07045052 DATE 2/14/2008

N:\Projects\2004\07045052\lab data\Hydrometer\[ILR0508 S-4.xls]ACT DATA

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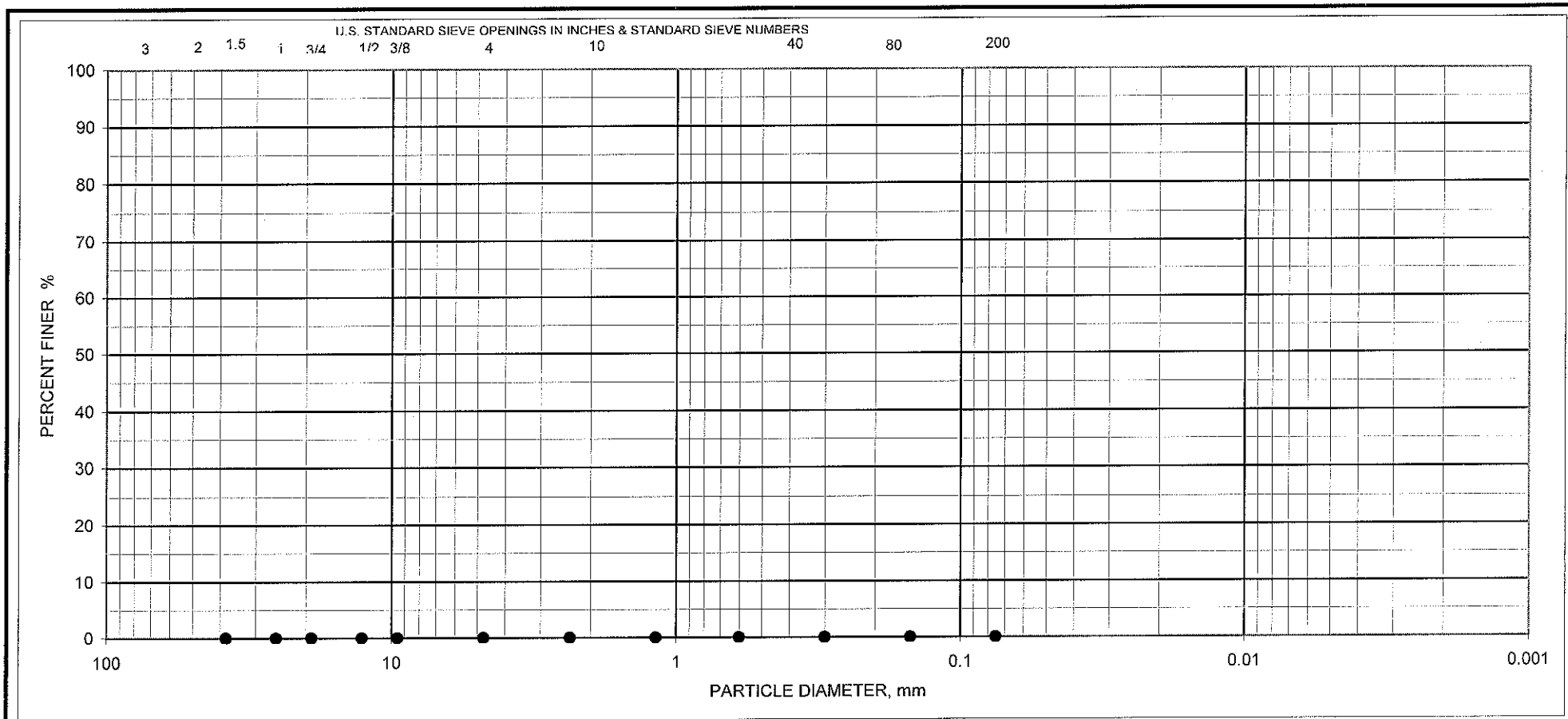

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0508	5	10	Clay	CL		27	13	14

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

N:\Projects\2004\07045052\lab data\Grain Size Distribution\[ILR0508 S-5.xls]ACT DATA

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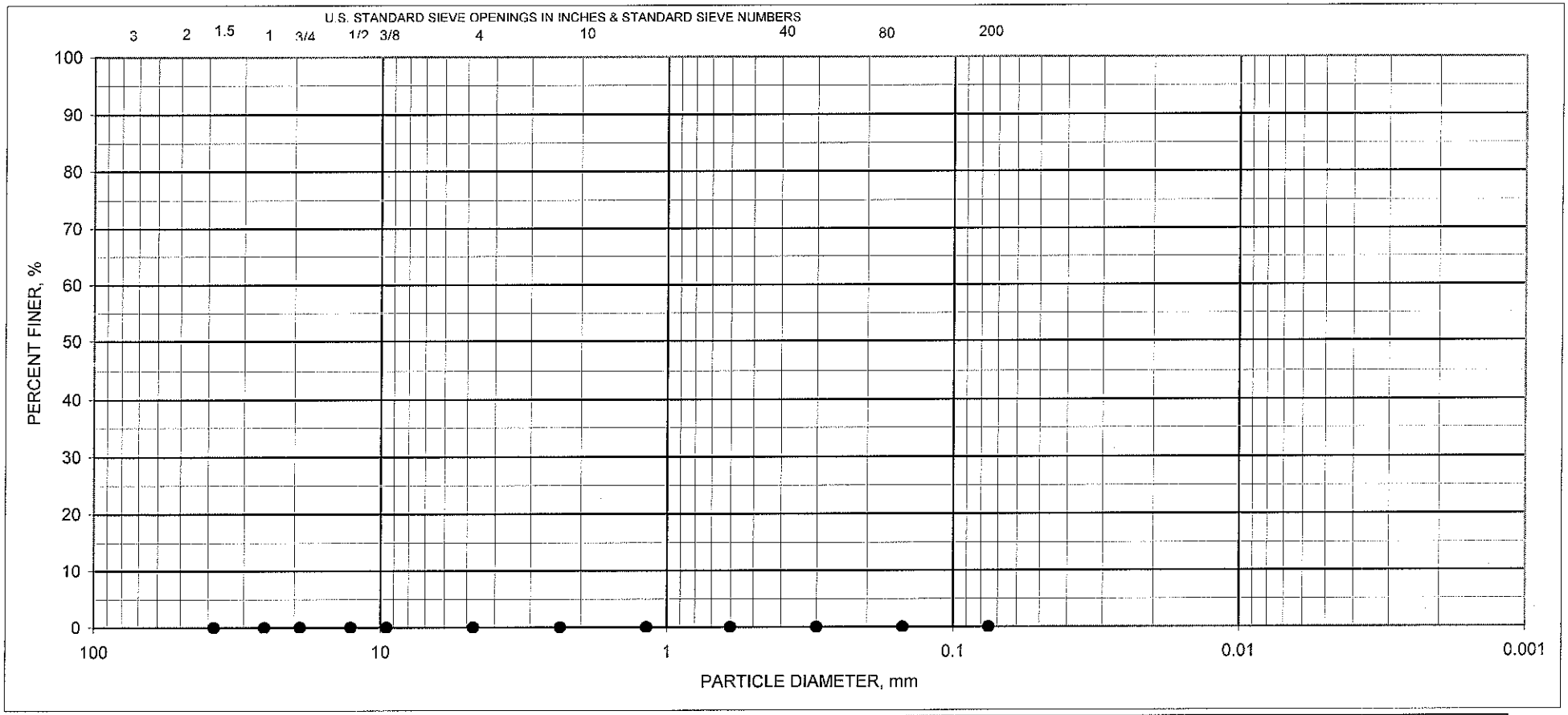

GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	SOIL DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0508	8	20	Clay	CL	15.0	30	13	17

PROJECT I-74 Corridor

Moline, IL PROJECT NO. 07045052 DATE 2/13/2008

N:\Projects\2004\07045052\lab data\Grain Size Distribution\[ILR0508 S-8.xls]ACT DATA

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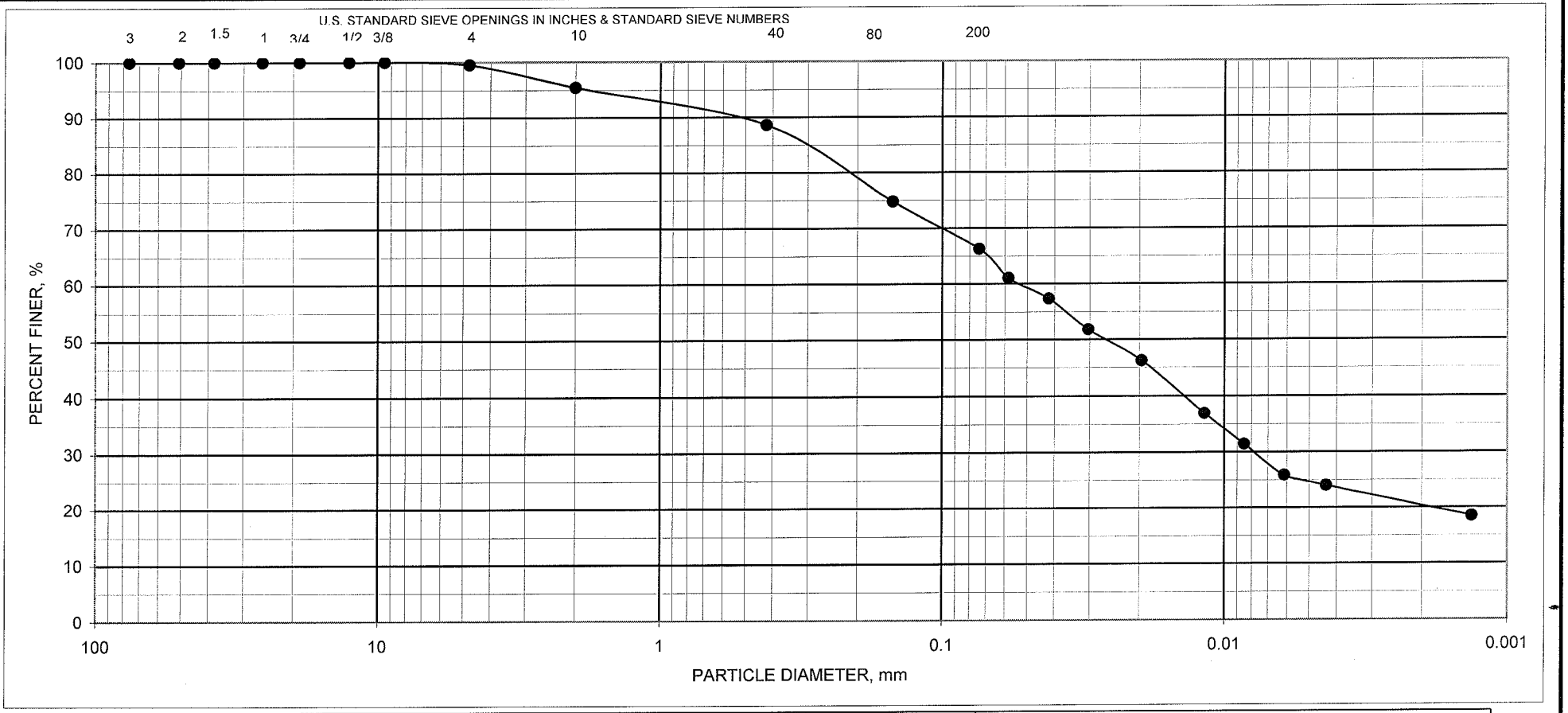


GRAVEL		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

GRAIN SIZE DISTRIBUTION CURVE

BORING NO.	SAMPLE NO.	DEPTH, feet	ASTM DESCRIPTION	UNIFIED SYMBOL	NAT. WC, %	ATTERBERG LIMITS LL	PL	PI
ILR0508	10	30			13.2			

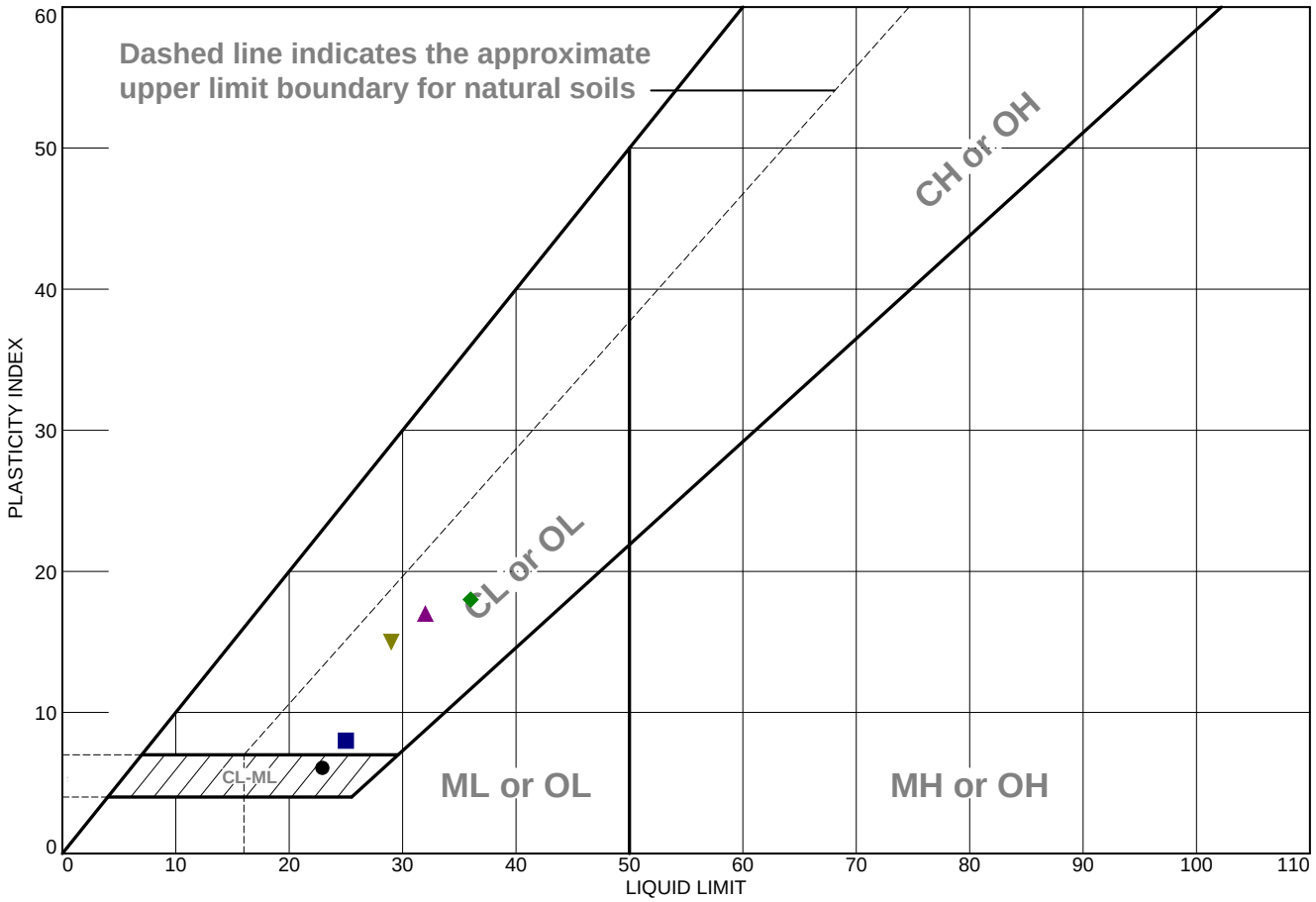
PROJECT I-74 Corridor

Moline, IL JOB NO. 07045052 DATE 2/14/2008

Terracon

N:\Projects\2004\07045052\lab data\Hydrometer\[ILR0508 S-10.xls]ACT DATA

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brn. & gray vf. sandy silt / f. sand seams - FILL.	23	17	6		67	
■	Brn. & gray vf.-f. sandy silt/so. clay.	25	17	8	100	73	CL
▲	Brn. vf. sandy silty clay (tr. cs. sand & sm. gravel).	32	15	17		70	
◆	Gray vf. sandy silt / so. clay-FILL .	36	18	18			
▼	Brn. vf.-f. sandy clayey silt (tr. cs. sand & sm. gravel).	29	14	15		68	

Project No. 08H0120E **Client:** IDOT

Project: I-74 Bridge over Mississippi River

Remarks:

●	**Location:** RW05-1	**Depth:** ST3-1 8.5-9.0	**Sample Number:** RW05-1
■	**Location:** RW05-1	**Depth:** SPT4 11.0-12.5	**Sample Number:** RW05-1
▲	**Location:** RW05-2	**Depth:** ST2-1 3.0-3.5	**Sample Number:** RW05-2
◆	**Location:** RW05-2	**Depth:** ST5-2 11.5-12.0	**Sample Number:** RW05-2
▼	**Location:** RW05-3	**Depth:** ST3-2 6.5-7.0	**Sample Number:** RW05-3

HANSON

Figure

Tested By: JCC **Checked By:** RIN

Hanson Professional Services Inc.

Unconfined Compression Test Report (ASTM D2166)

Date 8/31/10

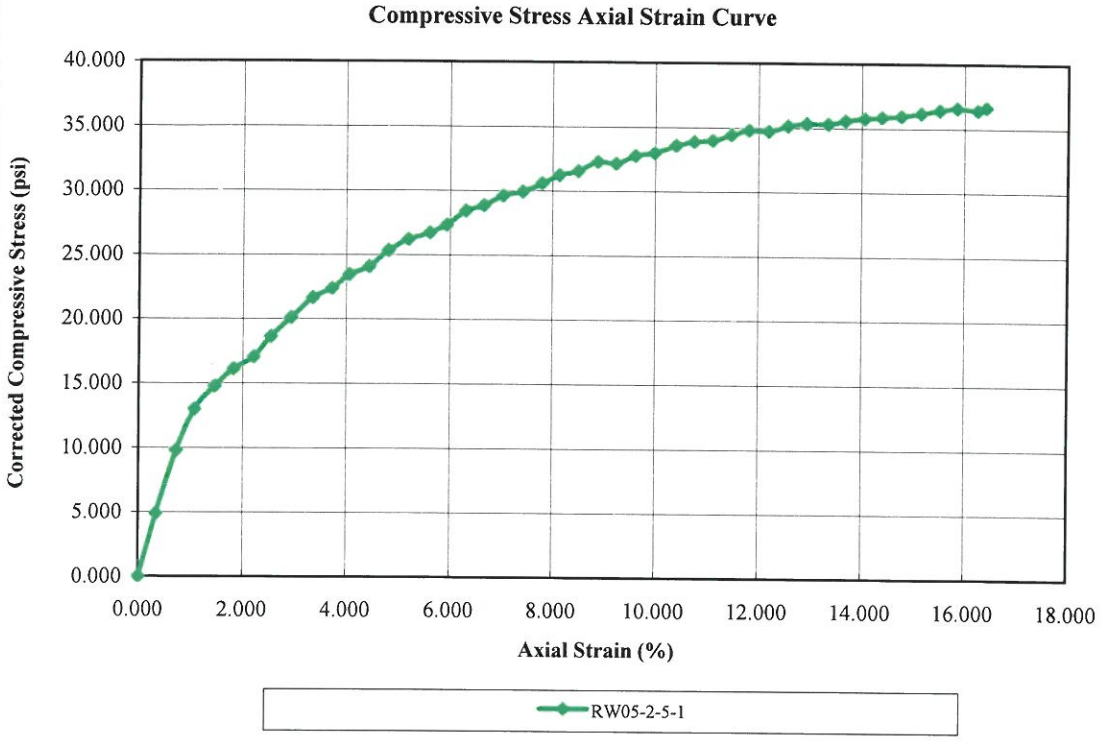
Checked By JCC

Date

Computed By

8/12/10 Date

Tested By Rin



Before Test	Specimen A	B	C	D
Water Content (%)	12.81			
Dry Density (pcf)	115.900			
Saturation (%)	79.48			
Void Ratio	0.43			
Diameter (in)	2.880			
Height (in)	5.555			
Test Data	**A**	**B**	**C**	**D**
Unconfined Strength (psi)	36.651			
Undrained Shear Strength (tsf)	1.319			
Undrained Shear Strength (psi)	18.326			
Rate of Strain (in/min)	1.500000			
Strain at Failure (%)	16.42			
Description				

Project Information		Specimen Description	
Project Num	08H0120E	RW05-2-5-1	Gray vf. sandy silt / so. clay - FILL.
Project	I-74 Mississippi River Bridge		
Depth	11.0-11.5		
Sample #	5-1		
Client		**Test Variables**	
		Specific Gravity	2.65
		Liquid Limit:	
		Plastic Limit:	

Remarks

Hanson Professional Services Inc.

Unconfined Compression Test Report (ASTM D2166)

Date 8/31/10

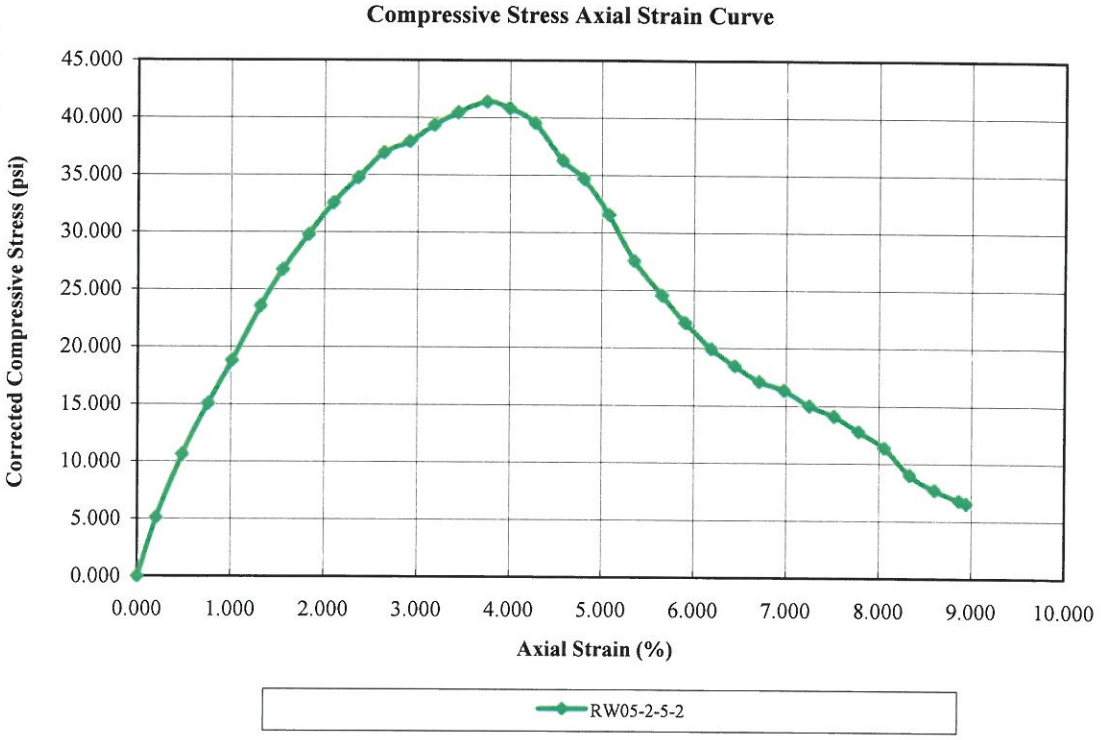
Checked By JCC

Date

Computed By

Date 8/12/10

Tested By Rin

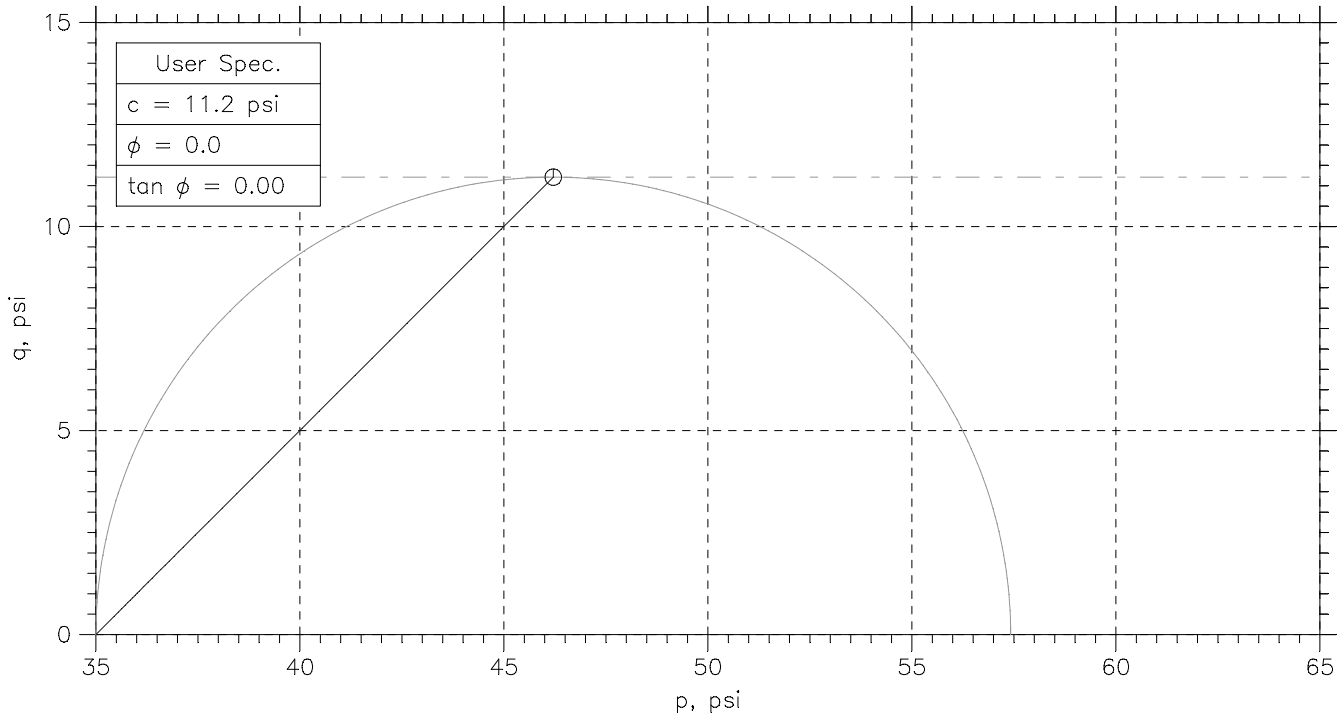


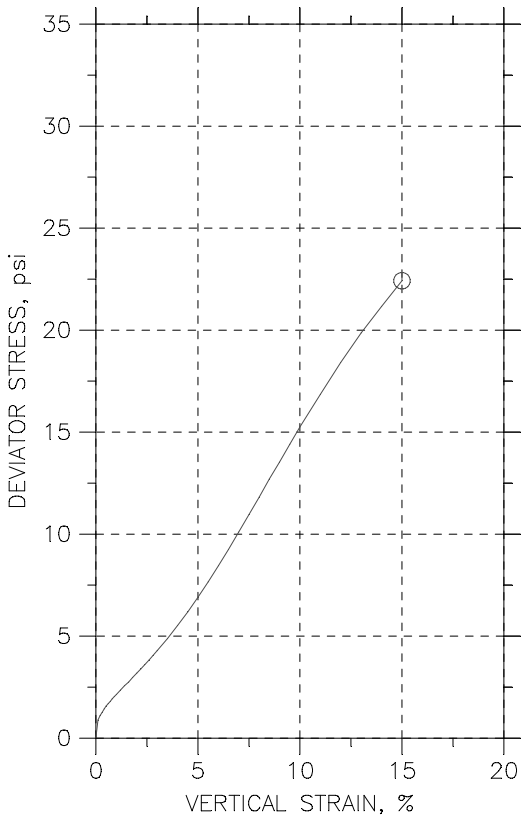
Before Test	Specimen A	B	C	D
Water Content (%)	21.25			
Dry Density (pcf)	98.158			
Saturation (%)	82.16			
Void Ratio	0.69			
Diameter (in)	2.880			
Height (in)	5.804			
Test Data	**A**	**B**	**C**	**D**
Unconfined Strength (psi)	41.414			
Undrained Shear Strength (tsf)	1.491			
Undrained Shear Strength (psi)	20.707			
Rate of Strain (in/min)	1.000000			
Strain at Failure (%)	3.75			
Description				

Project Information		Specimen Description	
Project Num	08H0120E	RW05-2-5-2	Gray vf. sandy silt / so. clay - FILL
Project	I-74 Mississippi River Bridge		
Depth	11.5-12.0		
Sample #	5-2		
Client		Test Variables	
		Specific Gravity	2.65
		Liquid Limit:	
		Plastic Limit:	

Remarks

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲			
Sample No.	3-1			
Test No.	1			
Depth	8.5-8.9			
Tested by	RIN			
Test Date	8/16/10			
Checked by	JCC			
Check Date				
Diameter, in	2.801			
Height, in	3.873			
Water Content, %	22.1			
Dry Density, pcf	107.9			
Saturation, %	109.5			
Void Ratio	0.534			
Confining Stress, psi	35			
Undrained Strength, psi	11.21			
Max. Dev. Stress, psi	22.42			
Strain at Failure, %	15			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.65			
Liquid Limit	0			
Plastic Limit	0			
Plasticity Index	0			

HANSON

Project: I-74 Mississippi River

Location: Quad Cities

Project No.: 08H0120E

Boring No.: RW05-1

Sample Type: Tube

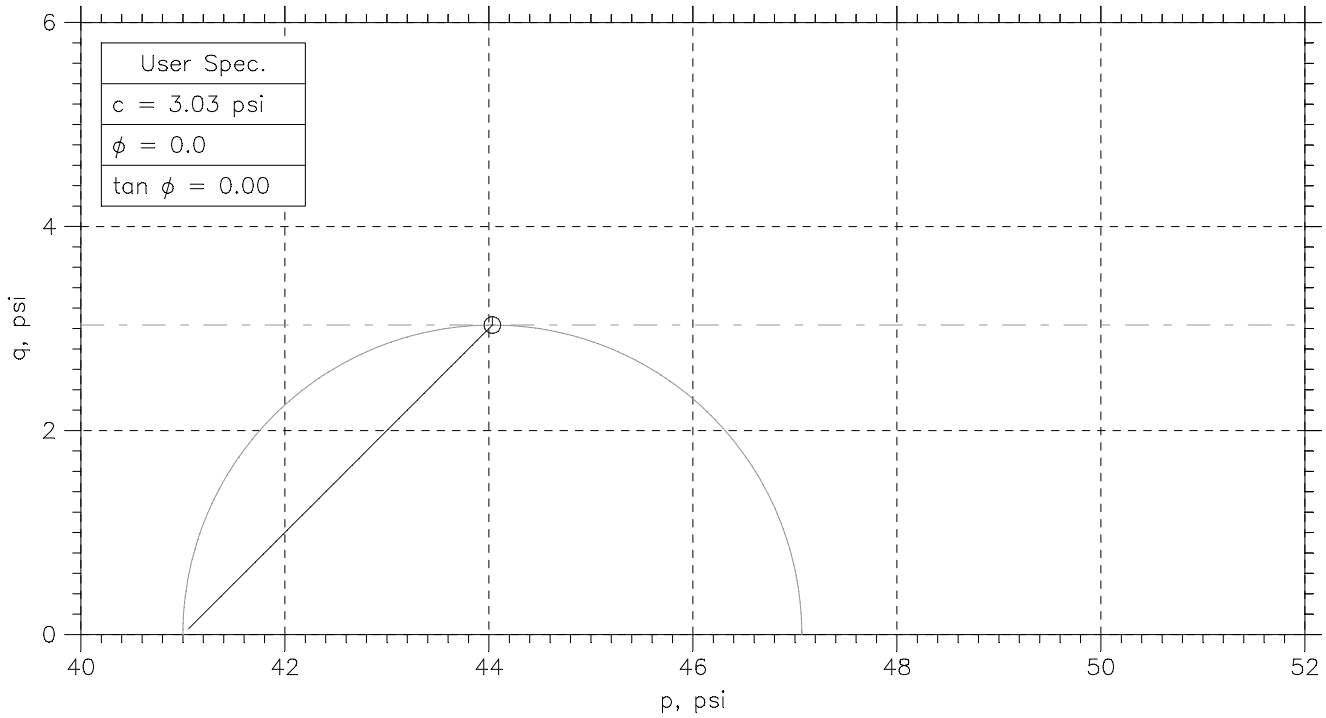
Description: Brn. vf.-f. sandy silt.

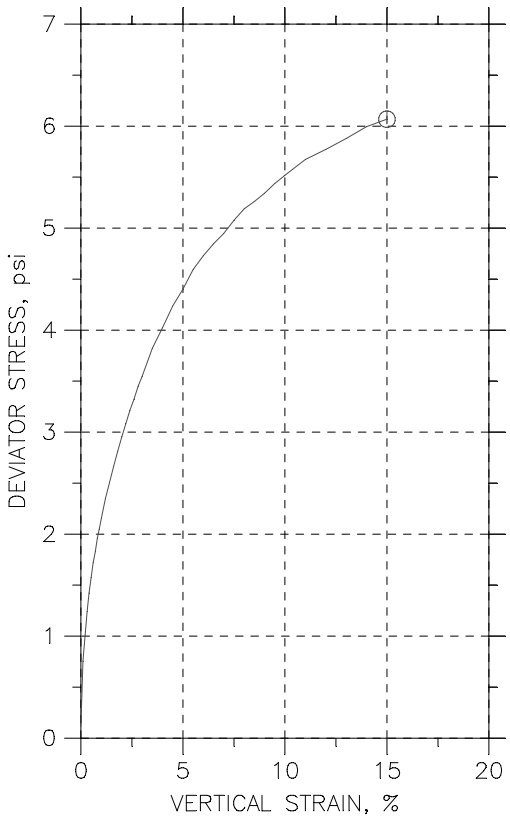
Remarks: 2500 # Load Cell Loadtrac II # 258112 LVDT55306

Phase calculations based on start of test.

Fri, 01-APR-2011 15:56:08

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲			
Sample No.	5-1			
Test No.	1			
Depth	12.5-13.0			
Tested by	RIN			
Test Date	8/24/10			
Checked by	JCC			
Check Date				
Diameter, in	2.847			
Height, in	5.621			
Water Content, %	23.8			
Dry Density, pcf	101.8			
Saturation, %	100.6			
Void Ratio	0.626			
Confining Stress, psi	41			
Undrained Strength, psi	3.034			
Max. Dev. Stress, psi	6.067			
Strain at Failure, %	15			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.65			
Liquid Limit	0			
Plastic Limit	0			
Plasticity Index	0			

HANSON

Project: I-74 Mississippi River

Location: Quad Cities

Project No.: 08H0120E

Boring No.: RW05-1

Sample Type: Tube

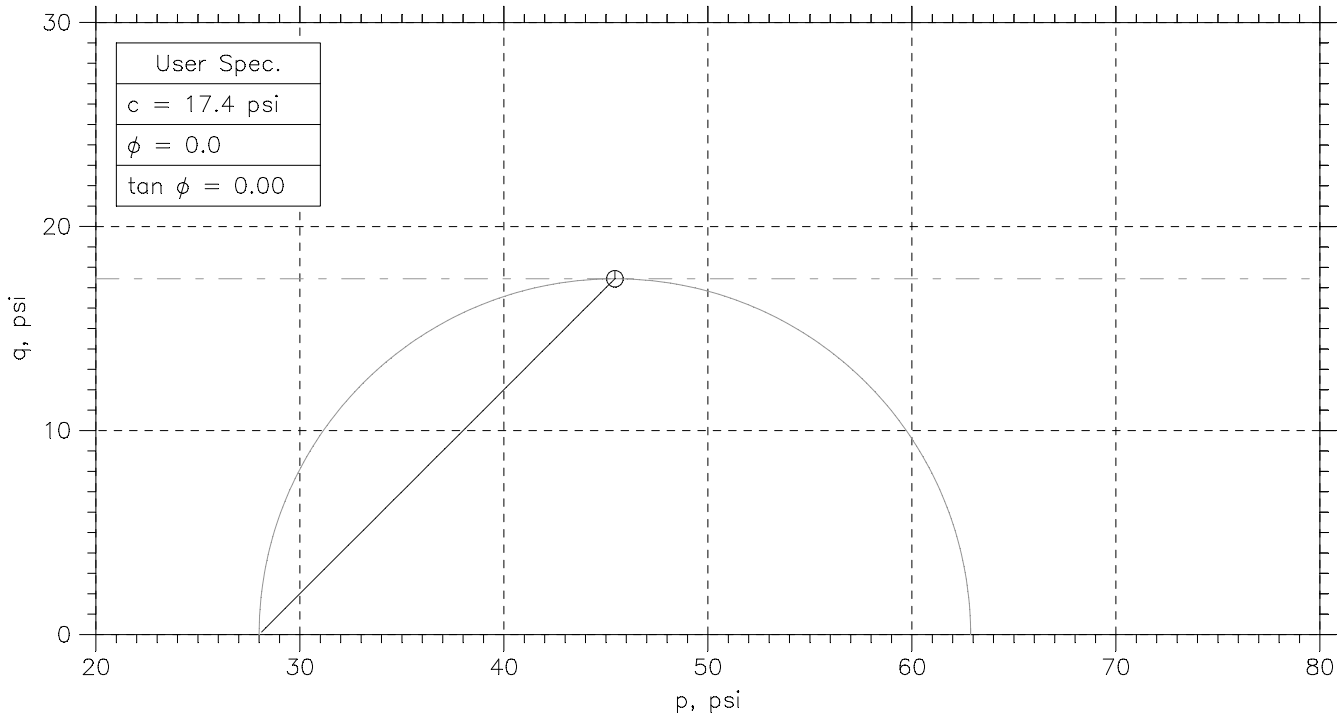
Description: Brn. & gray vf. sandy clayey silt.

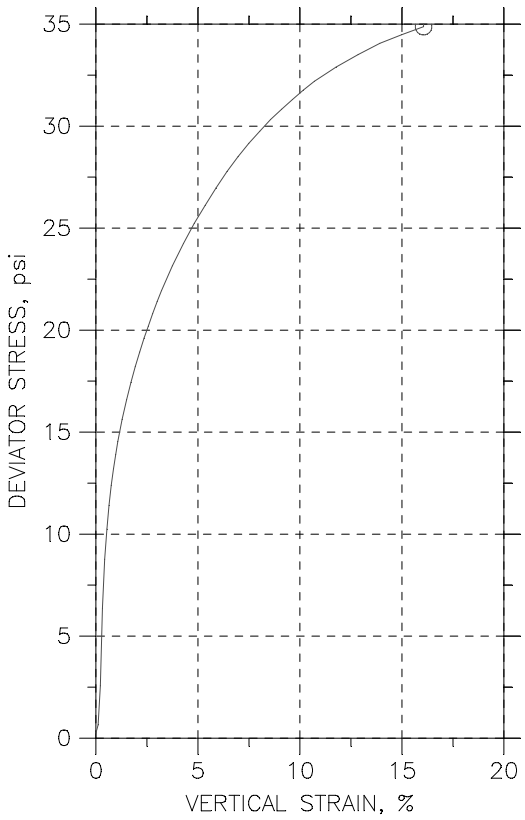
Remarks: 2500 # Load Cell Loadtrac II # 258112 LVDT55306

Phase calculations based on start of test.

Fri, 01-APR-2011 15:59:00

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲			
Sample No.	2-1			
Test No.	1			
Depth	3.0-3.5			
Tested by	RIN			
Test Date	8/16/10			
Checked by	JCC			
Check Date				
Diameter, in	2.878			
Height, in	5.564			
Water Content, %	17.2			
Dry Density, pcf	116.7			
Saturation, %	109.5			
Void Ratio	0.417			
Confining Stress, psi	28			
Undrained Strength, psi	17.44			
Max. Dev. Stress, psi	34.88			
Strain at Failure, %	16.1			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.65			
Liquid Limit	0			
Plastic Limit	0			
Plasticity Index	0			

HANSON

Project: I-74 Mississippi River

Location: Quad Cities

Project No.: 08H0120E

Boring No.: RW05-2

Sample Type: Tube

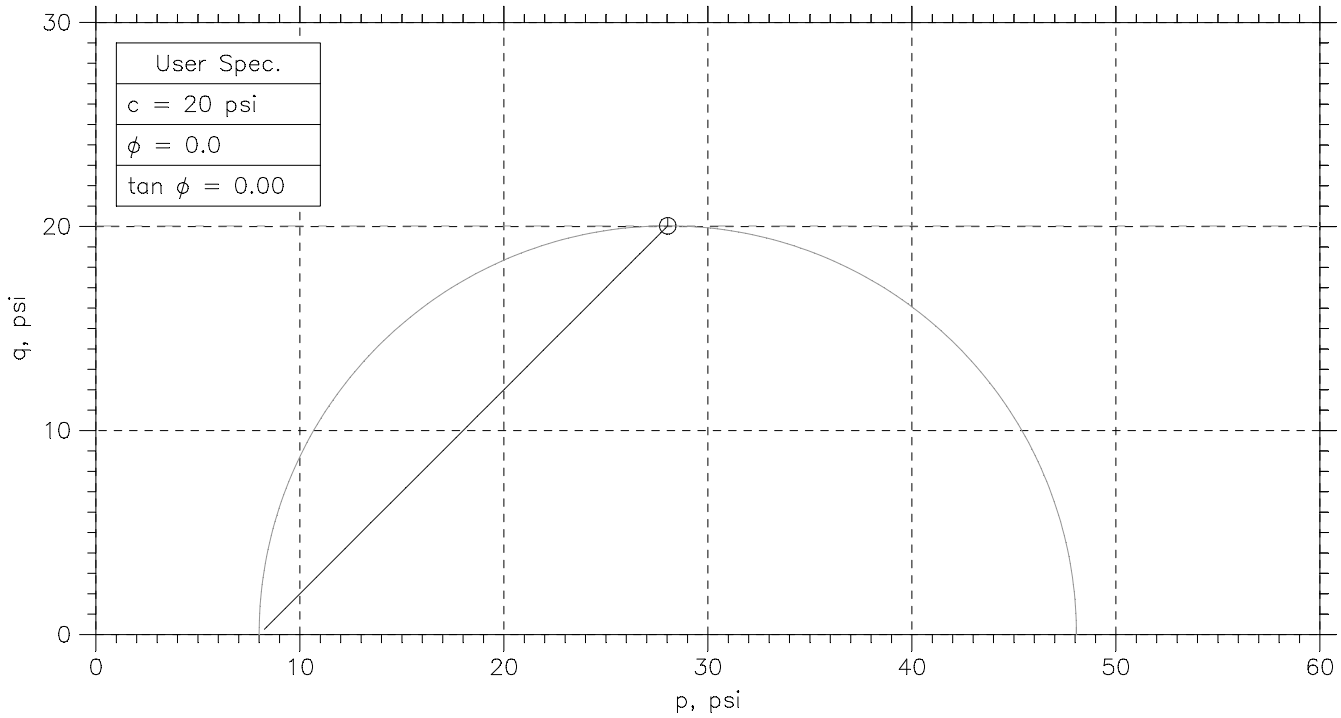
Description: Dk. brn. & brn. vf. sandy clayey silt (tr. sm. gravel).

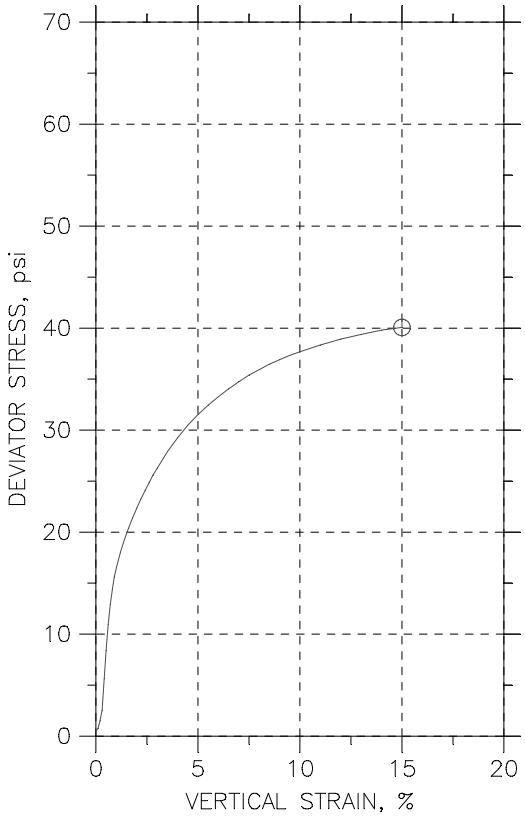
Remarks: 2500 # Load Cell Loadtrac II # 258112 LVDT55306

Phase calculations based on start of test.

Fri, 01-APR-2011 16:02:38

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲			
Sample No.	3-1			
Test No.	1			
Depth	6.0-6.5			
Tested by	RIN			
Test Date	8/16/10			
Checked by	JCC			
Check Date				
Diameter, in	2.878			
Height, in	5.492			
Water Content, %	12.0			
Dry Density, pcf	128.4			
Saturation, %	110.4			
Void Ratio	0.288			
Confining Stress, psi	8			
Undrained Strength, psi	20.03			
Max. Dev. Stress, psi	40.06			
Strain at Failure, %	15			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.65			
Liquid Limit	0			
Plastic Limit	0			
Plasticity Index	0			

HANSON

Project: I-74 Mississippi River

Location: Quad Cities

Project No.: 08H0120E

Boring No.: RW05-3

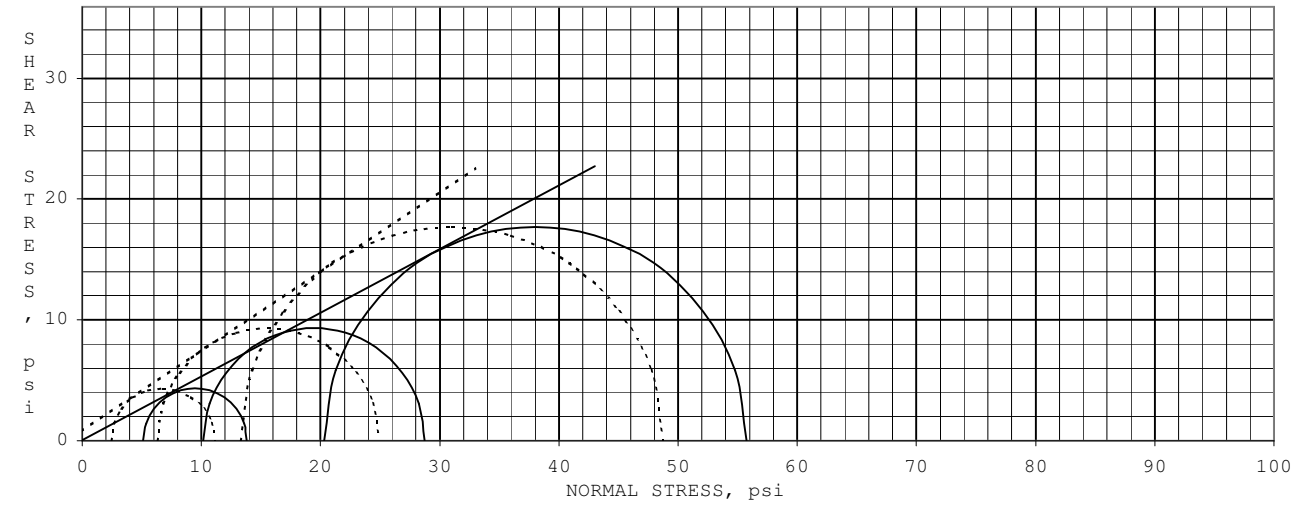
Sample Type: Tube

Description: Brn. vf.-f. sandy clayey silt (tr. c. sand & sm. gravel).

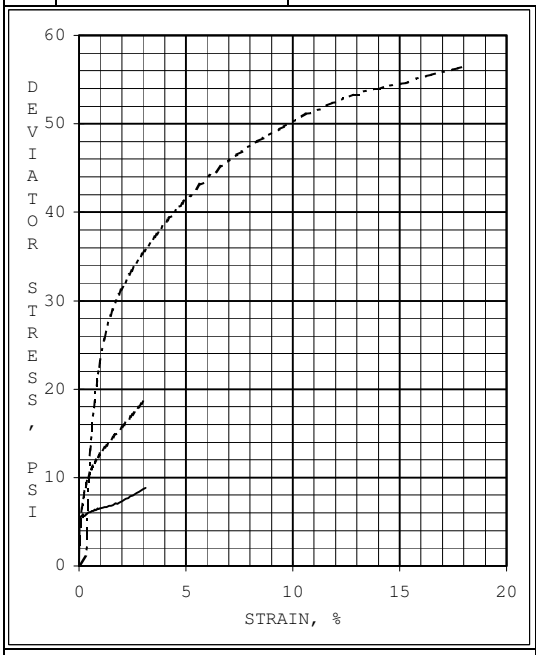
Remarks: 2500 # Load Cell Loadtrac II # 258112 LVDT55306

Phase calculations based on start of test.

Fri, 01-APR-2011 16:04:11



EFFECTIVE STRESS	ANGLE OF INTERNAL FRICTION, deg	**33.4**	COHESION, psi	**0.8**
TOTAL STRESS	ANGLE OF INTERNAL FRICTION, deg	**27.8**	COHESION, psi	**0.1**



SPECIMEN #:		A	B	C
INITIAL	WATER CONTENT, %	15.7	18.9	18.0
	DRY DENSITY, pcf	110.8	111.6	113.3
	SATURATION, %	82	100	100
	VOID RATIO	0.52	0.51	0.49
BEFORE SHEAR	WATER CONTENT, %	18.9	18.0	17.3
	DRY DENSITY, pcf	111.5	113.3	114.8
	SATURATION (B PARAMETER)	1.00	1.00	1.00
	VOID RATIO	0.51	0.49	0.47
	FINAL BACK PRESSURE, psi	100.3	100.3	100.0
MINOR PRINCIPAL STRESS, psi		105.4	110.4	120.3
DEVIATOR STRESS @ 3% STRAIN, psi		8.7	18.6	35.4
TIME TO 3% STRAIN, min.		80	81	82
ULTIMATE DEVIATOR STRESS, psi		NA	NA	54.5
INITIAL DIAMETER, inch		2.858	2.902	2.915
INITIAL HEIGHT, inch		5.836	5.623	5.488
AREA AFTER CONSOLIDATION, inch2*		6.431	6.504	6.552

CONTROLLED – STRAIN TEST

t_{50} 9.1 min | Strain Rate, %/hr 1.84

DESCRIPTION OF SPECIMENS: SANDY SILT, GRAY BROWN

LL	PL	PI	Gs
20	17	3	2.7 EST.

SAMPLE TYPE: 3" SHELBY TUBE

TEST TYPE: $\overline{CU}$

REMARKS:

MOHR'S CIRCLES DRAWN AT 3% STRAIN

SAMPLE WAS STAGE LOADED

* SECTION 10.2.2.1 METHOD A

PROJECT: I-74 CENTER SECTION
QUAD CITIES, IA/IL 07045052

BORING #: RW403

SAMPLE #: B-4

DEPTH OR ELEV.: 6.0 TO 8.0 feet

LABORATORY: TERRACON – LENEXA

DATE: 2/17/2006

TRIAXIAL COMPRESSION TEST REPORT

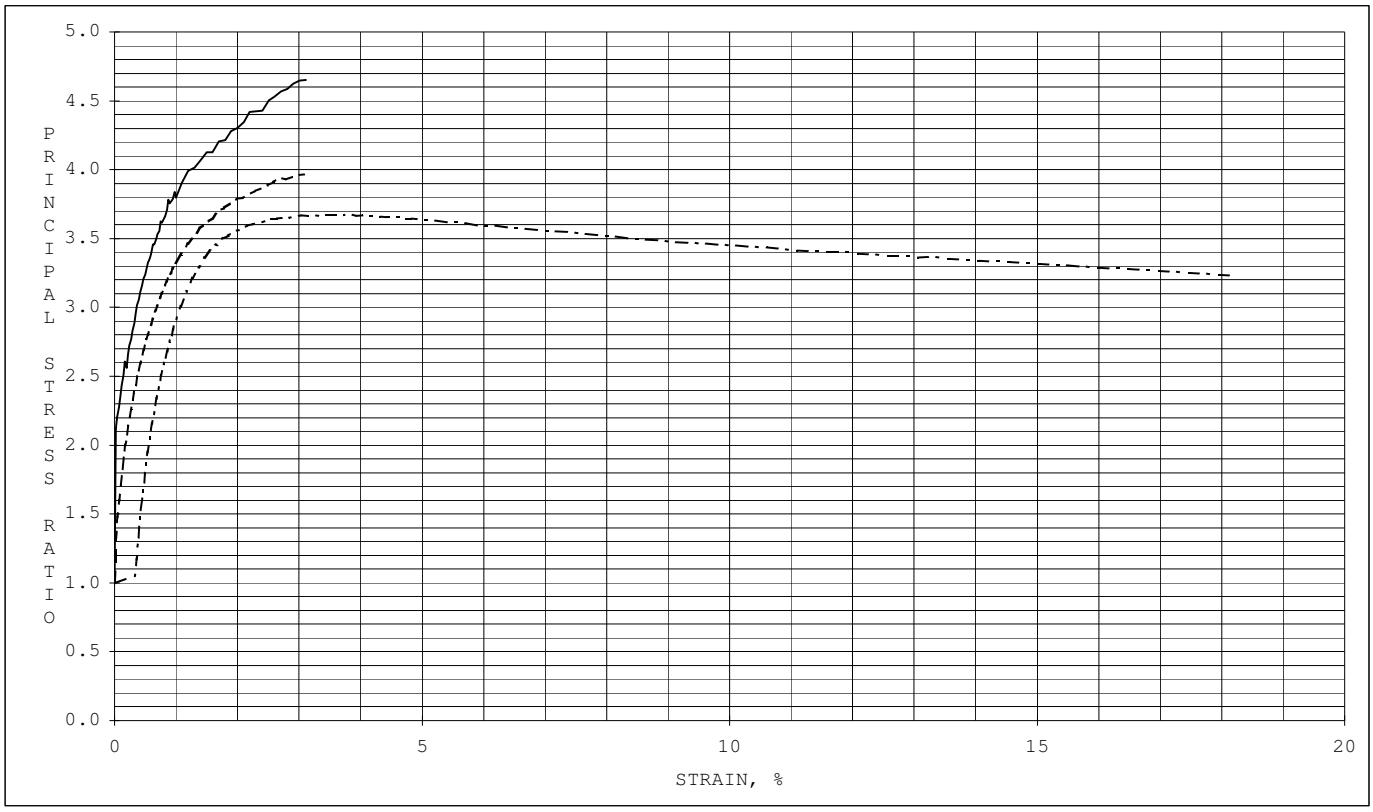
PROCEDURE: ASTM D4767, CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ON COHESIVE SOILS (TERRACON MODIFIED FOR STAGE LOADING)

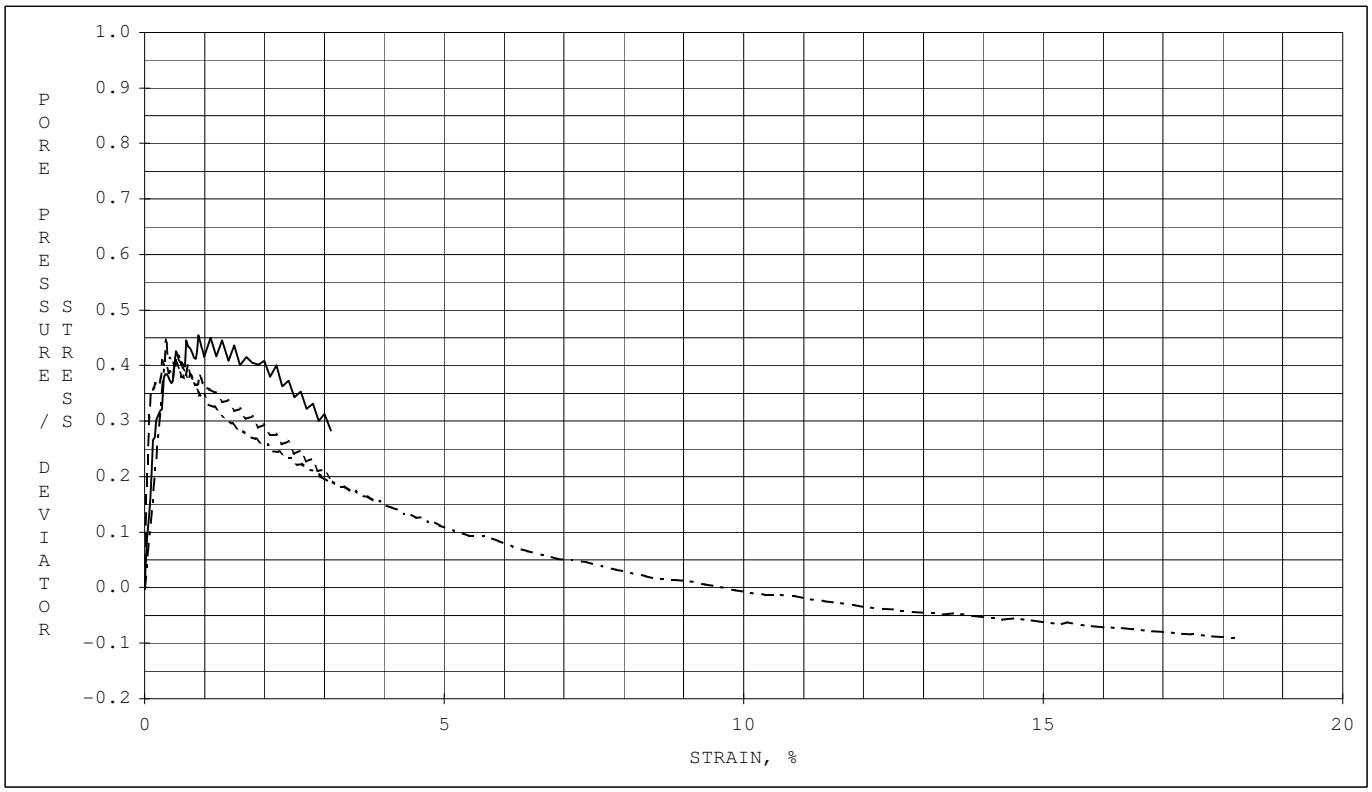
Terracon

Z:\ILRW04andILRW05\[TriaxialCUStaged-RW403 FOR REPORT.xls]REPORT

I-74 CENTER SECTION

07045052 RW403 6.0 TO 8.0 feet

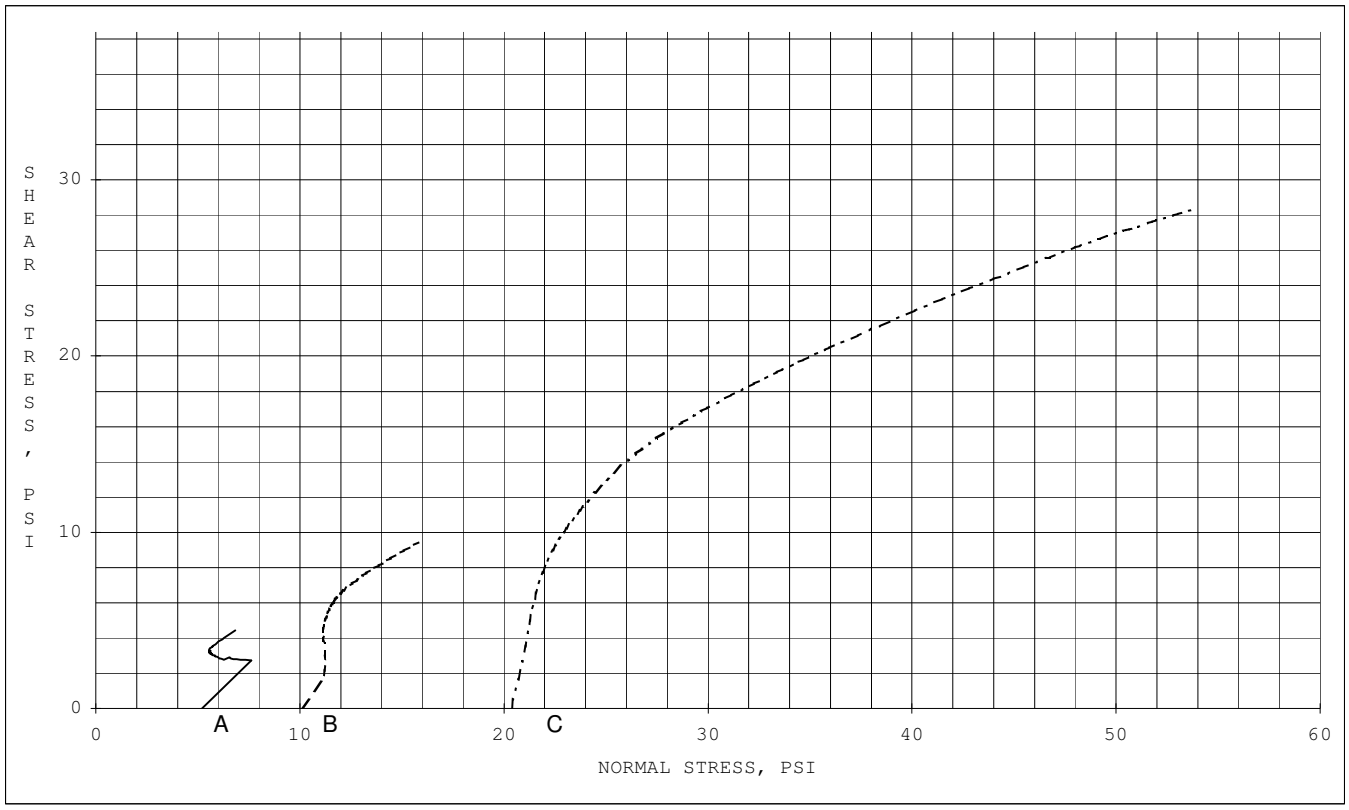


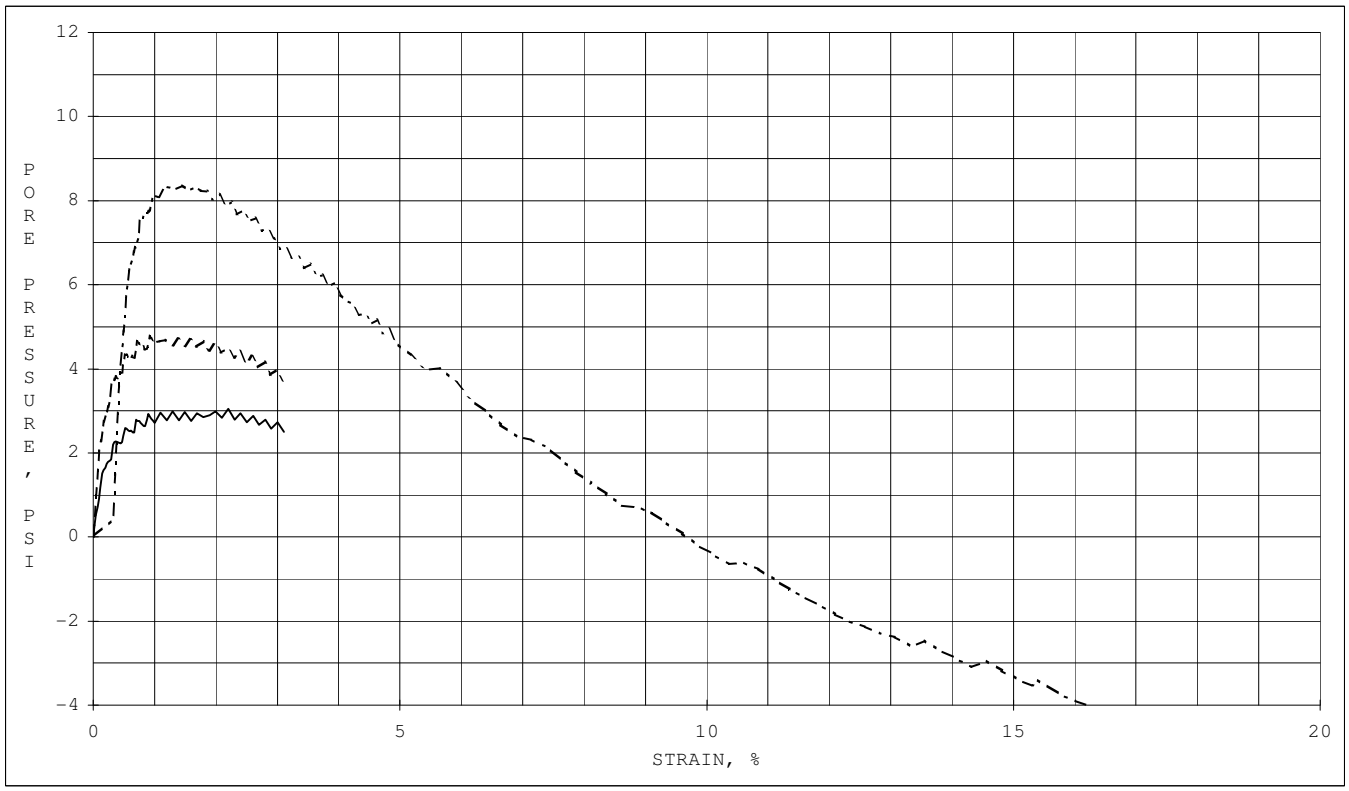


Terracon

I-74 CENTER SECTION

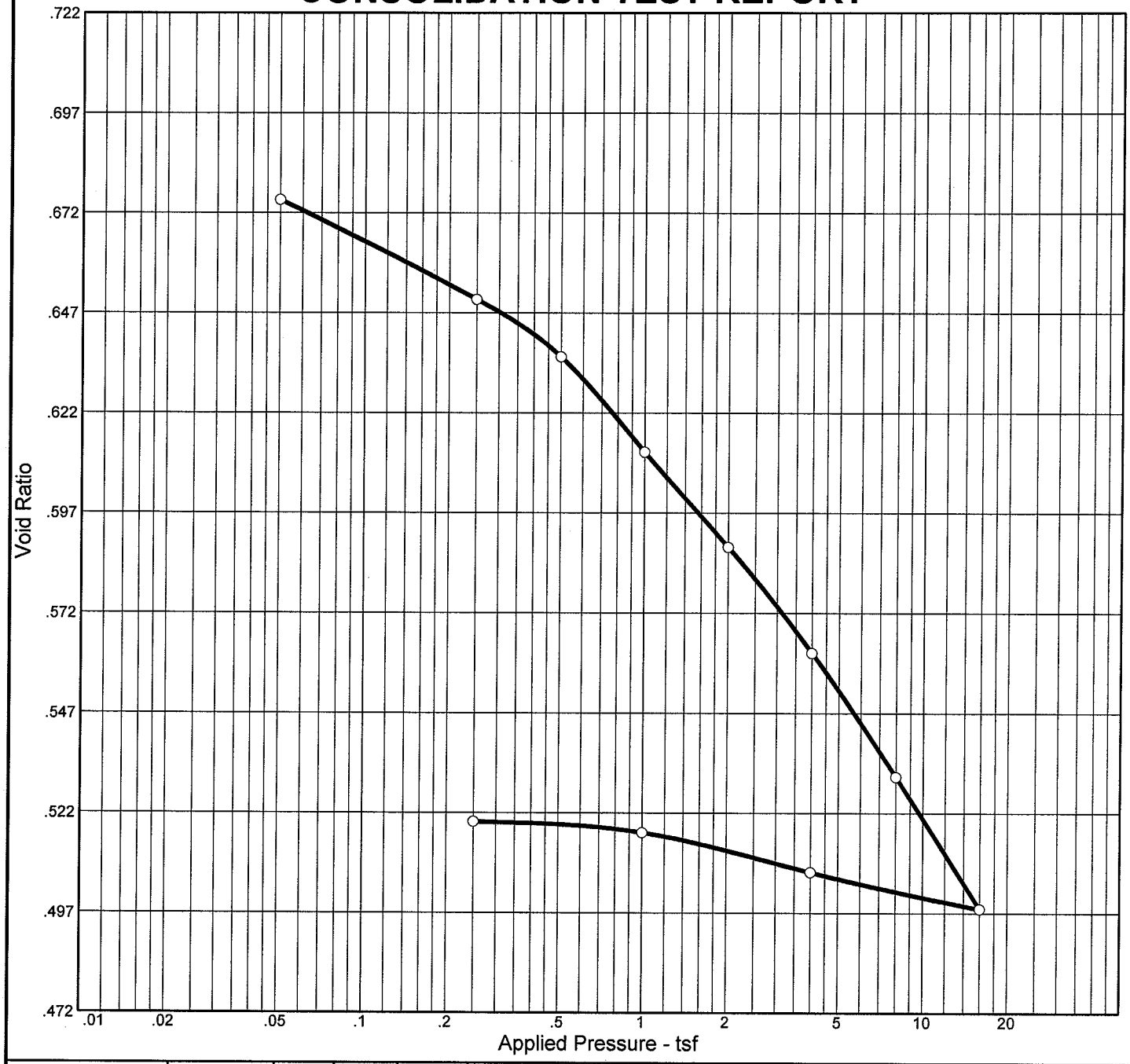
07045052 RW403 6.0 TO 8.0 feet





Terracon

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Swell Press. (tsf)	Swell %	e_o
Sat.	Moist.											
96.4 %	24.0 %	101.5			2.73		1.14	0.11	0.01			0.679

MATERIAL DESCRIPTION	USCS	AASHTO
LT. BROWN GRAY SILTY CLAY W/SAND LENSES, MOIST - MED. STIFF		

Project No. 07045052 **Client:** TERRACON

Project: I-74 EXPANSION CENTRAL

Source: ILR0501 **Sample No.:** T1 **Elev./Depth:** 8-10'

CONSOLIDATION TEST REPORT

H. C. NUTTING COMPANY

Remarks:

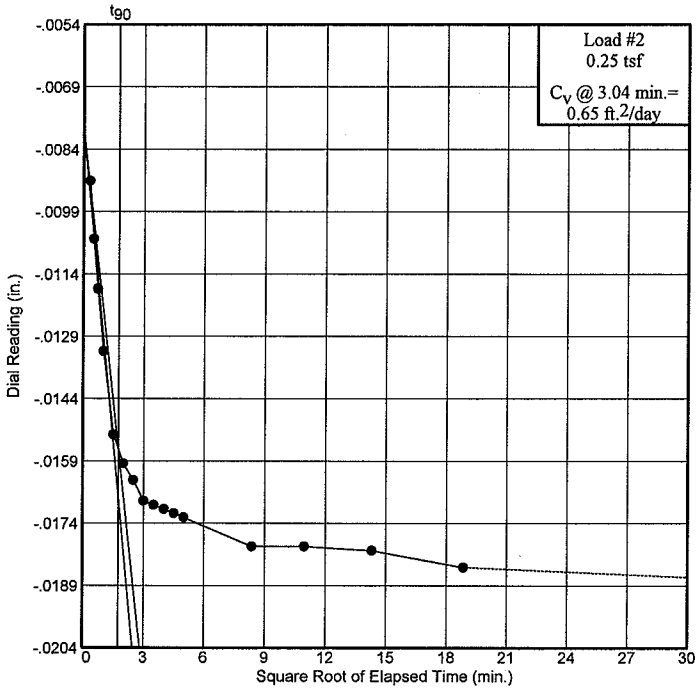
Lab No. 1069

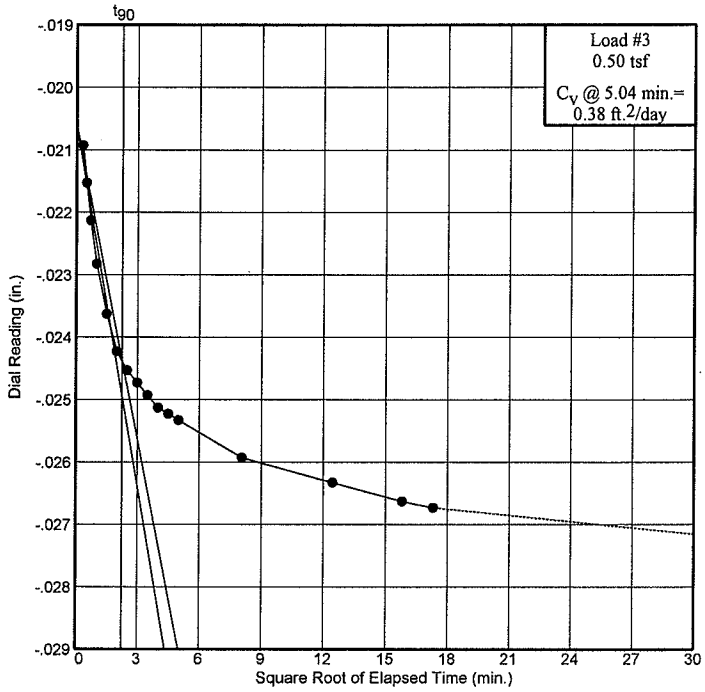
Figure

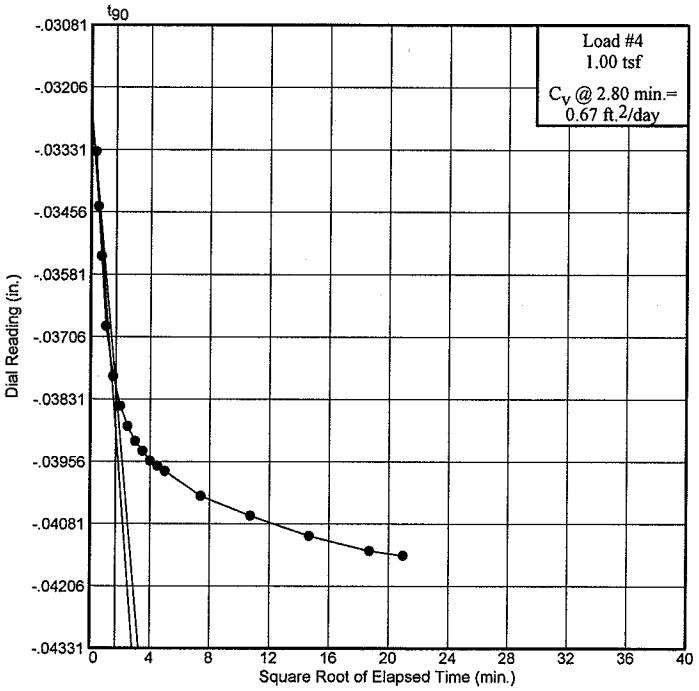
Dial Reading vs. Time

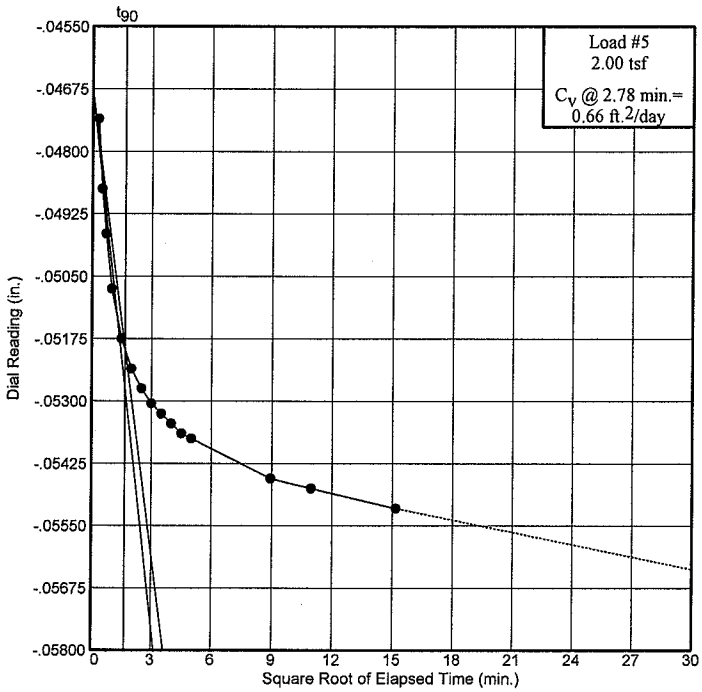
Project No.: 07045052
Project: I-74 EXPANSION CENTRAL

Source: ILR0501 Sample No.: T1 Elev./Depth: 8-10'









Dial Reading vs. Time

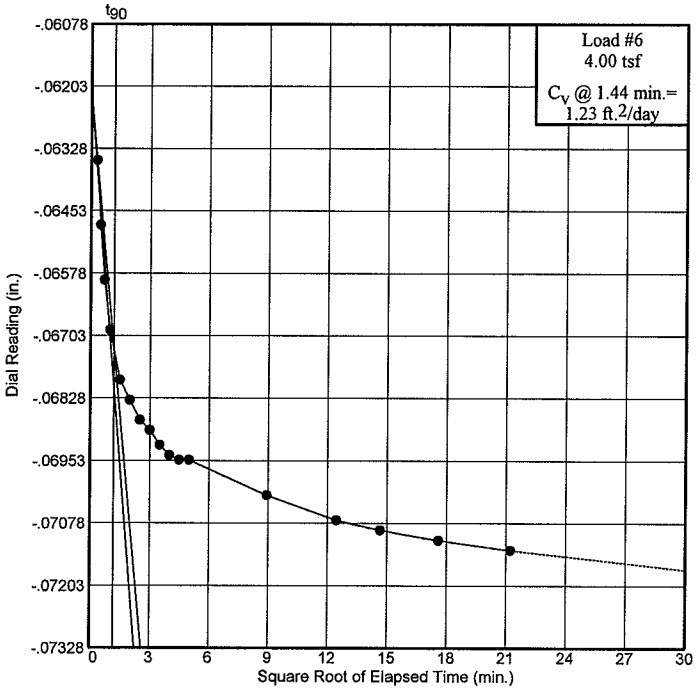
H. C. NUTTING COMPANY

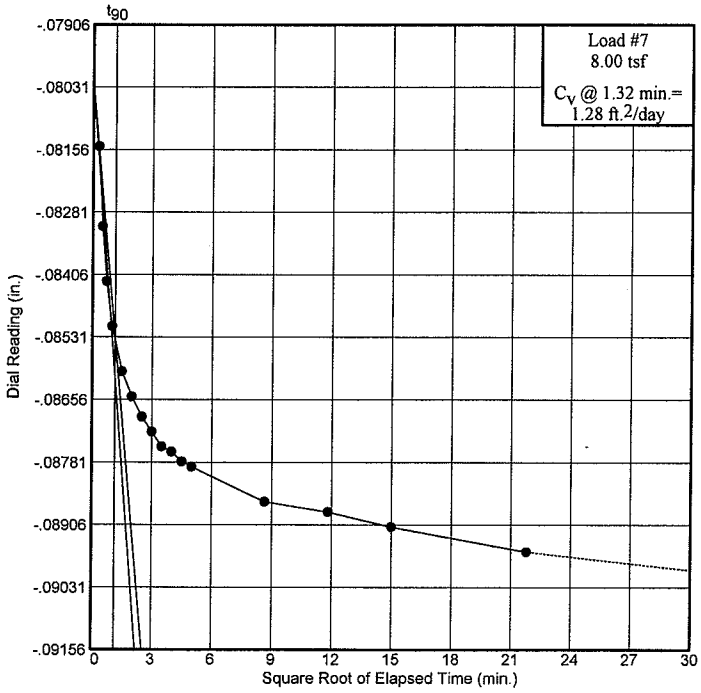
Figure

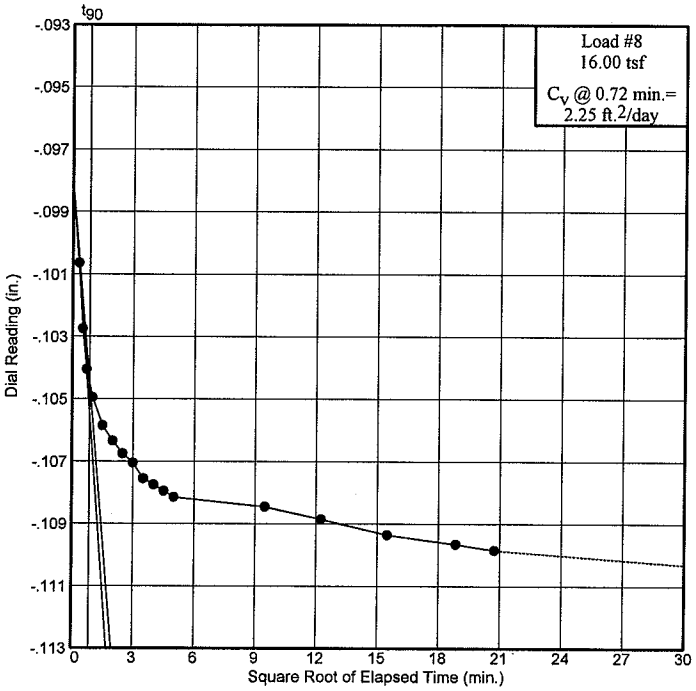
Dial Reading vs. Time

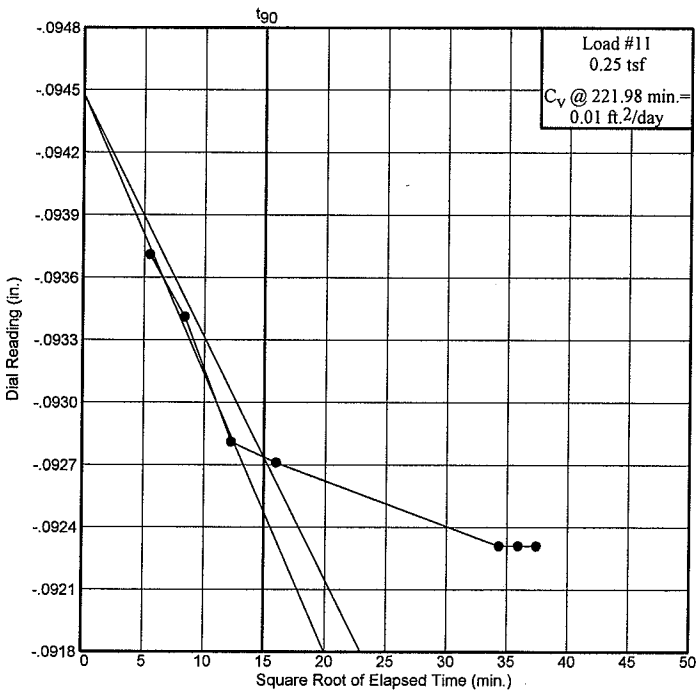
Project No.: 07045052
Project: I-74 EXPANSION CENTRAL

Source: ILR0501 Sample No.: T1 Elev./Depth: 8-10'









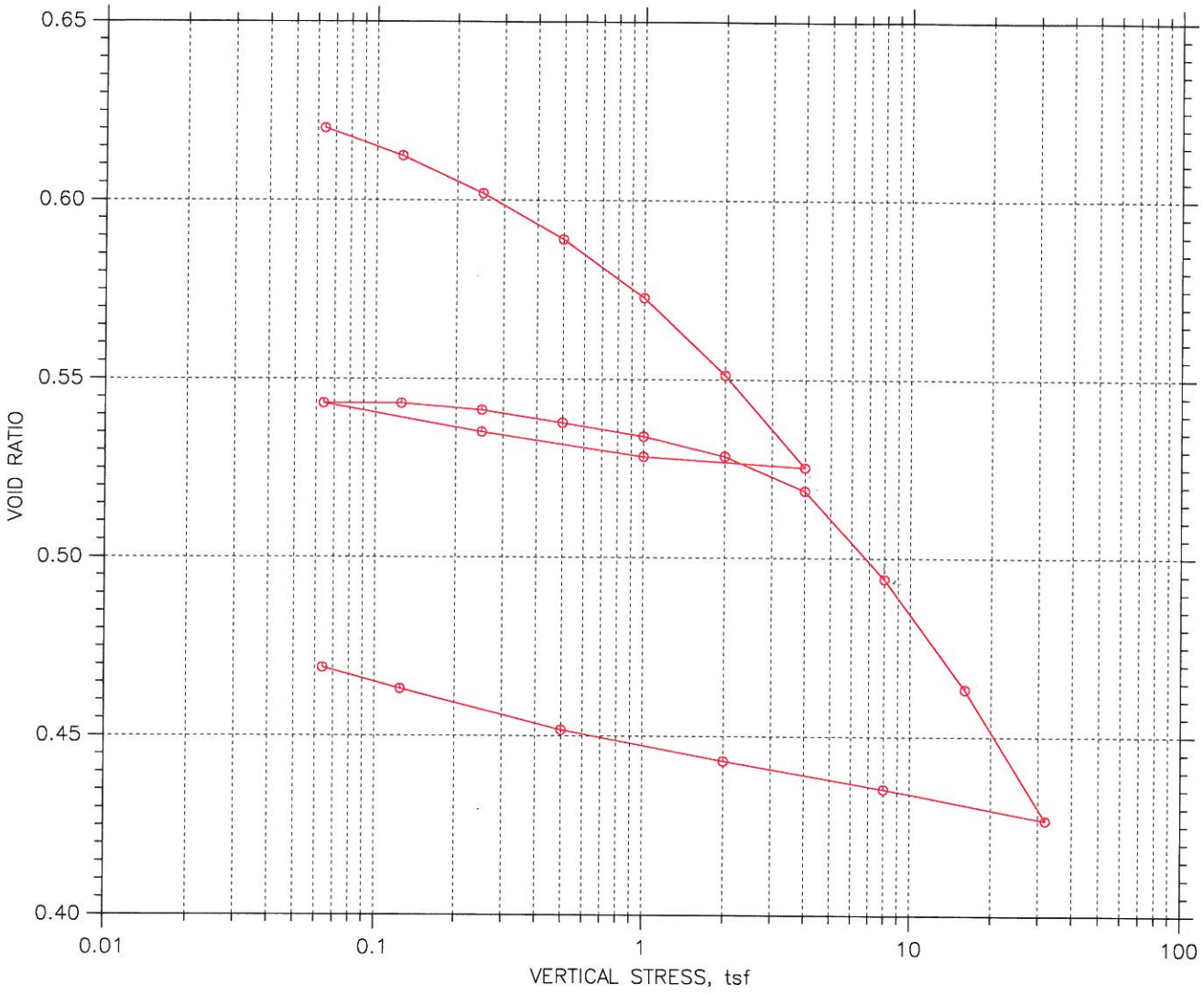
Dial Reading vs. Time

H. C. NUTTING COMPANY

Figure

CONSOLIDATION TEST DATA

SUMMARY REPORT



				Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	24.19	19.74
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	101.6	112.6
Compression Index: 2.54639e-313				Saturation, %	102.07	111.53
Diameter: 2.5 in		Height: 0.996 in		Void Ratio	0.63	0.47
LL: 0	PL: 0	PI: 0	GS: 2.65			

HANSON	Project: I74 Missippi River	Location: Quad Cities	Project No.: 08H0120E
	Boring No.: RW05-1	Tested By: RIN	Checked By: JCC
	Sample No.: 6-1	Test Date: 8/26/10	Depth: 16.5-16.8
	Test No.: 1	Sample Type: Tube	Elevation: N/A
	Description: Gray vf.-f. sandy silt.		
	Remarks: LT107 2000# 2009 Calibration		

Fri, 03-SEP-2010 10:02:44

CONSOLIDATION TEST DATA

Project: I74 Missippi River
Boring No.: RW05-1
Sample No.: 6-1
Test No.: 1

Location: Quad Cities
Tested By: RIN
Test Date: 8/26/10
Sample Type: Tube

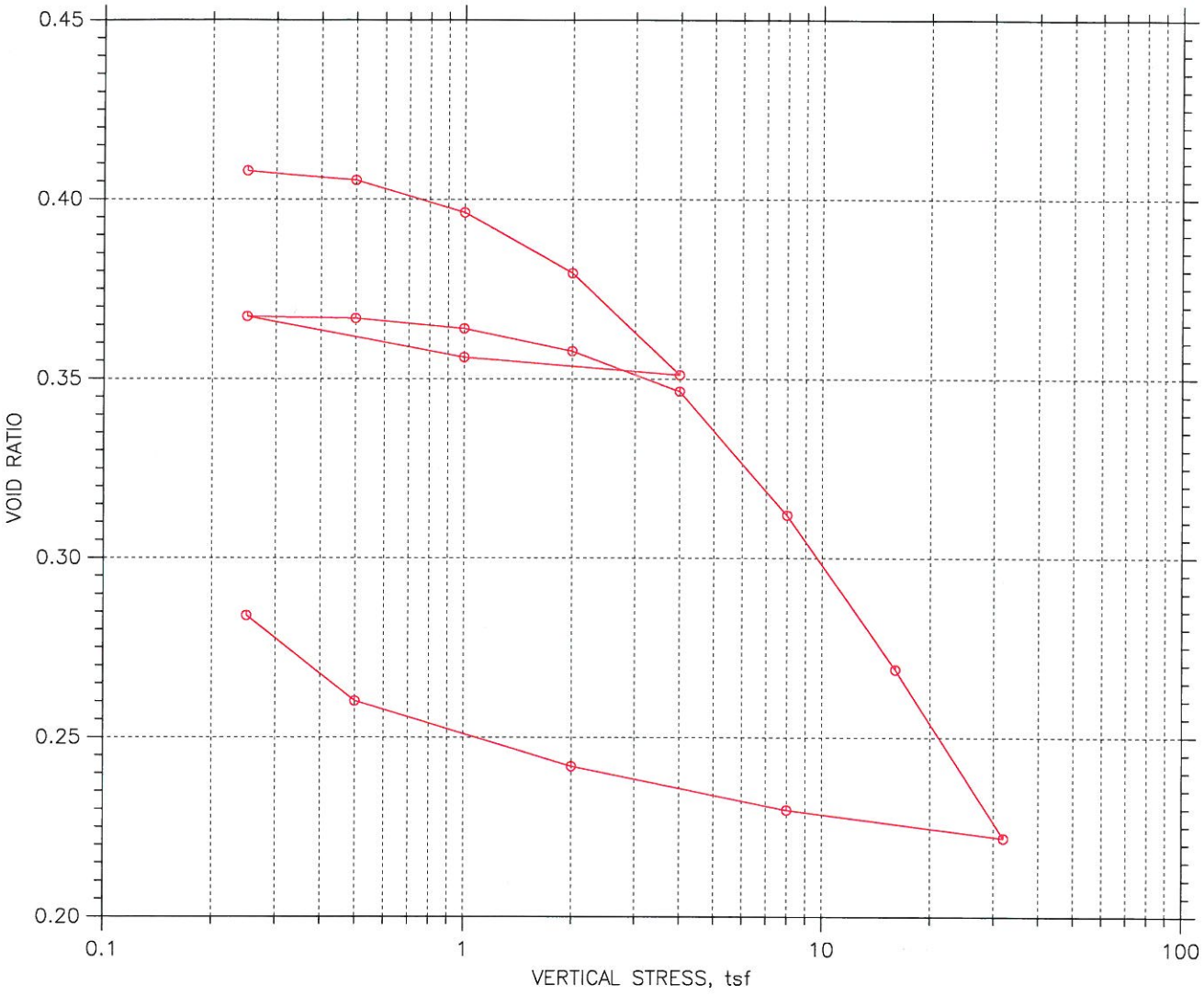
Project No.: 08H0120E
Checked By: JCC
Depth: 16.5-16.8
Elevation: N/A

Soil Description: Gray vf.-f. sandy silt.
Remarks: LT107 2000# 2009 Calibration

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting Sq.Rt. min	T50 Fitting Log min	Coefficient of Consolidation Sq.Rt. in^2/sec	Coefficient of Consolidation Log in^2/sec	Coefficient of Consolidation Ave. in^2/sec
1	0.064	0.004942	0.620	0.50	0.4	0.2	2.21e-003	4.22e-003	2.90e-003
2	0.125	0.009667	0.612	0.97	1.7	0.3	4.72e-004	2.66e-003	8.02e-004
3	0.25	0.0161	0.602	1.62	0.2	0.2	3.47e-003	4.48e-003	3.91e-003
4	0.5	0.02389	0.589	2.40	0.3	0.1	3.12e-003	7.22e-003	4.35e-003
5	1	0.03389	0.573	3.40	0.2	0.1	4.19e-003	7.88e-003	5.47e-003
6	2	0.04709	0.551	4.73	0.2	0.1	4.07e-003	1.10e-002	5.95e-003
7	4	0.06292	0.525	6.32	0.1	0.0	5.92e-003	1.67e-002	8.75e-003
8	1	0.0611	0.528	6.13	0.0	0.0	1.15e-001	7.75e-002	9.25e-002
9	0.25	0.05692	0.535	5.71	0.1	0.1	5.85e-003	1.44e-002	8.31e-003
10	0.064	0.05205	0.543	5.23	1.1	0.3	6.92e-004	2.80e-003	1.11e-003
11	0.125	0.05205	0.543	5.23	0.1	0.1	8.43e-003	1.05e-002	9.34e-003
12	0.25	0.05316	0.541	5.34	0.1	0.0	8.58e-003	1.93e-002	1.19e-002
13	0.5	0.05532	0.538	5.55	0.1	0.0	1.14e-002	1.84e-002	1.41e-002
14	1	0.05764	0.534	5.79	0.0	0.0	1.58e-002	2.83e-002	2.03e-002
15	2	0.06101	0.528	6.13	0.0	0.0	2.58e-002	5.13e-002	3.44e-002
16	4	0.06691	0.519	6.72	0.1	0.0	8.41e-003	5.03e-002	1.44e-002
17	8	0.08196	0.494	8.23	0.1	0.0	8.30e-003	2.94e-002	1.29e-002
18	16	0.1009	0.463	10.13	0.1	0.0	1.06e-002	3.91e-002	1.67e-002
19	32	0.1232	0.427	12.37	0.0	0.0	2.10e-002	4.57e-002	2.88e-002
20	8	0.118	0.435	11.84	0.0	0.0	6.51e-002	0.00e+000	6.51e-002
21	2	0.1132	0.443	11.37	0.0	0.0	7.71e-002	5.10e-002	6.14e-002
22	0.5	0.108	0.452	10.84	0.1	0.0	5.31e-003	1.82e-002	8.22e-003
23	0.125	0.101	0.463	10.14	0.9	0.3	7.06e-004	2.20e-003	1.07e-003
24	0.064	0.09735	0.469	9.77	6.4	0.0	1.03e-004	0.00e+000	1.03e-004

CONSOLIDATION TEST DATA

SUMMARY REPORT



				Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	15.49	12.97
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	117.2	128.9
Compression Index: 2.54639e-313				Saturation, %	99.88	121.12
Diameter: 2.5 in		Height: 0.996 in		Void Ratio	0.41	0.28
LL: 0	PL: 0	PI: 0	GS: 2.65			

HANSON	Project: I74	Location: Quad Cities	Project No.: 08H0120E
	Boring No.: RW-05-2	Tested By: RIN	Checked By: JCC
	Sample No.: 2-2	Test Date: 8/18/10	Depth: 3.5-3.7
	Test No.: 1	Sample Type: Tube	Elevation:
	Description: Brn. vf. sandy silty clay (tr. sm. gravel).		
	Remarks: LT107 2000# 2009 Calibration		

Mon, 13-SEP-2010 15:26:44

CONSOLIDATION TEST DATA

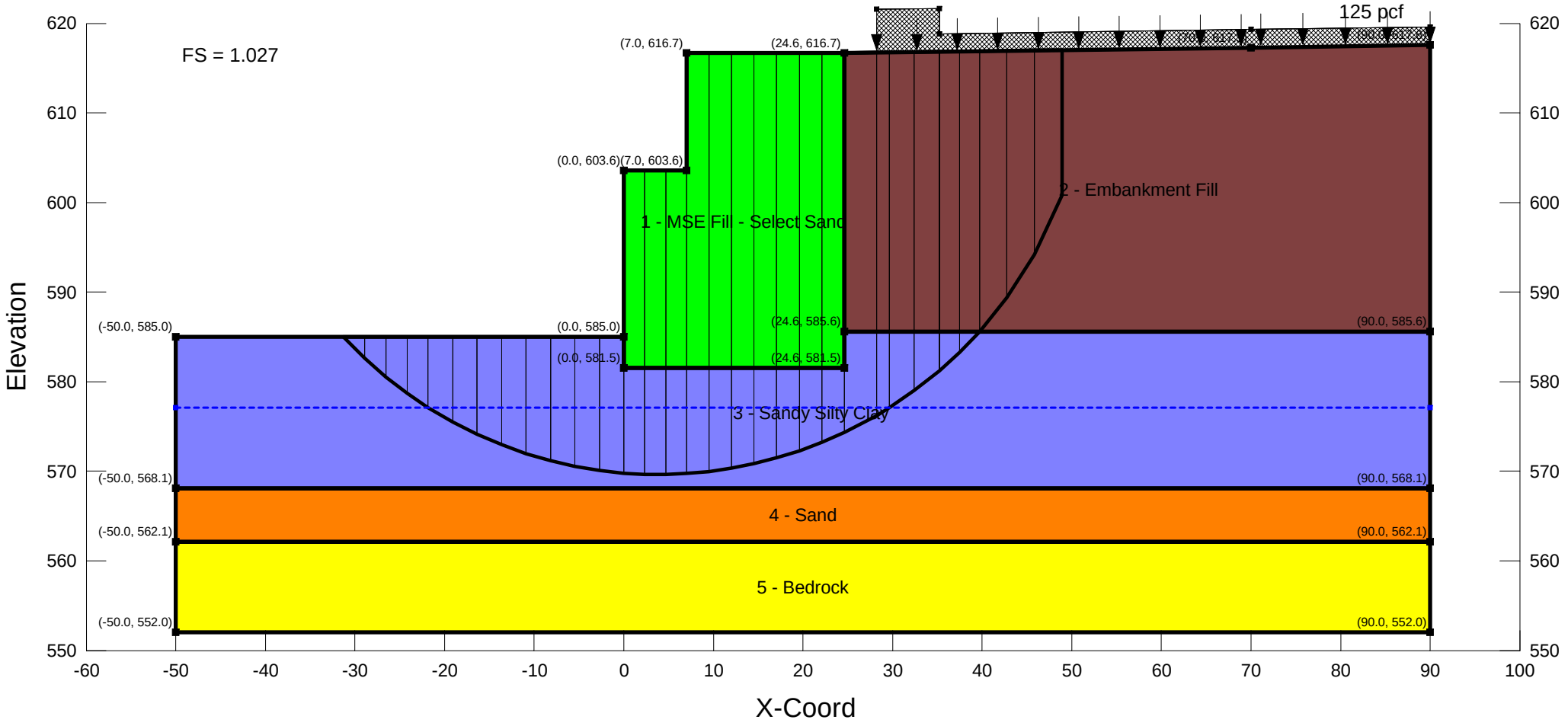
Project: I74
Boring No.: RW-05-2
Sample No.: 2-2
Test No.: 1

Location: Quad Cities
Tested By: RIN
Test Date: 8/18/10
Sample Type: Tube

Project No.: 08H0120E
Checked By: JCC
Depth: 3.5-3.7
Elevation:

Soil Description: Brn. vf. sandy silty clay (tr. sm. gravel).
Remarks: LT107 2000# 2009 Calibration

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting Sq.Rt. min	T50 Fitting Log min	Coefficient of Consolidation Sq.Rt. in^2/sec	Coefficient of Consolidation Log in^2/sec	Coefficient of Consolidation Ave. in^2/sec
1	0.25	0.002214	0.408	0.22	0.0	0.0	1.77e-002	2.05e-002	1.90e-002
2	0.5	0.004069	0.405	0.41	0.3	0.1	2.35e-003	1.27e-002	3.97e-003
3	1	0.01044	0.396	1.05	0.9	0.0	8.66e-004	0.00e+000	8.66e-004
4	2	0.02234	0.379	2.24	1.8	0.0	4.40e-004	0.00e+000	4.40e-004
5	4	0.04233	0.351	4.25	7.1	0.0	1.08e-004	0.00e+000	1.08e-004
6	1	0.03889	0.356	3.91	0.2	0.0	3.25e-003	0.00e+000	3.25e-003
7	0.25	0.03087	0.367	3.10	7.5	0.0	1.01e-004	0.00e+000	1.01e-004
8	0.5	0.03127	0.367	3.14	0.3	0.0	2.37e-003	0.00e+000	2.37e-003
9	1	0.03323	0.364	3.34	1.8	0.0	4.26e-004	0.00e+000	4.26e-004
10	2	0.03767	0.358	3.78	1.8	0.0	4.23e-004	0.00e+000	4.23e-004
11	4	0.04556	0.346	4.57	3.4	0.0	2.23e-004	0.00e+000	2.23e-004
12	8	0.06991	0.312	7.02	7.3	0.0	9.88e-005	0.00e+000	9.88e-005
13	16	0.1003	0.269	10.07	8.0	0.0	8.48e-005	0.00e+000	8.48e-005
14	32	0.1335	0.222	13.41	7.0	0.0	9.08e-005	0.00e+000	9.08e-005
15	8	0.128	0.230	12.85	0.0	0.0	3.53e-002	4.52e-002	3.96e-002
16	2	0.1195	0.242	11.99	3.5	0.0	1.78e-004	0.00e+000	1.78e-004
17	0.5	0.1066	0.260	10.70	16.3	0.0	3.93e-005	0.00e+000	3.93e-005
18	0.25	0.08977	0.284	9.01	136.1	0.0	4.87e-006	0.00e+000	4.87e-006



Material Properties

Name: 1 - MSE Fill - Select Sand Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 0 psf Phi: 34 °

Name: 2 - Embankment Fill Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 1000 psf Phi: 0 °

Name: 3 - Sandy Silty Clay Model: Mohr-Coulomb Unit Weight: 126 pcf Cohesion: 820 psf Phi: 0 °

Name: 4 - Sand Model: Mohr-Coulomb Unit Weight: 135 pcf Cohesion: 0 psf Phi: 32 °

Name: 5 - Bedrock Model: Bedrock (Impenetrable)

SN 081-6014 IL-RW05

Case 1 - Through Abutment - Circle

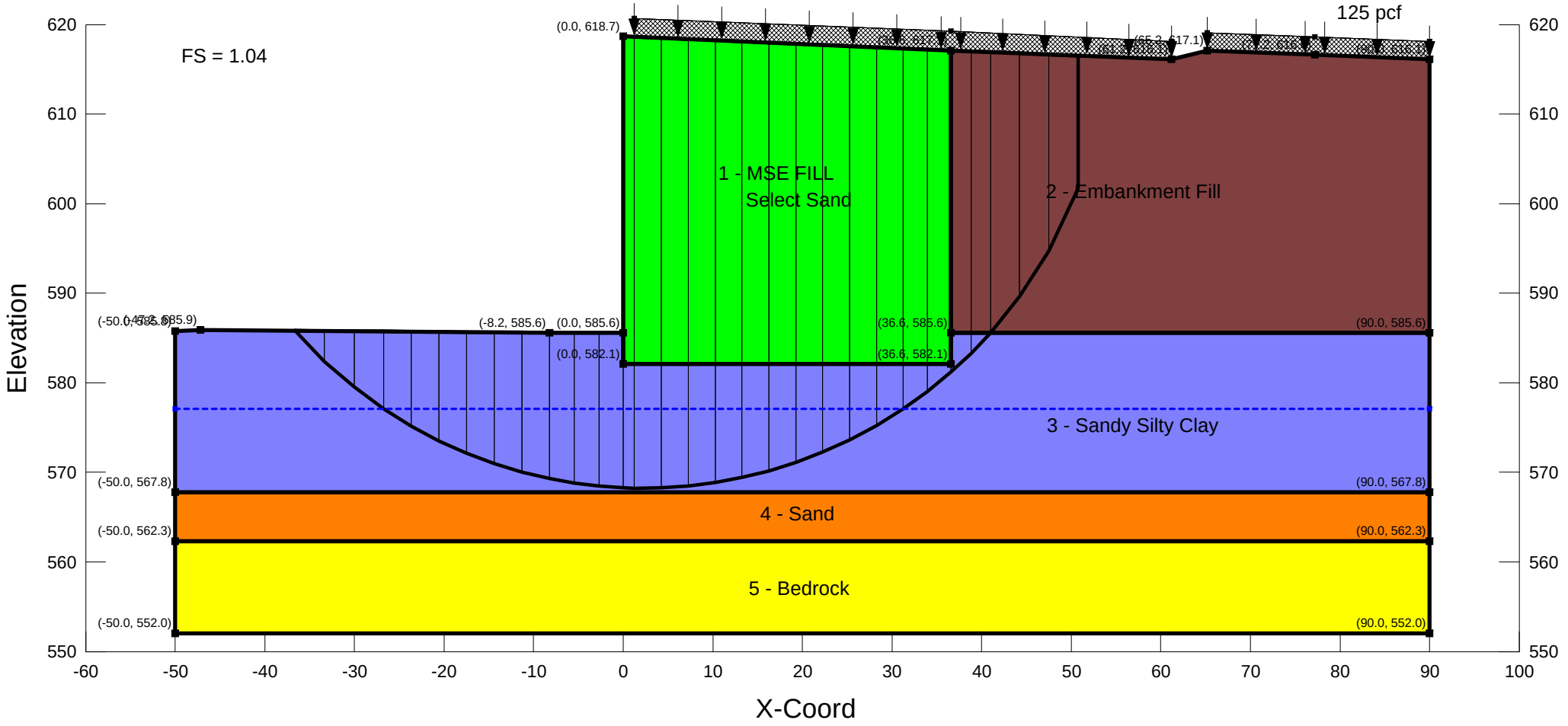
File Name: I-74 081-6014 - Through Abutment.gsz

Last Edited By: Robert Chantome

Date: 10/16/2011 7:04:05 PM

I-74 OVER THE MISSISSIPPI RIVER
CENTRAL SECTION FINAL DESIGN
ILLINOIS DEPARTMENT OF TRANSPORTATION
ROCK ISLAND COUNTY, ILLINOIS

HANSON



Material Properties

Name: 1 - MSE Fill - Select Sand Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 0 psf Phi: 34 °

Name: 2 - Embankment Fill Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 1000 psf Phi: 0 °

Name: 3 - Sandy Silty Clay Model: Mohr-Coulomb Unit Weight: 126 pcf Cohesion: 820 psf Phi: 0 °

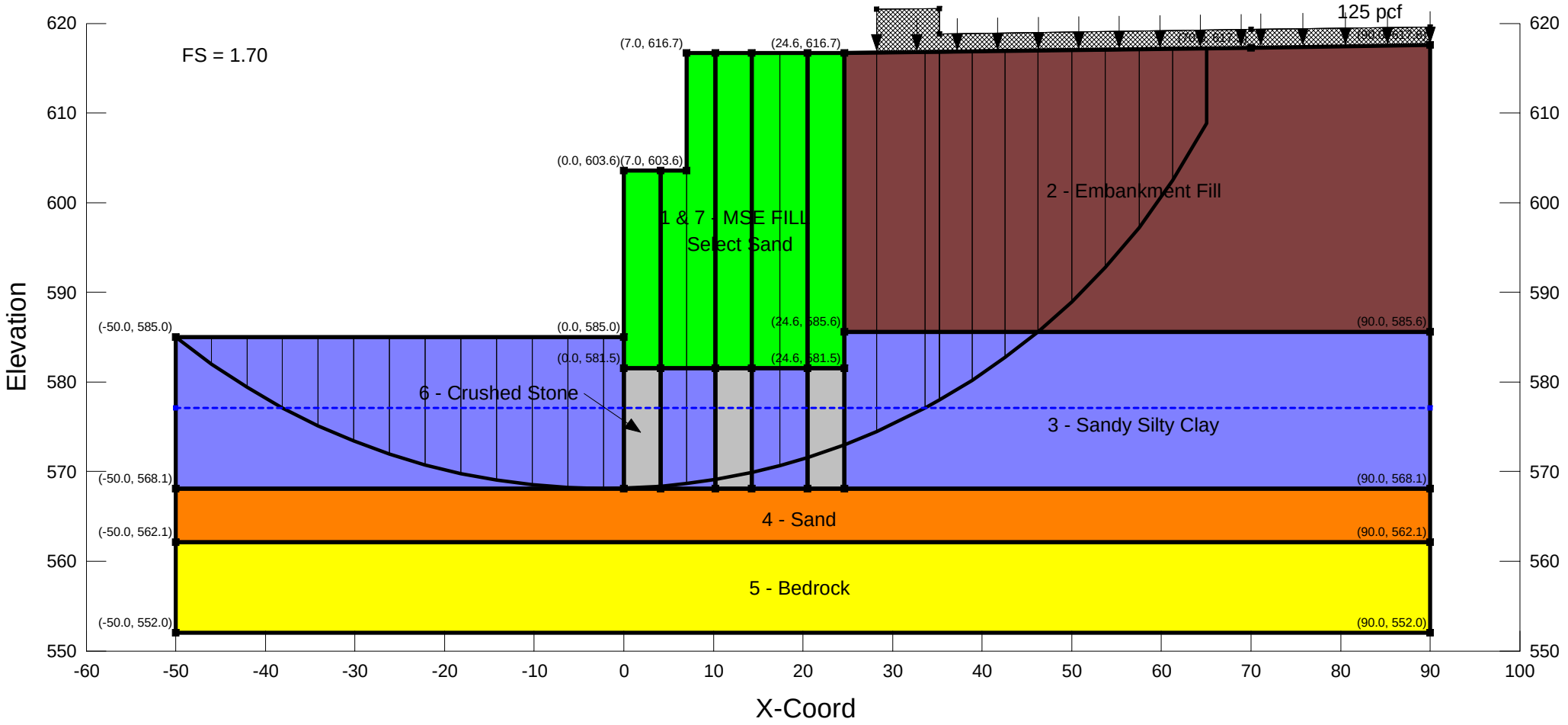
Name: 4 - Sand Model: Mohr-Coulomb Unit Weight: 135 pcf Cohesion: 0 psf Phi: 32 °

Name: 5 - Bedrock Model: Bedrock (Impenetrable)

SN 081-6014 IL-RW05
Case 1 - Sta 49+20 - Circle
File Name: I-74 081-6014 - Sta 49+20.gsz
Last Edited By: Robert Chantome
Date: 10/19/2011 11:18:17 AM

I-74 OVER THE MISSISSIPPI RIVER
CENTRAL SECTION FINAL DESIGN
ILLINOIS DEPARTMENT OF TRANSPORTATION
ROCK ISLAND COUNTY, ILLINOIS

HANSON



Material Properties

Name: 1 - MSE Fill - Select Sand Model: Mohr-Coulomb Unit Weight: 62.5 pcf Cohesion: 0 psf Phi: 34 °

Name: 2 - Embankment Fill Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 1000 psf Phi: 0 °

Name: 3 - Sandy Silty Clay Model: Mohr-Coulomb Unit Weight: 126 pcf Cohesion: 820 psf Phi: 0 °

Name: 4 - Sand Model: Mohr-Coulomb Unit Weight: 135 pcf Cohesion: 0 psf Phi: 32 °

Name: 5 - Bedrock Model: Bedrock (Impenetrable)

Name: 6 - Crushed Stone Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 0 psf Phi: 42 °

Name: 7 - MSE Fill - Select Sand Model: Mohr-Coulomb Unit Weight: 187.5 pcf Cohesion: 0 psf Phi: 34 °

SN 081-6014 IL-RW05

Case 2 - Through Abutment with ACGI - Circle

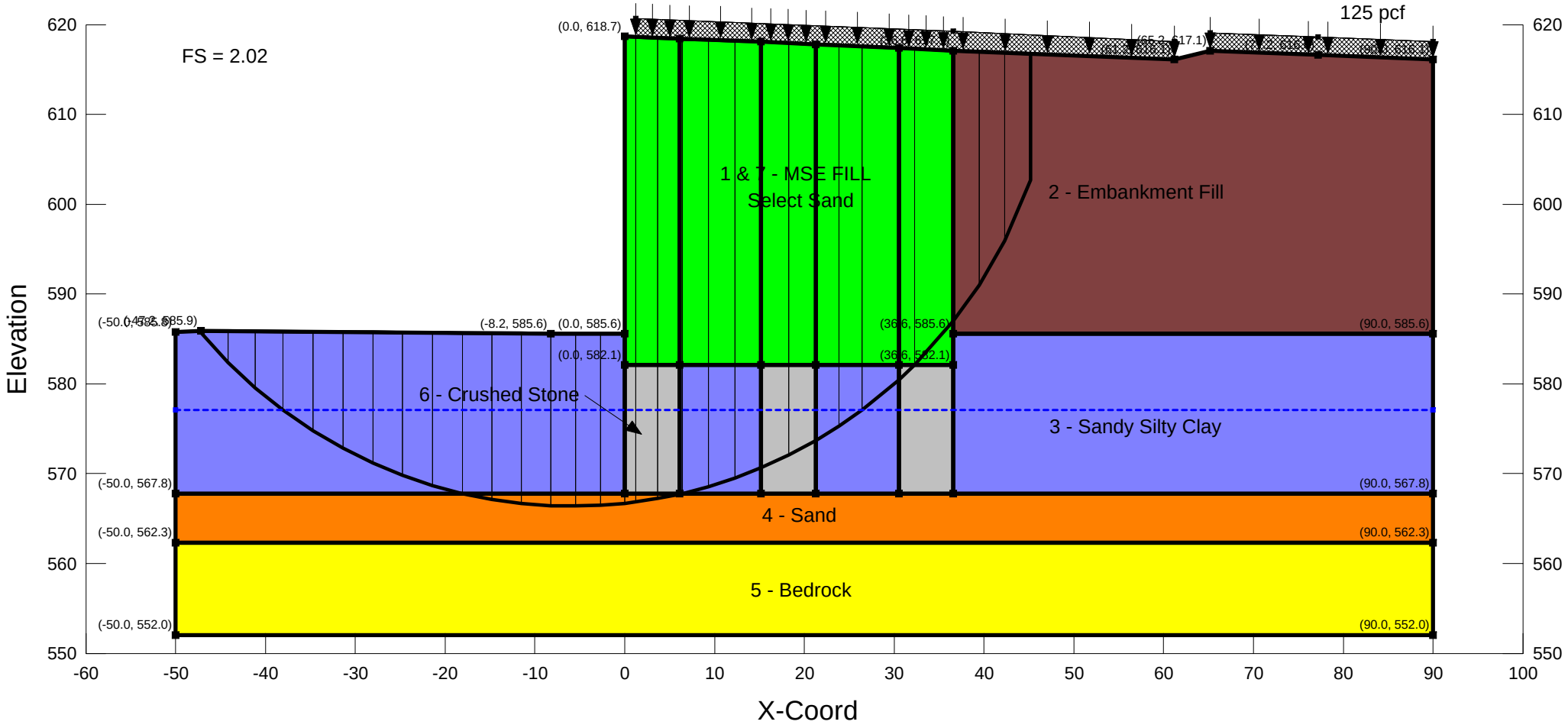
File Name: I-74 081-6014 - Through Abutment false soil.gsz

Last Edited By: Robert Chantome

Date: 10/19/2011 1:28:42 PM

I-74 OVER THE MISSISSIPPI RIVER
CENTRAL SECTION FINAL DESIGN
ILLINOIS DEPARTMENT OF TRANSPORTATION
ROCK ISLAND COUNTY, ILLINOIS

HANSON



Material Properties

Name: 1 - MSE Fill - Select Sand Model: Mohr-Coulomb Unit Weight: 62.5 pcf Cohesion: 0 psf Phi: 34 °

Name: 2 - Embankment Fill Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 1000 psf Phi: 0 °

Name: 3 - Sandy Silty Clay Model: Mohr-Coulomb Unit Weight: 126 pcf Cohesion: 820 psf Phi: 0 °

Name: 4 - Sand Model: Mohr-Coulomb Unit Weight: 135 pcf Cohesion: 0 psf Phi: 32 °

Name: 5 - Bedrock Model: Bedrock (Impenetrable)

Name: 6 - Crushed Stone Model: Mohr-Coulomb Unit Weight: 125 pcf Cohesion: 0 psf Phi: 42 °

Name: 7 - MSE Fill - Select Sand Model: Mohr-Coulomb Unit Weight: 187.5 pcf Cohesion: 0 psf Phi: 34 °

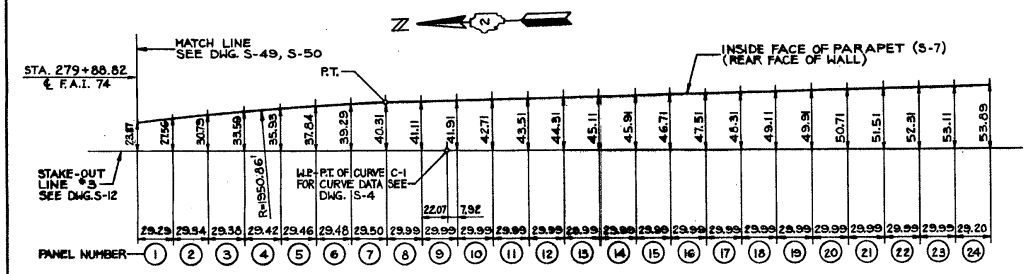
SN 081-6014 IL-RW05
Case 2 - Sta 49+20 with ACGI - Circle
File Name: I-74 081-6014 - Sta 49+20 false soil.gsz
Last Edited By: Robert Chantome
Date: 10/19/2011 1:24:32 PM

I-74 OVER THE MISSISSIPPI RIVER
CENTRAL SECTION FINAL DESIGN
ILLINOIS DEPARTMENT OF TRANSPORTATION
ROCK ISLAND COUNTY, ILLINOIS

HANSON

DWG. NO. W-4

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 74	81-1-2	ROCK ISLAND	389	283
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT I-74		



STAKE - OUT DIAGRAM

SCALE: 1"=50'-0"

LEGEND

Ⓒ = CONTRACTION JOINT

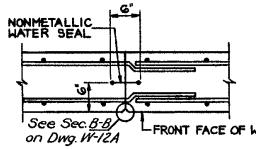
Ⓔ = EXPANSION JOINT

E.F. = EACH FACE

N.F. = NEAR FACE

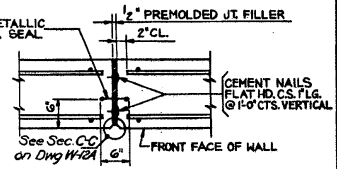
F.F. = FAR FACE

Note: For Rustication Details see Dwg. W-12A



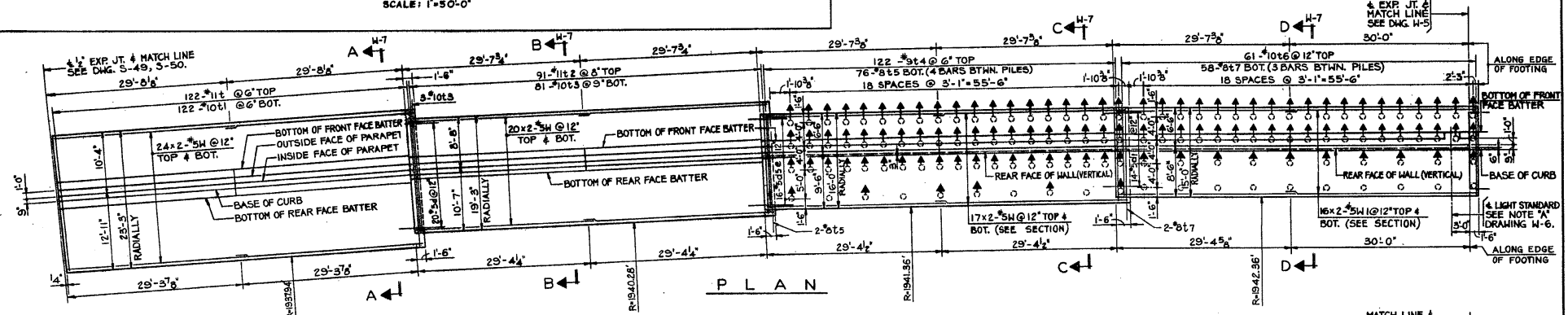
CONTRACTION JOINT

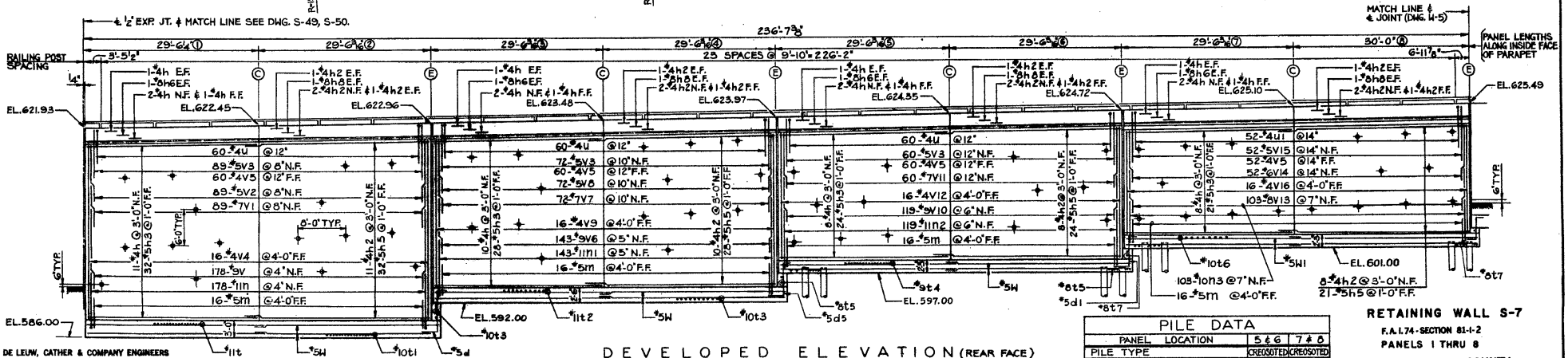
SCALE: 1"=1'-0"



EXPANSION JOINT

SCALE: 1"=1'-0"





DEVELOPED ELEVATION (REAR FACE)

SCALE: ⅛" = 1'-0"

PILE DATA		
PANEL LOCATION	5 & 6	7 & 8
PILE TYPE	CREOSOTED	CREOSOTED
CAPACITY	22 TONS	19 TONS
NUMBER REQUIRED	67*	58
ESTIMATED LENGTH - FT	17	18
CUT OFF ELEVATION	598.00	602.00

* INCLUDES 1 TEST PILE

MAXIMUM TOE PRESSURES:

PANELS 1 & 2 8000 PSF.

PANELS 3 & 4 6500 PSF.

DE LEUW, CATHER & COMPANY ENGINEERS

DESIGNED BY R.KENNEDY

DRAWN BY R.GHORBANIAN

CHECKED D. Fowler

IN CHARGE E.S. MARTINS

APPROVED W.G. HORN

RETAINING WALL S-7

F.A.I. 74 - SECTION 81-1-2

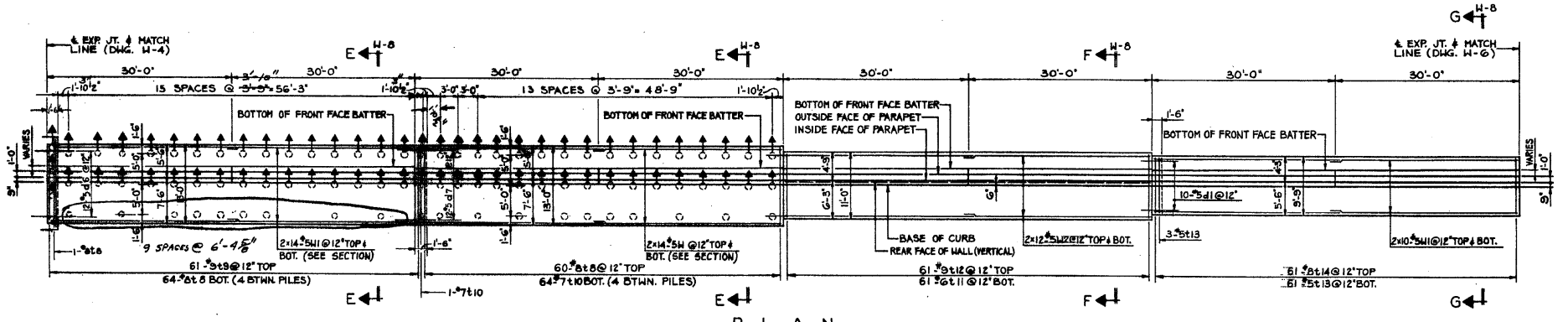
PANELS 1 THRU 8

ROCK ISLAND COUNTY

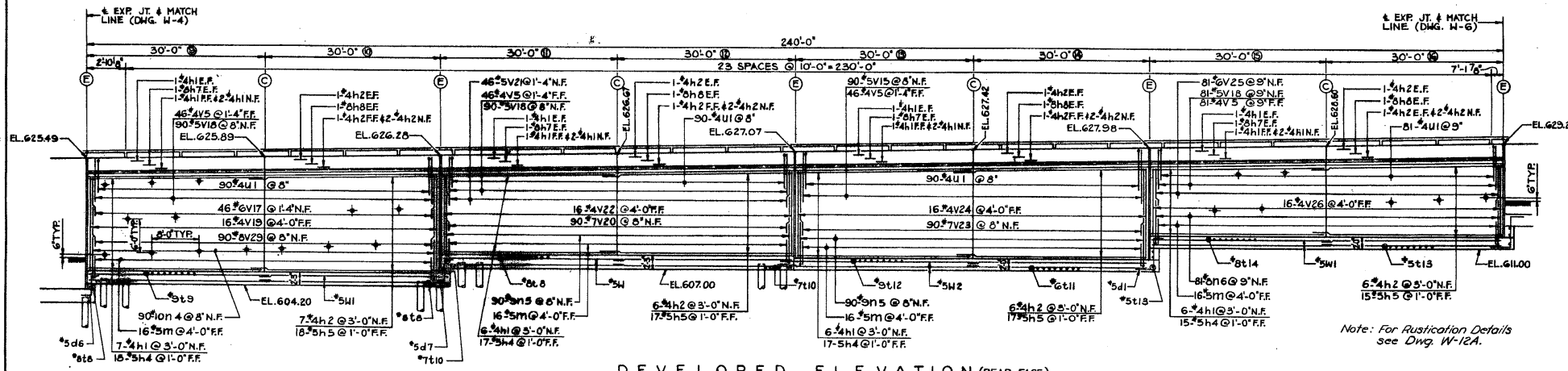
SCALE: AS NOTED DATE:

DWG. NO. W-8

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 74	81-1-2	ROCK ISLAND	289	286
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT I-74		



PLAN
SCALE: 1/8" = 1'-0"



DEVELOPED ELEVATION (REAR FACE)
SCALE: 1/8" = 1'-0"

Note: For Rustication Details see Dwg. W-12A.

NOTE: WEEP HOLES TYPICAL FOR ALL PANELS.

MAXIMUM BEARING PRESSURES

PANELS	13 & 14	4200 PSF.
PANELS	15 & 16	3500 PSF.

* INCLUDES 1 TEST PILE

PILE DATA		
PANEL LOCATION	9 & 10	11 & 12
PILE TYPE	CREOSOTED	CREOSOTED
CAPACITY	23 TONS	20 TONS
NUMBER REQUIRED	42*	42
ESTIMATED LENGTH - FT	15	17
CUT OFF ELEVATION	605.20	608.00

DE LEUW, CATHER & COMPANY ENGINEERS
DESIGNED BY R. KENNEDY
DRAWN BY R. GHOBRANIAN
CHECKED
IN CHARGE E. S. MARTINS
APPROVED W. G. HORN

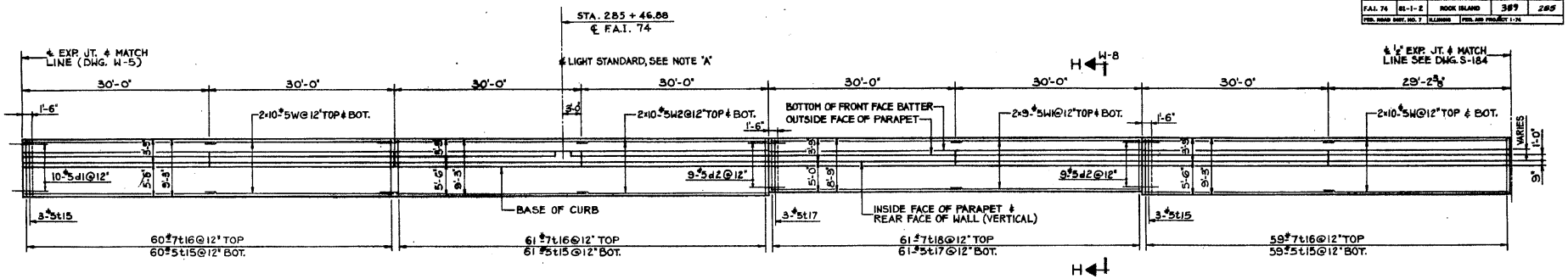
RETAINING WALL S-7

F.A.I. 74 - SECTION 81-1-2
PANELS 9 THRU 16
ROCK ISLAND COUNTY

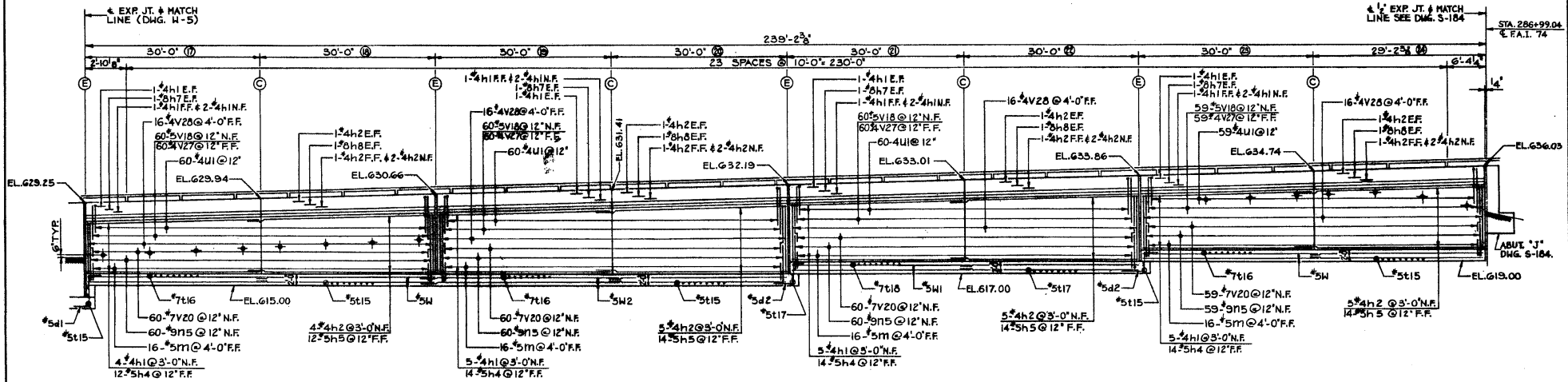
SCALE: AS NOTED DATE:

DWG. NO. W-6

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 74	81-1-2	ROCK ISLAND	389	285
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT I-74		



P L A N
SCALE : 1/8" = 1'-0"



D E V E L O P E D E L E V A T I O N (REAR FACE)
SCALE : 1/8" = 1'-0"

NOTE: WEEP HOLES TYPICAL FOR ALL PANELS.
NOTE 'A': FOR DETAILS SEE SECTION X-X DWG. W-8.
ALL COSTS INCIDENTAL TO COST OF STRUCTURE.

MAXIMUM BEARING PRESSURES

PANELS 17 THRU 20	3400 PSF.
PANELS 21 & 22	3500 PSF.
PANELS 23 & 24	3600 PSF.

Note: For Rustication Details see Dwg. W-12A.

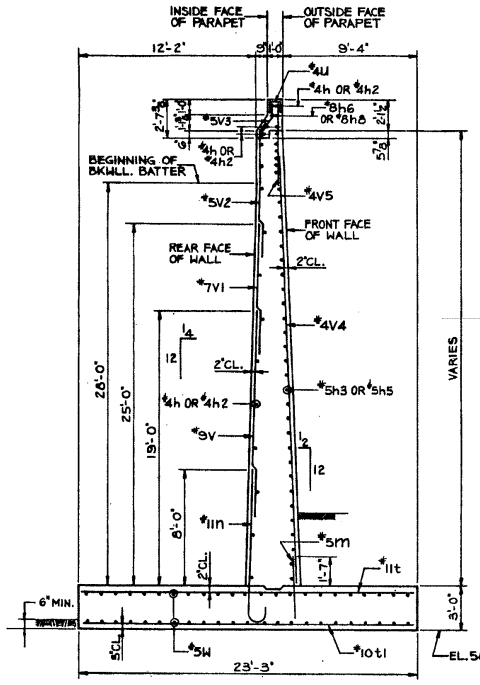
RETAINING WALL S-7
F.A.I.74-SECTION 81-1-2
PANELS 17 THRU 24
ROCK ISLAND COUNTY

SCALE: AS NOTED DATE:

DE LEUW, CATHER & COMPANY ENGINEERS
DESIGNED BY R. KENNEDY
DRAWN BY R. GHORBANIAN
CHECKED
IN CHARGE E. S. MARTINS
APPROVED W.G. HORN

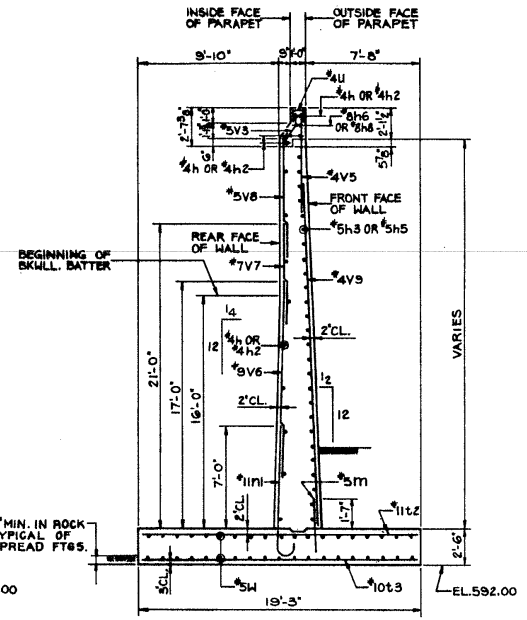
TRACE NO. 10-0186

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 74	81-1-2	ROCK ISLAND	389	286
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT I-74		



PANELS ① & ②
SCALE: 1/4"=1'-0"

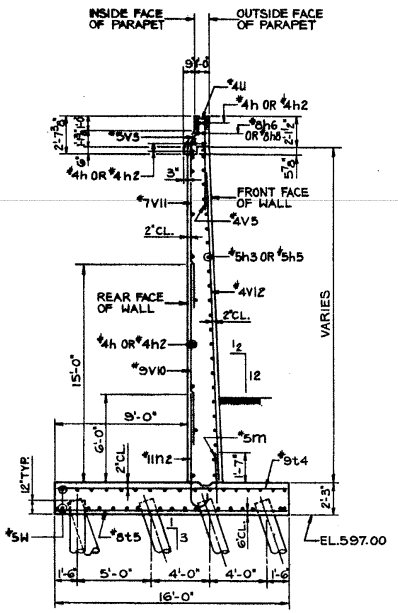
SECTION A-A (DWG. W-4)



PANELS ③ & ④
SCALE: 1/4"=1'-0"

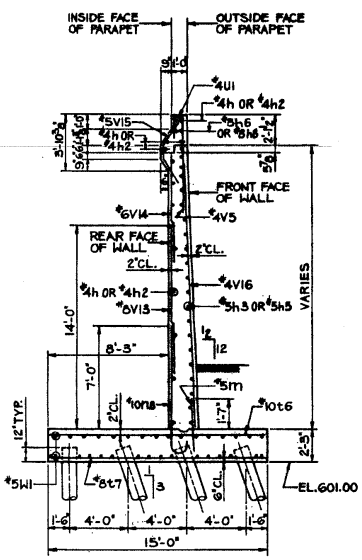
SECTION B-B (DWG. W-4)

Note: For Rustication Details see Dwg. W-12A.



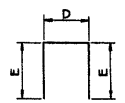
PANELS ⑤ & ⑥
SCALE: 1/4"=1'-0"

SECTION C-C (DWG. W-4)



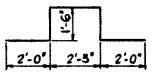
PANELS ⑦ & ⑧
SCALE: 1/4"=1'-0"

SECTION D-D (DWG. W-4)

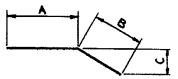


BAR U & U1

BAR	D	E
U	8"	9"
U1	8"	2'-0"



BAR d3



BAR V2, V8, V11 & d4

BAR	A	B	C
V2	8'-6"	1'-6"	9"
V8	8'-0"	1'-6"	9"
V11	10'-9"	1'-6"	9"
d4	4'-3"	1'-6"	9"

BAR LIST

BAR	NO.	SIZE	LENGTH	SHAPE	BAR	NO.	SIZE	LENGTH	SHAPE	BAR	NO.	SIZE	LENGTH	SHAPE	BAR	NO.	SIZE	LENGTH	SHAPE	BAR	NO.	SIZE	LENGTH	SHAPE
h	57	4	25'-3"		T1	122	10	23'-0"		U1	642	4	4'-8"		V18	500	5	4'-11"		d4	6	6	5'-9"	
h1	89	4	29'-9"		T2	91	11	19'-0"		V	178	9	14'-0"		V19	16	4	16'-3"		d5	16	5	10'-3"	
h2	136	4	31'-0"		T3	84	10	19'-0"		V1	89	7	8'-6"		V20	325	7	8'-3"		d6	12	5	8'-6"	
h3	105	5	29'-3"		T4	122	9	15'-9"		V2	85	5	11'-0"		V21	46	5	5'-5"		d7	12	5	8'-0"	
h4	121	5	29'-9"		T5	78	8	15'-9"		V3	221	5	2'-6"		V22	16	4	14'-9"						
h5	226	5	31'-3"		T6	61	10	14'-9"		V4	16	4	30'-9"		V23	90	7	12'-6"						
h6	8	8	29'-3"		T7	60	8	14'-9"		V5	451	4	4'-0"		V24	16	4	15'-9"						
h7	16	8	29'-9"		T8	125	8	12'-9"		V6	143	9	12'-10"		V25	81	6	9'-6"						
h8	24	8	32'-0"		T9	61	9	12'-9"		V7	72	7	6'-6"		V26	16	4	12'-9"						
					T10	65	7	12'-9"		V8	72	5	9'-6"		V27	259	4	6'-0"						
m	192	5	3'-3"		T11	61	6	10'-9"		V9	16	4	26'-0"		V28	64	4	10'-0"						
n	178	11	11'-8"		T12	61	9	10'-9"		V10	119	9	12'-0"		V29	90	8	8'-6"						
n1	148	11	10'-2"		T13	64	5	9'-6"		V11	60	7	12'-3"		W	380	5	31'-0"						
n2	119	11	9'-0"		T14	61	8	9'-6"		V12	16	4	22'-3"		W1	196	5	31'-6"						
n3	103	10	9'-10"		T15	186	5	9'-0"		V13	105	8	9'-9"		W2	88	5	32'-0"						
n4	90	10	9'-9"		T16	180	7	9'-0"		V14	52	6	7'-9"		d	20	5	11'-6"						
n5	419	9	8'-8"		T17	64	5	8'-6"		V15	142	5	4'-5"		d1	34	5	9'-0"						
n6	81	8	8'-6"		T18	61	7	8'-6"		V16	16	4	19'-0"		d2	18	5	7'-0"						
T	122	11	23'-0"		U	180	4	2'-2"		V17	46	6	6'-0"		d3	14	6	9'-3"						

BILL OF MATERIAL *

ITEM	UNIT	QUANTITY
STRUCTURE EXCAVATION	CU. YD.	6567
CLASS "X" CONCRETE	CU. YD.	1722.2
REINFORCEMENT BARS	POUND	224,805
ALUMINUM RAILING	LIN. FT.	716
PROTECTIVE COAT	SQ. YD.	280
FURNISHING CREOSOTED PILES UP TO 20 FT.	LIN. FT.	3495
DRIVING TIMBER PILES	LIN. FT.	3495
TEST PILES (TIMBER)	EACH	2

* INCLUDES ALL WORK SHOWN ON DWG. W-4 THRU W-7.

NOTE:
FOR RAILING DETAILS SEE DWG. NO. S-172.

RETAINING WALL S-7
CROSS SECTIONS

F.A.I. 74 - SECTION 81-1-2
PANELS 1 THRU 8

ROCK ISLAND COUNTY

SCALE: AS NOTED DATE:

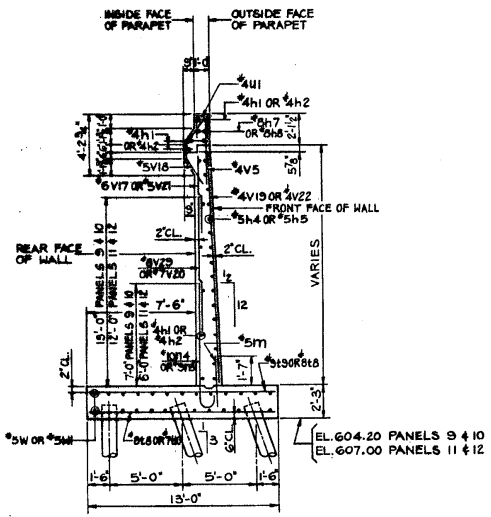
DE LEUW, CATHER & COMPANY ENGINEERS
DESIGNED BY R. KENNEDY
DRAWN BY R. SHORBANIAN
CHECKED
IN CHARGE K. E. MARTINS
APPROVED W.G. HORN

K & E CO. 10-0100

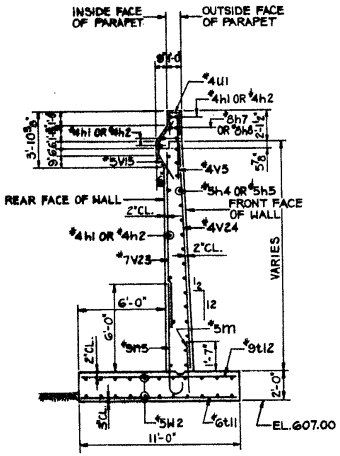
DWG. NO. W-8

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 74	81-1-2	ROCK ISLAND	389	287
FED. HIGHWAY DIST. NO. 7	ILLINOIS	FED. AID PROJECT 1-74		

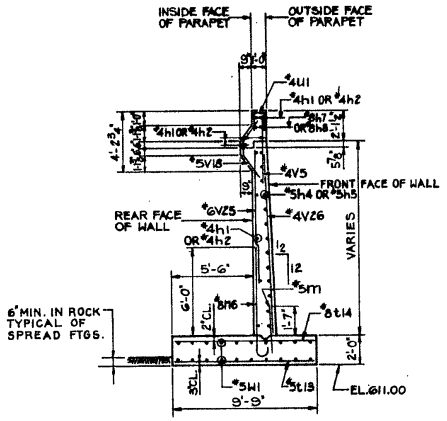
Note: For Rustication Details see Dwg. W-12A.



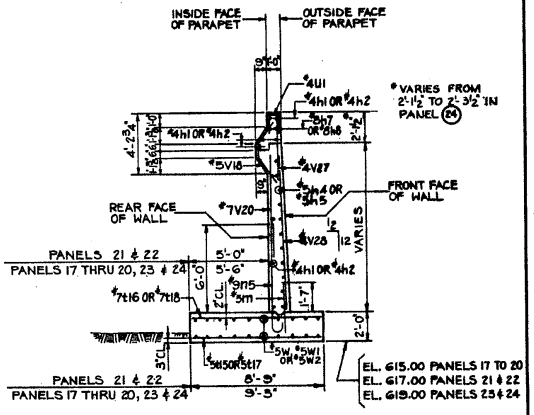
PANELS (9) THRU (12)
SCALE: 1/4"=1'-0"



PANELS (13) & (14)
SCALE: 1/4"=1'-0"



PANELS (15) & (16)
SCALE: 1/4"=1'-0"



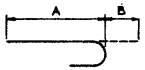
PANELS (17) THRU (24)
SCALE: 1/4"=1'-0"

SECTION E-E (DWG. W-5)

SECTION F-F (DWG. W-5)

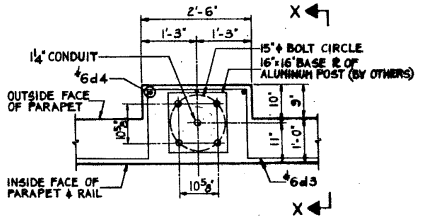
SECTION G-G (DWG. W-5)

SECTION H-H (DWG. W-6)



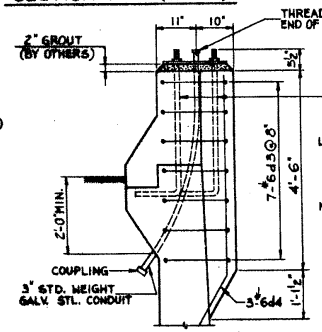
BARS n TO n6

BAR	A	B
n	1'-2"	10'-6"
n1	1'-2"	9'-0"
n2	1'-2"	7'-10"
n3	1'-1"	6'-9"
n4	1'-1"	5'-8"
n5	1'-0"	7'-8"
n6	10"	7'-8"

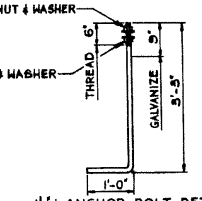


DETAIL 'Y'
SCALE: 3/4"=1'-0"

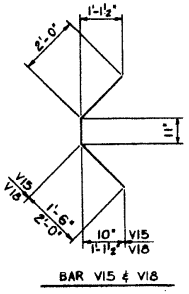
COST OF ANCHOR BOLTS AND CONDUITS IS INCIDENTAL.



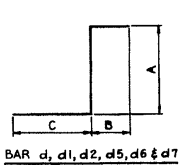
SECTION X-X
SCALE: 3/4"=1'-0"



1¼" ϕ ANCHOR BOLT DETAIL
SCALE: 3/4"=1'-0"

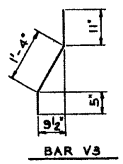


BAR V15 & V18



BAR d, d1, d2, d5, d6 & d7

BAR	A	B	C
d	7'-9"	1'-3"	2'-6"
d1	5'-3"	1'-3"	2'-6"
d2	3'-3"	1'-3"	2'-6"
d5	6'-6"	1'-3"	2'-6"
d6	4'-9"	1'-3"	2'-6"
d7	4'-3"	1'-3"	2'-6"



BAR V3

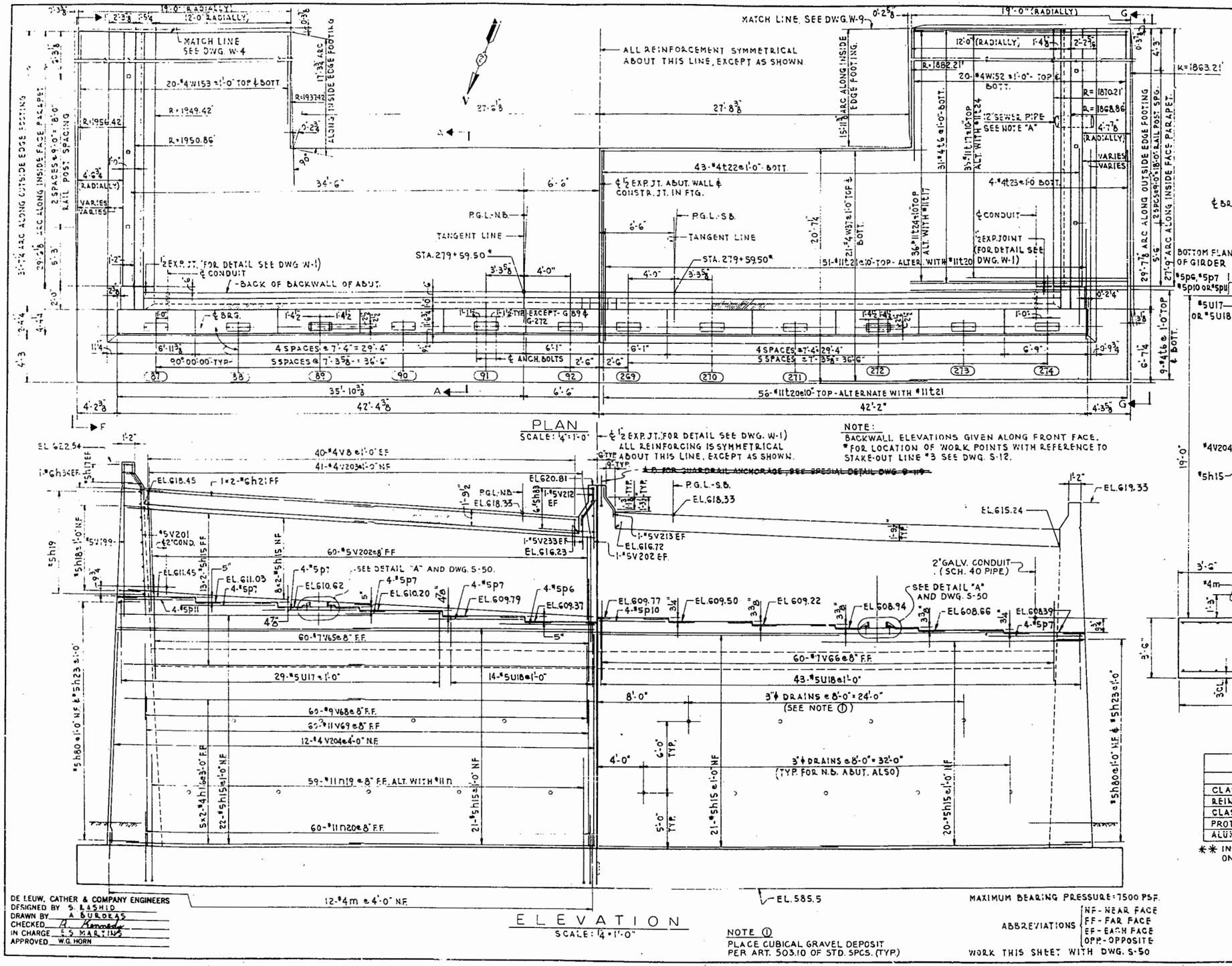
DE LEUW, CATHER & COMPANY ENGINEERS
DESIGNED BY R. KENNEDY
DRAWN BY R. SHORBANIAN
CHECKED W. Zuber
IN CHARGE E. S. MARTINS
APPROVED W.G. HORN

RETAINING WALL S-7
CROSS SECTIONS
F.A.I. 74 - SECTION 81-1-2
PANELS 9 THRU 24
ROCK ISLAND COUNTY

SCALE: AS NOTED DATE:

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 74	81-1HVB	ROCK ISLAND	389	163
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT I-74		

DWG. NO. S-49



PLAN
SCALE: 1/4"=1'-0"

NOTE:
BACKWALL ELEVATIONS GIVEN ALONG FRONT FACE.
*FOR LOCATION OF WORK POINTS WITH REFERENCE TO STAKE-OUT LINE *3 SEE DWG. S-12.

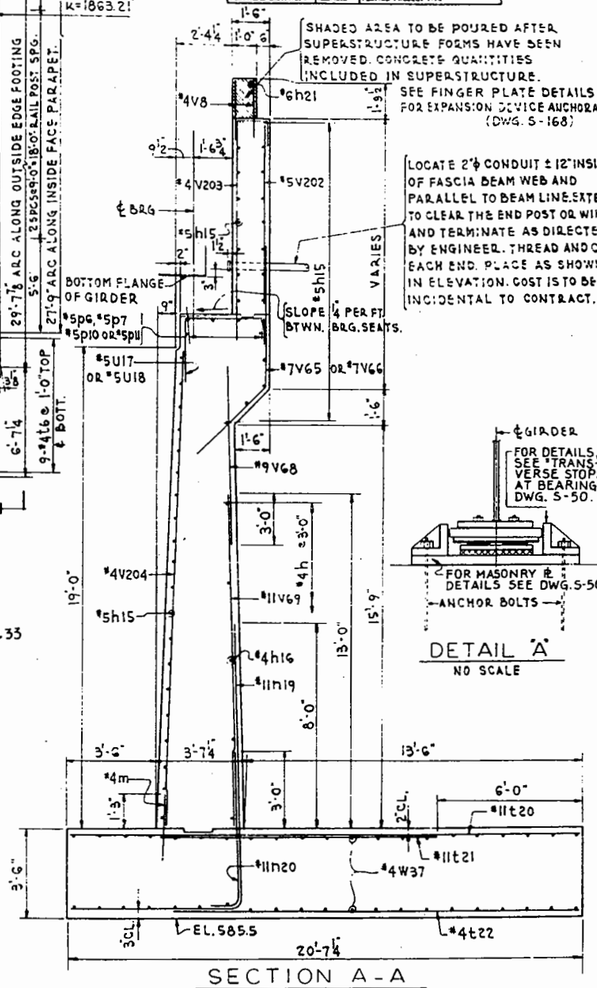
ELEVATION
SCALE: 1/4"=1'-0"

NOTE ①
PLACE CUBICAL GRAVEL DEPOSIT PER ART. 503.10 OF STD. SPCS. (TYP)

MAXIMUM BEARING PRESSURE = 7500 PSF.

ABBREVIATIONS
NF - NEAR FACE
FF - FAR FACE
EF - EACH FACE
OPP. - OPPOSITE

WORK THIS SHEET WITH DWG. S-50



DETAIL "A"
NO SCALE

SECTION A-A
SCALE: 3/8"=1'-0"

BILL OF MATERIAL **

ITEM	UNIT	QUANTITY
CLASS X CONCRETE	CU. YD.	819.3
REINFORCEMENT BARS	POUND	99689
CLASS A EXCAVATION FOR STRUCTURES	CU. YD.	2,216
PROTECTIVE COAT	SQ. YD.	24
ALUMINUM RAILING	LIN. FT.	61

** INCLUDES DETAILS SHOWN ON DWG. S-50 ALSO.

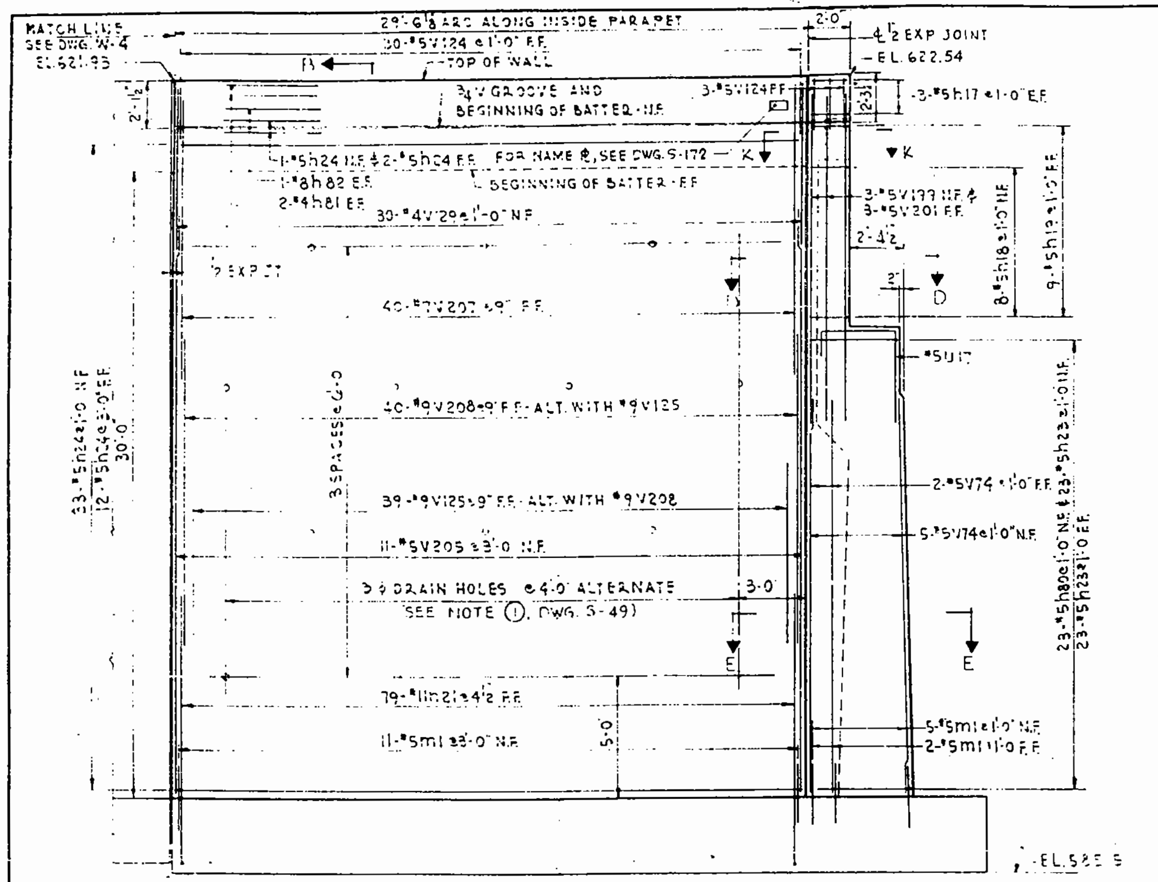
ABUTMENT © - MAINLINE PLAN, ELEVATION AND SECTION

F.A.I. 74 - SECTION 81-1HVB-1
MOLINE VIADUCT
ROCK ISLAND COUNTY
STATION 265 + 20
SCALE: AS NOTED DATE:
Rev. 5-22-73

DE LEUW, CATHER & COMPANY ENGINEERS
DESIGNED BY S. RASHID
DRAWN BY A. BURDKAS
CHECKED R. Kennedy
IN CHARGE E. S. MARTINS
APPROVED W.G. HORN

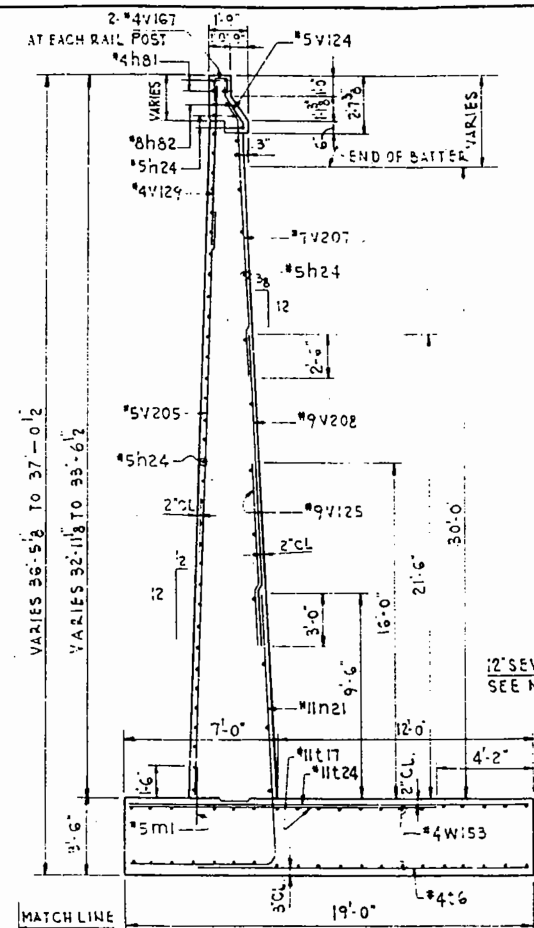
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 74	81-1HVB-1	ROCK ISLAND	389	162
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT I-74		

DWG NO S-50



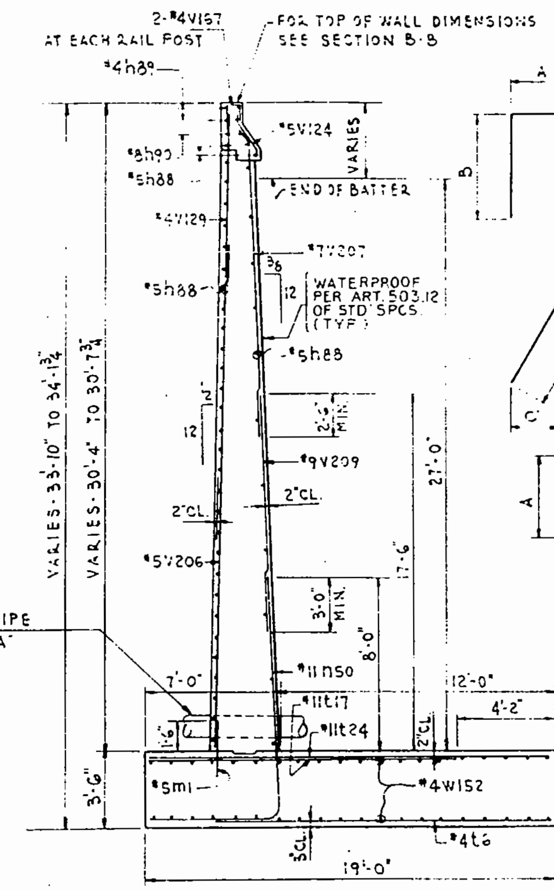
SECTION F-F

SCALE: 1/4" = 1'-0"



SECTION B-B

SCALE: 1/4" = 1'-0"



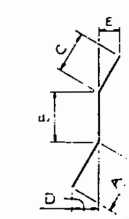
SECTION C-C

SCALE: 1/4" = 1'-0"

BAR	A	B	C
U17	3'-6	4'-3"	1'-3
U18	3'-6"	2'-8"	1'-3"
V167	9"	7"	9"
V203	1'-2"	9'-0"	1'-3"

BAR	A	B	C
V65	6'-3"	3'-9"	2'-8"
V66	4'-6"	3'-9"	2'-8"
V200	11'-0"	1'-0"	6 1/2
V201	14'-0"	1'-0"	6 1/2
V207	12'-9"	1'-0"	6 1/2
V233	4'-0	1'-4"	9"

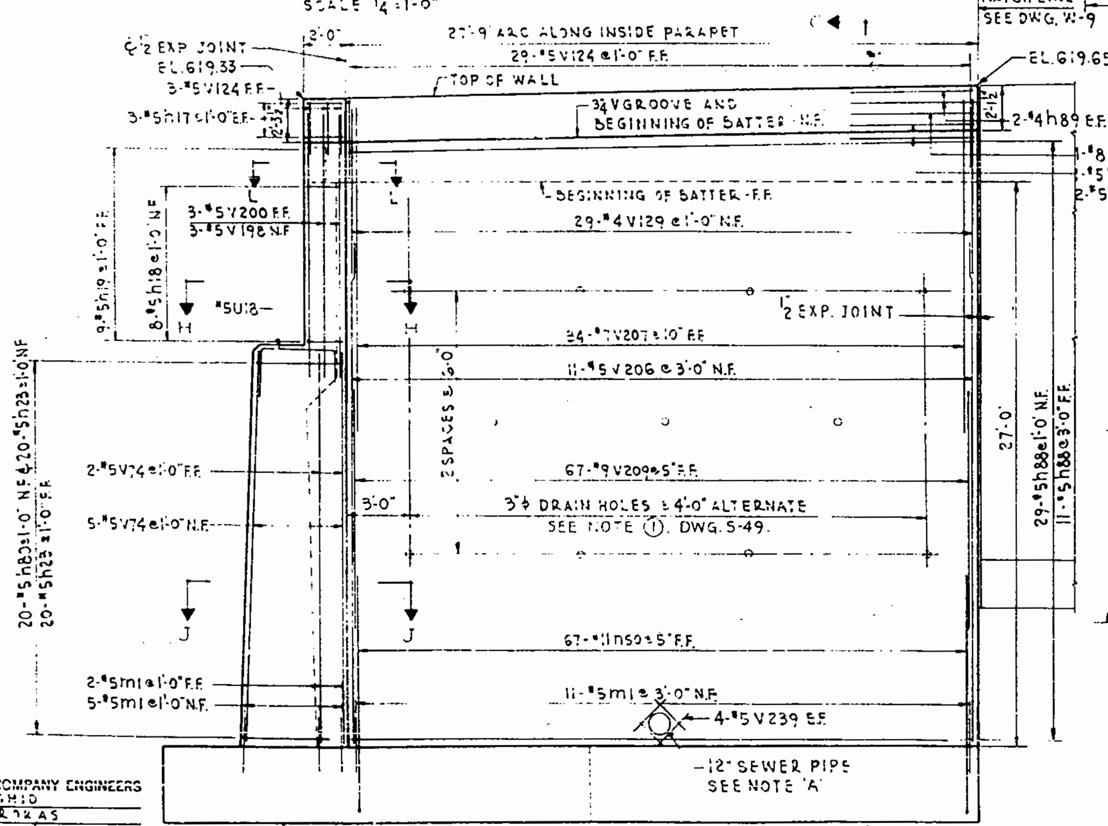
BAR	C	A	B
h17	–	0'-10"	1'-8"
h18	–	1'-6"	1'-8"
h34	–	1'-0"	3'-6"
h80	–	2'-0"	2'-0
n19	2 1/2"	11'-3"	6'-8"
n20	–	6'-3"	1'-2"
n21	2 1/2"	12'-9"	6'-7"
n50	2 1/2"	11'-3"	6'-7"



BAR	A	B	C	D	E
V124	3"	1'-5"	11"	1 3/4"	6"
V212	1'-0"	1'-4"	1'-6"	6 3/4"	10 1/8"
V213	1'-0"	1'-4"	1'-0"	6 3/4"	6 3/4"

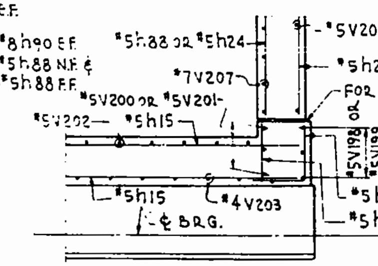
REINFORCING BAR LIST

BAR MARK	QUANTITY OF BARS	BAR SIZE	LENGTH	SHAPE
H15	168	[illegible]	[illegible]	
H16	2[illegible]	4	[illegible]	
H17	12	5	[illegible]	
H18	16	[illegible]	[illegible]	
H19	1[illegible]	5	[illegible]	
H21	4	6	21- 3	
H23	86	[illegible]	3- [illegible]	
H24	4[illegible]	5	2[illegible]- [illegible]	
H34	4	6	4- [illegible]	
H80	43	5	4- [illegible]	
H81	4	4	2[illegible]-	
H82	2	[illegible]	[illegible]	
H83	12	5	0- [illegible]	
H88	43	5	27- 5	
H89	4	4	27- 5	
H90	2	8	27- [illegible]	
M	24	4	2- 6	
M1	36	5	3- 0	
N19	118	11	17-11	
N20	120	11	7- 5	
N21	79	11	19- 4	
N50	67	11	17-1[illegible]	
P6	4	5	6- [illegible]	
P7	36	5	8- 6	
P10	4	5	5- [illegible]	
P11	4	5	6- 7	
T6	98	4	18- 8	
T17	70	11	14- 9	
T20	112	11	20- 2	
T21	102	11	11- 0	
T22	86	4	17- 0	
T23	3	4	20- 3	
T24	72	11	18- 8	
U17	29	5	9- 0	
U18	[illegible]7	5	7- 5	
V8	160	4	3- 3	
V65	60	7	10- 0	
V66	60	7	8- 3	
V68	120	9	7- 6	
V69	120	11	13- 0	
V74	14	5	18- 6	
V124	65	5	2- 7	
V125	39	9	9- [illegible]	
V129	59	4	[illegible]- [illegible]	
V167	12	4	2- 1	
V198	3	5	13- [illegible]	
V199	3	5	16- 0	
V200	3	5	12- 0	
V201	3	5	15- 0	
V202	124	5	6- [illegible]	
V203	82	4	11- 5	
V204	24	4	16-1[illegible]	
V205	11	[illegible]	31- [illegible]	
V206	11	5	28- [illegible]	
V207	7[illegible]	[illegible]	13- [illegible]	
V208	4[illegible]	9	15- [illegible]	
V209	57	[illegible]	1[illegible]- [illegible]	
V212	2	[illegible]	3-1[illegible]	
V213	2	[illegible]	[illegible]- [illegible]	
V233	4	[illegible]	5- [illegible]	
V239	[illegible]	5	3- 0	
W37	84	4	25- 9	
W152	40	4	17- 0	
W153	40	4	19- 9	



SECTION G-G

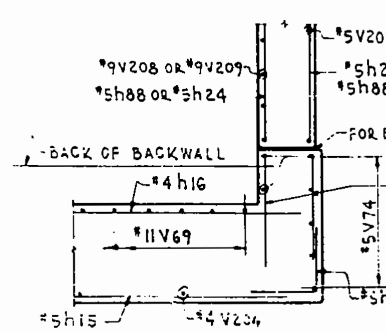
SCALE: 1/4" = 1'-0"



SECTION H-H

SECTION D-D OPP HAND

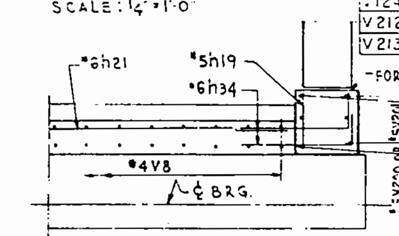
SCALE: 3/8" = 1'-0"



SECTION J-J

SECTION E-E OPP HAND

SCALE: 3/8" = 1'-0"

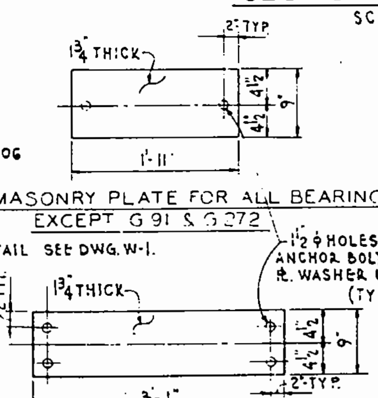


FOR EXP. JT. DETAIL SEE DWG W-1.

SECTION L-L

SECTION K-K OPP. HAND

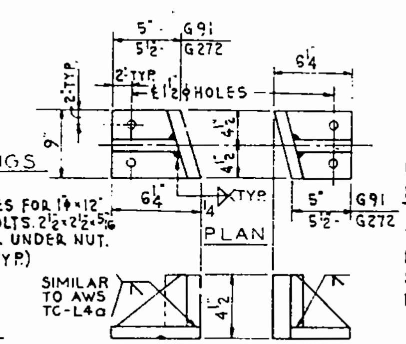
SCALE: 3/8" = 1'-0"



MASONRY PLATE FOR ALL BEARINGS EXCEPT G 91 & G 272

MASONRY PLATE FOR BEARINGS AT G 91 & G 272

SEE ALSO DETAIL "A", DWG. S-49.



TRANSVERSE STOPS AT BEARINGS G91 & G272

ALL PLATES ARE 5/8" THICK

FOR BEARING DETAILS SEE SHEET S171

NOTES:

REFER TO DWG S-12 FOR LOCATION OF WORK POINT FROM STAKEOUT LINE.

BAR MARKS IN LOWER CASE ON DWG. AND IN UPPER CASE IN BAR LIST REFER TO THE SAME BAR.

SPACE REINFORCEMENT IN CAP TO MISS ANCHOR BOLTS.

POUR STEPS MONOLITHICALLY WITH CAP.

WORK THIS DRAWING WITH DWG. S-49.

ALL ANCHOR BOLTS TO PROJECT 3 1/4" ABOVE FINISHED CONCRETE EXCEPT THOSE AT GR.89 & GR. 272.

ANCHOR BOLTS AT GR.89 & GR. 272 TO PROJECT 3/4" ABOVE FINISHED CONCRETE.

GIRDERS MUST BE PLACED BEFORE BACKFILL IS PLACED.

NOTE "A":

12" SEWER PIPE WILL BE IN PLACE BEFORE THE RETAINING WALL IS BUILT. ALL OBSTRUCTING BARS TO BE FIELD CUT AS NECESSARY TO MISS THE SEWER PIPE. FOUR ADDITIONAL #5V239 BARS SHALL BE PLACED AT EACH FACE AS SHOWN IN SECTION G-G.

ABUTMENT (C) - MAINLINE WINGWALLS AND DETAILS

F.A.I. 74 - SECTION 81-1HVB-1

MOLINE VIADUCT

ROCK ISLAND COUNTY

STATION 265 + 20

SCALE: AS NOTED   DATE:

DE LEUW, CATHER & COMPANY ENGINEERS
DESIGNED BY S. RASHID
DRAWN BY A. BURDZKAS
CHECKED R. Kennedy
IN CHARGE S. S. MARTINS
APPROVED W.G. HORN