

ROADWAY GEOTECHNICAL REPORT

FAP 67 (IL 97) Section S(X) & W(X,TS) Sangamon County

D-96-501-95
Contract 92621

IL 97 Expressway
0.1 Miles West of IL 4 in Springfield to Covered Bridge Road

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Supersedes October 1999 Report

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Attachments: See Table of Contents
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This Report has been prepared to provide information and recommendations to the Designer. The specific design recommendations included in this Report may not be reflected in the final plans or special provisions. Revisions may be made after Report submittal. This Report has been prepared based on March 12, 2021 Preliminary Plans. Contact the Geotechnical Engineer if there are changes to vertical alignment, horizontal alignment, cross section, or location and type of minor structures.

The Geotechnical Data section of this Report has been prepared to provide information to Contractors and Field Inspection Personnel. The subsurface investigation has been carried out in a manner consistent with reasonable engineering judgment. However, because variations in subsurface conditions may exist between borings, there is a possibility that differing subsurface conditions may be encountered during construction. Contact the Geotechnical Engineer if there are questions about the data or if differing conditions are encountered during construction.

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1.0 Project Location and Description

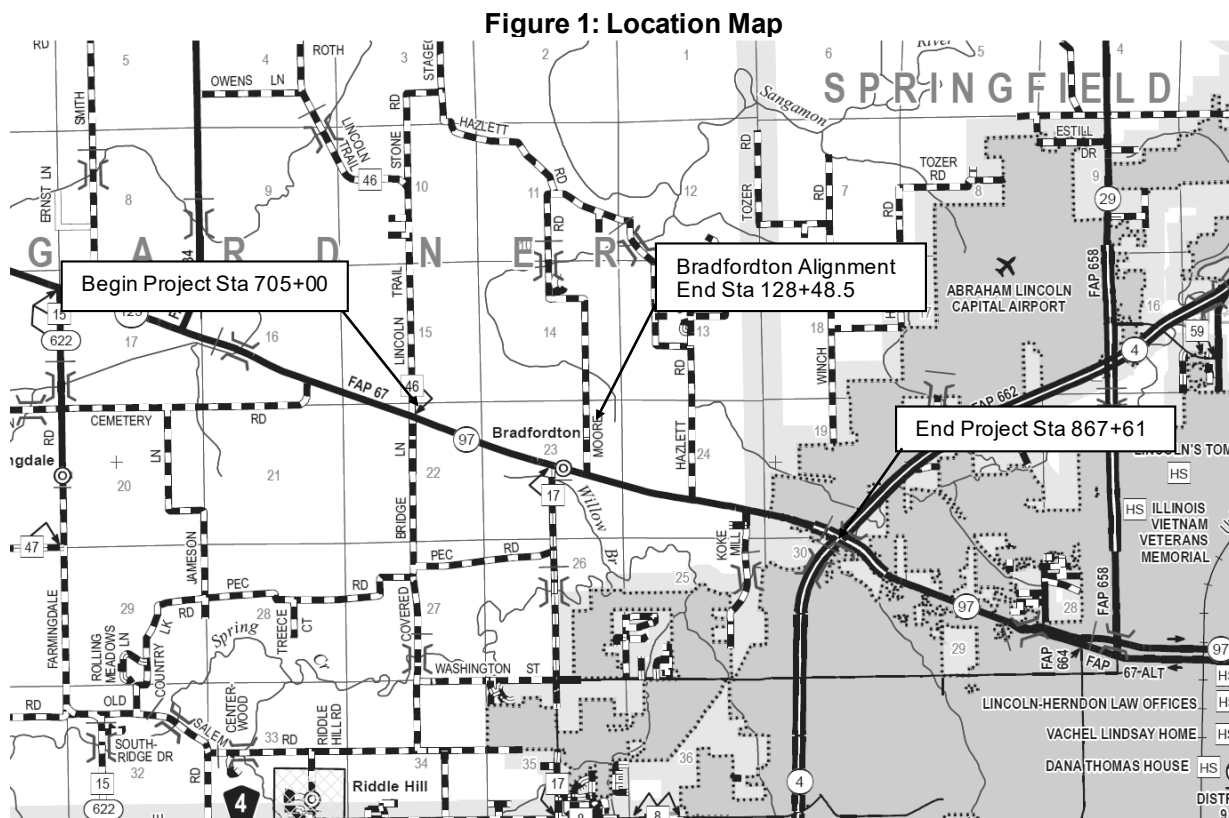
1.1 General Description

This report presents the geotechnical data, analysis, and recommendations for the proposed reconstruction of IL 97 between Winch Road and Old Covered Bridge Lane/ County Highway 46. This report supersedes a Roadway Geotechnical Report, completed in October of 1999. The proposed alignment has been shifted in-between the two reports. This report is based on preliminary plans developed by Quigg Engineering, Inc. in March of 2021. The proposed work includes the construction of a new 4-lane divided highway. The proposed work includes the extension of Bradfordton Road north to Moore Road.

The proposed alignment is slightly north of the existing alignment to bypass Bradfordton. Generally speaking, the new roadway will be constructed on shallow fills, less than 6 feet in height, except near Station 720+00 in which a creek is to be filled in and East of Station 835+00, where the alignment transitions to a cut. The Sangamon Valley Trail overpass bridge will be replaced with a longer bridge to accommodate the wider alignment. The overall project length is 3.08 miles along IL 97.

1.2 Project Location

The project is located in north-central Sangamon County, on the westside of Springfield. More specifically, the southwest quarter of Section 19, Township 16 North, Range 5 West, the middle third of Section 24, Township 16 North, Range 6 West, the upper third of Section 23, Township 16 North, Range 6 West, and the northwest quarter of Section 22, Township 16 North, Range 6 West. See Location Map below for more detail.



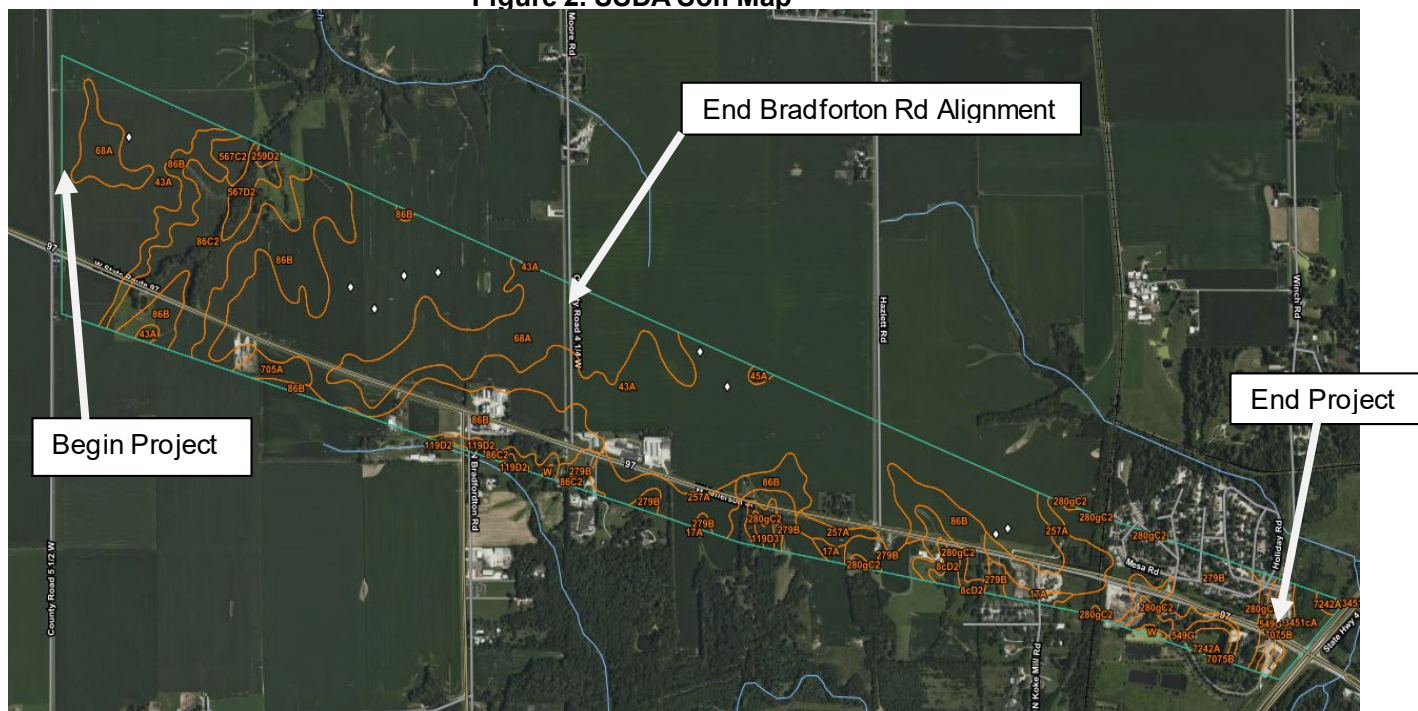
2.0 Local Geology

2.1 USDA Soil Map

The United States Department of Agriculture (USDA) offers soil maps that can be accessed with an interactive internet tool. These maps generally provide useful information as far as determining typical soils that will be encountered and can, in some cases, help differentiate and explain differences in stratigraphy between borings. However, the USDA Soil Maps do not offer much information as far as shear strength and stability of the soils encountered.

Figure 2, below, shows the Soil Map for the project area. The map indicates that a majority of the project will be composed of Ipava Silt Loam (43A), Sable Silty Clay Loam (68A), and Osco Silt Loam (86B). Typical of these ground formations are silty loam and silty clay loam of varying degrees of clay content. This matches the soil types found in the borings well.

Figure 2: USDA Soil Map



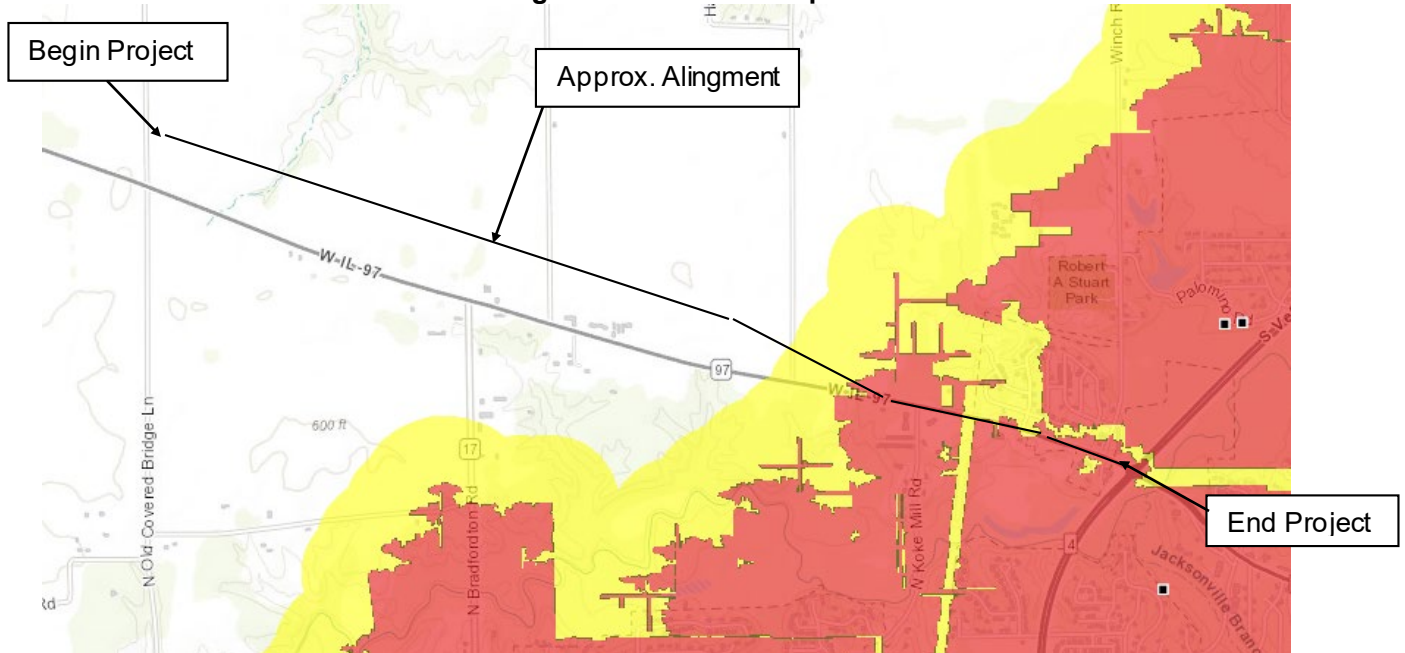
From approximately Station 718+00 to 724+00 a slight shift in the geology was indicated by the USDA Soil Map, this area is composed mostly of a variation of the Osco Silt Loam previously mentioned. This variation, shown in the map as 86C2, seems to indicate less organic top soil, due to not being classified as prime farmland. This is a phenomenon that could occur around creeks as low strength soils can be scoured away during storm events, this usually is followed by siltation of these soils elsewhere. The borings in this area did indicate an increase in shear strength, when comparing S-695, S-720, and S-745.

West of the Sangamon Valley Trail another shift in geology occurs, this area is composed mostly of Rozetta Silt Loam (279B) and Fayette Silt Loam (280gC2). The groundwater table for these ground formations is expected to be forty-eight (48) inches or deeper.

2.2 ISGS Mine Map

Underground and Surface Mines can have a dramatic impact on roadways and bridges located above/ on them. Illinois State Geological Survey (ISGS) has an online interactive map that gives approximate extents of mined areas. See Figure 3 below for a Mine Map of the project area. In the map areas in red are areas of known mining activities, as indicated on historical mine maps from the coal mines when in operation. The yellow is a buffer region to account for uncertainties and inaccuracies in the historic mine maps, as surveying techniques and technology has greatly improved over the years and differences in mining companies record keeping practices. The black squares indicated in the map are known mine shaft locations.

Figure 3: ISGS Mine Map



As can be seen in Figure 3 above, the area of the project stretching from Winch Road to Hazlett Road should be considered as undermined. The Directory of Coal Mines for Sangamon County, provided by ISGS indicates the Spring Creek Coal Company and Panther Creek Mines, Inc mined the Springfield Coal Seam in the area. A coal log, conducted by Spring Creek Coal Company in the area indicated the Springfield Seam is encountered at Elevation 372.9 and is expected to be 5.9 feet in thickness. Mining a seam this deep, underneath varying layers of limestone, sandstone, shale, and clay should not present an issue for this project. Issues could manifest in depressions caused by the collapse of the mine roof, which would be accounted for with the most recent topographic survey, unless the mine roof has not already collapsed, then the issue will become a maintenance issue, as it likely can not be designed for. Shafts into the mine works are anticipated to be located outside of the project limits. If issues related to abandoned mines are encountered, the District Geotechnical Engineer and Illinois Department of Natural Resources Abandoned Mine Lanes (IDNR AML) should be contacted.

3.0 Field Exploration

3.1 Borings

Borings were taken as part of the 1999 Roadway Geotechnical Report and again in 2020 for the shifted alignment, as this made some of the previous borings not applicable to the current project.

The borings for the 1999 Report were conducted June and July of 1998, with additional work being completed in September of 1999. A CME 550 drill mounted on an all terrain vehicle was used to perform the borings. Subgrade borings were performed by hydraulically pushing a 2 ft long split barrel sampler. Upon completion of drilling, holes were left open (where possible) between 24 and 96 hours before recording the free water level. All holes were backfilled with native cuttings. Select samples were taken to the IDOT District 6 Materials Laboratory for classification. Classification were done according to AASHTO T88, T89, and T90. Bulk samples were tested according to AASHTO T99.

The borings added in 2020 were conducted using an ATV mounted CME 550 drill rig at locations provided by District Staff. Soil samples were obtained using the Standard Penetration Test (SPT), in accordance with AASHTO T 206-19. Unconfined compressive strengths are based on Rimac or penetrometer tests obtained on SPT samples. Borings were conducted during November of 2020.

Table 1 shows the departure from normal precipitation prior to, and during, the investigations.

Table 1. Precipitation Data

1998	Departure from Normal (inch)	1999	Departure from Normal (inch)	2020	Departure from Normal (Inches)
January	+0.92	March	-2.22	January	+2.67
February	+0.94	April	+0.92	February	+1.47
March	+1.39	May	-1.74	March	+0.67
April	+0.37	June	-0.96	April	+2.92
May	+2.03	July	-1.44	May	+1.64
June	+5.38	August	+1.35	June	-2.01
July	-0.2	Total	-4.09	July	+1.49
Total	+10.83			August	-1.61
				September	-0.45
				October	-1.69
				Total	+5.1

Table 1 shows the precipitation was significantly above the normal prior to the borings taken in 1998. Table 1 also shows below normal precipitation prior to the borings taken in 1999 and slightly above average precipitation before the borings taken in 2020.

3.2 Cone Penetration Test

In addition to traditional borings, cone penetration tests (CPT) were conducted to increase overall site coverage and to offer additional information to ongoing ICT Research project *Cone Penetration Testing (CPT) for Illinois Subsurface Characterization and Geotechnical Design*. Cone Penetration testing was done in accordance with ASTM D 5778-20. The soil types were empirically determined using Soil Type Classification Chart after Robertson et al 1986 and 2010. When possible, soil samples from nearby borings were used to assist in the CPT soil classification.

The results of the CPT testing did not prove useful for the purposes of this report. Especially as the top foot or so is tilled farm fields composed of a black clayey soil and the CPT results indicated this would be a highly sensitive organic soil with very little strength. Nearby borings did not agree with this assessment of the top foot or so. Additionally, the classifications given from the CPT results are a bit too general and not specific enough to be relied upon for the suitability of the soils.

4.0 Subgrade and Pavement Considerations

4.1 IL 97

4.1.1 Proposed Pavement

The pavement cross section consists of separate two lane pavements, yielding a four lane roadway. The shoulder width is set for ten feet on the outside shoulder and six feet for the inside shoulder. The 2021 AADT of the existing alignment is 9,850.

The proposed pavement is 9" thick Jointed Portland Cement Concrete Pavement, with 8" thick Portland Cement concrete Shoulders. The plans call for 4" of Stabilized Subbase on top of 12" of Lime Modified Soil and 4" Pipe Underdrains for Drainage under the pavement. The shoulders are set to receive Subbase Granular Material, Type C and 12" of Lime Stabilized Soil.

4.1.2 Subgrade Conditions

Generally speaking, the subgrade soils expected to be encountered are Silty Clay Loam and Silty Clay with varying degrees of Silt and Clay Contents, with generally low Sand Contents. Clayey Topsoil may also be encountered. Subgrade Support Rating, Frost Susceptibility, IBV and Construction Stability, and Subgrade Treatment are discussed in the following Sections.

4.1.2.1 Subgrade Support Rating (SSR)

For the purposes of Pavement Design, a subgrade stability rating of "Poor" should be used. Of the twenty applicable Grain Size Analyses, 19 plotted in the "Poor" area of Figure 7.3.3.5-2 of the IDOT Geotechnical Manual. One did plot in the "Fair" area of Figure 7.3.3.5-2 of the IDOT Geotechnical Manual.

4.1.2.2 Frost Susceptibility

The criteria established in Section 6.3.2.2.3.1 Frost Susceptibility Evaluation were used to determine the frost susceptibility of the subgrade soils throughout the project. The evaluation did not indicate the presence of frost susceptible soils.

4.1.2.3 IBV and Constructability

The Illinois Bearing Value (IBV) was back calculated from Rimac Unconfined Compressive Strengths using Equation 2 of the IDOT Subgrade Stability Manual. Then Figure A-2 of the same manual was used to determine total treatment depth. As discussed in Section 4.2.1 Subgrade Support Rating, a vast majority of the project fell under the “Poor” category, this will require the entire pavement section receive 12” of either Lime Modified Soil or Aggregate placed underneath the pavement. Areas, requiring additional depth of either treatment are given in Table 4 below:

Table 2: At Grade Subgrade Locations of Concern

Start Station	End Station	Side	Additional Treatment Required	Problem Soil
727+00	730+00	WBL	6”	Clay and Silty Clay N60=5 C725 and C730
728+00	730+00	EBL	6”	
793+00	796+00	Both	12”	Clay w/ N60=2 C795
811+00	816+00	Both	6”	Silty Clay Loam W>30% Qu=0.5 B-12 & B-13

The Designer and Contractor have two options for the additional treatment. The first would be two lifts of Lime Modification, and the second would be Aggregate Subgrade Improvement, in lieu of Lime Modification.

4.1.2.4 Subgrade Treatment

The Clay Content of the subgrade soils indicates that Lime Modification is feasible. The lowest clay content observed was 23.4%, and generally a minimum of 15% Clay Content is required for the Lime to react with the soil. The project is not in an urban area, and mostly on lands currently used for crop farming, allowing for the use of Lime Modification in lieu of 12” of Aggregate Improved Subgrade for a majority of the project. Beginning at Station 832+00, 12” of Subbase Granular Material, Type A should be used. The exact station can be adjusted as needed for staging of traffic.

4.1.3 Subsurface Drainage

The current version of the plans include longitudinal pipe underdrains in the pavement cross section. For most of the project this will be sufficient for proper subsurface drainage. Transverse underdrains per the District 6 Standard Detail *TRANSVERSE PIPE UNDERDRAIN DETAIL* should be added for the locations in Table 3, below:

Table 3: Transverse Pipe Underdrain Locations

Start Station	End Station	Spacing along Centerline
714+00	733+00	300'
838+00	851+00	
859+00	868+00	

4.2 Bradfordton Road

4.2.1 Proposed Pavement

The proposed pavement transitions from a variable width two-way pavement with multiple turn lanes, to a two-way, two-lane pavement with 12' wide lanes and 2' hot mix asphalt shoulders. The 2012 AADT of the existing alignment is 5,200. It should be noted that the current alignment terminates at existing IL 97, with Moore Road having a substantially lower AADT, at 450 in 2017. One could infer that the proposed Bradfordton Road alignment north of the proposed IL 97 alignment would receive a similar traffic volume and mix to the existing Moore Road.

The proposed pavement is to consist of 1 ½" of hot mix asphalt surface, over 2 ¼" of hot mix asphalt binder, over 4 ¼" asphalt base, over 12" of Aggregate Base Course Type, A. The shoulders are set to be 8" thick hot mix asphalt.

It is recommended that from Station 95+30 to 126+00, the 12" of Aggregate Base Course Type, A be replaced with 12" of Lime Modified Soil. From Station 126+00 to 128+48 it is understood that Lime Modification may not be feasible due to desire to minimize Moore Road closure time.

4.2.2 Subgrade Conditions

Generally speaking, the subgrade soils encountered are expected to be clayey topsoil underlain by clays with a unconfined compressive strength over 1.5 tsf.

4.2.2.1 Subgrade Stability Rating

For the purposes of Pavement Design, a subgrade stability rating of "Poor" should be used. A case could be made that removing the top foot of clayey top soil should allow for a "Fair" rating, but the information available for Bradfordton Road are based on CPT results, in which a soil sample is not collected and therefore the silt content can not be determined. A conservative approach of assuming "Poor", matching the mainline alignment should be taken.

4.2.2.2 Frost Susceptibility

The criteria established in Section 6.3.2.2.3.1 Frost Susceptibility Evaluation of the Geotechnical Manual were used to determine the frost susceptibility of the subgrade soils throughout the project. The evaluation did not indicate the presence of frost susceptible soils.

4.2.2.3 IBV and Constructability

The Illinois Bearing Value (IBV) was back calculated from obtained Rimac Unconfined Compressive Strengths using Equation 2 of the IDOT Subgrade Stability Manual. Then Figure A-2 of the same manual was used to determine total treatment depth. As discussed in Section 4.2.2.1 a subgrade stability rating of "Poor" should be used for design, this will require either 12" of lime modified soil or aggregate placed beneath the entire pavement section. 12" of subgrade treatment should be sufficient for the entire Bradfordton Road alignment.

4.3 Sangamon Valley Trail

4.3.1 Proposed Pavement

Sangamon Valley Trail is proposed to be a 10 foot wide bike trail. Part of the alignment will be at or slightly above the existing grade, but as the alignment approaches IL 97, the grade will increase and be on top of a modular retaining wall.

The proposed pavement will consist of 3" of hot mix asphalt surface over 6" of Aggregate Base Course, Type B.

4.3.2 Subgrade Conditions

The subgrade for the proposed pavement is expected to consist of either fill soils on top of existing railroad ballast or aggregate fill required for the retaining wall on top of silty clay soils with unconfined compressive strength close to 1.0 tsf. Railroad ballast is usually crushed granite and would be of a higher quality than limestone aggregate available within the District, it is recommended in areas that railroad ballast could be used as the subgrade soil, that the ballast remains in place. Subgrade stability is not anticipated to be an issue for the Sangamon Valley Trail Alignment.

4.4 Hazlett Road

4.4.1 Proposed Pavement

The proposed pavement is a two-way, two-lane pavement with 12' wide lanes without shoulders. The 2021 AADT for the existing alignment is 1,000.

The proposed pavement is to consist of 1 ½" of hot mix asphalt surface, over 2 ¼" of hot mix asphalt binder, over 4 ¼" asphalt base, over 12" of Aggregate Base Course Type, A.

4.4.2 Subgrade Conditions

The subgrade for the proposed pavement is expected to consist of Silty Clay with a Silt Content of approximately 63% and a PI of 19.6. The subgrade soils are not believed to be frost susceptible, due to silt content being below 65% and the PI being greater than 12. The average unconfined compressive strength of the Silty Clay is expected to be near 0.75 tsf. For design purposes a Subgrade Support Rating of "Poor" should be used. Additional subgrade treatment, outside of 12" of either Aggregate Base Course, Type A or Lime Modified Soil is not anticipated at this time.

4.5 Koke Mill Road

4.5.1 Proposed Pavement

The proposed pavement is a two-way, two-lane pavement with varying lane widths. The pavement will have 4 foot wide shoulders. The 2017 AADT of the existing alignment is 1,150.

The proposed pavement is to consist of 1 ½" of hot mix asphalt surface, over 2 ¼" of hot mix asphalt binder, over 4 ¼" asphalt base, over 12" of Aggregate Base Course Type, A. The shoulders are set to be 8" thick hot mix asphalt.

4.5.2 Subgrade Conditions

The subgrade conditions and recommendations are as described in Section 4.1.2 Station 832+00 to 843+00.

5.0 Slope Stability Analyses and Results

Large stretches of the project do not exhibit slopes taller than fifteen (15) feet in height. The stretches of the project with slopes taller than fifteen (15) feet in height were identified by a close inspection of the cross sections available at the time of the report. The critical cross section in a run of stations was analyzed using the computer software Slide2 by Rocscience. As required by the IDOT Geotechnical Manual, Bishop's Method was used to determine the factor of safety. Table 4 below shows the slopes analyzed and the resulting factor of safety at the critical cross section.

Table 4: Slope Stability Results

Alignment	Start Station	Stop Station	Side	Station Analyzed	Height of Slope	Factor of Safety	Factor of Safety Location	Slope	Boring(s) Used
IL 97	716+00	723+00	RT	718+00	17.1	4.4	Backslope	1V:3H	S-720, B-41, & B-42
	719+00	734+00	LT	722+43	18.2	6.5	Fore slope	1V:6.2H & 1V:4.2H	S-720
	839+00	842+00	LT	839+00	11.5	5.6	Backslope	1V:3H	B-5 & S-840
				842+00	18.5	2.8	Backslope, requires RR3	1V:3H	B-4 & S-840
	839+00	842+00	RT	842+00	20.2	5.3	Backslope	1V:3H	C843, S-840, & S-845
	844+70	848+00	LT	844+70	25.5	4	Backslope	1V:2.5H	B-3, S-845, & C844
	844+70	848+00	RT	844+70	25.3	3.7	Backslope & Ditch	1V:3H	B-3, S-845, & C844
	849+03	860+00	LT	850+00	16.0	8.3	Backslope	1V:3H	S-850, B-1
	860+00	864+00	LT	861+40	17.1	6.3	Backslope	1V:3H	S-859

The initial results indicated that Station 842+00 would have had a factor of safety below 1.7. This was due to the low strength silty soils indicated in boring B-4 and the high ground water table indicated by a USDA Soil Survey and nearby Boring(s). To remedy this RR3 with a filter fabric from elevations 579.4 to 576.9 should be installed. This will help alleviate seepage forces driving the lower factor of safety. The limits of the rip rap will be as directed by the District Geotechnical Engineer. All other properly constructed slopes are geotechnically adequate. Slope Stability Analyses are available in Appendix A.1

6.0 Settlement Analyses and Results

6.1 IL 97

A majority of the proposed alignment is composed of shallow fills, less than 5 feet in height, resulting in settlements less than 2 inches. The maximum predicted settlement is 2.79 inches at Station 819+00 on the Left with a fill height of 6.2 feet. Settlement was evaluated using BBS 150 *Cohesive Soil Settlement Estimate*, to a depth at which the increase in pressure is less than 10% of the effective overburden pressure or 35' whichever occurs first. Settlement estimates may be skewed high, as the stress distribution for a shallow but wide embankment shows the

change in stress dissipating slowly with depth, whereas a shallow but narrow embankment would show the change in stress dissipating quickly with depth. Overall and differential settlement issues are not anticipated.

6.2 Bradfordton Road

The maximum expected settlement along the roadway is 1.61 inches, at Station 121+50. Otherwise the settlements along Bradfordton Road are expected to be less than an inch and half. Overall and differential settlement issues are not anticipated.

6.3 Sangamon Valley Trail

The magnitude of total and differential settlement along the alignment will be less than half an inch. Settlement is not expected to be a significant issue along Sangamon Valley Trail and no further action is needed.

6.4 Hazlett Road

The maximum settlement occurring along the Hazlett Road is expected to be 1.37" at station 399+00.75, with a majority of the alignment expected to be $\frac{3}{4}$ " or less. There is a mild concern of differential settlement between the mainline pavement and the Hazlett Road alignment. It is anticipated the differential between the two alignments could be 0.9" in 100', which is roughly equal to 1/1330, which does not merit a high level of concern given Hazlett is a lightly traveled HMA side road. Issues related to differential settlement between the two alignments can be alleviated by paving Hazlett Road after the mainline, which should be easy to accommodate as Hazlett Road is planned to be an asphalt road and IL 97 is planned to be jointed concrete pavement, meaning the two could not be simultaneously paved.

6.5 Koke Mill

The maximum magnitude of anticipated settlement along the Koke Mill alignment is half an inch. The mainline pavement and tie in to existing Koke Mill are expected to have less than half an inch of settlement. Overall consolidation and differential settlement is not expected to be an issue.

7.0 Minor Structure Foundations

7.1 Culverts

The project will require various pipe culvert and inlet structures for proper drainage. Table 5 below, indicates the pipe culvert structures that may require rock fill placed beneath them to ensure stable working conditions at the base of the trench. The requirement for this will be verified in construction. The unstable soil shall be replaced with rock fill as directed in the special provision Rock Fill- Foundation.

Table 5: Removal and Replacement Amount

Alignment	Station	Structure	Removal and Replacement Depth
IL 97	722+43	72" Pipe Culvert	12 inches
	821+87	42" Pipe Culvert	12 inches
Hazlett Road	399+01	36" Pipe Culvert	12 inches
	401+03	36" Pipe Culvert	12 inches

Slope Stability Analyses indicated that all known culvert locations, a construction slope of 1V:1H, should be satisfactory for the construction of the pipe culverts. The lowest calculated factor of safety was 1.9 at Station 821+87.

7.2 Noise Wall

It is anticipated that a Noise Wall will be needed for the left side of the alignment, between Sangamon Valley Trail and Winch Lane. Per Section 3.12 of the IDOT Bridge Manual, the Contractor is responsible for the design of Noise Walls, including their foundation. Borings are included in this report.

7.3 Sign and Traffic Signal Structures

A review of the Signing and Pavement Marking Plans, in the set of plans available at the time of this report, did not indicate that the new overhead sign structures and traffic signals are a part of this project, however it is suspected the intersection of Bradfordton Road and IL 97 will have traffic signals. Based on C105 and C755 the Foundation Design can be as according to Highway Standard 878001-11.

If additional overhead sign structures or traffic signals are added to the project at a later date, a Geotechnical Design Memorandum will be issued to address the design of these foundations.

8.0 Construction Considerations

8.1 Drainage Ditches and Swales

The ditches and swales throughout the project are generally do not exhibit steep slopes in areas of highly erodible soils. The preliminary plans call for rip rap on steep slopes that could be erodible, except in two areas.

- IL 97: Station 820+50 to 822+30 Right. 3.8% grade and Silts are present.
- Koke Mill Road: Station 198+50 to 199+03.5 Right. 4.98% grade and Silts are present

The identified areas above should be lined with A3 Riprap, or similar as determined by hydraulics engineer.

9.0 Summary of Design Recommendations

9.1 Contract Quantities

Table 6 below shows the estimated quantities required to address Geotechnical Issues outlined in this report. More details are provided within the report and Appendix A.2 Schedule of Quantities. Excel versions of the Schedule of Quantities are available upon request.

Table 6: Contract Quantities

Issue Addressed		Items Added	QTY	Estimated Stations	Special Provision
Subgrades*	Option 1- Aggregate Subgrade Improvement	Earth Ex	6361 CY		
		Agg Subgrade Imp 18"	9167 SY	727+00 to 730+00 WBL, 728+00 to 730+00 EBL, 811+00 to 816+00	BDE Special Aggregate Subgrade Improvement
		Agg Subgrade Imp 24"	2667 SY	793+00 to 796+00	
	Option 2- Lime Modification**	Earth Ex	6361 CY		
		Process Mod Soil 18"	9167 SY	727+00 to 730+00 WBL, 728+00 to 730+00 EBL, 811+00 to 816+00	
		Process Mod Soil 24"	2667 SY	793+00 to 796+00	
		Lime	382 TON		
Slopes ⁽³⁾		Rem & Dis Uns Matl	99 CY	839+00 to 844+00 (Elev 579.4 to 576.9)	
		Stone Riprap, Class A3	444 SQ YD		
		Filter Fabric	444 SQ YD		
Culverts ⁽⁴⁾		Rockfill-Foundation	308 TON	Stations 722+43, 821+87, 399+01, & 401+03	Rockfill-Foundation
Subsurface Drainage		Pipe Underdrain	9150 FT	714+00 to 733+00, 838+00 to 851+00, & 859+00 to 868+00	

*Estimated Quantities for correcting unstable subgrade may be reduced, increased, or deleted by the Engineer based on actual field conditions. No work involving these estimated quantities shall be performed without the direction and approval of the Engineer.

**The Lime Modification shall take place in two separate operations with a maximum treatment depth of 12 inches. The earth excavation will be paid for each separate operation.

(3) Estimated Quantity for correcting slope stability/seepage may be reduced, increased, or deleted by the Engineer based on actual field conditions. No work involving these estimated quantities shall be performed without the direction and approval of the Engineer.

(4) Estimated Quantity assumes 12 inches of Rockfill-Foundation. Quantity may be reduced, increased, or deleted by the Engineer based on actual field conditions. No work involving the estimated quantity shall be performed without the direction and approval of the Engineer.

9.2 Special Provisions

The following is a list of special provisions that should be added to the contract. Full versions of the special provisions are available in Appendix A.3.

- Geotechnical Data
- Rockfill-Foundation
- BDE Special Provision: Aggregate Subgrade Improvement

9.3 Plan Notes

The following note(s) should be added to the General Notes:

The Contractor should anticipate shallow ground water during excavation operations. Available information indicates ground water can be as shallow as 0-24 inches.

Under Application Rates add a row for Lime. The application rate for lime used for the preliminary Lime quantity is 0.06 tons/ cu yd or 0.02 tons/sq yd for a treatment depth of 1', this correlates roughly to 4% lime by weight.

9.4 Design Considerations

Design Inputs are as follows:

Subgrade Stability Rating (SSR)= POOR

Lime Application Rate=0.02 tons per square yard

Subbase Granular Application Rate=2.05 tons per cubic yard

Shrinkage Factor=20%

Lime application rate given above assumes 4% lime by weight.

Construction Slopes for culvert construction should not be steeper than 1V:1H.

Erosion of Silts is a concern for various stretches of the project, please see section 8.1 for more information. Proper temporary erosion control measures are critical to proper performance of ditches.

Furnishing topsoil may not be required, as throughout the project top soil can be as deep as 12-14 inches.

Appendices

Appendix A.1 Slope Stability Analyses

Appendix A.2 Schedule of Quantities

Appendix A.3 Special Provisions

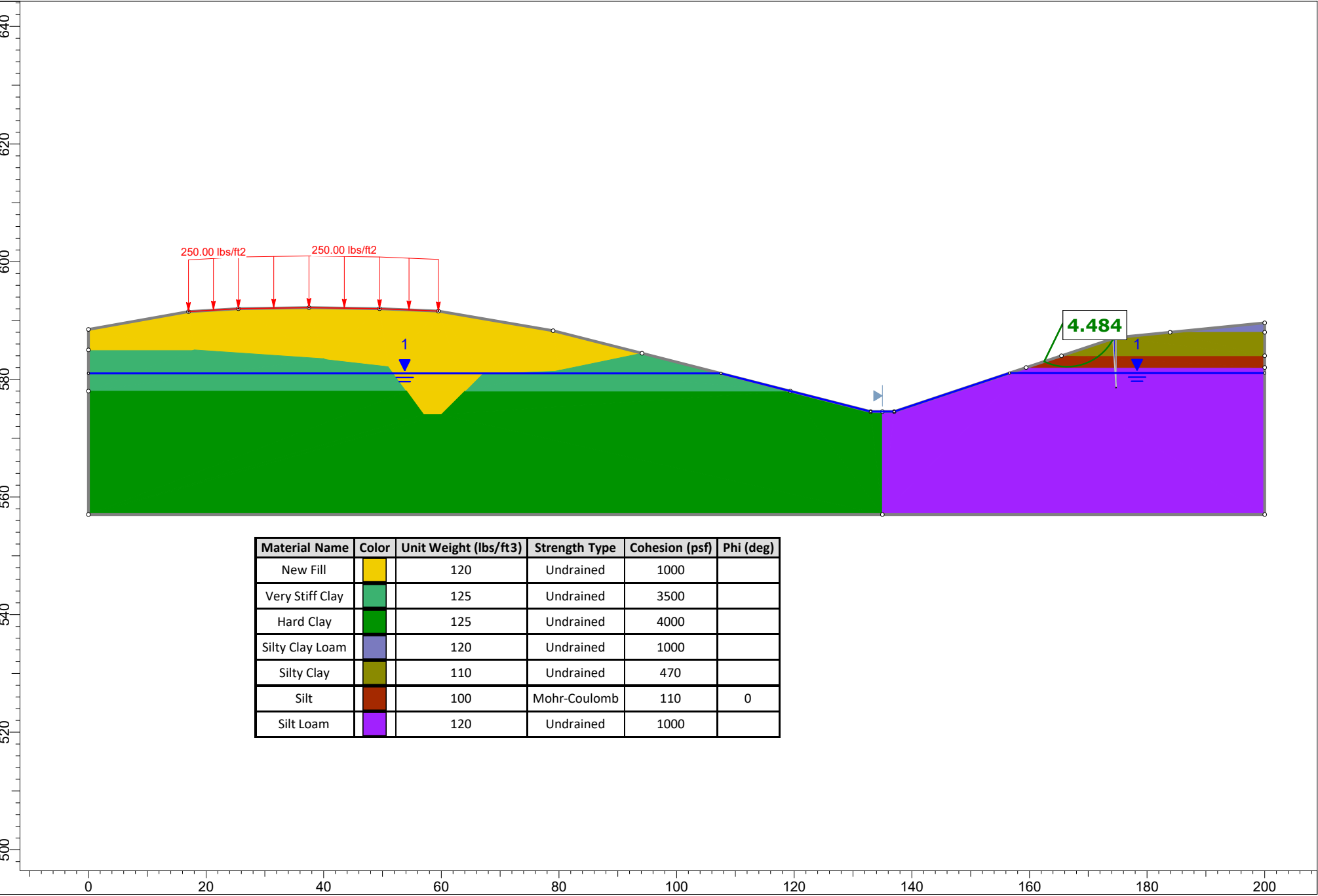
Appendix A.4 Soil Profile

Appendix A.5 Soil Borings

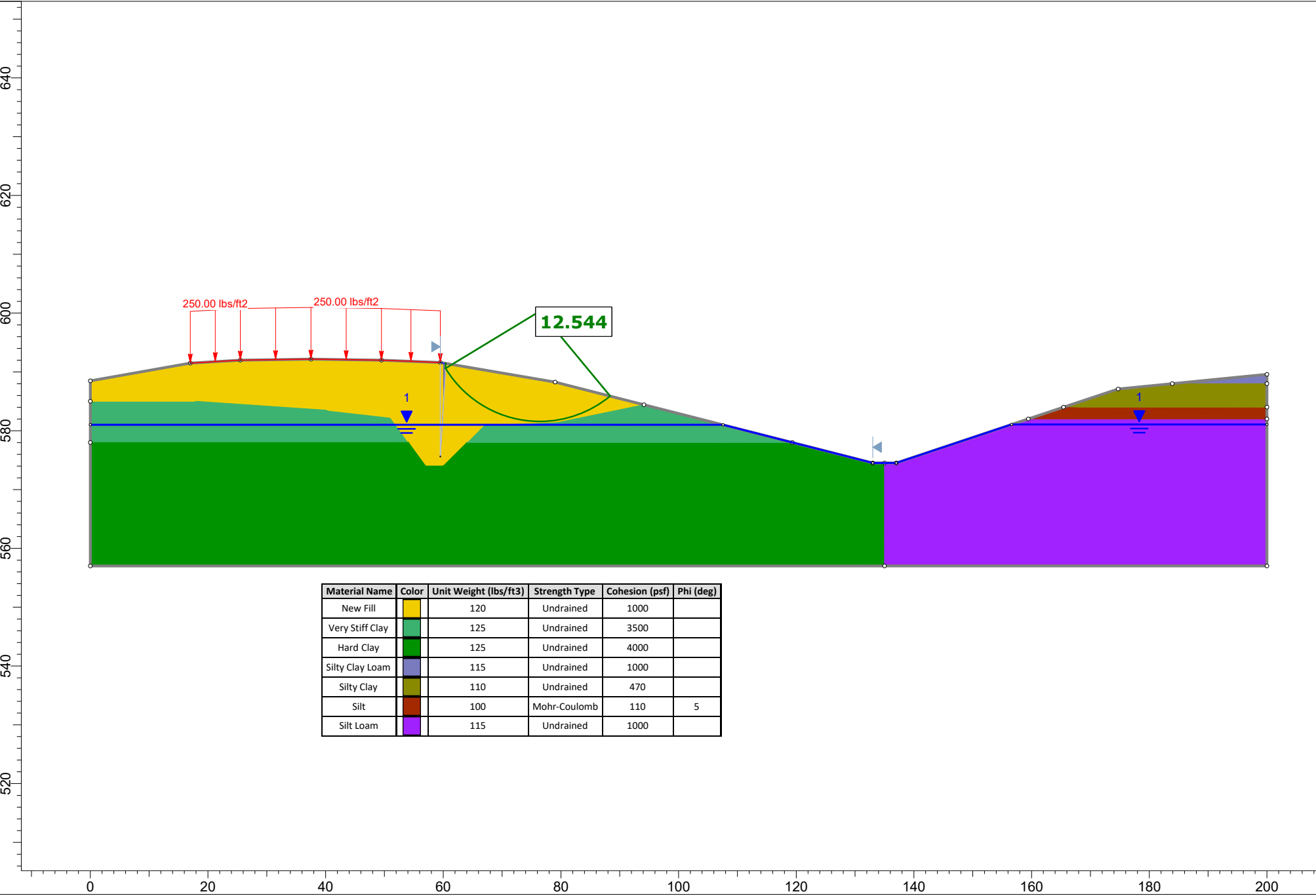
Appendix A.6 Soil Testing

Appendix A.1 Slope Stability Analyses

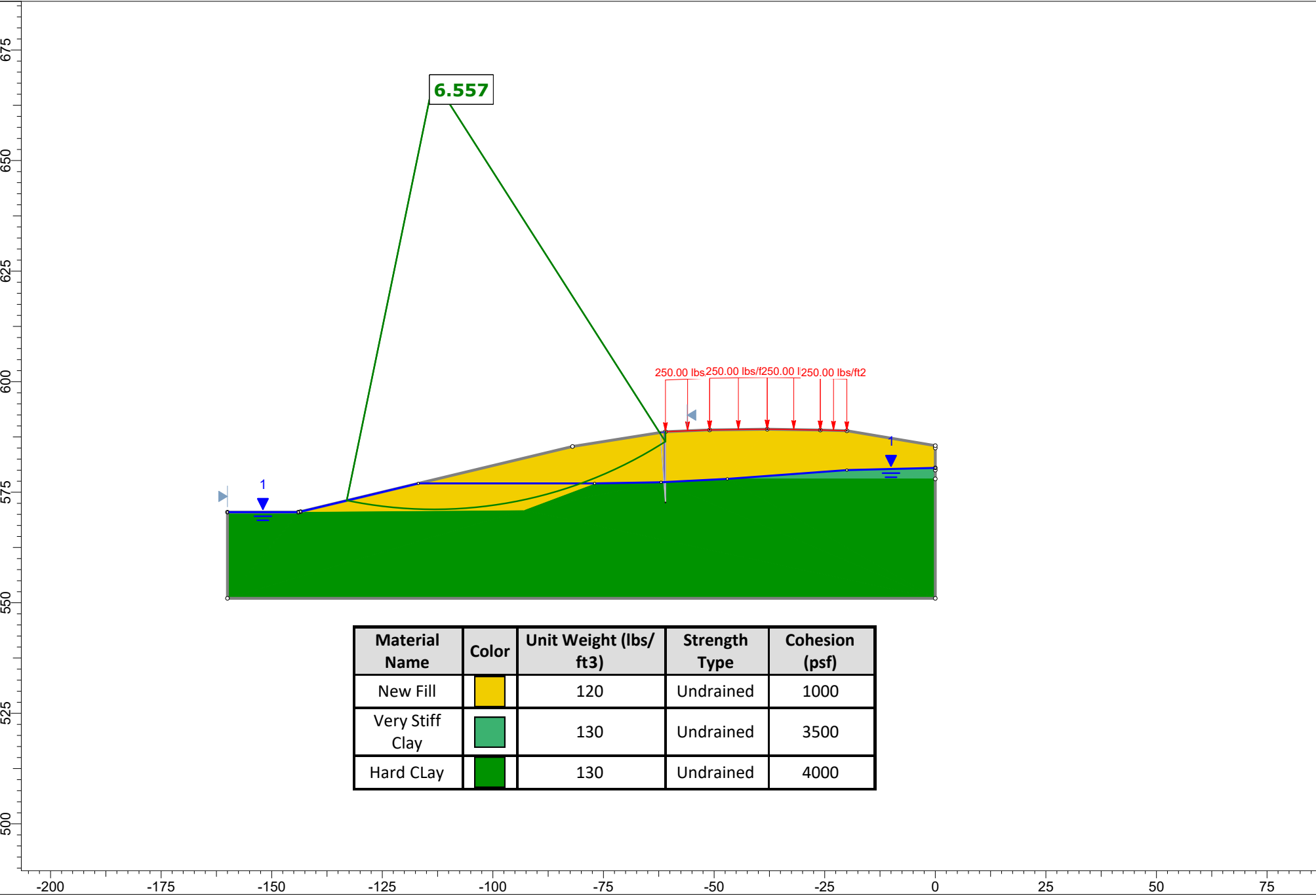
Station 718+00 Backslope

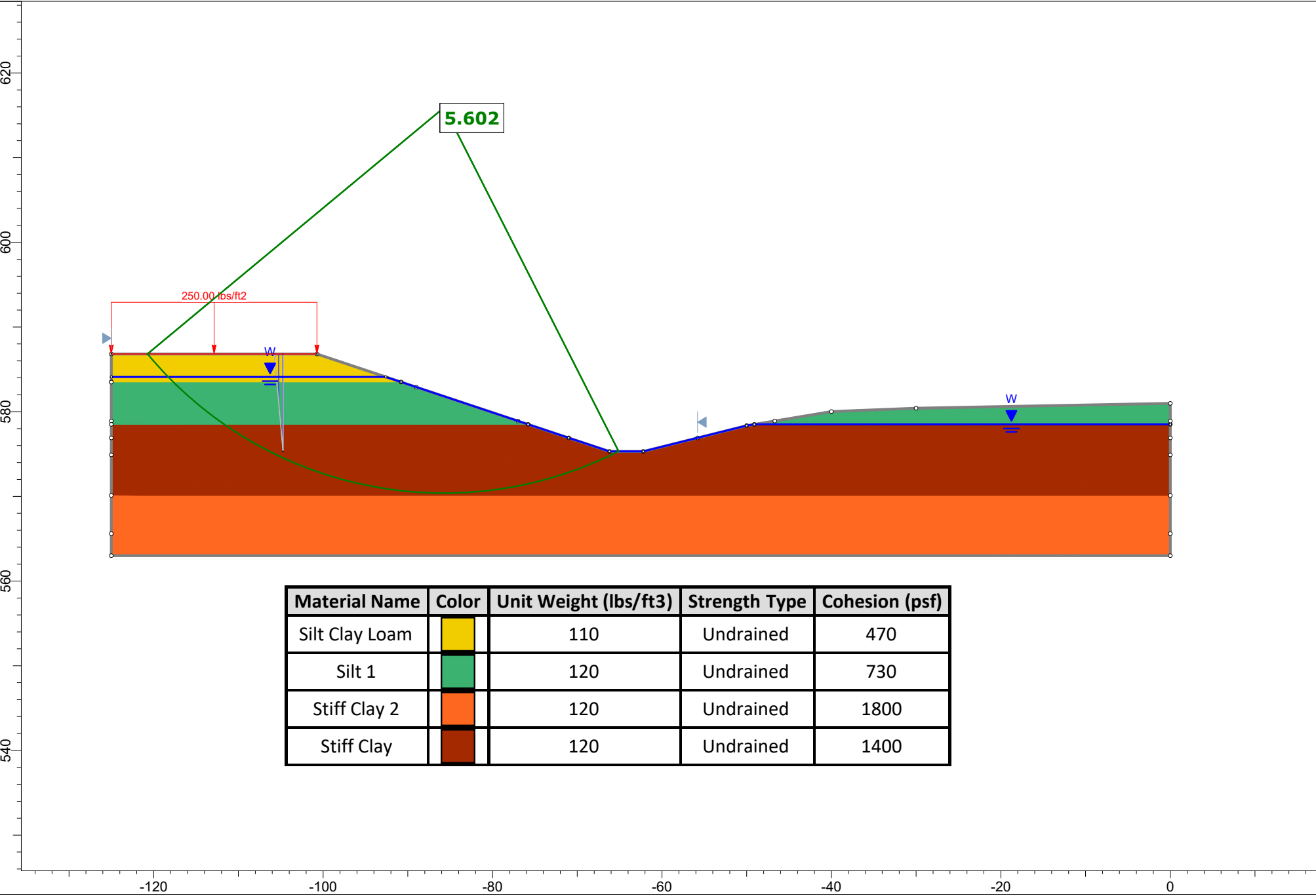


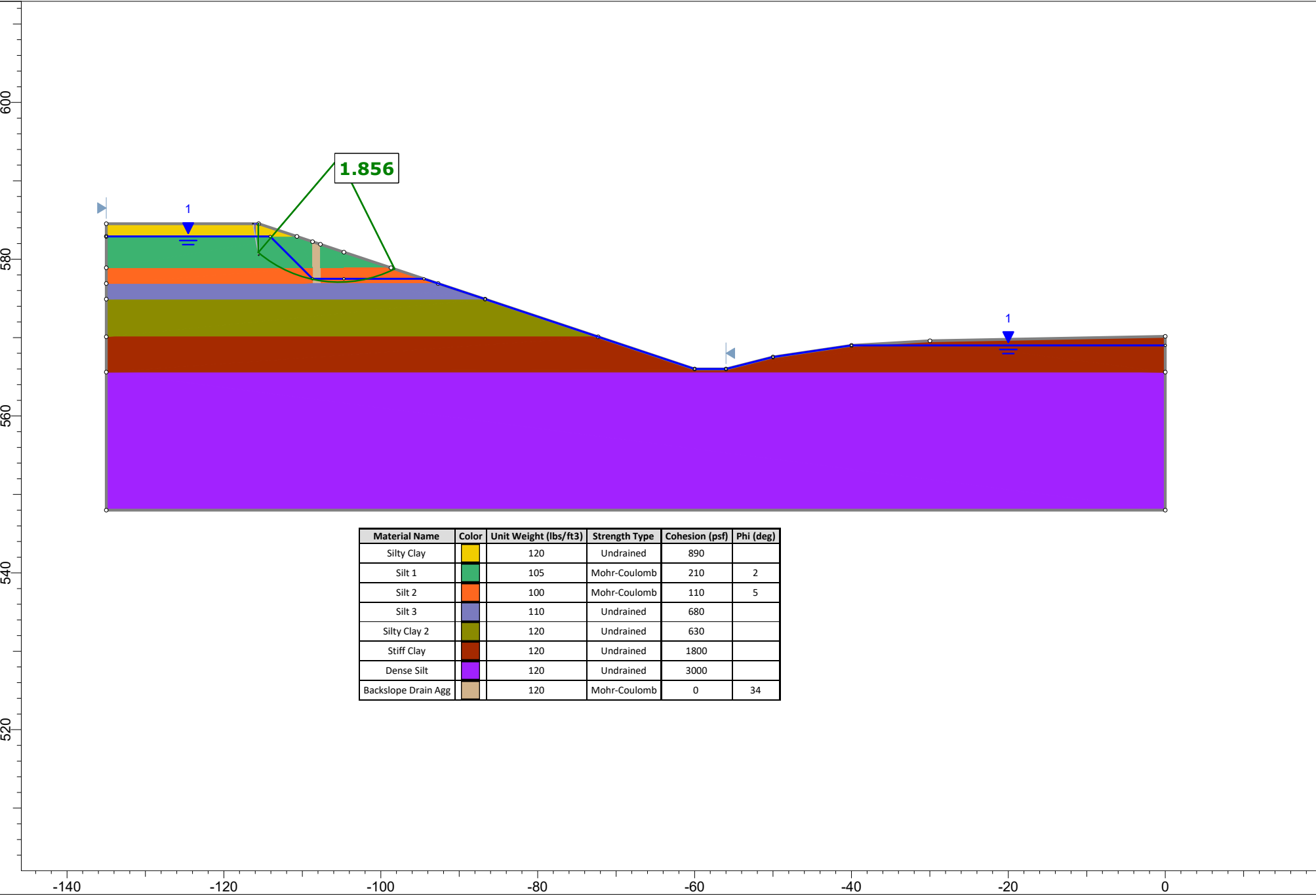
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
New Fill		120	Undrained	1000	
Very Stiff Clay		125	Undrained	3500	
Hard Clay		125	Undrained	4000	
Silty Clay Loam		120	Undrained	1000	
Silty Clay		110	Undrained	470	
Silt		100	Mohr-Coulomb	110	0
Silt Loam		120	Undrained	1000	



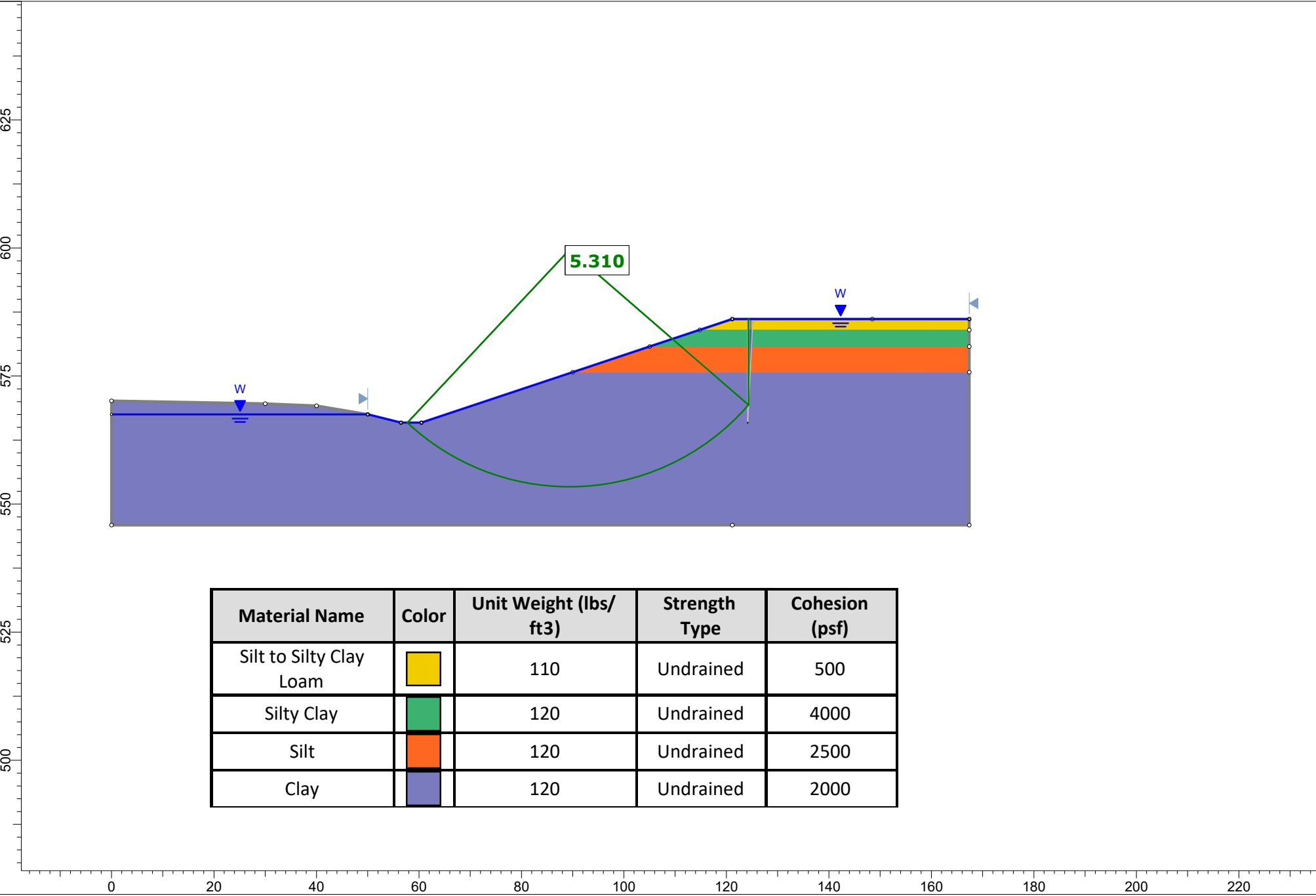
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New Fill		120	Undrained	1000	
Very Stiff Clay		125	Undrained	3500	
Hard Clay		125	Undrained	4000	
Silty Clay Loam		115	Undrained	1000	
Silty Clay		110	Undrained	470	
Silt		100	Mohr-Coulomb	110	5
Silt Loam		115	Undrained	1000	



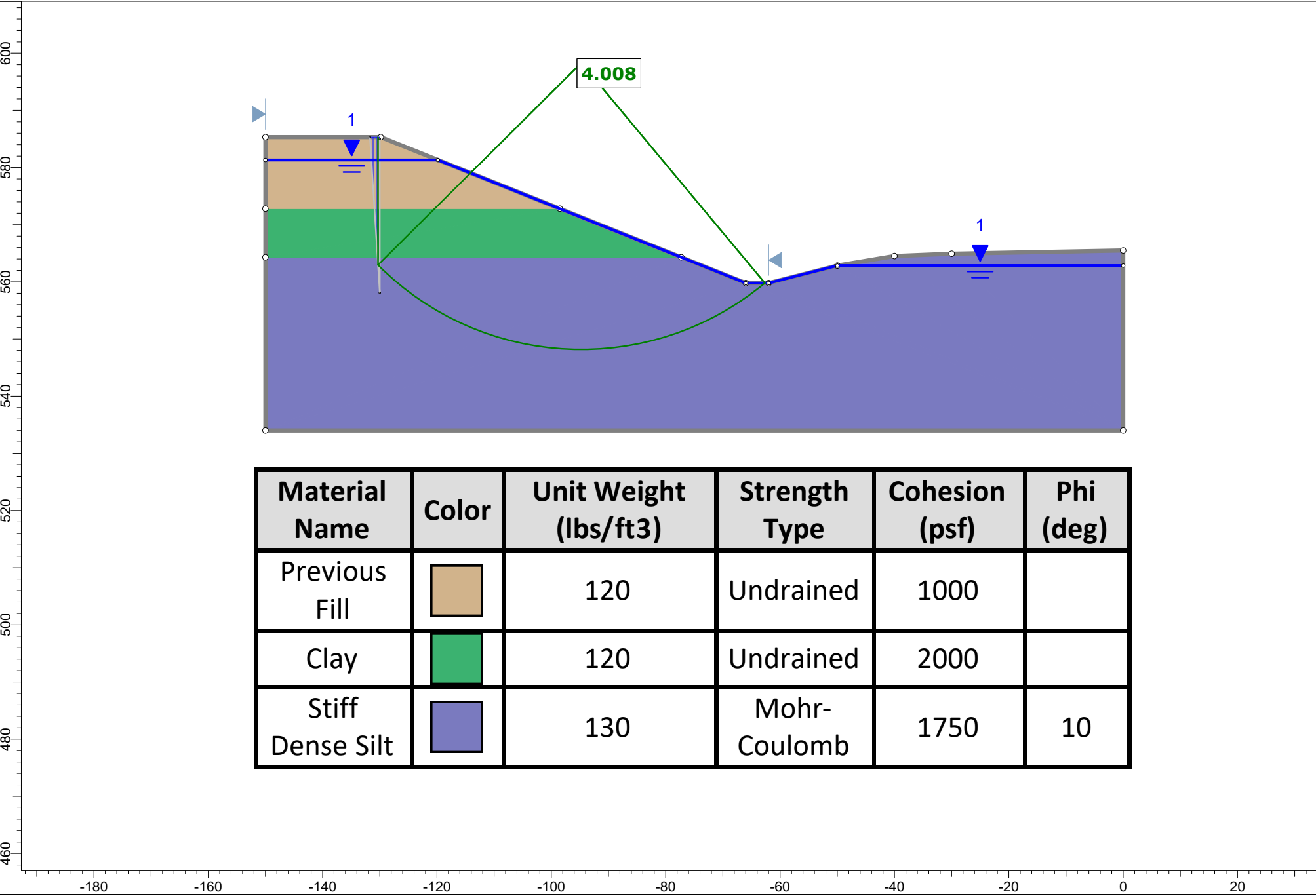




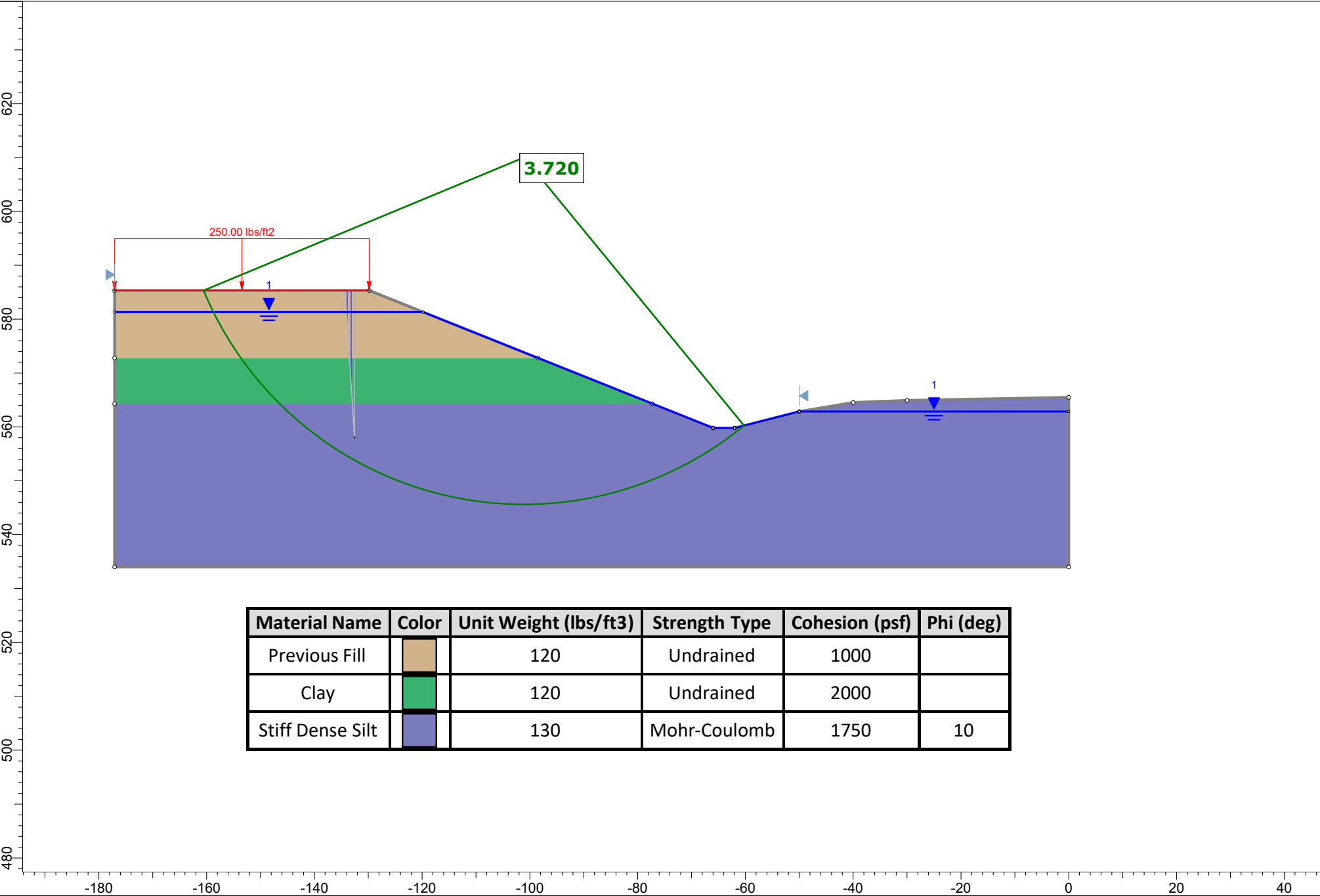
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Silty Clay		120	Undrained	890	
Silt 1		105	Mohr-Coulomb	210	2
Silt 2		100	Mohr-Coulomb	110	5
Silt 3		110	Undrained	680	
Silty Clay 2		120	Undrained	630	
Stiff Clay		120	Undrained	1800	
Dense Silt		120	Undrained	3000	
Backslope Drain Agg		120	Mohr-Coulomb	0	34

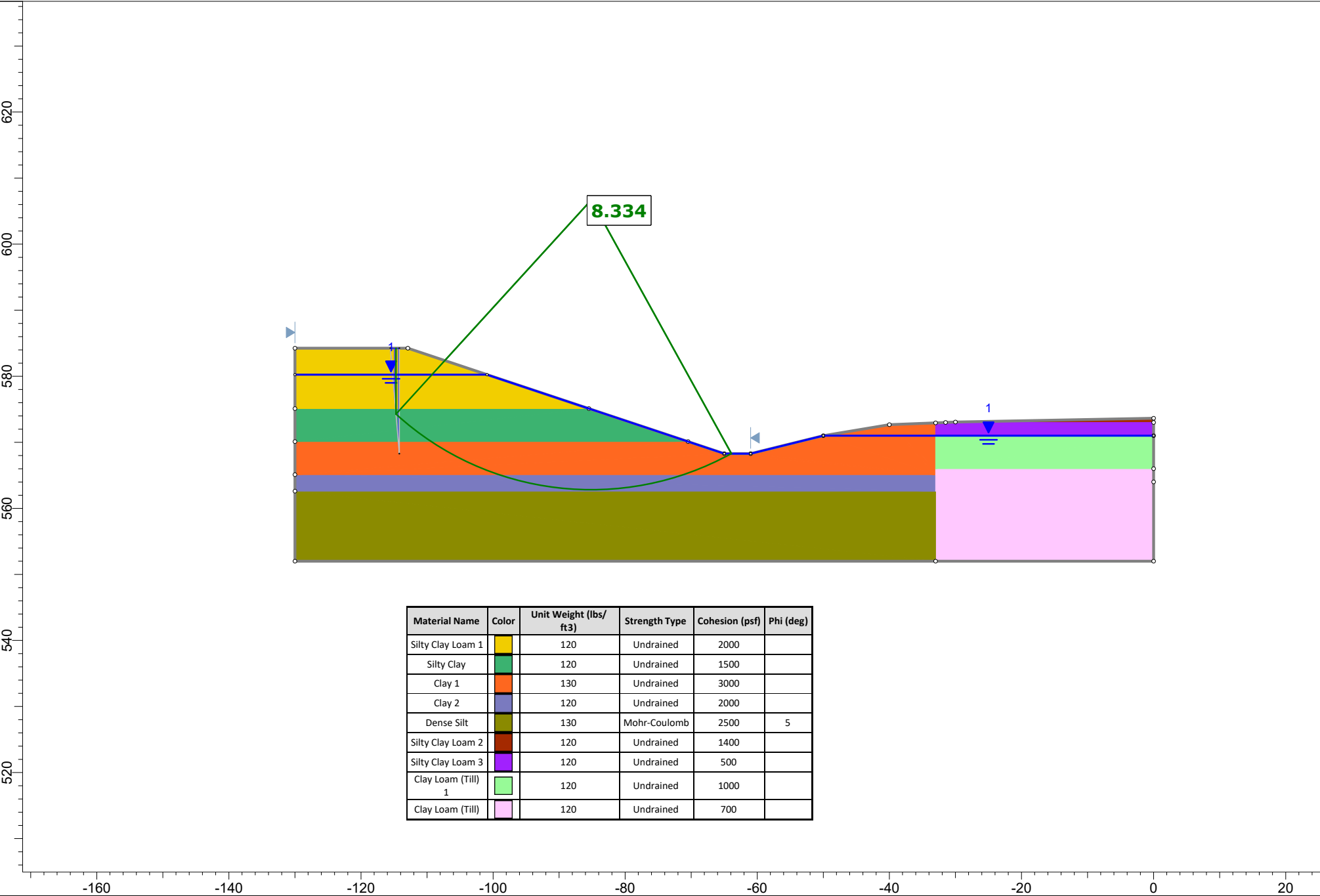


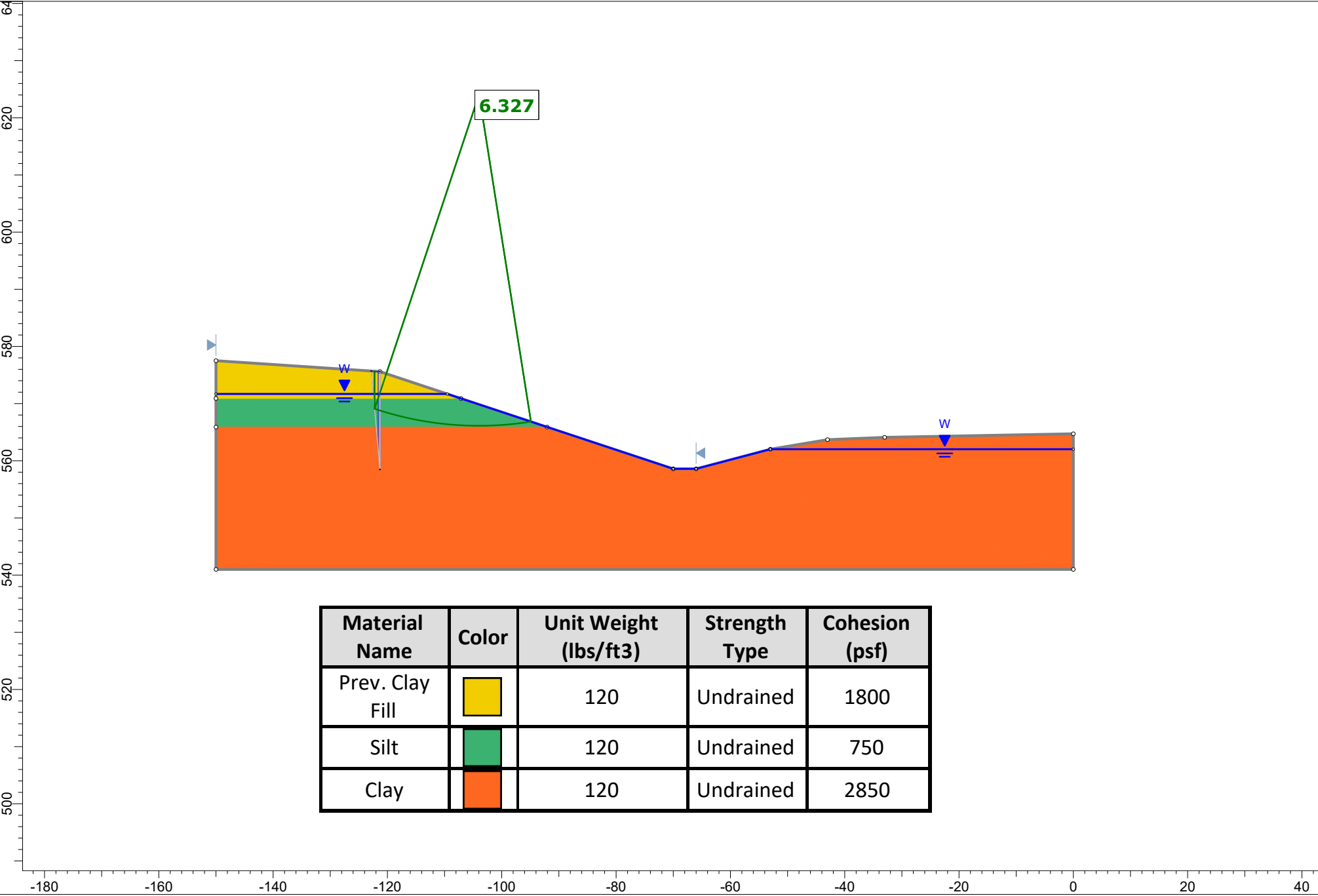
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)
Silt to Silty Clay Loam		110	Undrained	500
Silty Clay		120	Undrained	4000
Silt		120	Undrained	2500
Clay		120	Undrained	2000



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Previous Fill		120	Undrained	1000	
Clay		120	Undrained	2000	
Stiff Dense Silt		130	Mohr-Coulomb	1750	10







Appendix A.2 Schedule of Quantities

						Option 1- Aggregate Subgrade Improvement			Option 2-Lime Modified Soil			
						20200100	30300118	30300124	20200100	30200950	30201250	30201500
						Earth Excavation	Agg Subgrade Impr 18"	Agg Subgrade Impr 24"	Earth Excavation	Process Mod Soil 18	Process Mod Soil 24	Lime
Alignment	Start	End	Side	Total Depth (inches)	Width (feet)	CU YD	SQ YD	SQ YD	CU YD	SQ YD	SQ YD	TON
IL 97	727+00	730+00	WBL	18	40	666.7	1333.3		666.7	1333.3		40.0
	728+00	730+00	EBL	18	40	444.4	888.9		444.4	888.9		26.7
	793+00	796+00	Both	24	80	1777.8		2666.7	1777.8		2666.7	106.7
	811+00	816+00	Both	18	125	3472.2	6944.4		3472.2	6944.4		208.3
Totals						6361	9167	2667	6361	9167	2667	382

Schedule of Slope Stability Quantities

			20201200	28100105	28200200
	Station		REM & DIS UNS MATL	STONE RIPRAP, CLASS A3	FILTER FABRIC
Alignment	Start	End	CU YD	SQ YD	SQ YD
IL 97	839+00	844+00	98.8	444.4	444.4
Total			99	444	444

Schedule of Culvert Quantities					
					Z0054517
		Length	Width	Depth	ROCK FILL-FOUNDATION
Alignment	Station	FT	INCH	INCH	TON
IL 97	722+43	222	108	12	151.7
	821+87	198	78	12	97.7
Hazlett	399+01	63	72	12	28.7
	401+03	66	72	12	30.1
Totals					308

Appendix A.3 Special Provisions

GEOTECHNICAL DATA 6M5 2/10/04

Reviewed: April 14, 2020

A subsurface investigation has been performed for this project. Geotechnical data including boring logs and laboratory test results are available for Contractor review prior to bidding. The data can be reviewed at the District 6 Annex located at 1340 North 9th Street in Springfield. Contact the District Geotechnical Engineer at 217-782-6709.

ROCKFILL - FOUNDATION 6M10 6/15/17

Revised: April 14, 2020

Description. This work consists of constructing a layer of rockfill below culverts or spread footings having unstable or unsuitable soil conditions. When shown on the plans, the rockfill limits and thickness shall be confirmed by the Engineer prior to excavating below the theoretical top of rockfill line.

Materials. Rockfill materials shall meet the requirements of Article 1005.01 of the Standard Specifications. The gradation of rockfill shall be primary crusher run. The maximum dimension shall be 8 inches. Rockfill may contain broken pavement or rock excavation as defined in Article 205.04 and with the approval of the Engineer.

Materials shall meet the requirements of the following Articles of the Standard Specifications:

Bedding or Capping Material 1003.04 or 1004.05

Construction Requirements. The method of rockfill placement shall be approved by the Engineer. Rockfill shall be capped according to application as shown below:

Spread Footing	4 to 6 inches CA-6
Cast-In-Place Box Culverts	4 to 6 inches CA-7 or CA-11
Pre-Cast Box Culverts	Porous Granular Bedding Material (Article 540.02)
Pre-Cast Pipe Culverts	Coarse or Fine Aggregate Bedding (Article 542.04)

Excavation shall be performed according to Section 202 of the Standard Specifications.

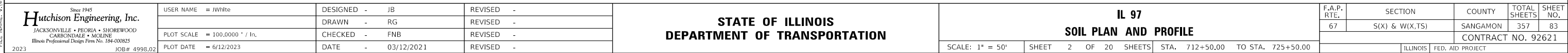
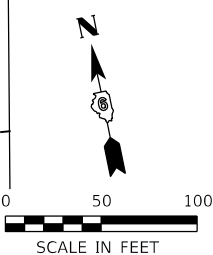
In spread footing applications, the CA-6 cap shall be compacted to the satisfaction of the Engineer. No compaction of rockfill is required for culvert applications.

Method of Measurement. This work will be measured for payment in tons (metric tons).

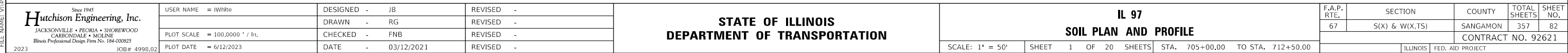
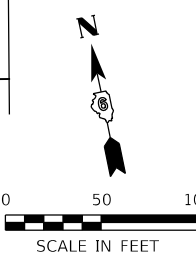
Basis of Payment. This work will be paid for at the contract unit price per ton for ROCKFILL - FOUNDATION. The contract unit price for ROCKFILL-FOUNDATION shall include excavation, aggregate materials, aggregate material placement, and placement of excavated materials within right-of-way or disposal off right-of-way. *Excavation will not be measured or paid for separately or as part of EARTH EXCAVATION.* For precast concrete box culverts, porous granular bedding material and the excavation volume required for bedding will be paid for according to Article 540.08. For pipe culverts, the aggregate bedding material and excavation volume required for the aggregate bedding material will be paid for according to Article 542.11.

Appendix A.4 Soil Profile

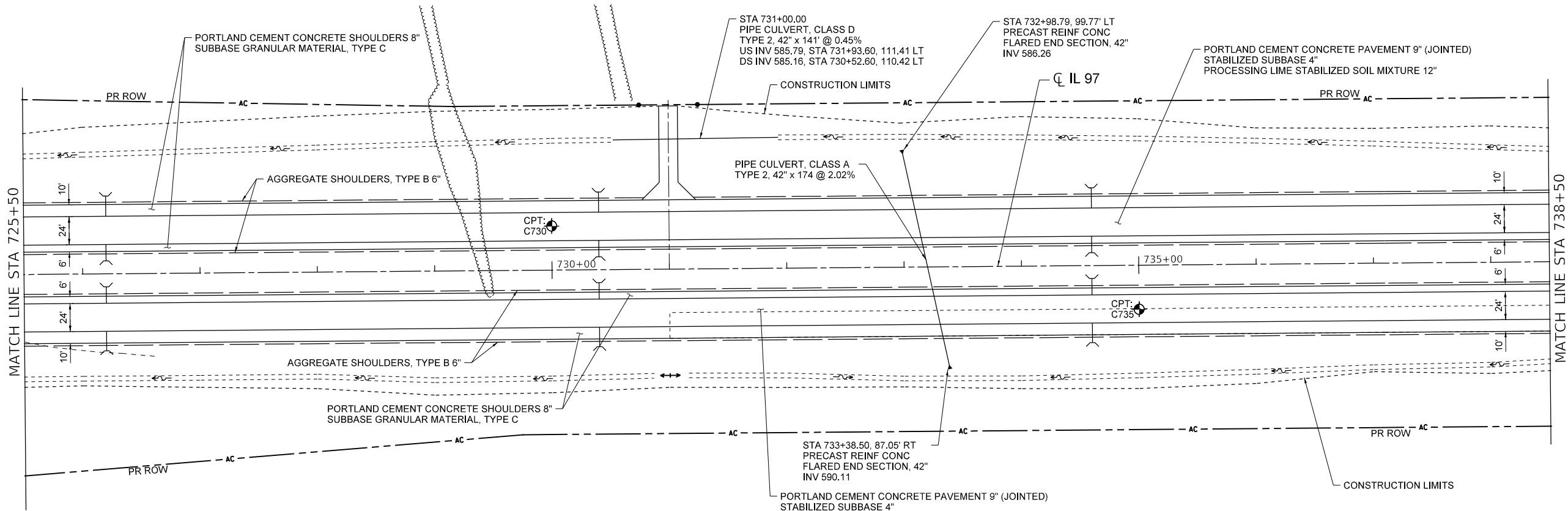
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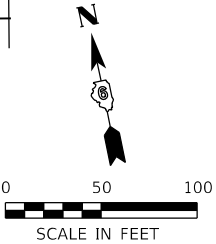
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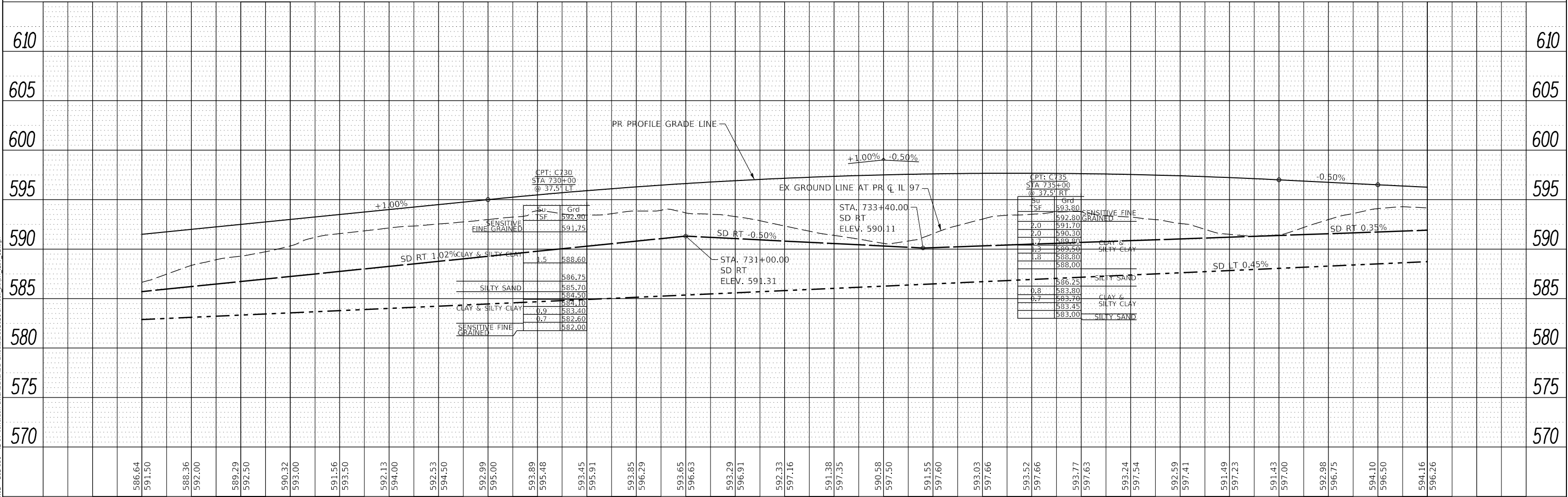
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NOTE: THE PR PROFILE GRADE LINE
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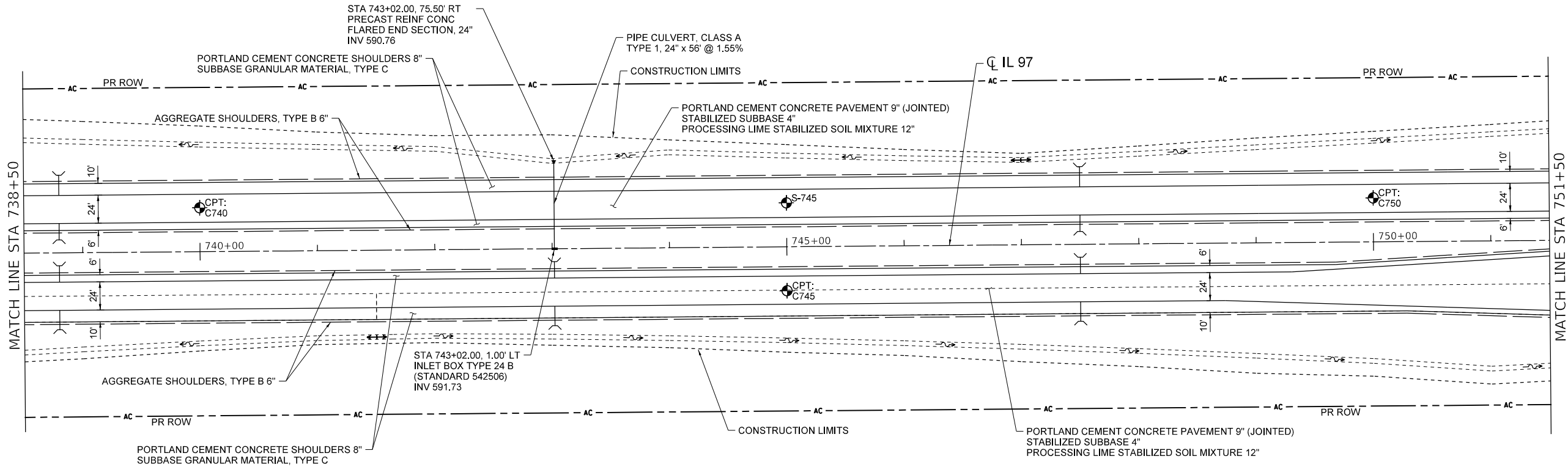
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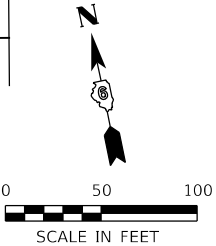
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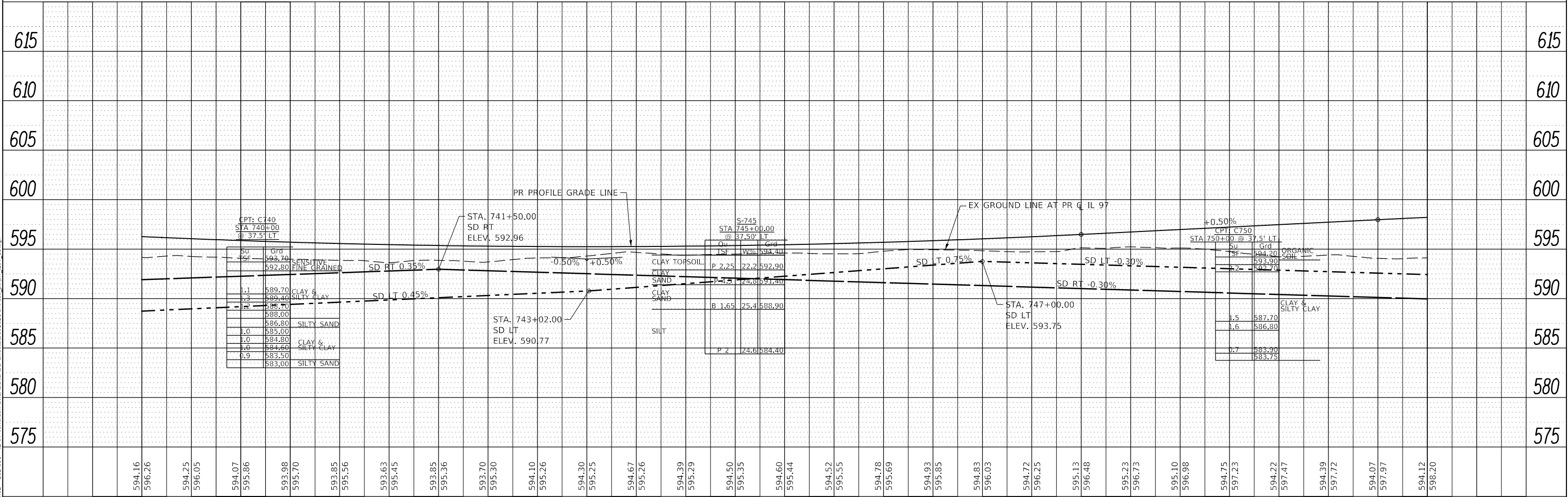
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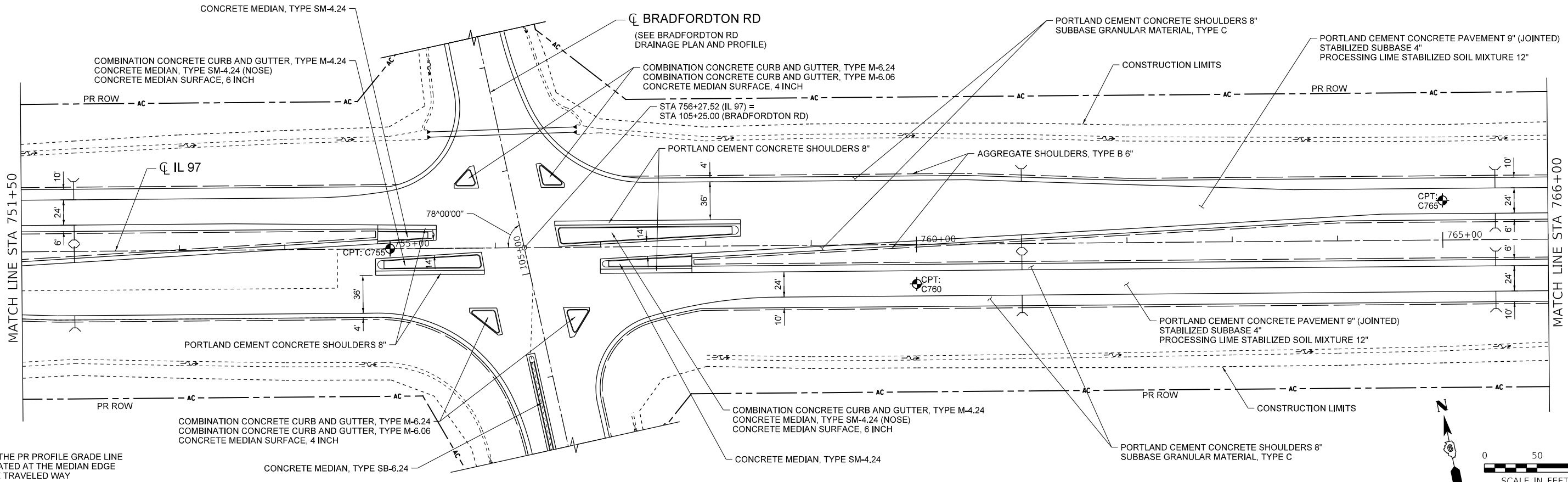
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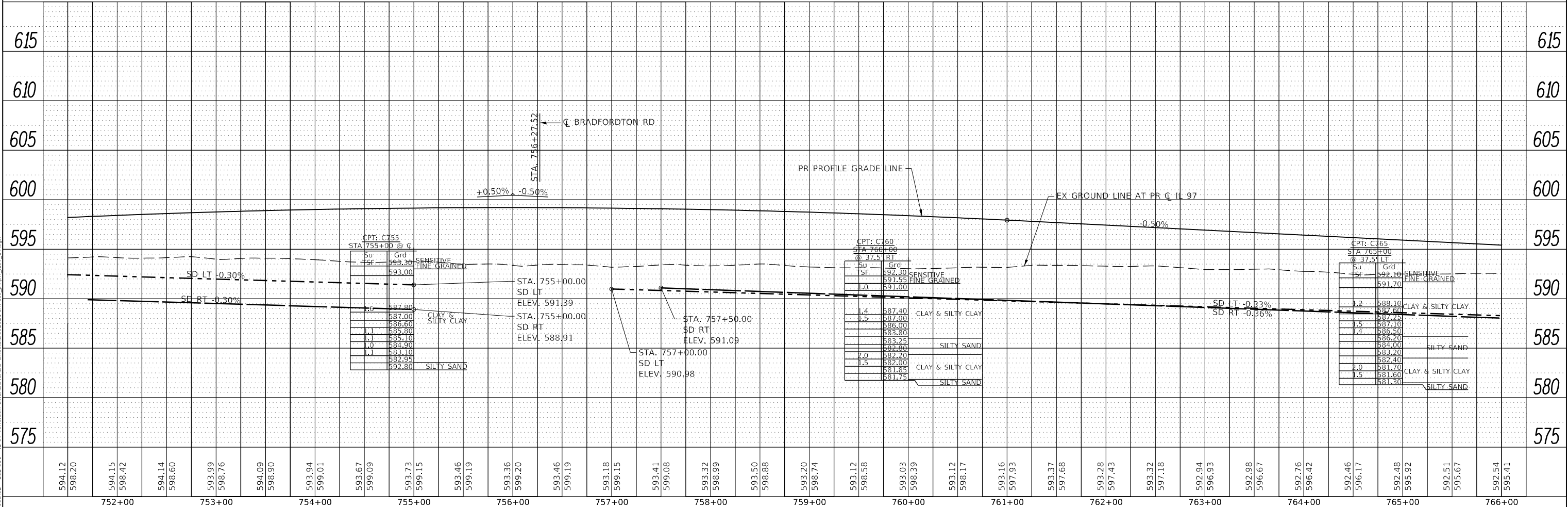
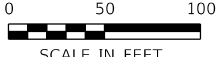
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CARBONDALE • MOBILE
Illinois Professional Design Firm No. 184-000825
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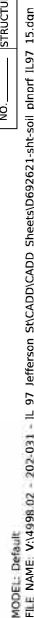
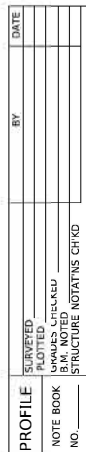


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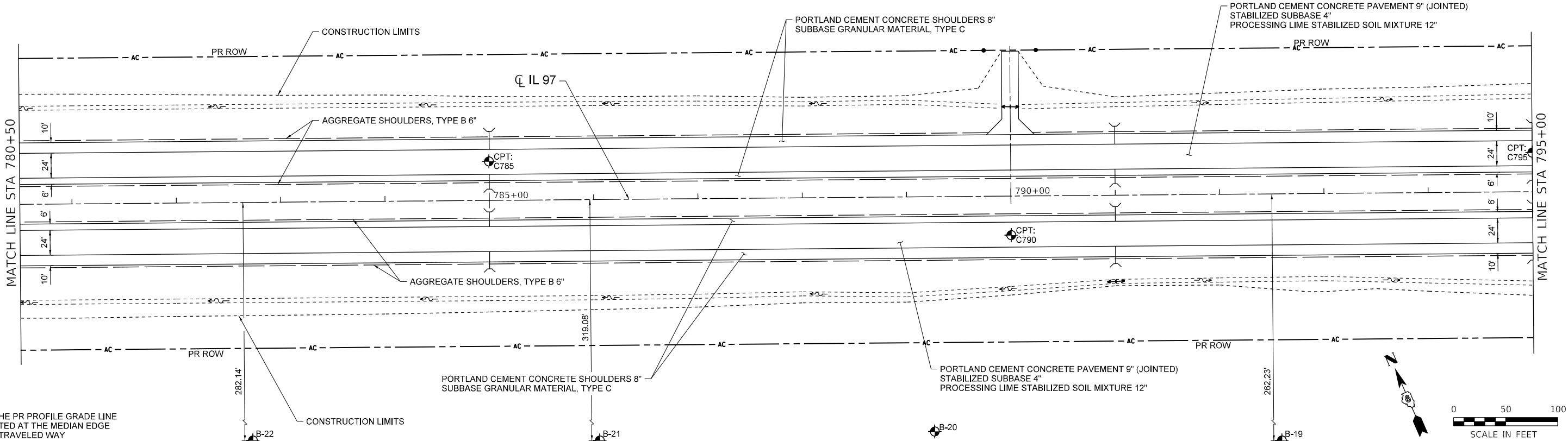


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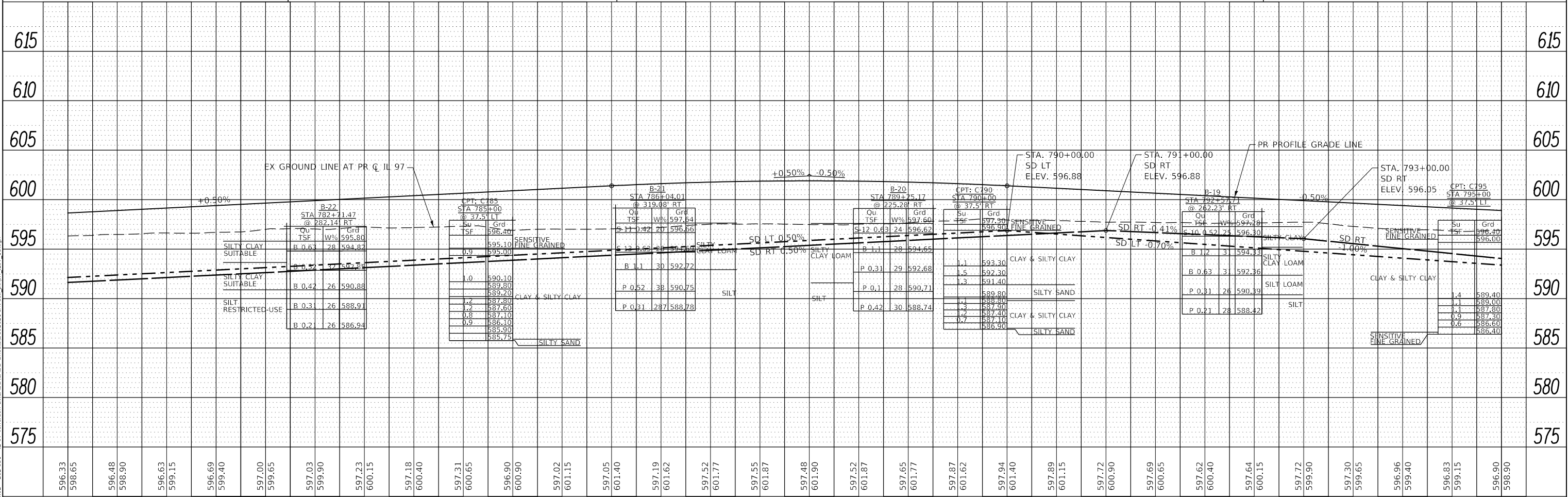


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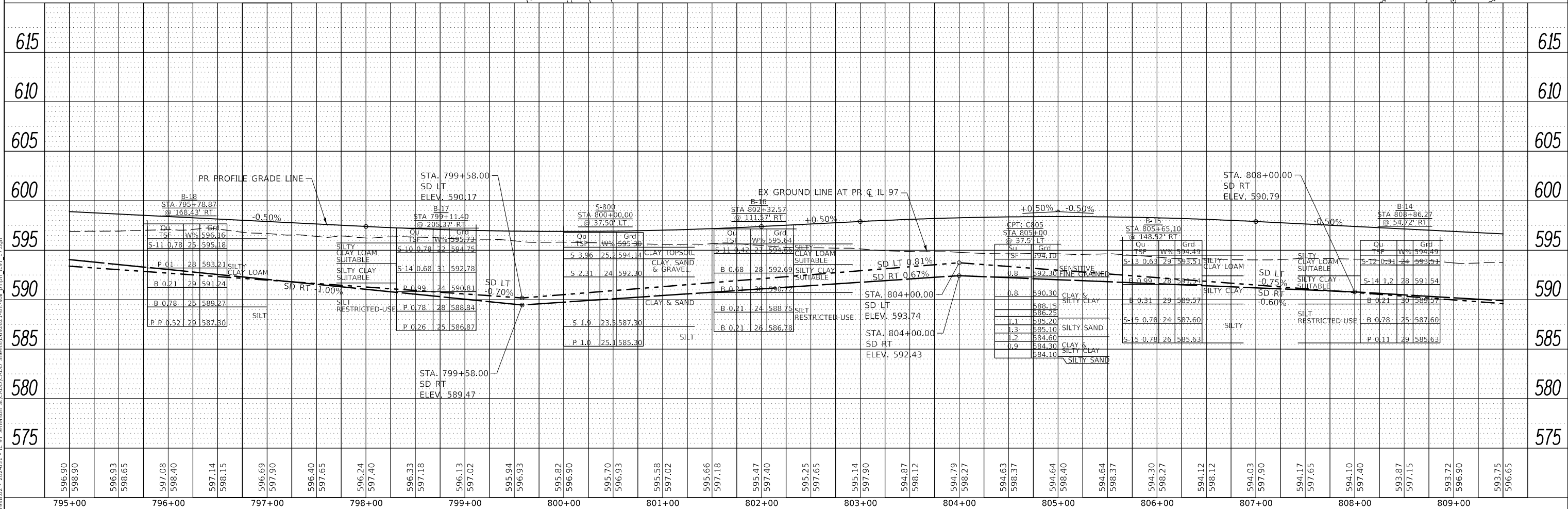
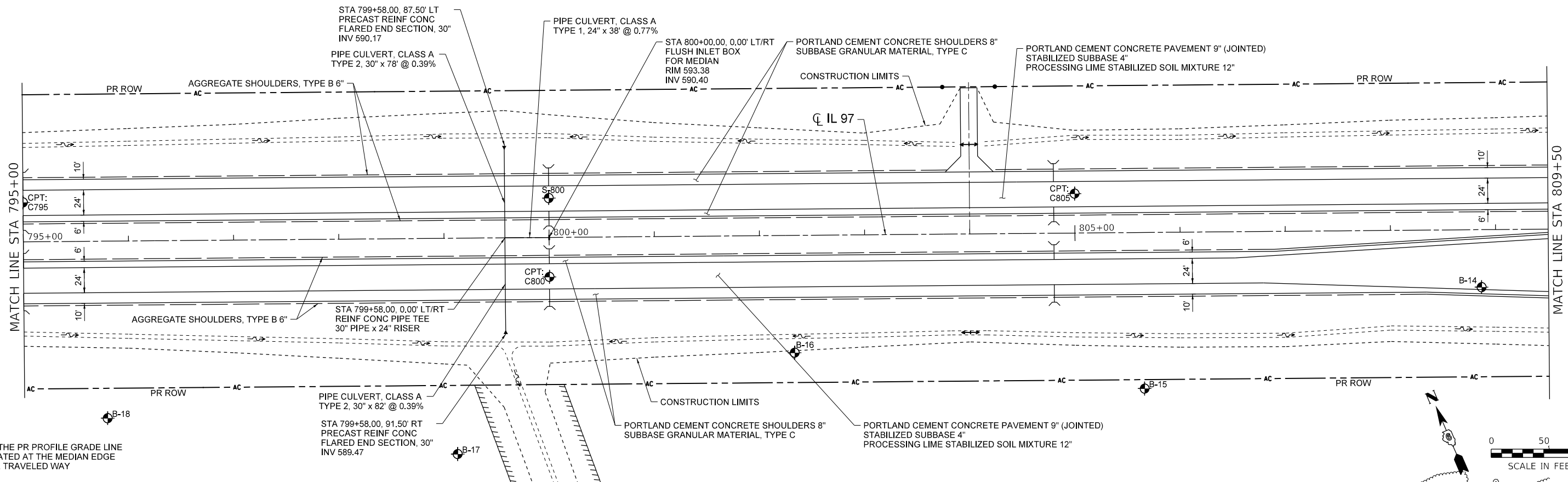
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**IL 97
SOIL PLAN AND PROFILE**

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F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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ILLINOIS FED. AID PROJECT				

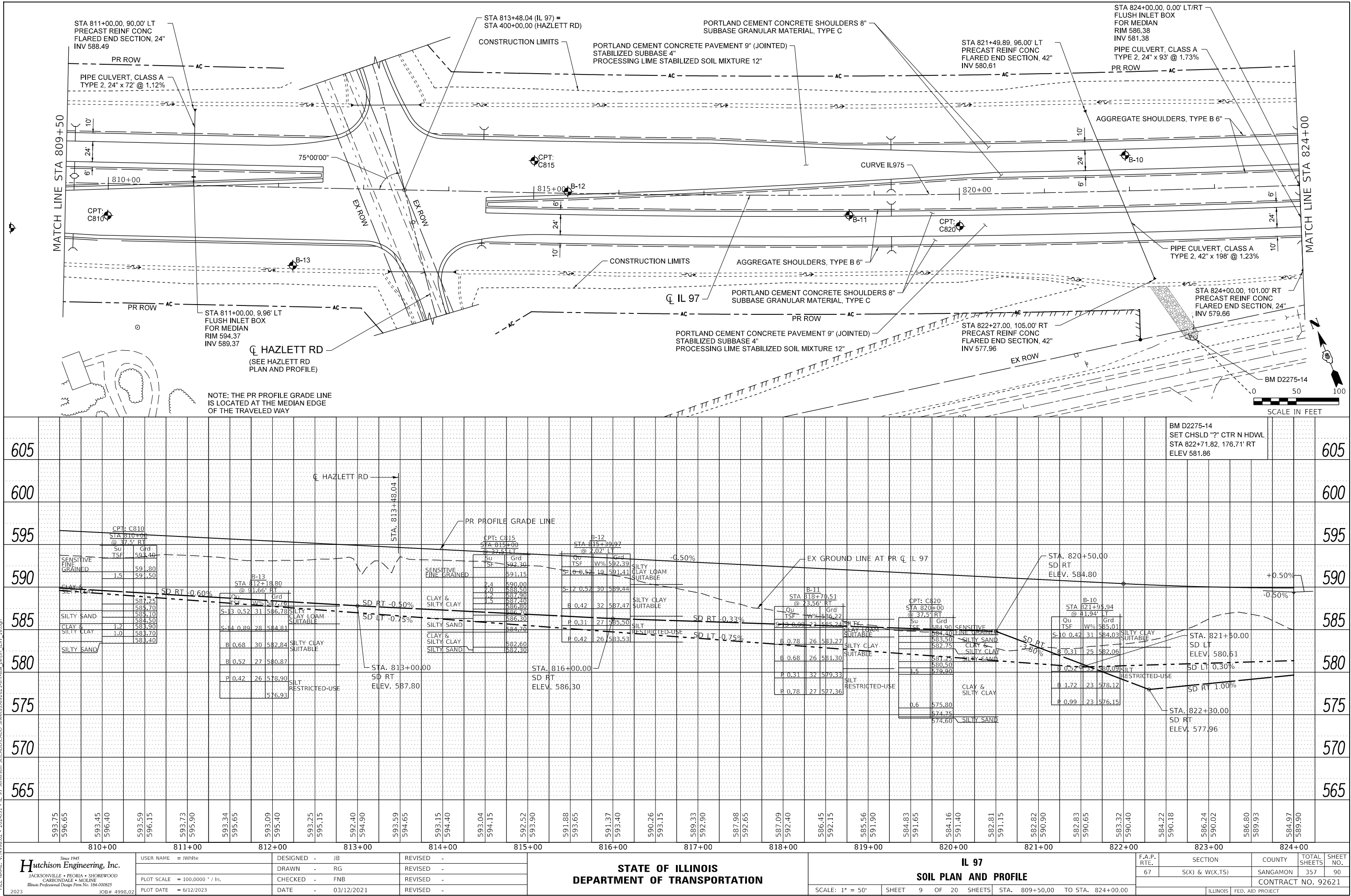
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CARBONDALE • MOBILE
Illinois Professional Design Firm No. 184-000825

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

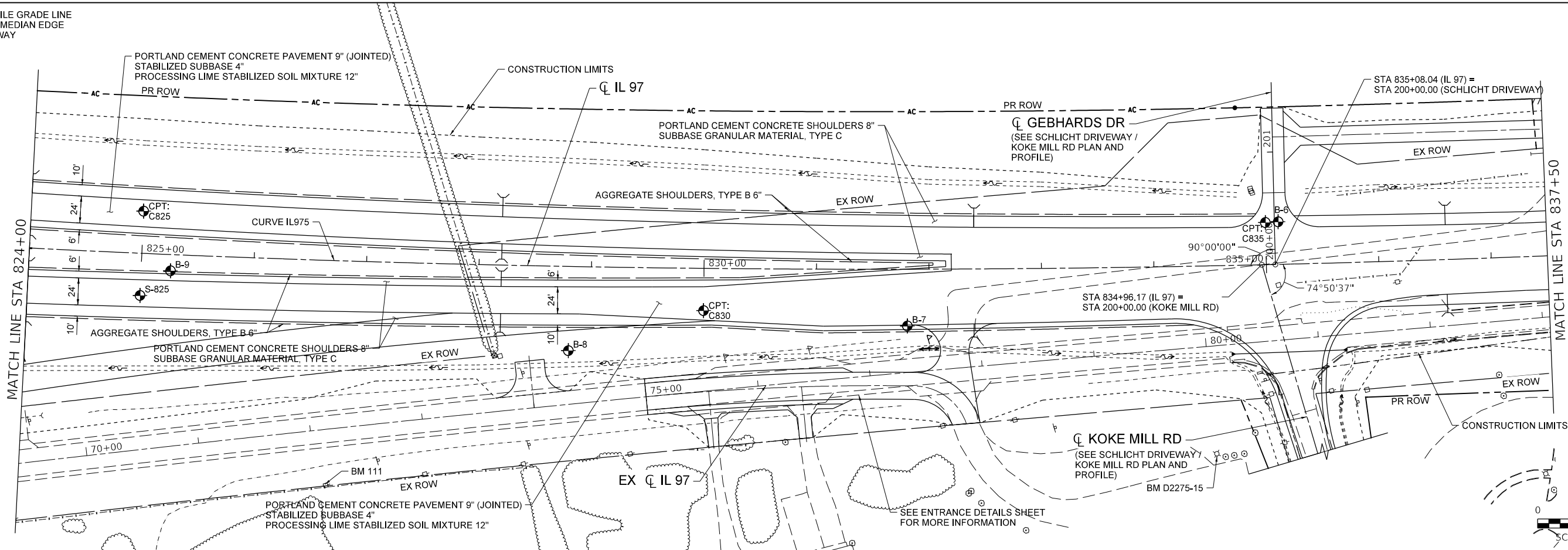
IL 97
SOIL PLAN AND PROFILE

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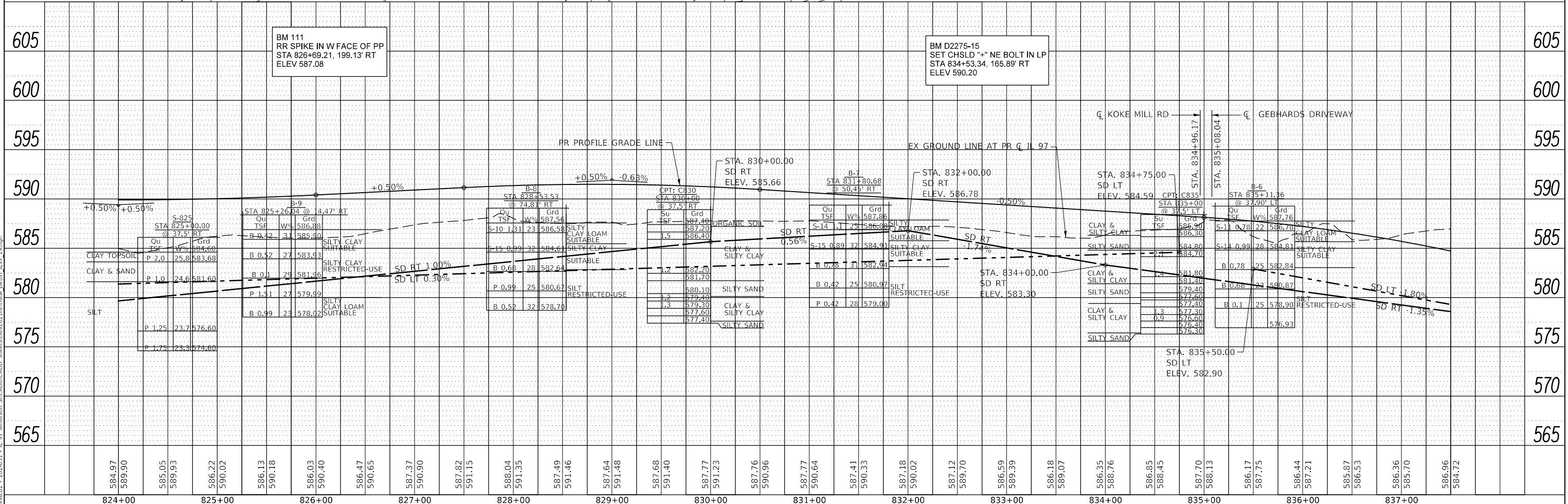
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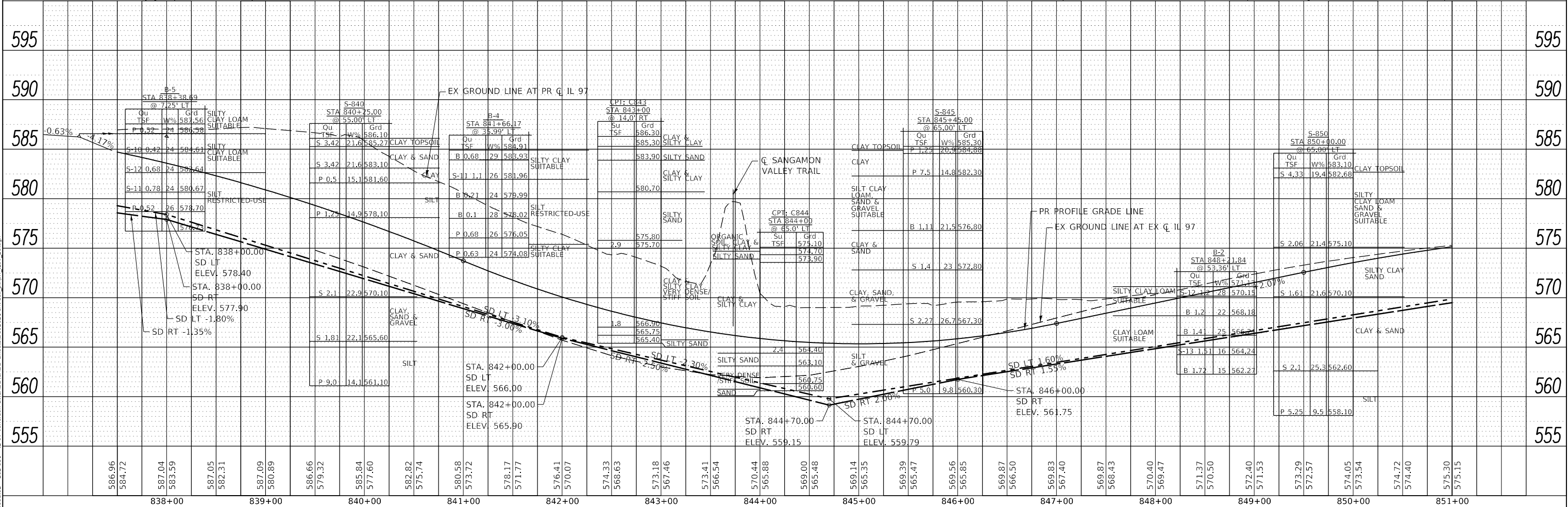
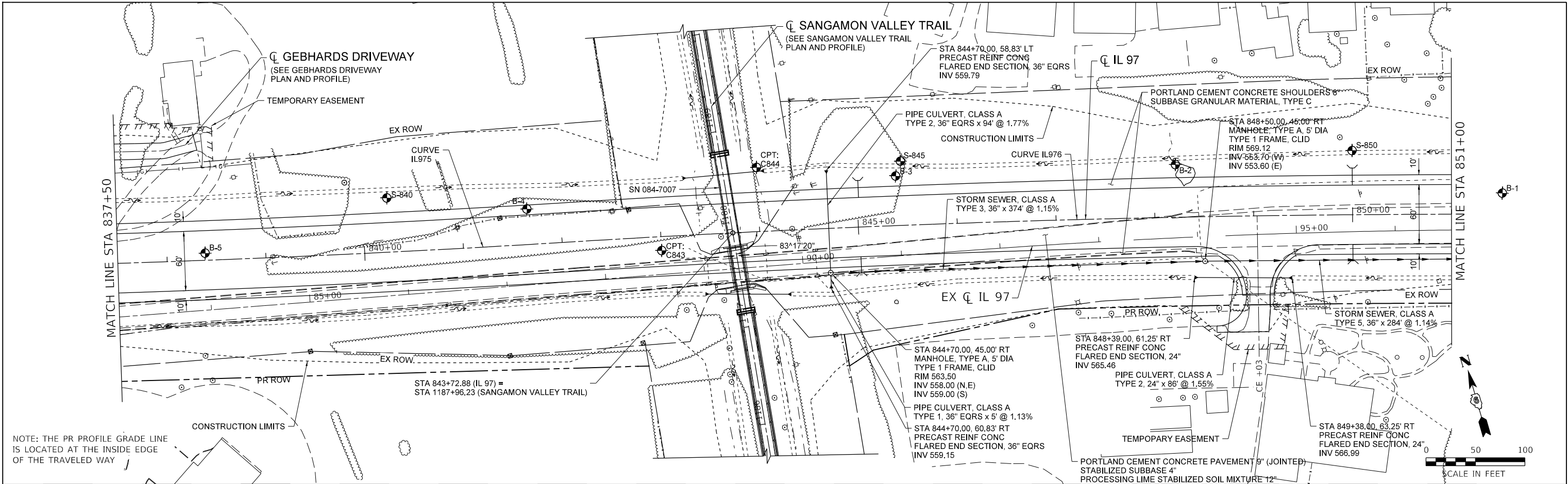


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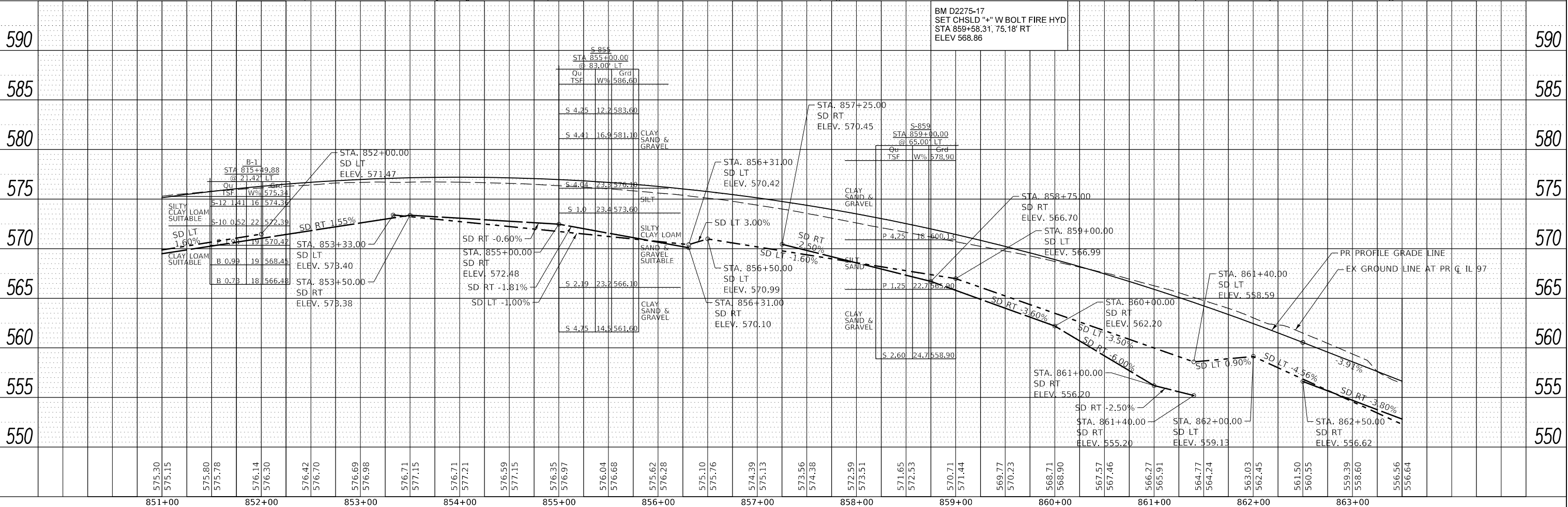
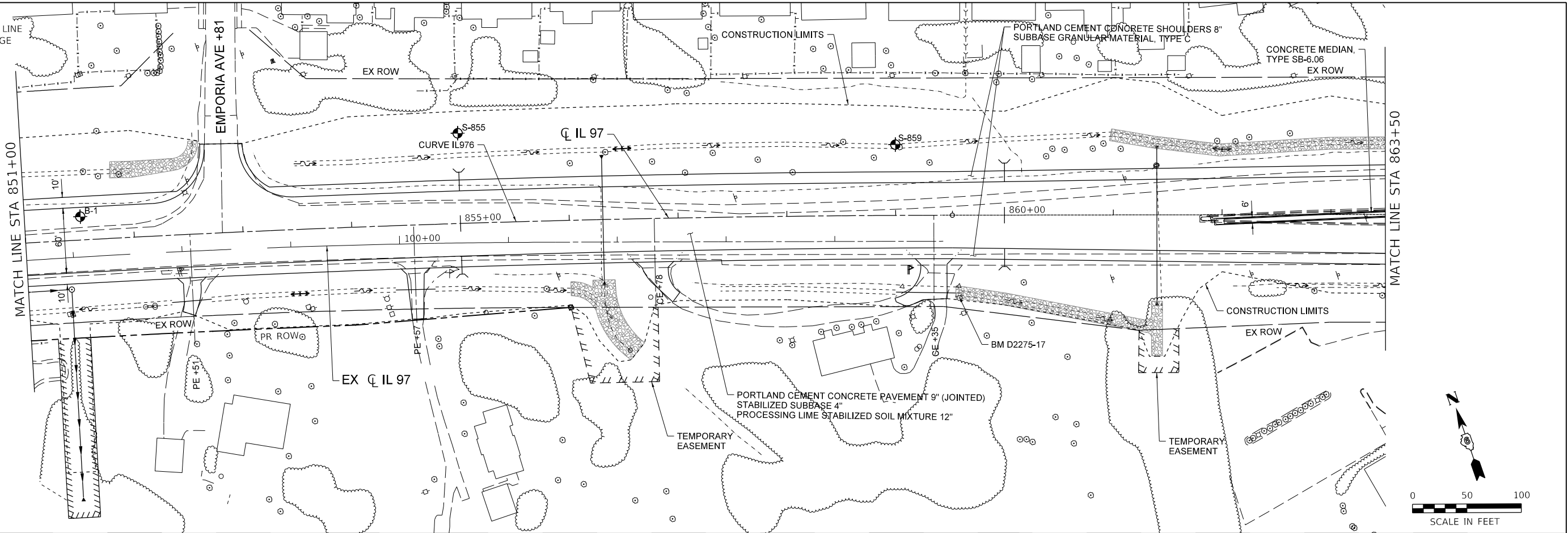


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NOTE: THE PR PROFILE GRADE LINE
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CARBONDALE • MOLINE
Illinois Professional Design Firm No. 184-000825

USER NAME = JWhite	DESIGNED - JB	REVISED -
	DRAWN - RG	REVISED -
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**IL 97
SOIL PLAN AND PROFILE**

SCALE: 1" = 50' SHEET 12 OF 20 SHEETS STA. 851+00.00 TO STA. 863+50.00

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
67	S(X) & W(X,TS)	SANGAMON	357	93
CONTRACT NO. 92621				
ILLINOIS FED. AID PROJECT				

Appendix A.5 Soil Borings

Page 1 of 1

Date 11/4/20

COUNTY Sangamon **DRILLING METHOD** AASHTO T 206-19 HSA **HAMMER TYPE** Auto Hammer 140 lbs

[illegible]

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer, E-Estimated) Abbreviations W.O.H - Sampler Advanced By Weight of Hammer, W.O.P - Advanced by Weight of Pipe, B.S. - Before Seating 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) CME-750 ATV Drill Rig Used. SEECO Job No. 12444G

Page 1 of 1

Date 11/3/20

COUNTY Sangamon **DRILLING METHOD** AASHTO T 206-19 HSA **HAMMER TYPE** Auto Hammer 140 lbs

STRUCT. NO. _____ Station _____		DEPTH (ft)	BLOWS /6"	UCS Qu (tsf)	MOIST (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft	
BORING NO. _____ S-800 Station _____ 800+00 Offset _____ 37.5ft LT Ground Surface Elev. _____ 595.3 ft						Groundwater Elev.: ▽ First Encounter _____ DRY ft ▽ Upon Completion _____ DRY ft ▽ After _____ Hrs. _____ ft	
14" CLAY TOPSOIL, Black (A-7-5) _____ 594.14		5					
CLAY, Dark Brown and Brown, Trace Sand and Gravel, Very Stiff, Moist (A-6) _____ 592.30		5 7	3.96 S	25.2			
CLAY, Brown and Gray, Trace Sand, Very Stiff to Stiff, Moist (A-6) _____ 587.30		4 4 5	2.31 S	24			
		3					
		3 3	1.9 S	23.5			
SILT, Brown and Gray, Loose, Moist (A-4) _____ 585.30		3 4 3	1.0 P	25.1			
End of Boring at 10 Feet.							

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer, E-Estimated) Abbreviations W.O.H - Sampler Advanced By Weight of Hammer, W.O.P - Advanced by Weight of Pipe, B.S. - Before Seating 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) CME-750 ATV Drill Rig Used. SEECO Job No. 12444G



SOIL BORING LOG

ROUTE FAP 67, FAU 8049 DESCRIPTION IL-97/125 4 Lane Expressway LOGGED BY S.D.

SECTION S (X), W (X, TS) LOCATION Sangamon County, IL, SEC. 24, TWP. 16N, RNG. 6W, 3 PM

COUNTY Sangamon DRILLING METHOD AASHTO T 206-19 HSA HAMMER TYPE Auto Hammer 140 lbs

STRUCT. NO. Station	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft Groundwater Elev.: ▽ First Encounter _____ DRY ft ▽ Upon Completion _____ DRY ft ▽ After _____ Hrs. _____ ft	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)
BORING NO. <u>S-840</u> Station <u>840+25</u> Offset <u>55.0ft LT</u> Ground Surface Elev. <u>586.1</u> ft									
10" FILL: CLAY TOPSOIL, Dark Brown, Hard, Moist (A-7-5) <u>585.27</u>		4			<u>565.60</u> SILT, Brown and Gray, Medium Dense, Moist (A-4)		5		
FILL: CLAY, Dark Brown and Dark Gray, Trace Sand and Gravel, Very Stiff, Moist (A-6) <u>583.10</u>		5	3.42	21.6			5	3.01	14.6
		7	S				7	S	
CLAY, Dark Gray and Brown, Medium, Moist (A-6) <u>581.60</u>		2					7		
		2	0.5	15.1			8	9.0	14.1
SILT, Light Brown and Gray, Loose, Moist (A-4)	-5	3	P	19.8	<u>561.10</u> End of Boring at 25 Feet.	-25	10	P	
			1.25		Note: 1. This boring was offset 25 feet east and 10 feet south from original location due to presence of trees.				
		3							
		4	1.25	14.9					
		4	P						
<u>578.10</u>									
CLAY, Brown, Trace Gray, Trace Sand, Stiff to Very Stiff, Moist (A-6)		4							
		4	1.53	24.7					
	-10	5	S			-30			
		4							
		4	1.36	23.3					
		4	S						
		3							
		4	2.25	24.6					
	-15	5	P			-35			
<u>570.10</u>									
CLAY, Brown and Gray, Trace Sand and Gravel, Very Stiff to Stiff, Moist (A-6)		4							
		4	2.1	22.9					
		4	S						
		4							
		5	1.81	22.1					
	-20	5	S			-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer, E-Estimated) Abbreviations W.O.H - Sampler Advanced By Weight of Hammer, W.O.P - Advanced by Weight of Pipe, B.S. - Before Seating 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) CME-750 ATV Drill Rid Used. SEECO Job No. 12444G



SOIL BORING LOG

ROUTE FAP 67, FAU 8049 DESCRIPTION IL-97/125 4 Lane Expressway LOGGED BY S.D.

SECTION S (X), W (X, TS) LOCATION Sangamon County, IL, SEC. 19, TWP. 16N, RNG. 5W, 3 PM

COUNTY Sangamon DRILLING METHOD AASHTO T 206-19 HSA HAMMER TYPE Auto Hammer 140 lbs

STRUCT. NO. Station	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft Groundwater Elev.: ▽ First Encounter _____ DRY ft ▽ Upon Completion _____ DRY ft ▽ After _____ Hrs. _____ ft	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)
5" FILL: CLAY TOPSOIL, Dark Brown (A-7-5)	584.88				SILT, Brown and Gray, Trace Gravel, Medium Dense to Extremely Dense, Moist to Dry (A-4) (continued)				
FILL: CLAY, Brown, Stiff, Moist (A-6)		3					50/2"		
		4	1.25 P	20.9			refusa		9.6
	582.30								
FILL: SILTY CLAY LOAM, Brown and Gray, Trace Sand and Gravel, Medium Dense, Moist (A-6)		8					50/4"		
(Combined Analysis Test, Lab #114)		8	7.5 P	14.8			refusa		9.8
		9			560.30	-25			
		7			End of Boring at 25 Feet.				
		9	8.75 P	17.1	Note: 1. This boring was offset 45 feet east from original boring location due to presence of trees at original location.				
		10							
	576.80				2. Total split spoon sampler refusal was encountered at approximately 21.16 feet and again at approximately 23.83 feet below the existing ground surface level and total hollow stem auger refusal was encountered at approximately 25 feet below the existing ground surface level.				
FILL: CLAY, Brown, Trace Sand, Stiff, Moist (A-6)		3							
		4	1.11 B	21.5					
		5							
		5	1.4 S	23					
	572.80	6							
CLAY, Brown and Gray, Trace Sand and Gravel, Stiff to Very Stiff, Moist (A-6)		5							
		6	1.77 S	25					
		6							
		6	2.27 S	26.7					
		7							
	567.30								
SILT, Brown and Gray, Trace Gravel, Medium Dense to Extremely Dense, Moist to Dry (A-4)		9							
		10	5.0 P	13.3					
		12							

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer, E-Estimated) Abbreviations W.O.H - Sampler Advanced By Weight of Hammer, W.O.P - Advanced by Weight of Pipe, B.S. - Before Seating 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) CME-750 ATV Drill Rid Used. SEECO Job No. 12444G



SOIL BORING LOG

ROUTE FAP 67, FAU 8049 DESCRIPTION IL-97/125 4 Lane Expressway LOGGED BY S.D.

SECTION S (X), W (X, TS) LOCATION Sangamon County, IL, SEC. 19, TWP. 16N, RNG. 5W, 3 PM

COUNTY Sangamon DRILLING METHOD AASHTO T 206-19 HSA HAMMER TYPE Auto Hammer 140 lbs

STRUCT. NO. Station	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft Groundwater Elev.: ▽ First Encounter _____ DRY ft ▽ Upon Completion _____ DRY ft ▽ After _____ Hrs. _____ ft	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)
BORING NO. <u>S-855</u> Station <u>855+00</u> Offset <u>83.0ft LT</u> Ground Surface Elev. <u>586.6</u> ft									
FILL: CLAY, Dark Brown, Brown and Gray, Trace Sand and Gravel, Hard, Moist (A-6)		5			566.10				
		7	4.25	12.2	CLAY, Brown and Gray, Trace Sand and Gravel, Hard, Moist (A-6)		9		
		7	S				9	4.49	11.7
							11	S	
583.60									
FILL: CLAY, Brown, Trace Sand and Gravel, Hard, Moist (A-6)		11					7		
		10	4.41	16.9			10	4.74	14.5
	-5	13	S				13	S	
581.10					561.60	-25			
CLAY, Brown, Trace Sand and Gravel, Very Stiff to Hard, Moist (A-6)		8			End of Boring at 25 Feet.				
		8	3.75	25.5	Note: 1. This boring was offset 18 feet north from original location due to sloped ground.				
		11	P		2. Proctor sample was taken from this boring from 3'-10'.				
		9							
		10	4.04	23.3					
	-10	12	S			-30			
576.10									
SILT, Brown, Medium Dense, Moist (A-4)		7							
		7	1.0	23.4					
		8	P						
573.60									
SILTY CLAY LOAM, Brown to Reddish Brown, Little Sand, Trace Gravel, Stiff to Very Stiff, Moist (A-6(11)) (Combined Analysis and Atterberg Limit Test, Lab #116)		4							
		5	1.44	21.4					
	-15	5	S			-35			
		4							
		4	1.53	21.7					
		5	S						
		5							
		6	2.19	23.2					
	-20	6	S			-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer, E-Estimated) Abbreviations W.O.H - Sampler Advanced By Weight of Hammer, W.O.P - Advanced by Weight of Pipe, B.S. - Before Seating 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) CME-750 ATV Drill Rid Used. SEECO Job No. 12444G



SOIL BORING LOG

ROUTE FAP 67, FAU 8049 DESCRIPTION IL-97/125 4 Lane Expressway LOGGED BY S.D.

SECTION S (X), W (X, TS) LOCATION Sangamon County, IL, SEC. 19, TWP. 16N, RNG. 5W, 3 PM

COUNTY Sangamon DRILLING METHOD AASHTO T 206-19 HSA HAMMER TYPE Auto Hammer 140 lbs

STRUCT. NO. _____
Station _____

BORING NO. S-859
Station 859+00
Offset 65.0ft LT
Ground Surface Elev. 578.9 ft

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

Surface Water Elev. _____ ft
Stream Bed Elev. _____ ft
Groundwater Elev.:
▽ First Encounter _____ DRY ft
▽ Upon Completion _____ DRY ft
▽ After _____ Hrs. _____ ft

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

FILL: CLAY, Dark Brown and Brown, Trace Sand and Gravel, Hard, Moist
(A-6)

8			
10	4.5	10.5	
11	P		
9			
8	4.5	10.1	
-5	10	P	
6			
6	4.25	18	
9	P		
570.90			

End of Boring at 20 Feet.
Note:
1. This boring was offset 20 feet north from original location due to sloped ground.

-25			
-30			

SILT, Dark Brown and Dark Gray, Trace Sand, Medium Dense, Moist
(A-4)

4			
5	1.25	25.5	
-10	6	P	
5			
5	1.25	22.7	
6	P		
565.90			

-35			
-----	--	--	--

CLAY, Brown and Gray, Trace Sand and Gravel, Very Stiff, Moist
(A-6)

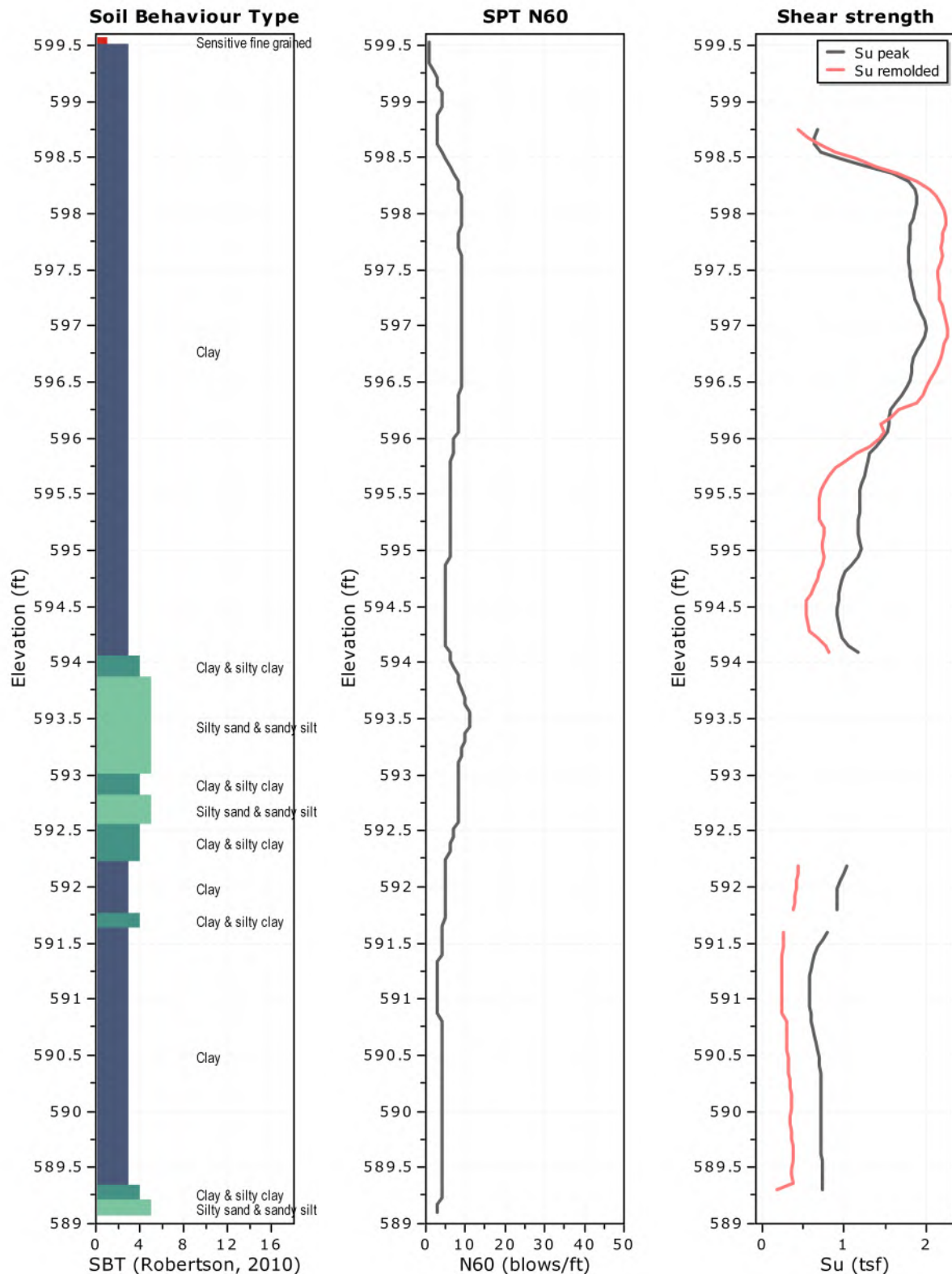
6			
6	2.89	24.4	
-15	7	S	
5			
7	3.05	23.1	
8	S		
6			
6	2.60	24.7	
8	S		
558.90			

-40			
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The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer, E-Estimated) Abbreviations W.O.H - Sampler Advanced By Weight of Hammer, W.O.P - Advanced by Weight of Pipe, B.S. - Before Seating 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) CME-750 ATV Drill Rid Used. SEECO Job No. 12444G

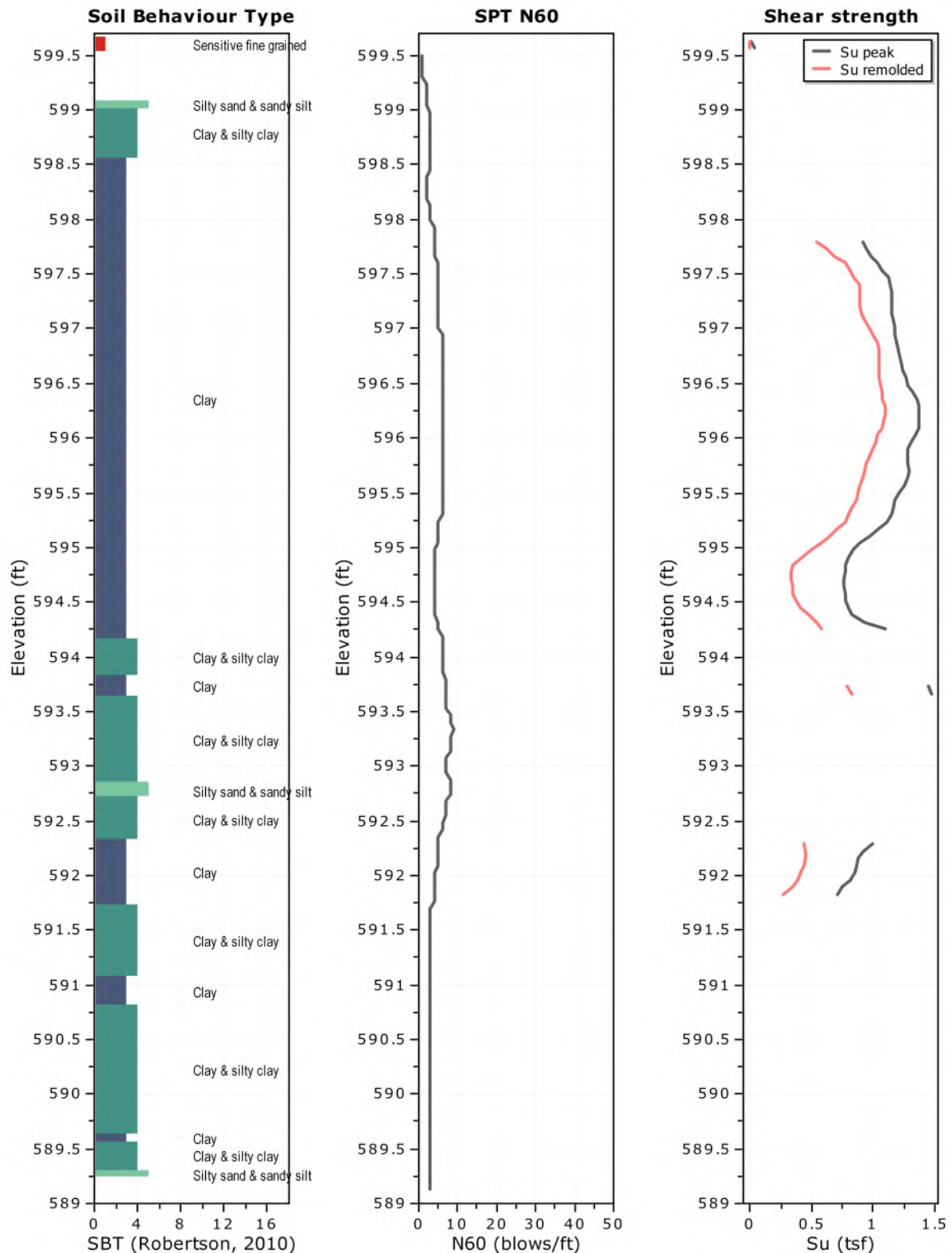
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Location: Springfield, Illinois



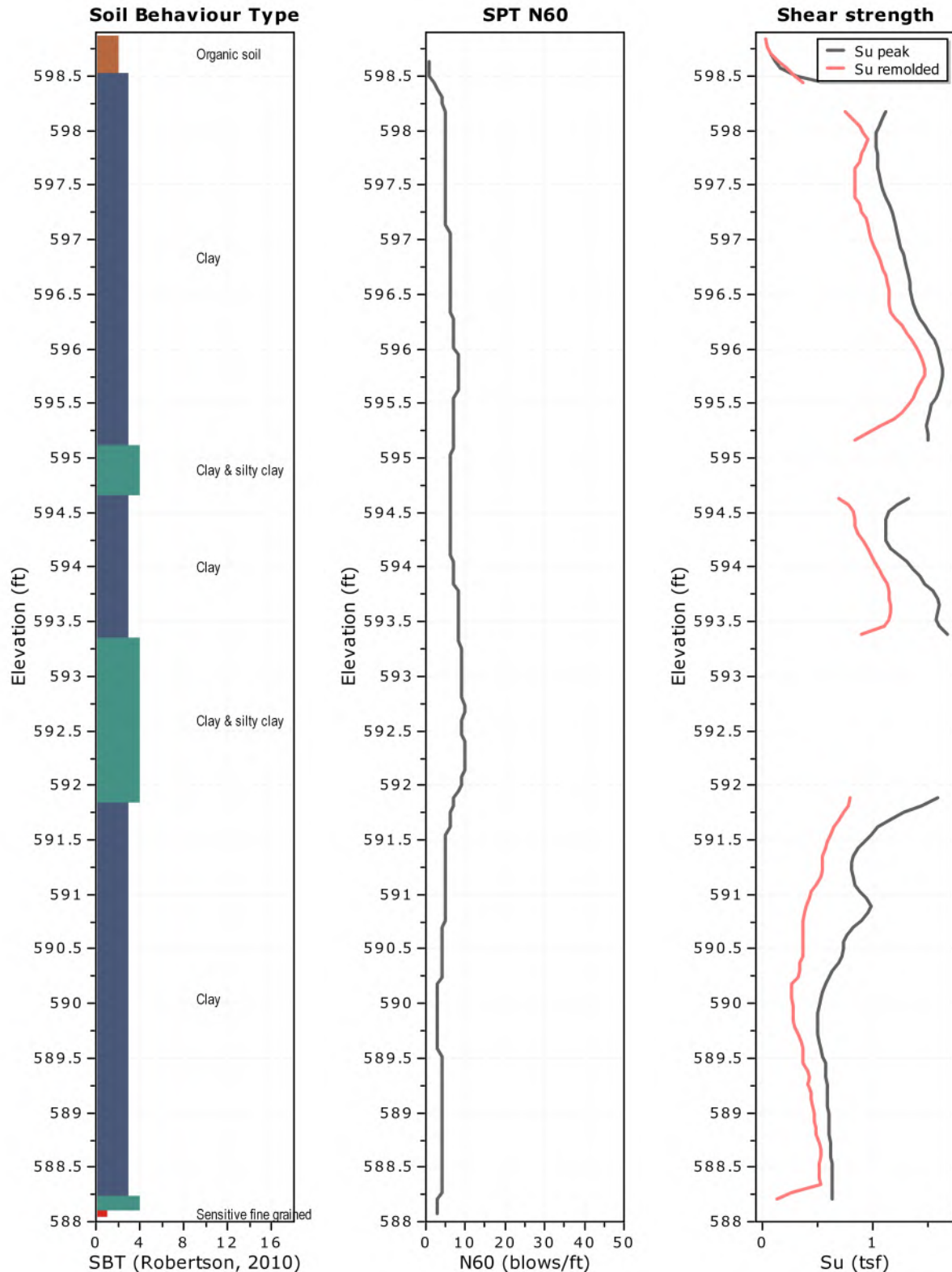
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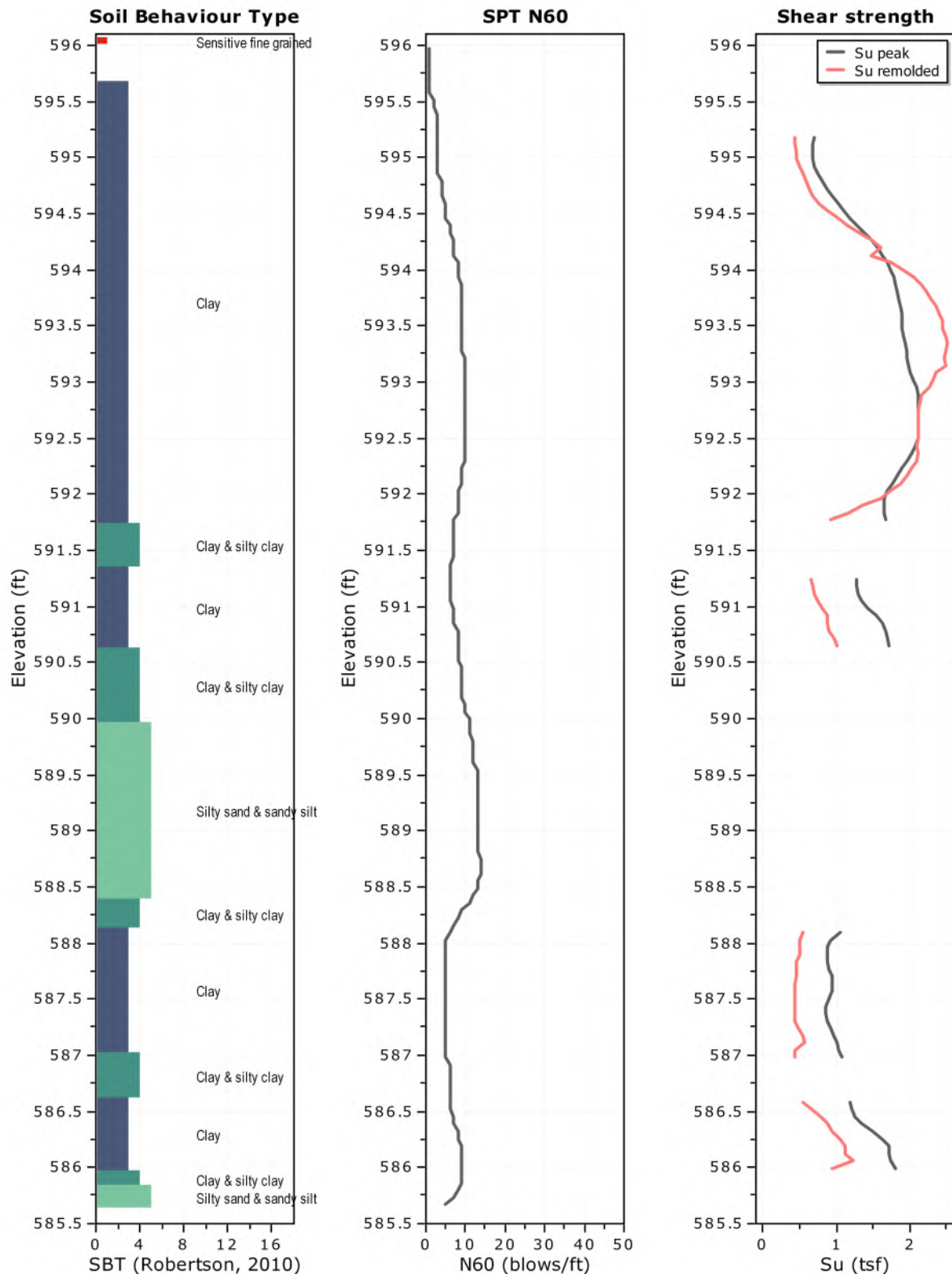
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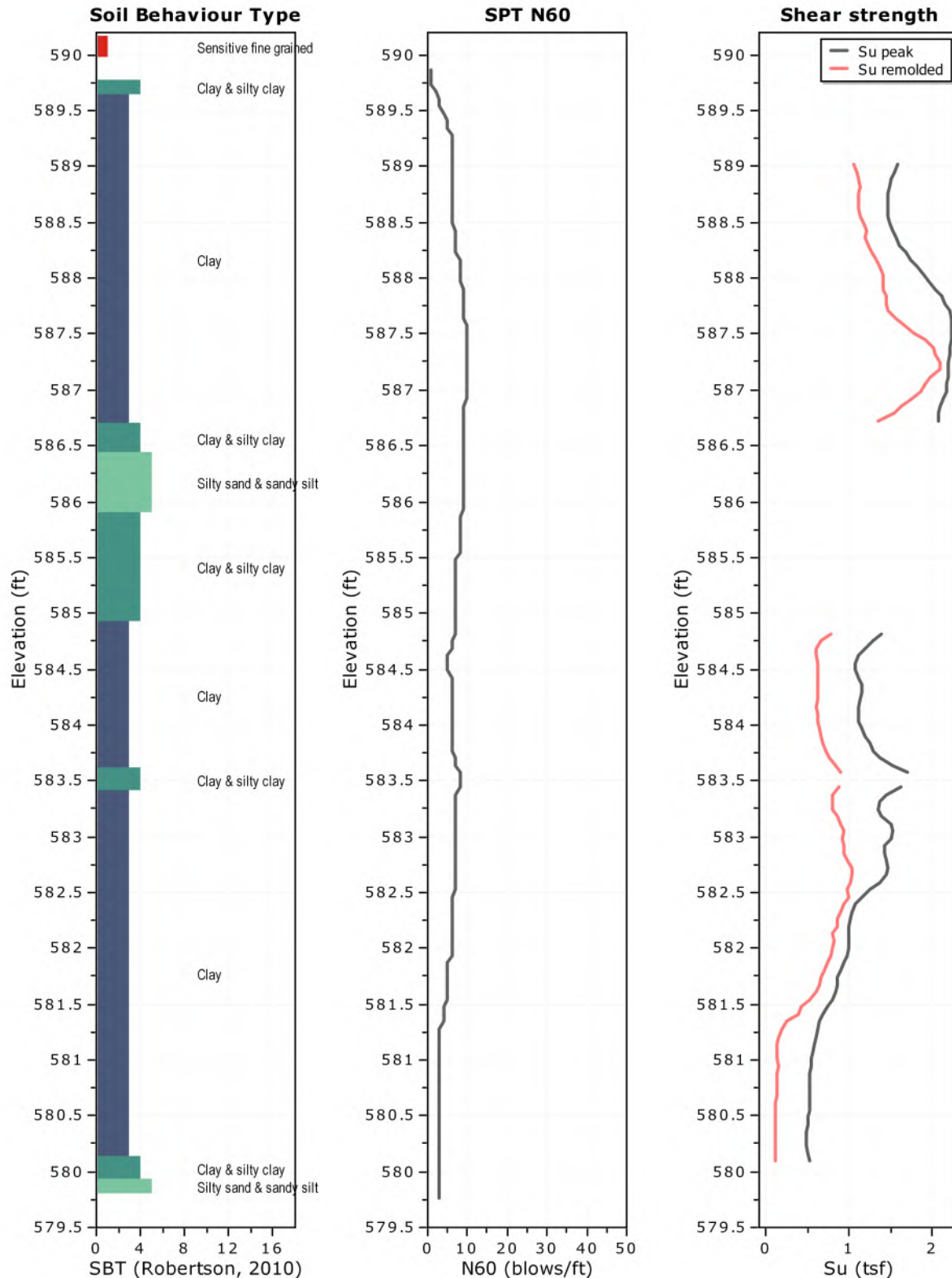
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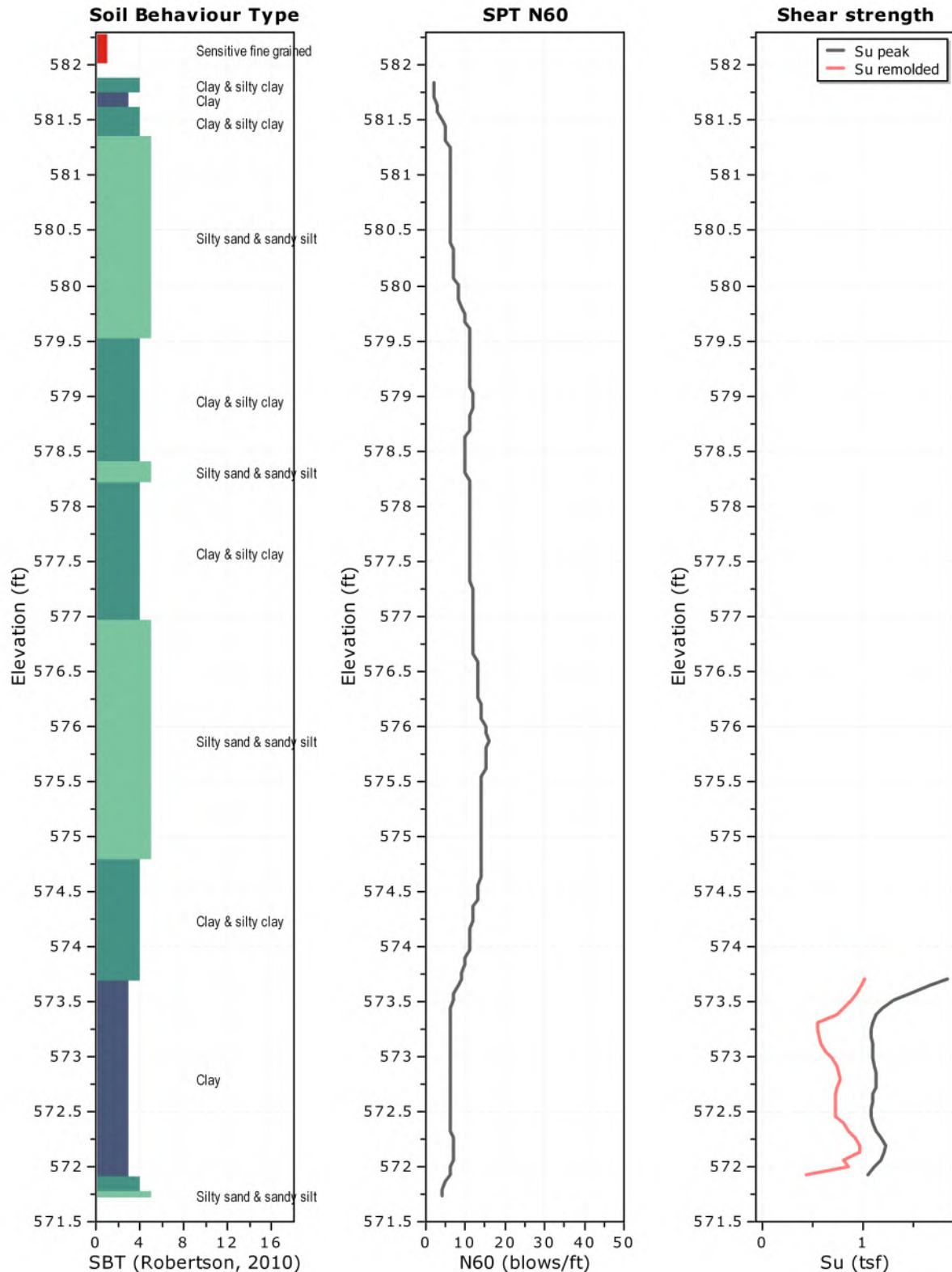
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Location: Springfield, Illinois



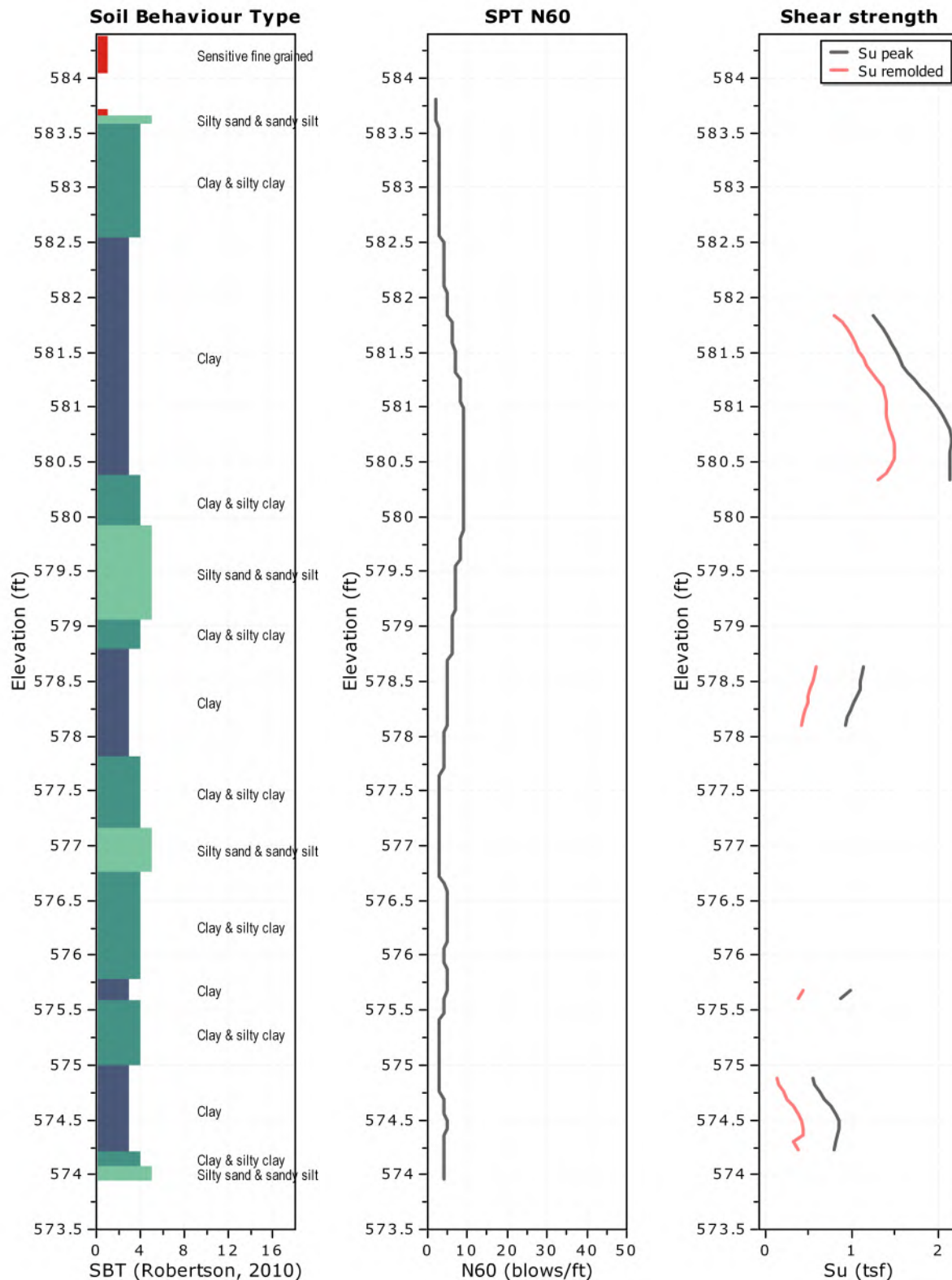
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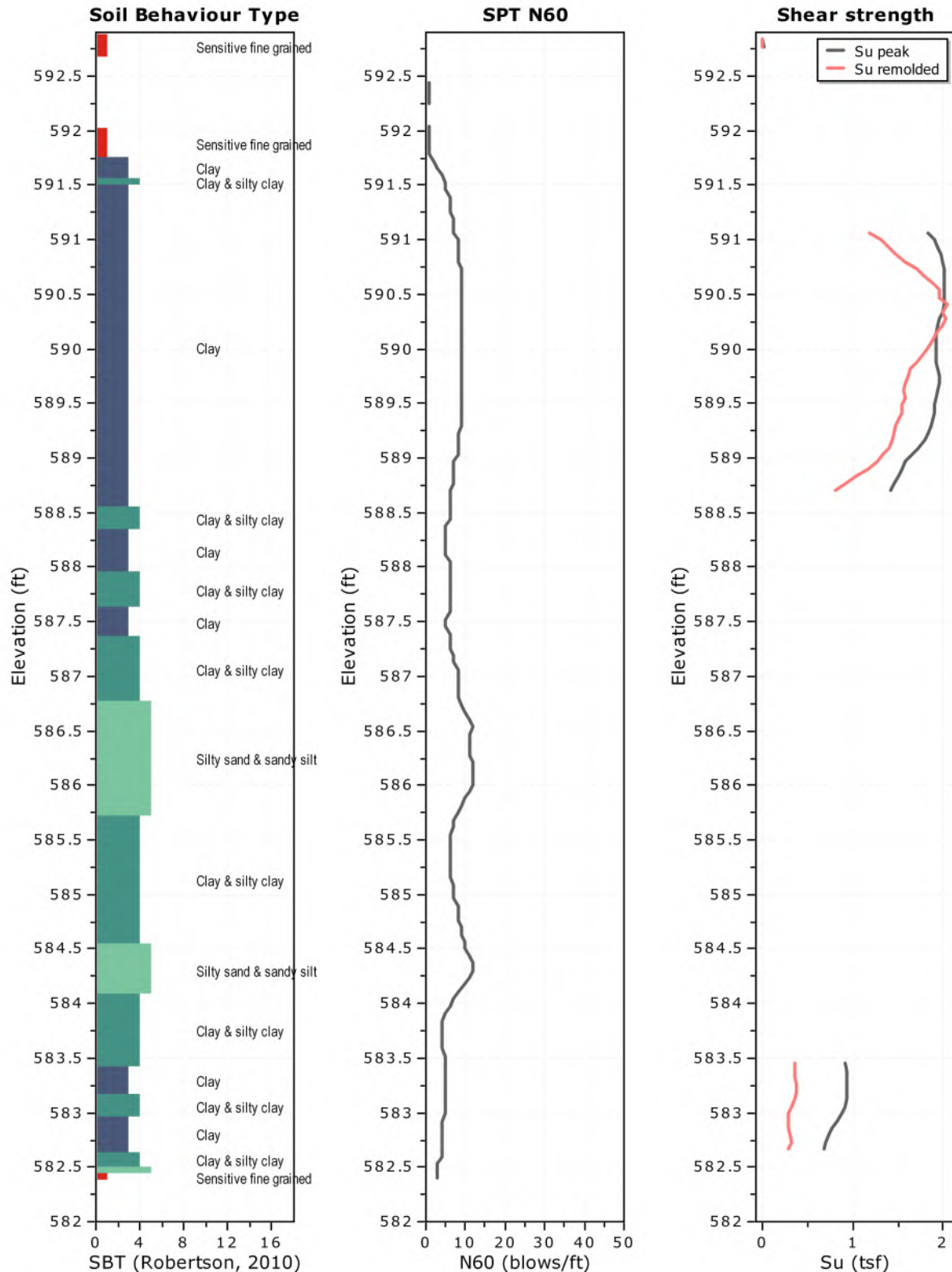
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Location: Springfield, Illinois



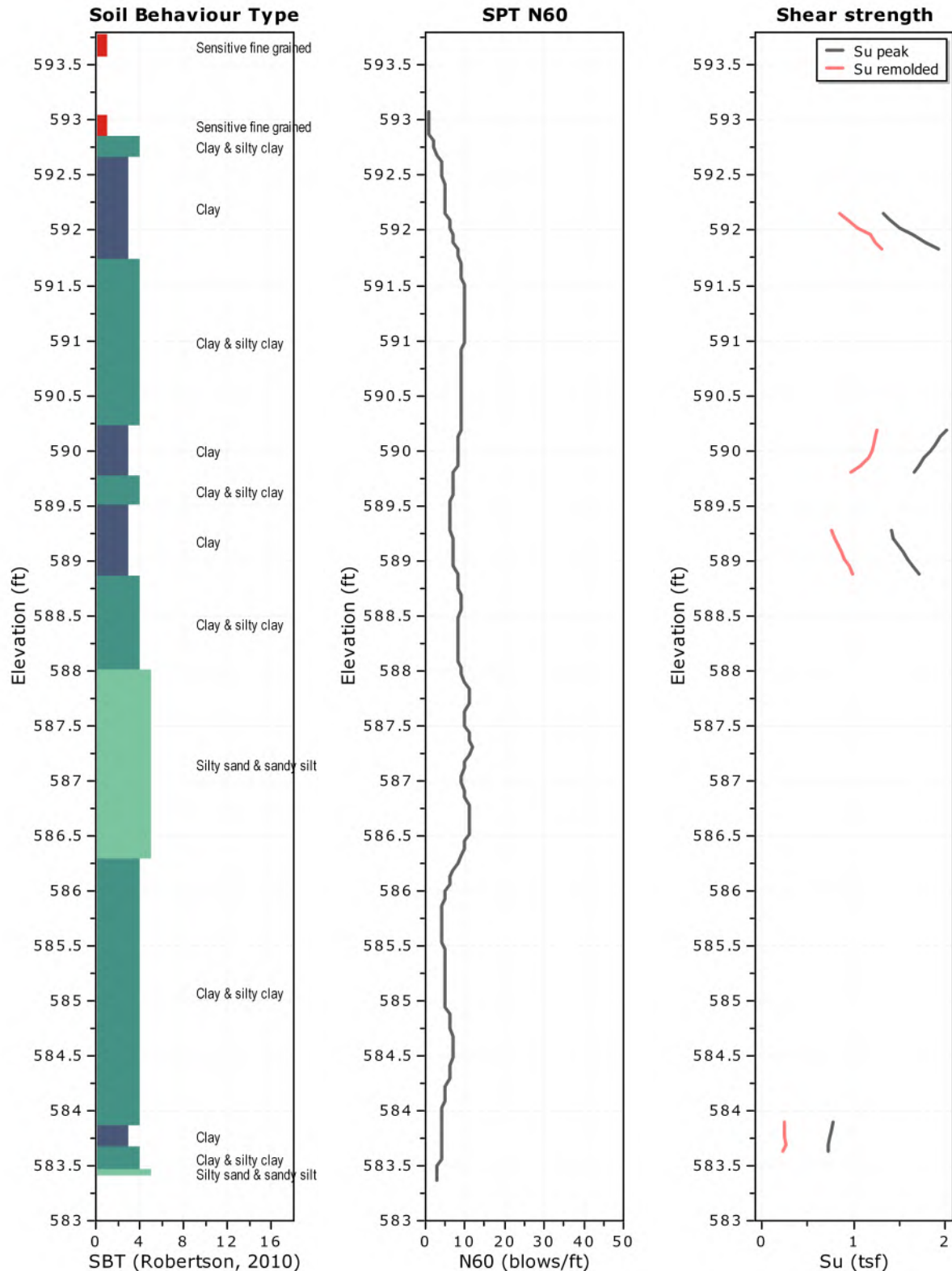
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Location: Springfield, Illinois



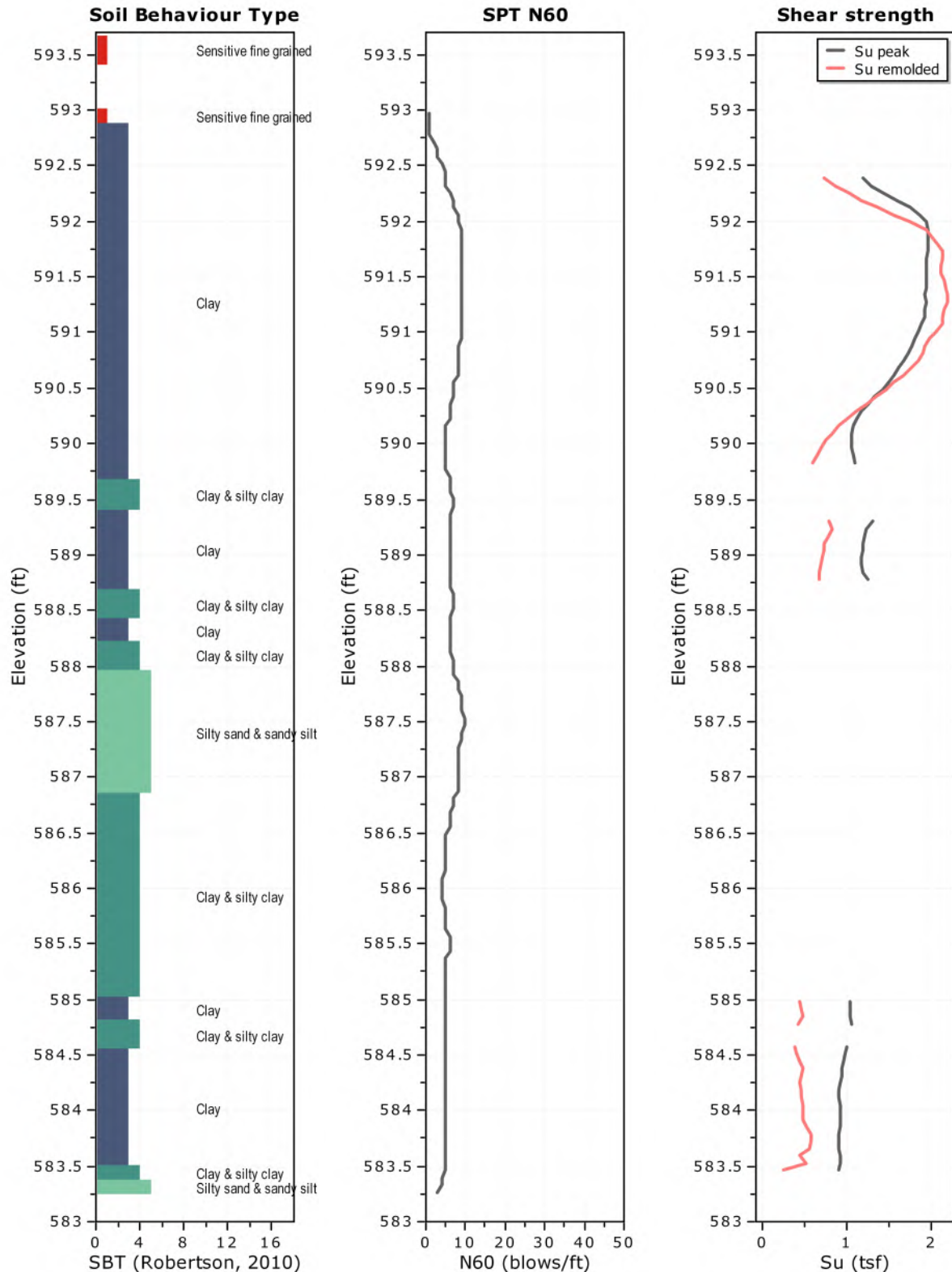
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Location: Springfield, Illinois



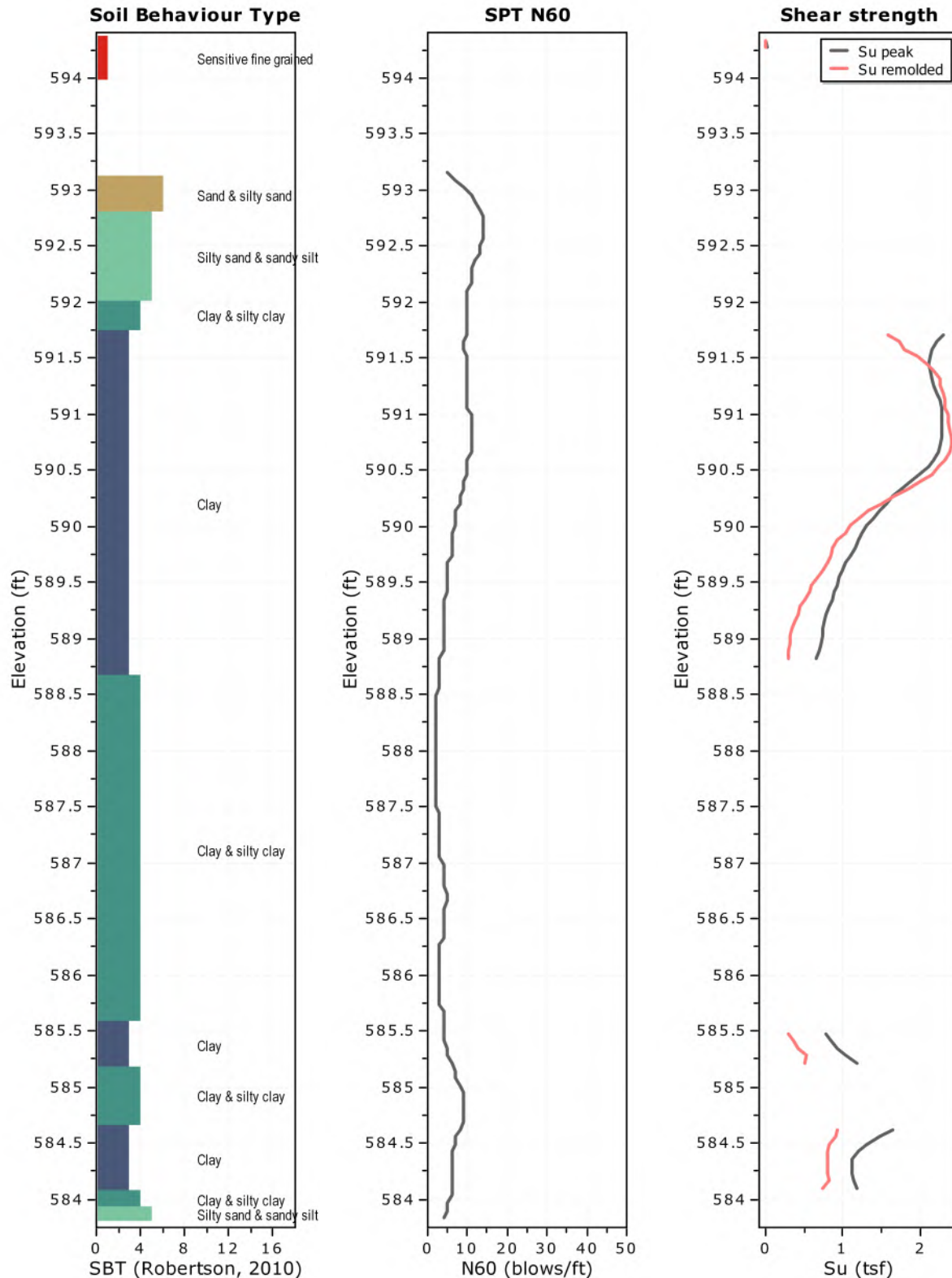
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Location: Springfield, Illinois



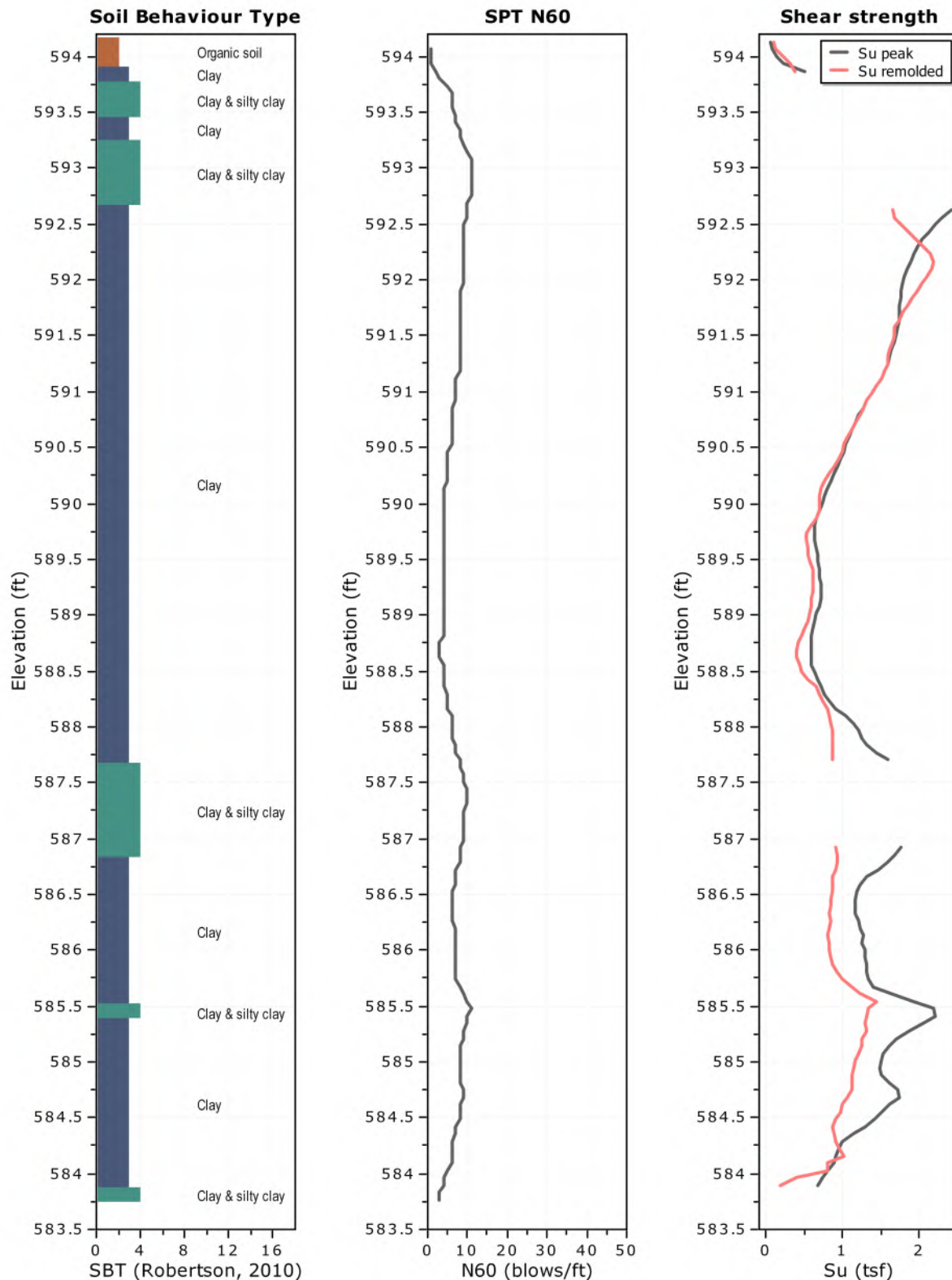
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Location: Springfield, Illinois



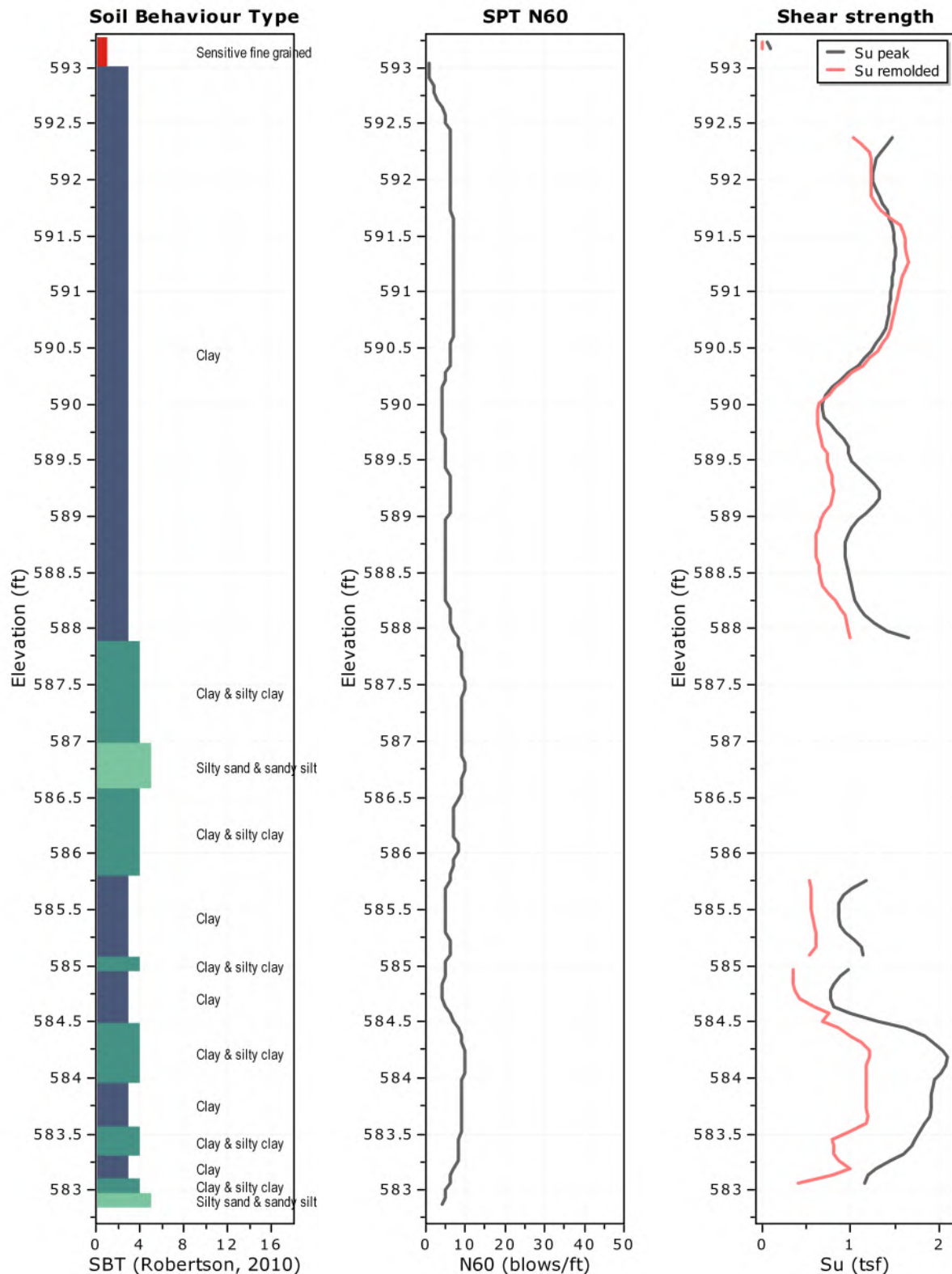
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Location: Springfield, Illinois



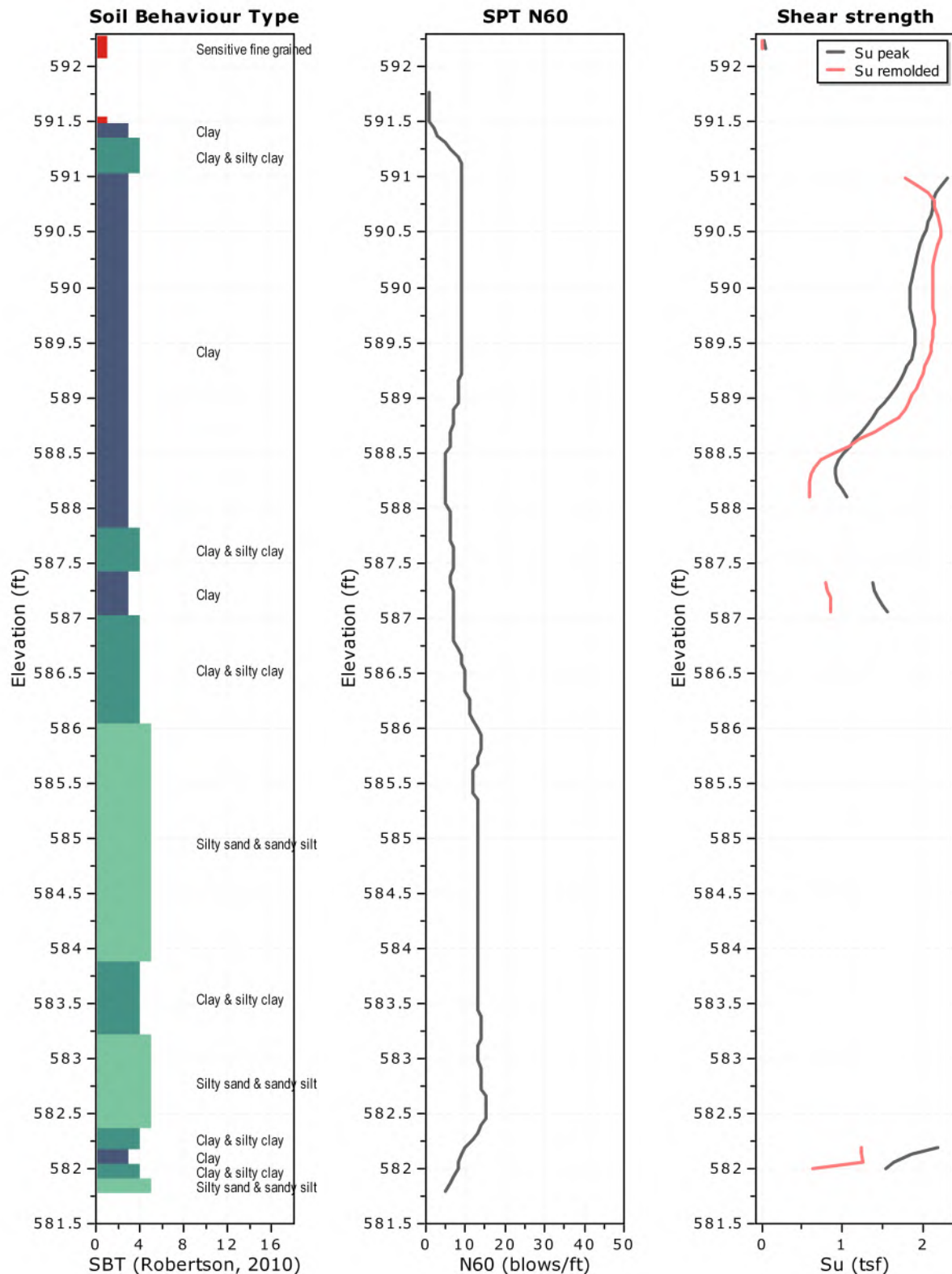
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Location: Springfield, Illinois



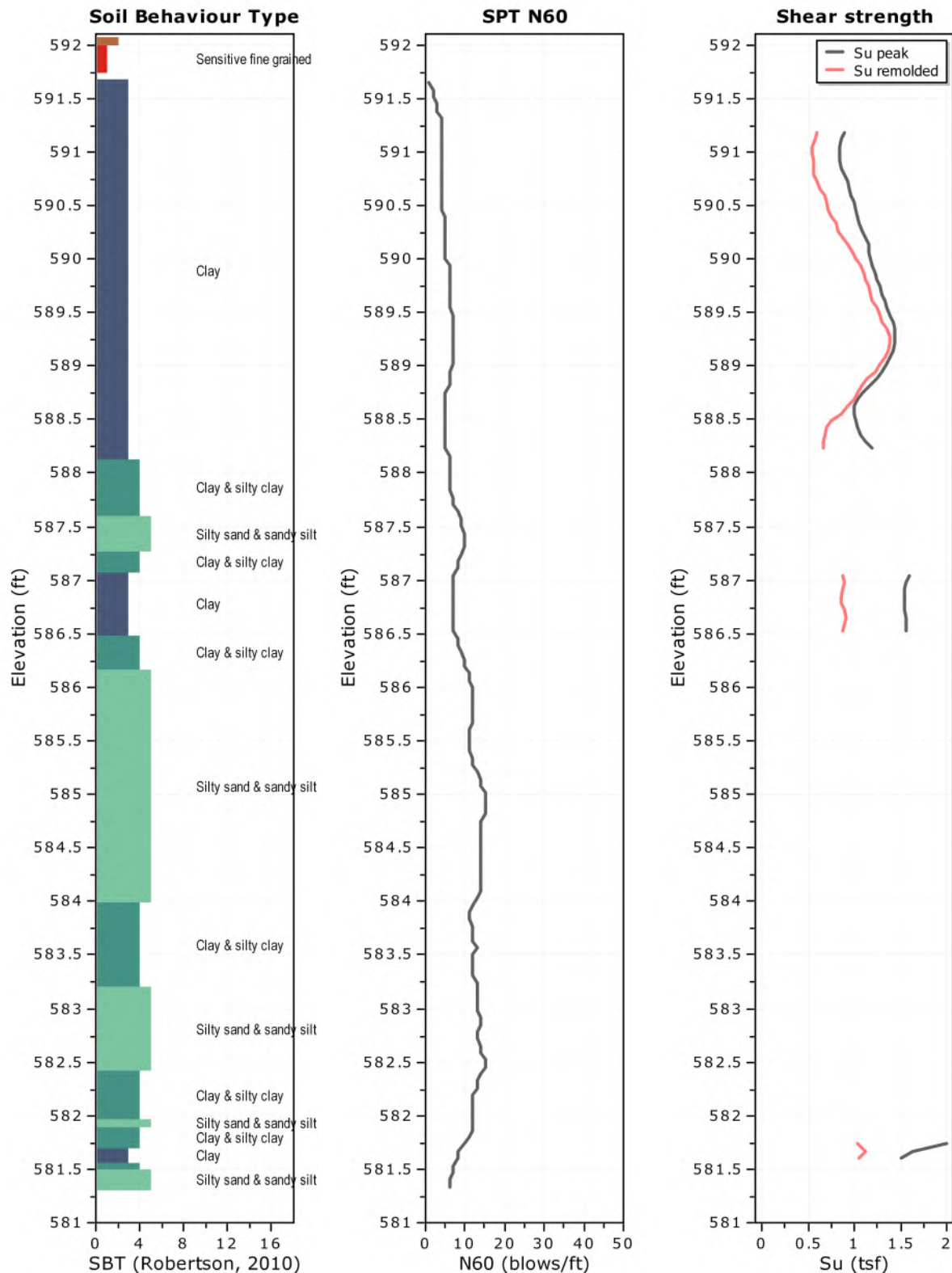
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Location: Springfield, Illinois



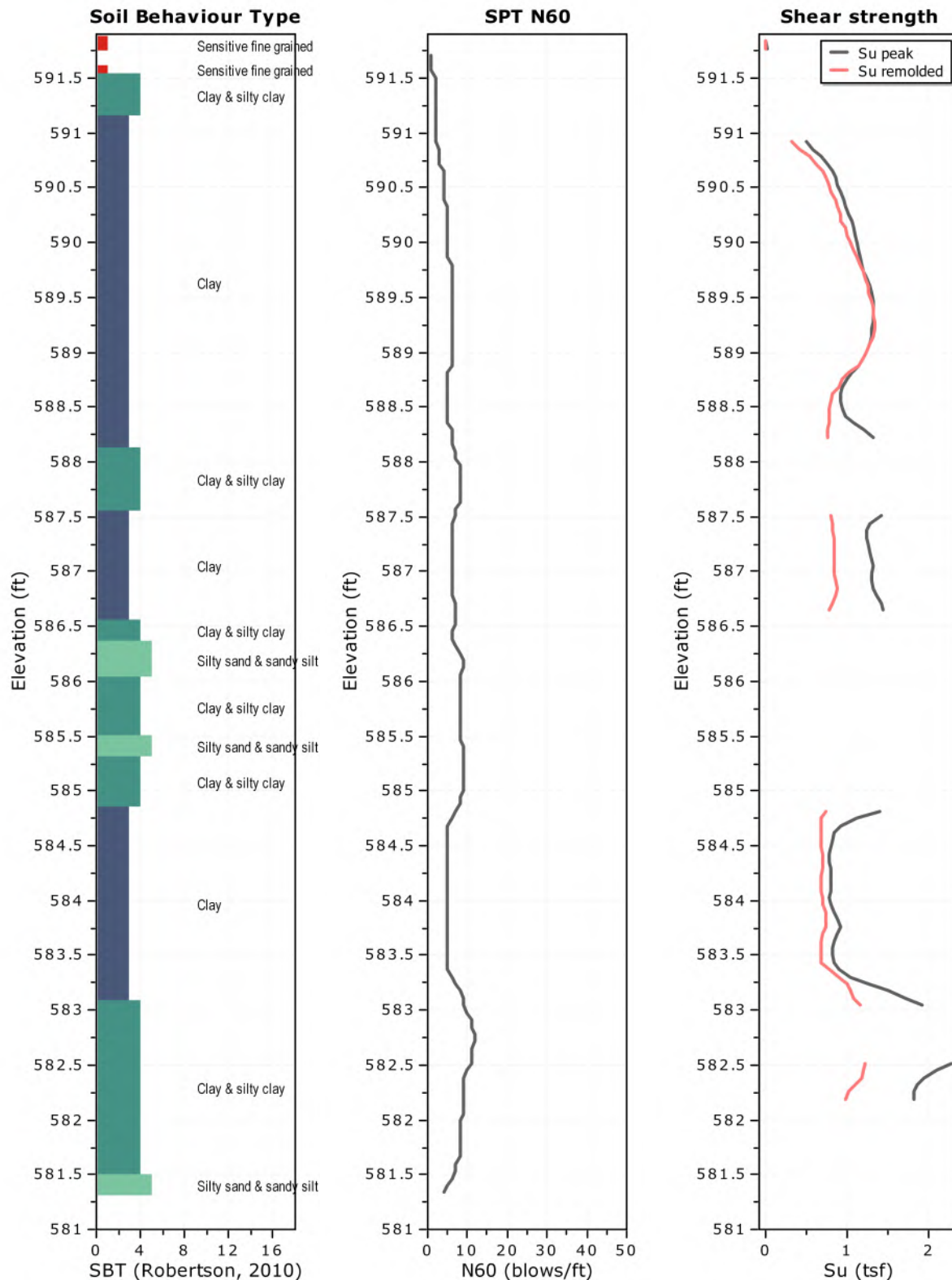
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Location: Springfield, Illinois



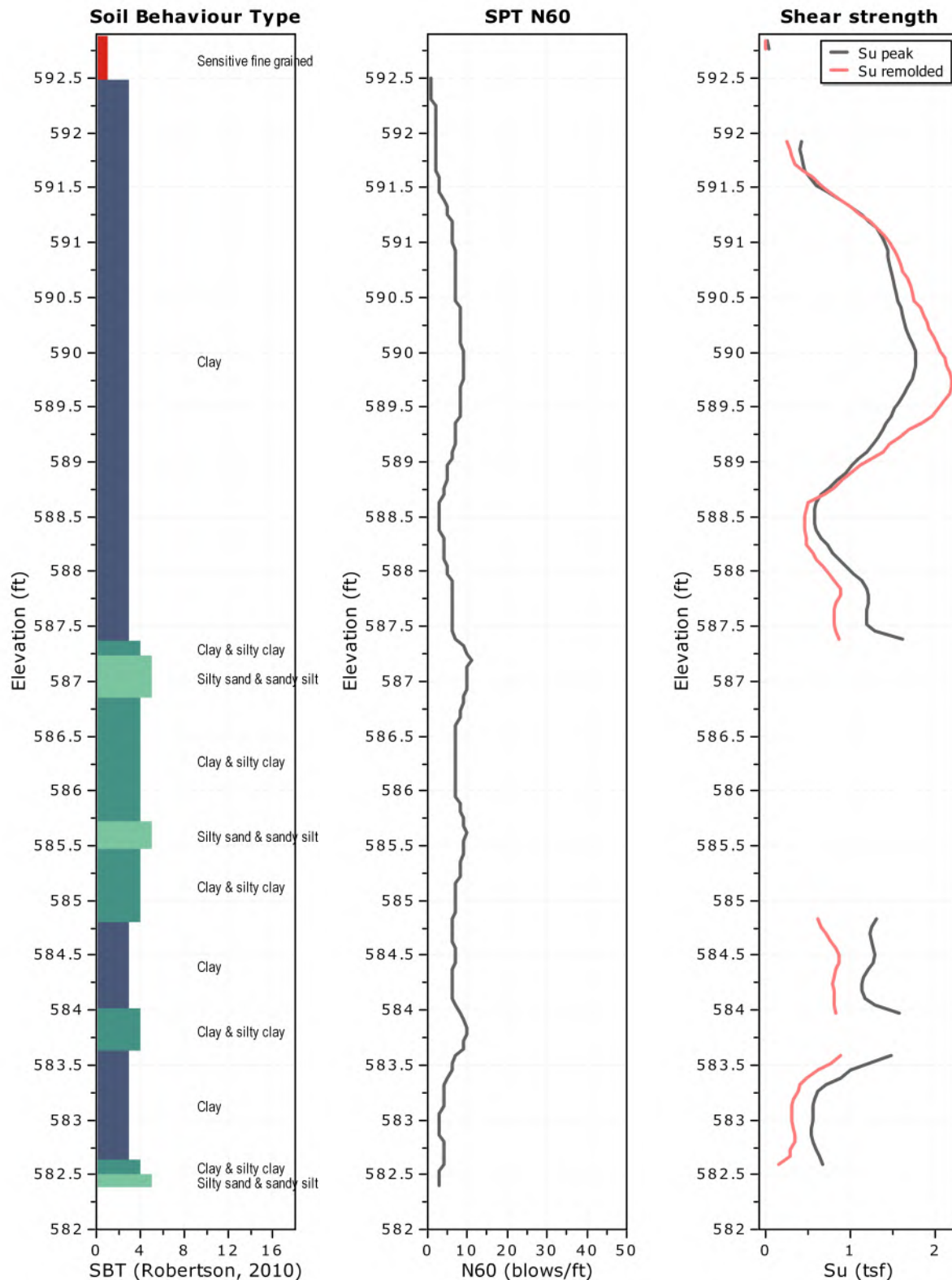
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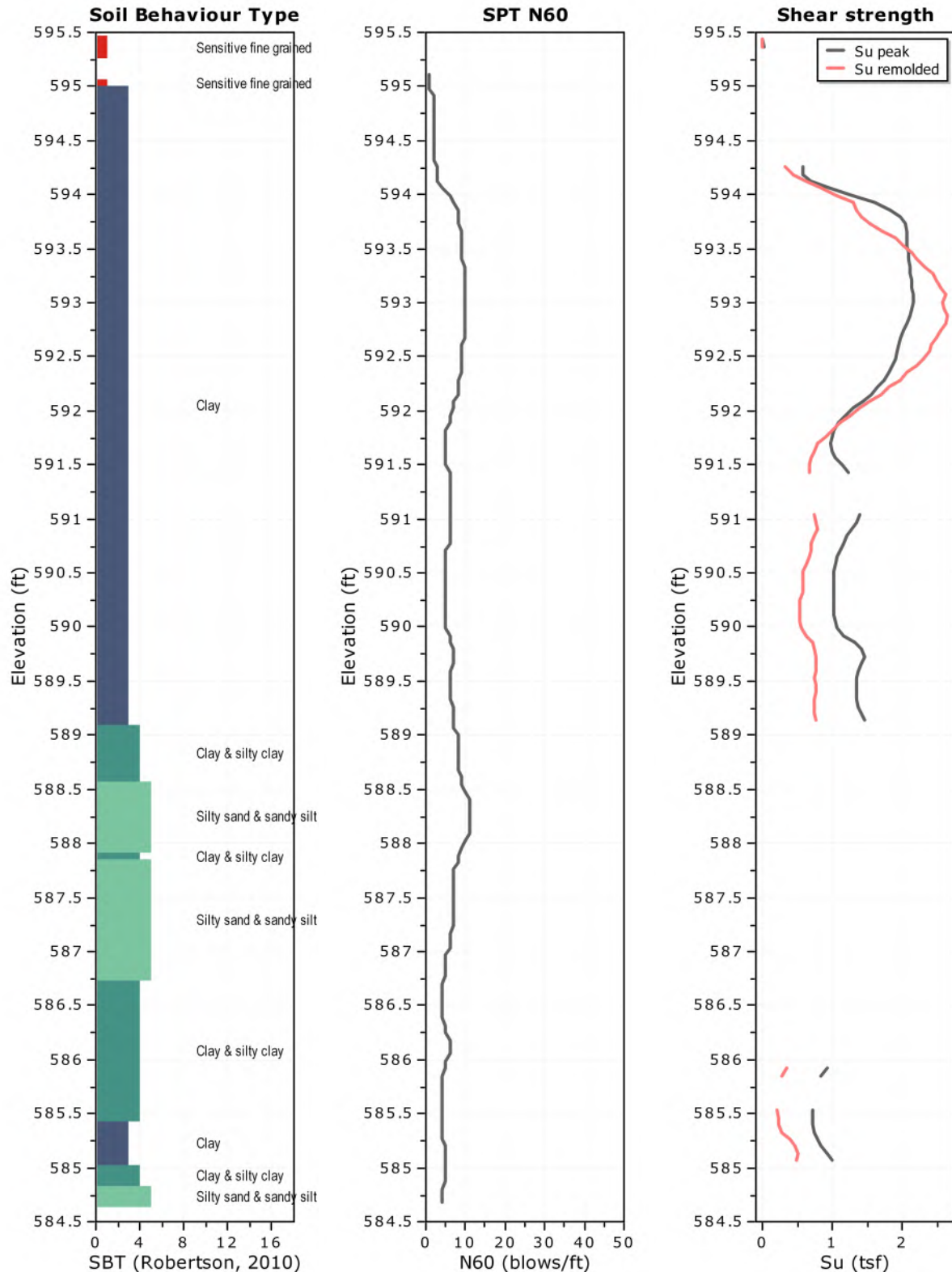
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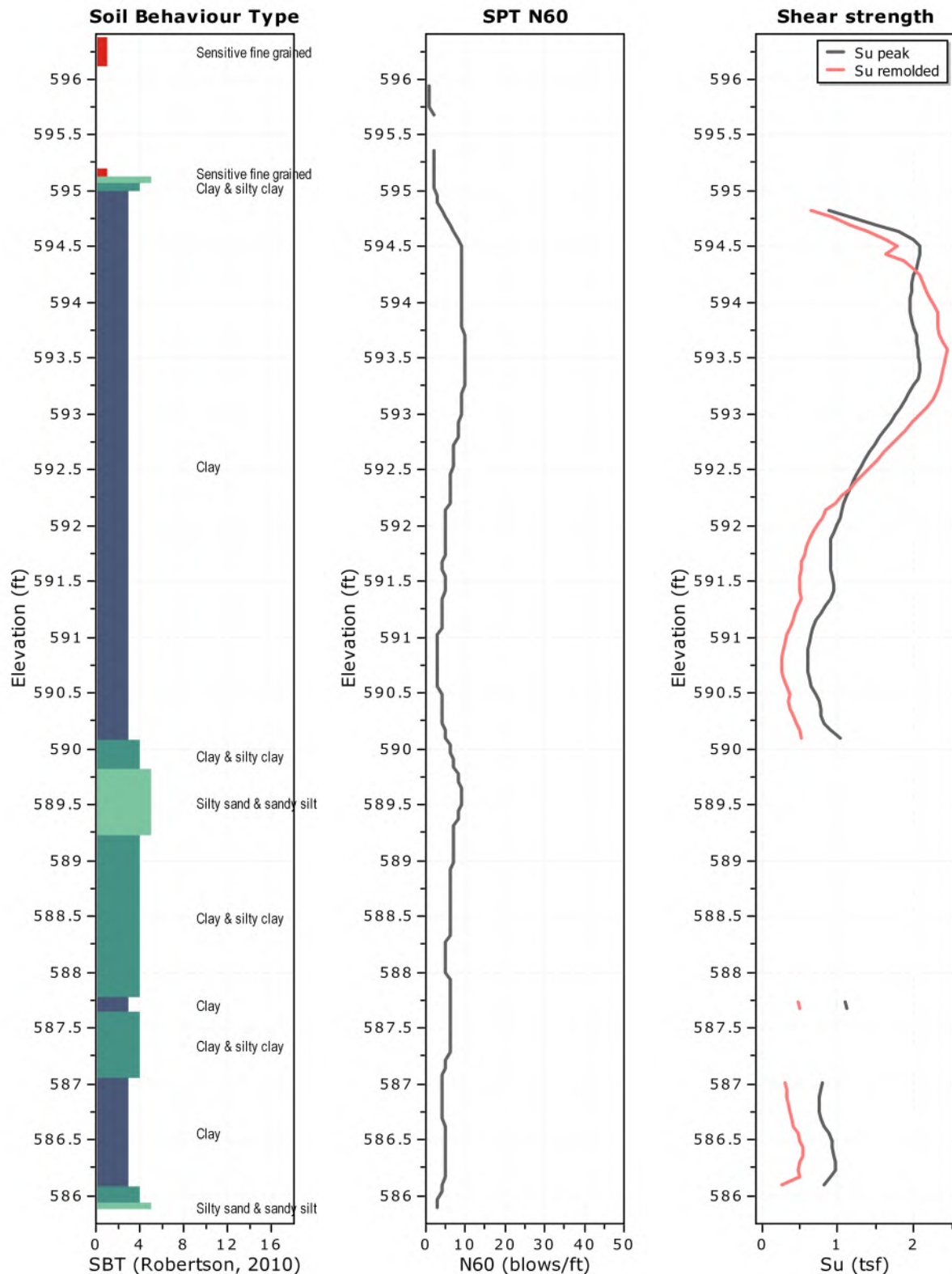
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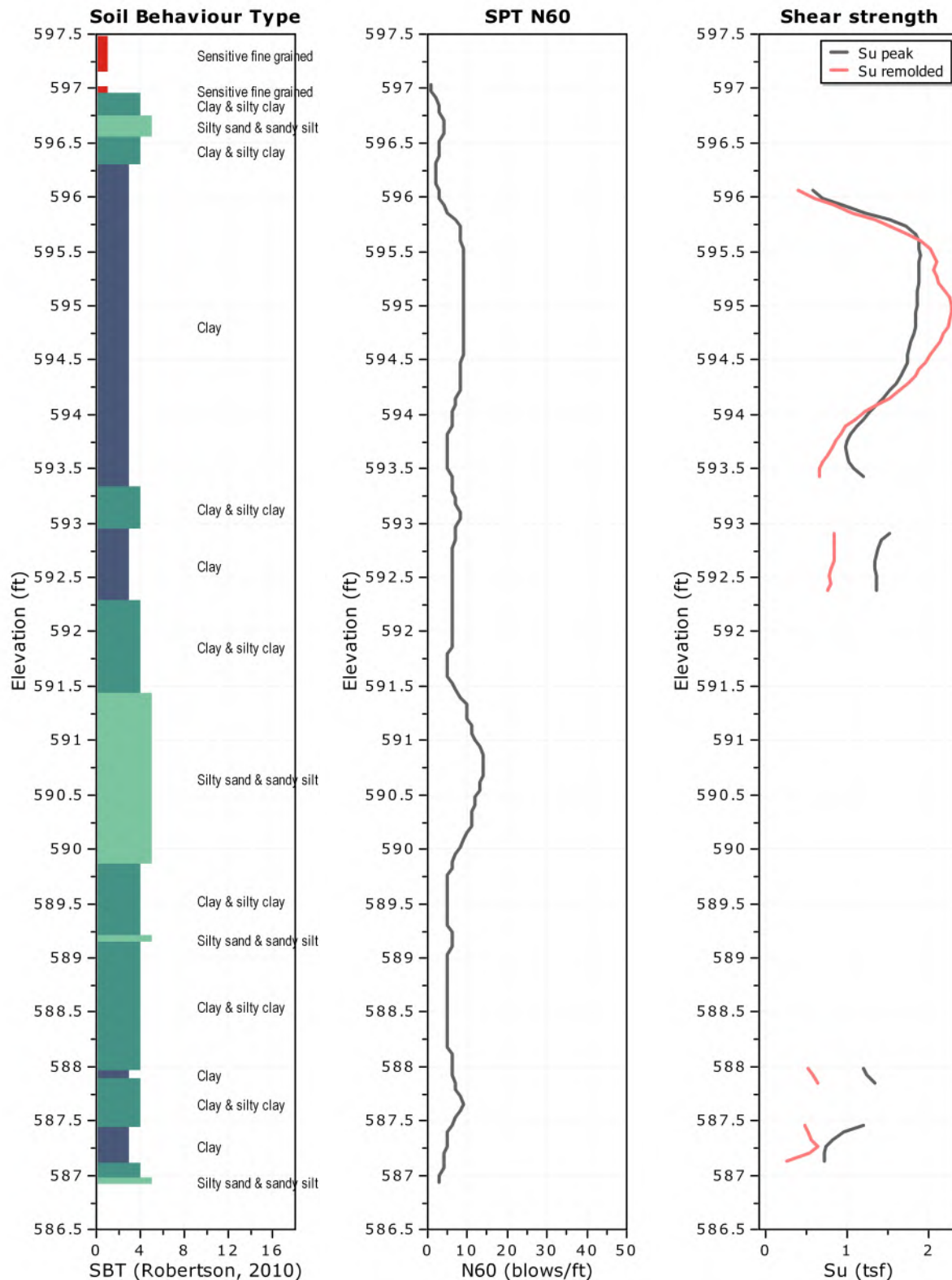
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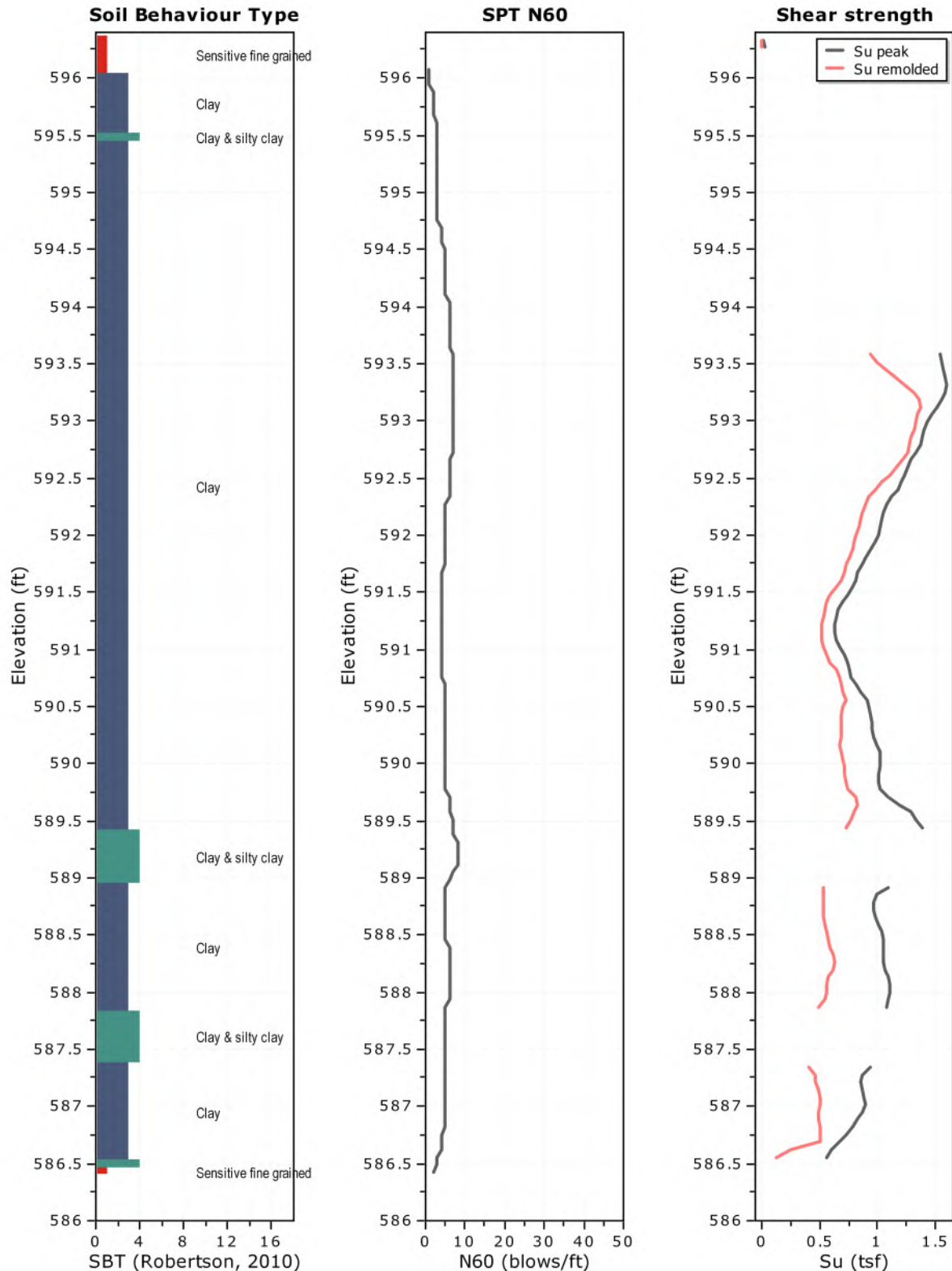
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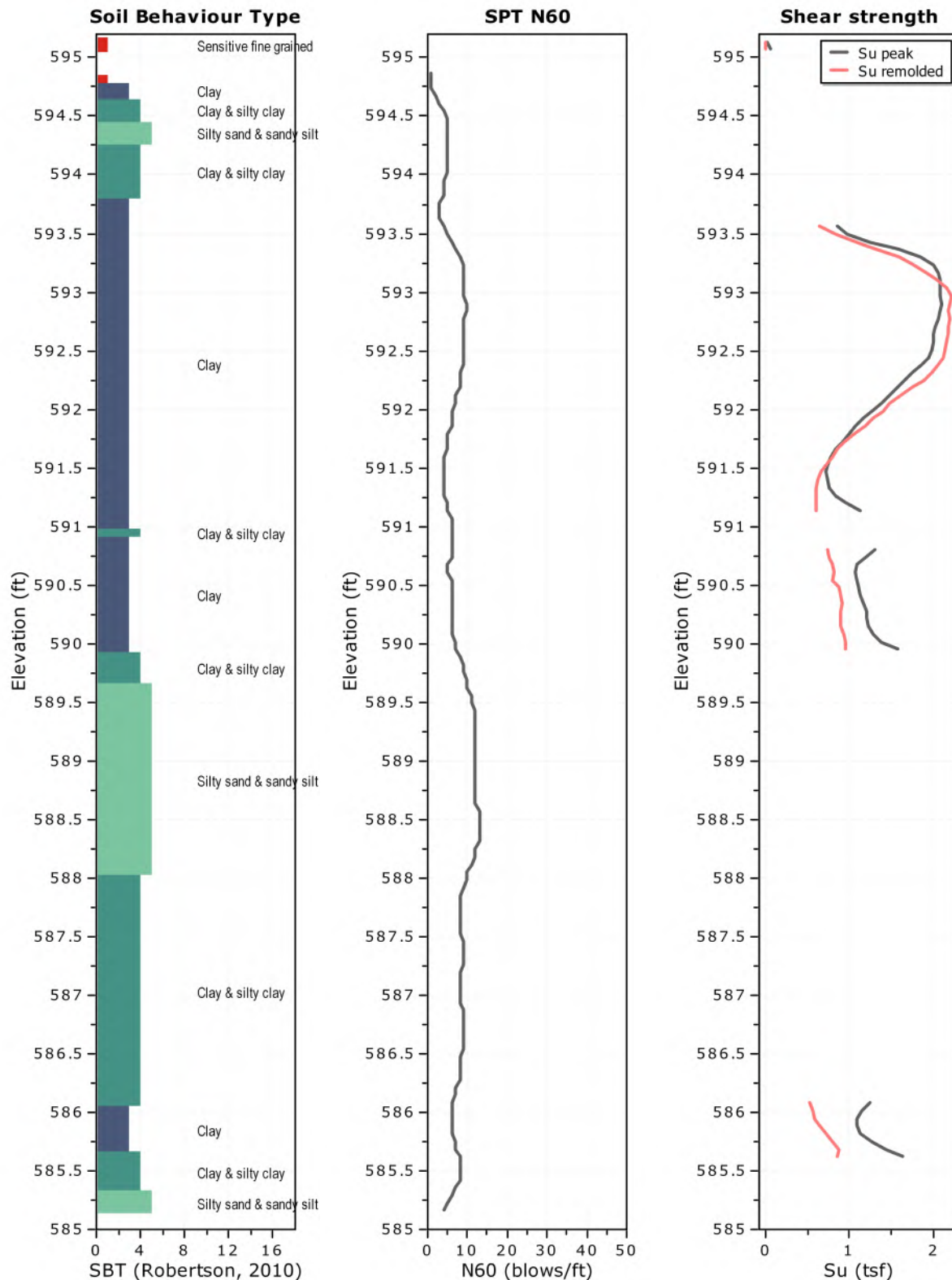
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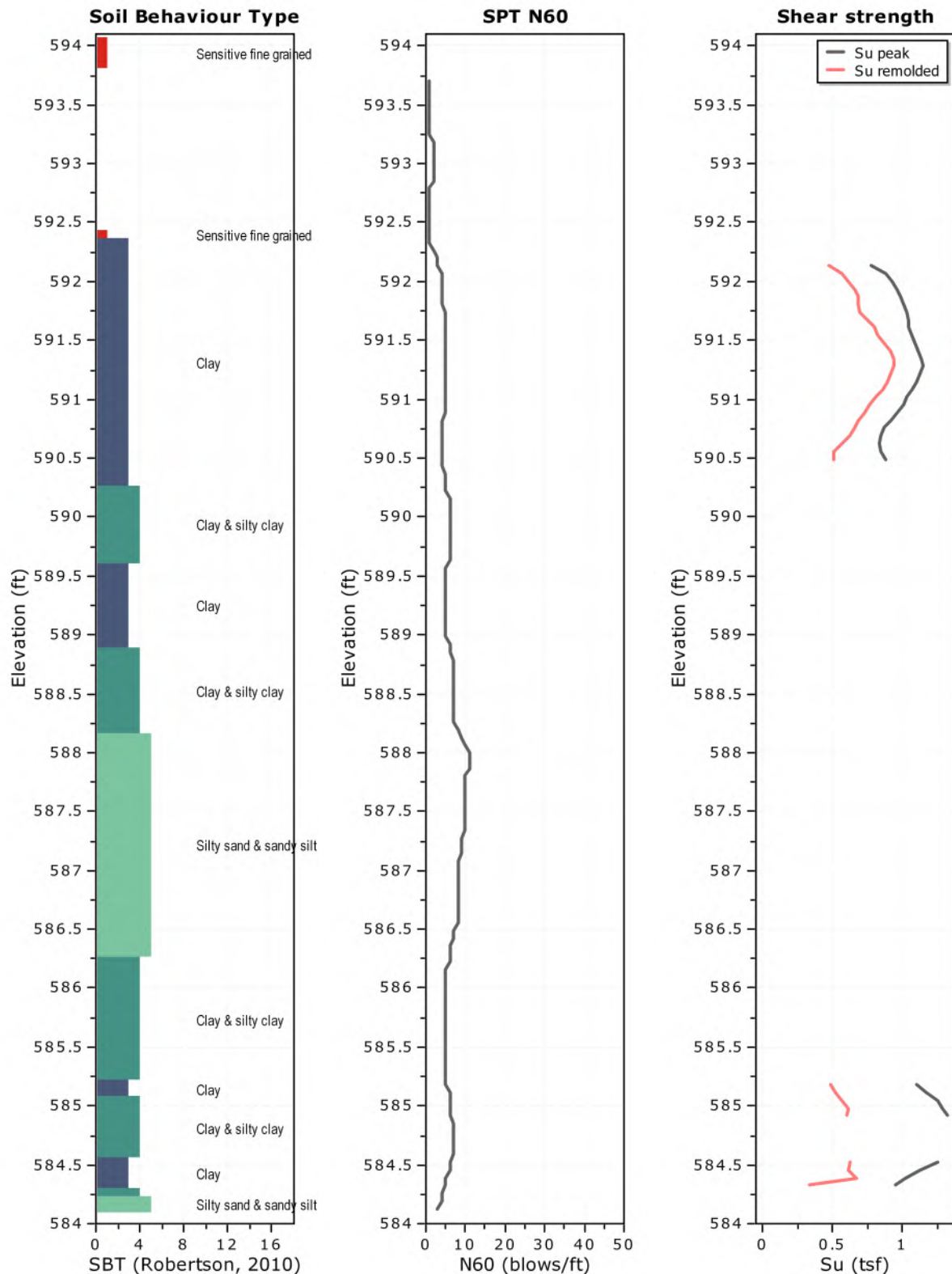
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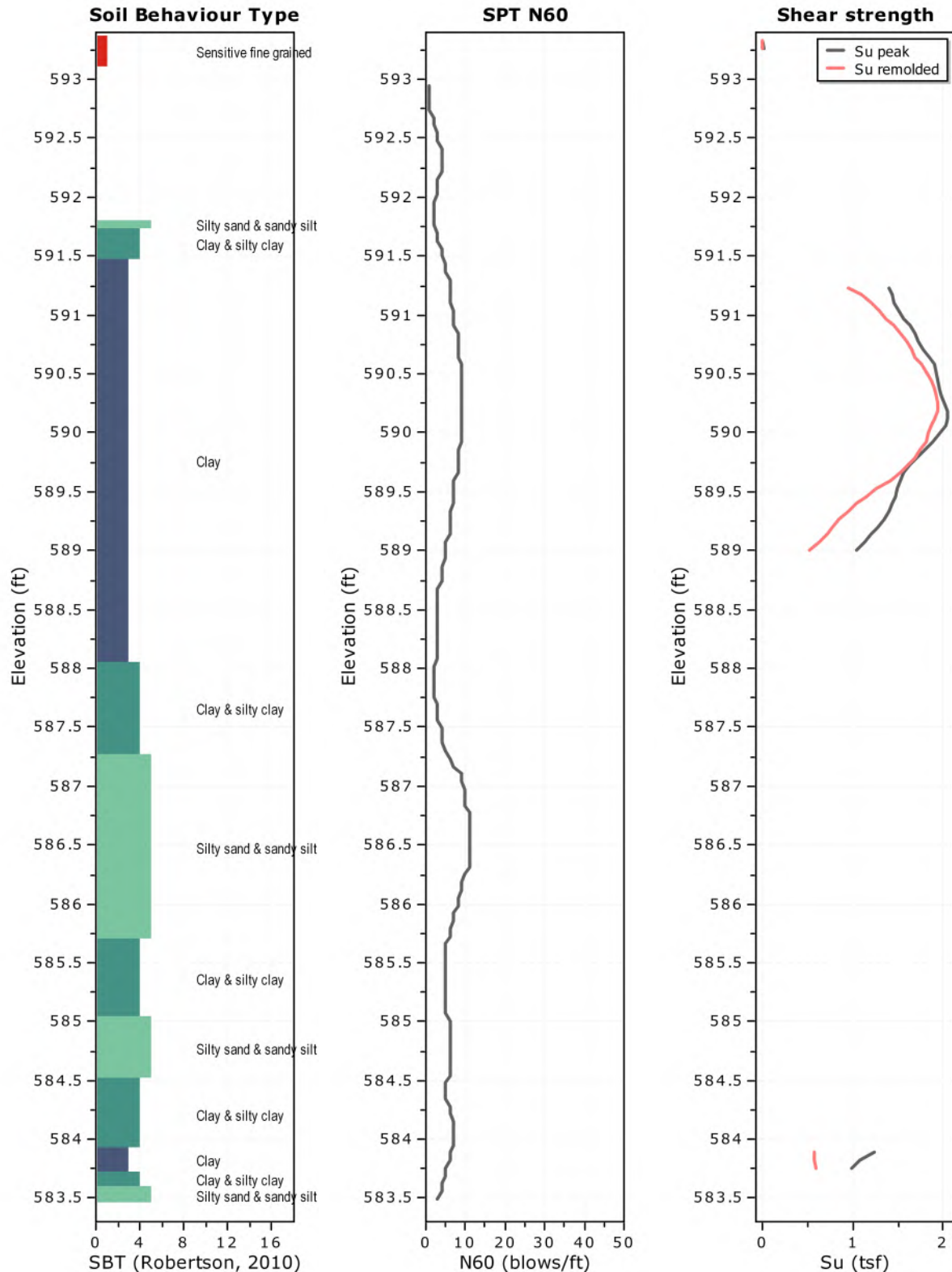


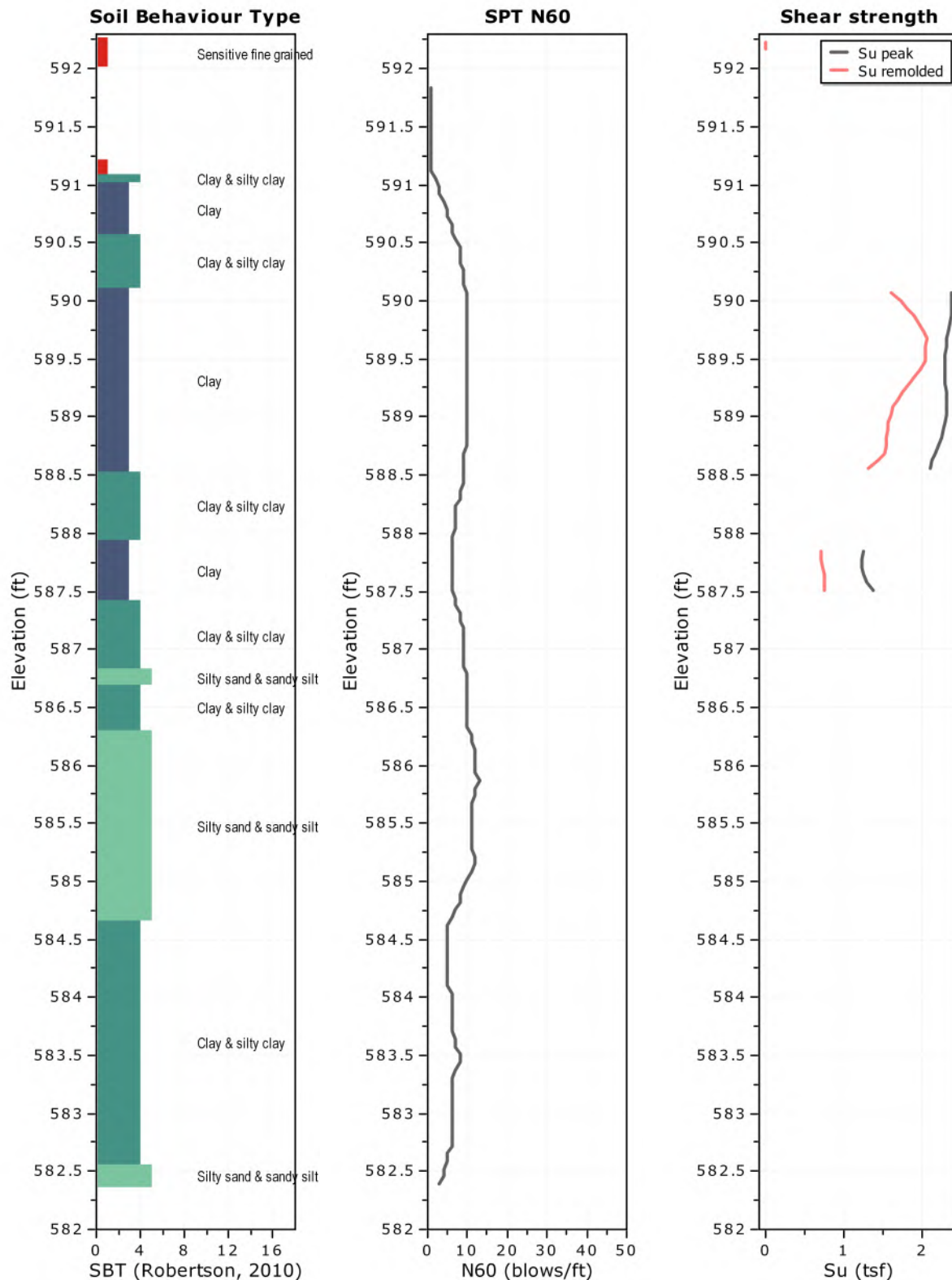
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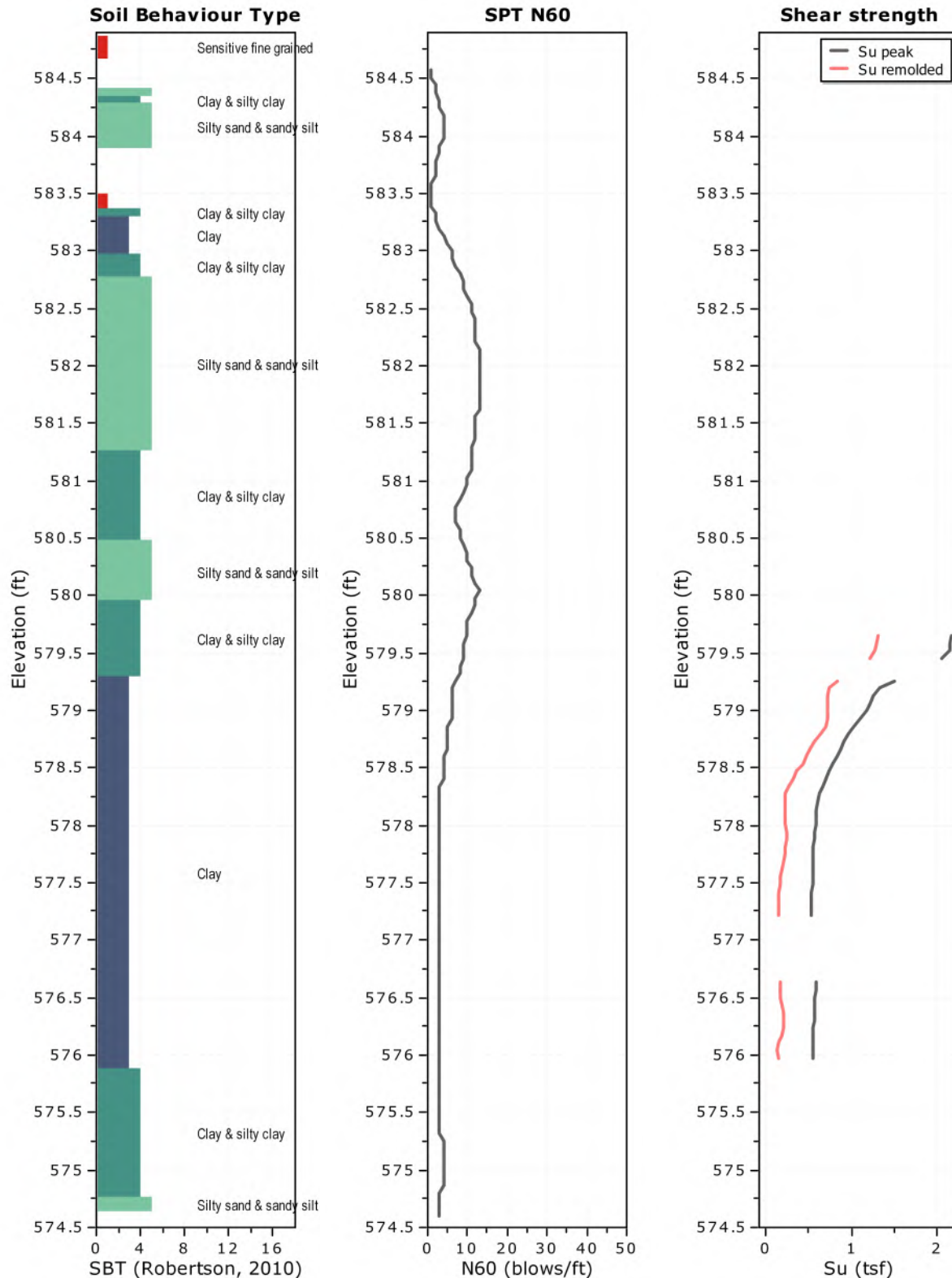


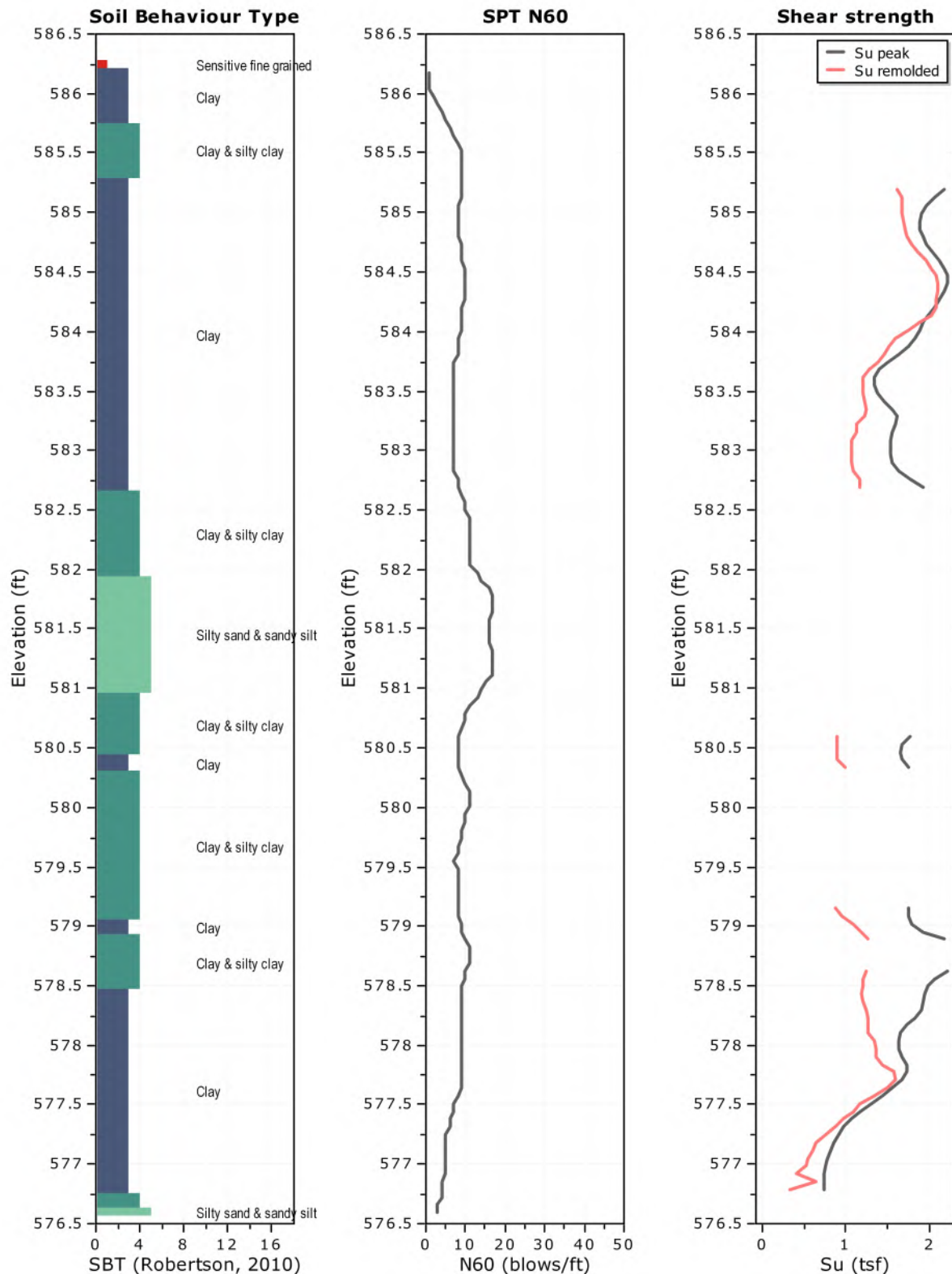




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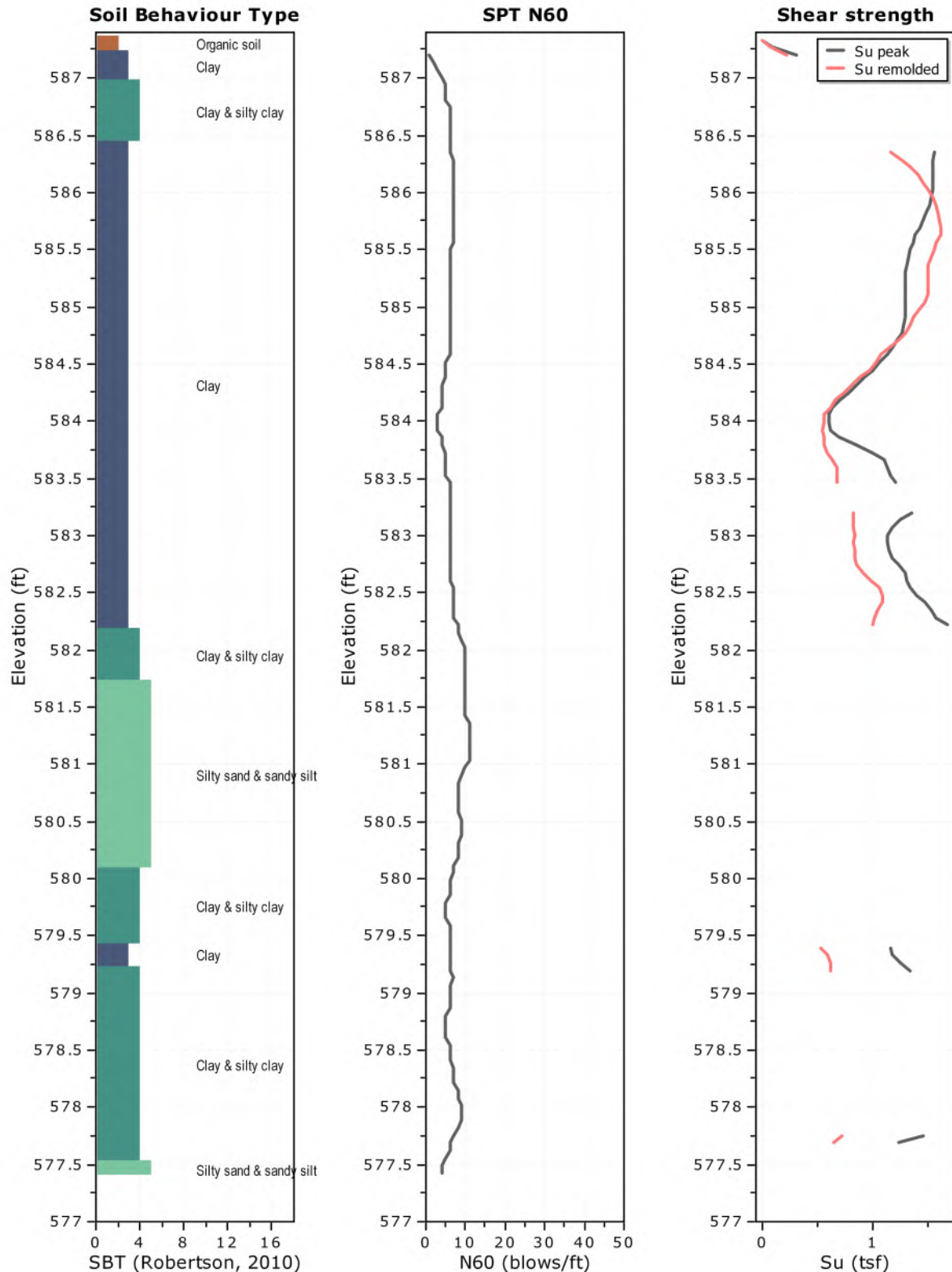
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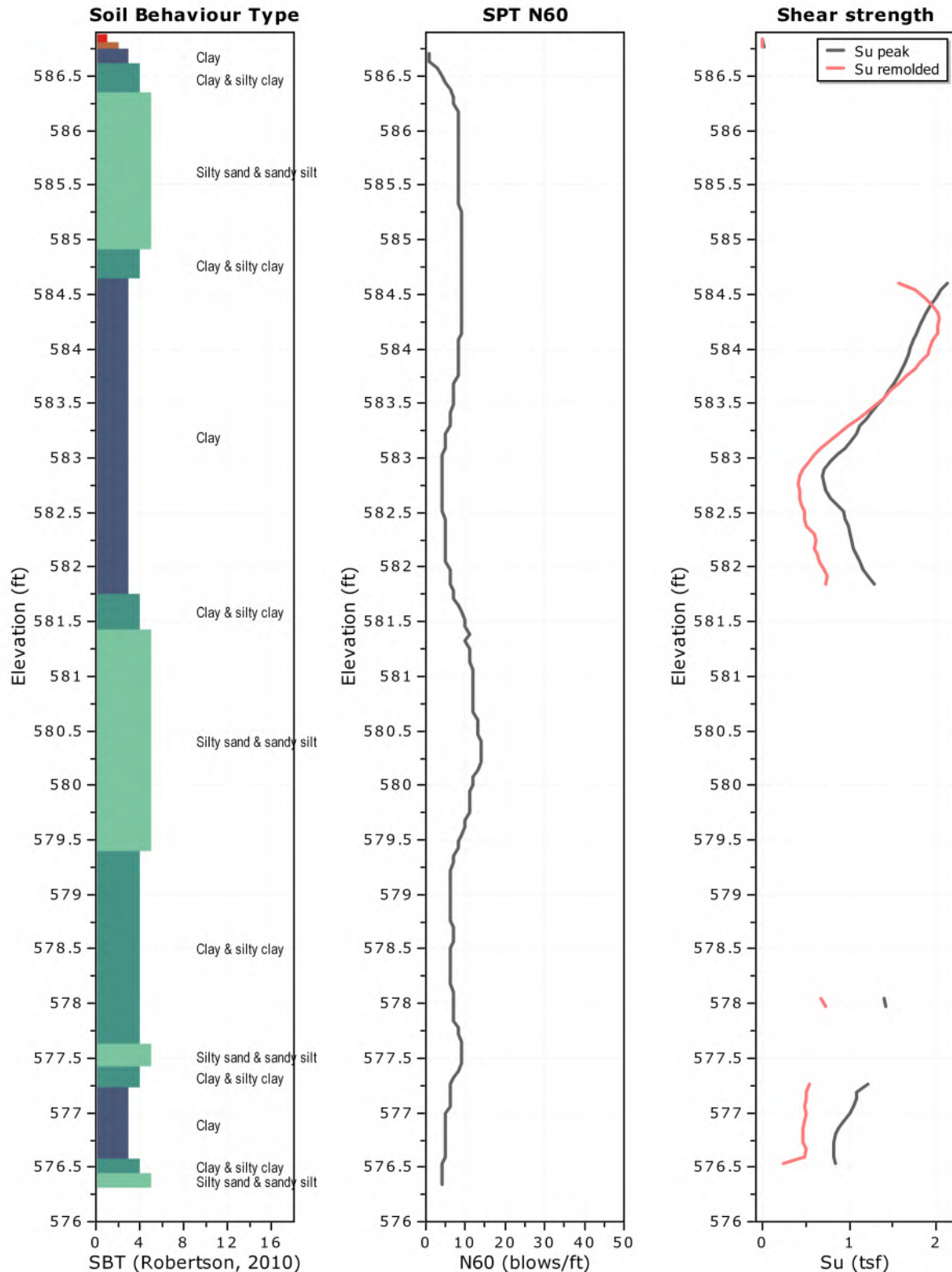
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Location: Springfield, Illinois



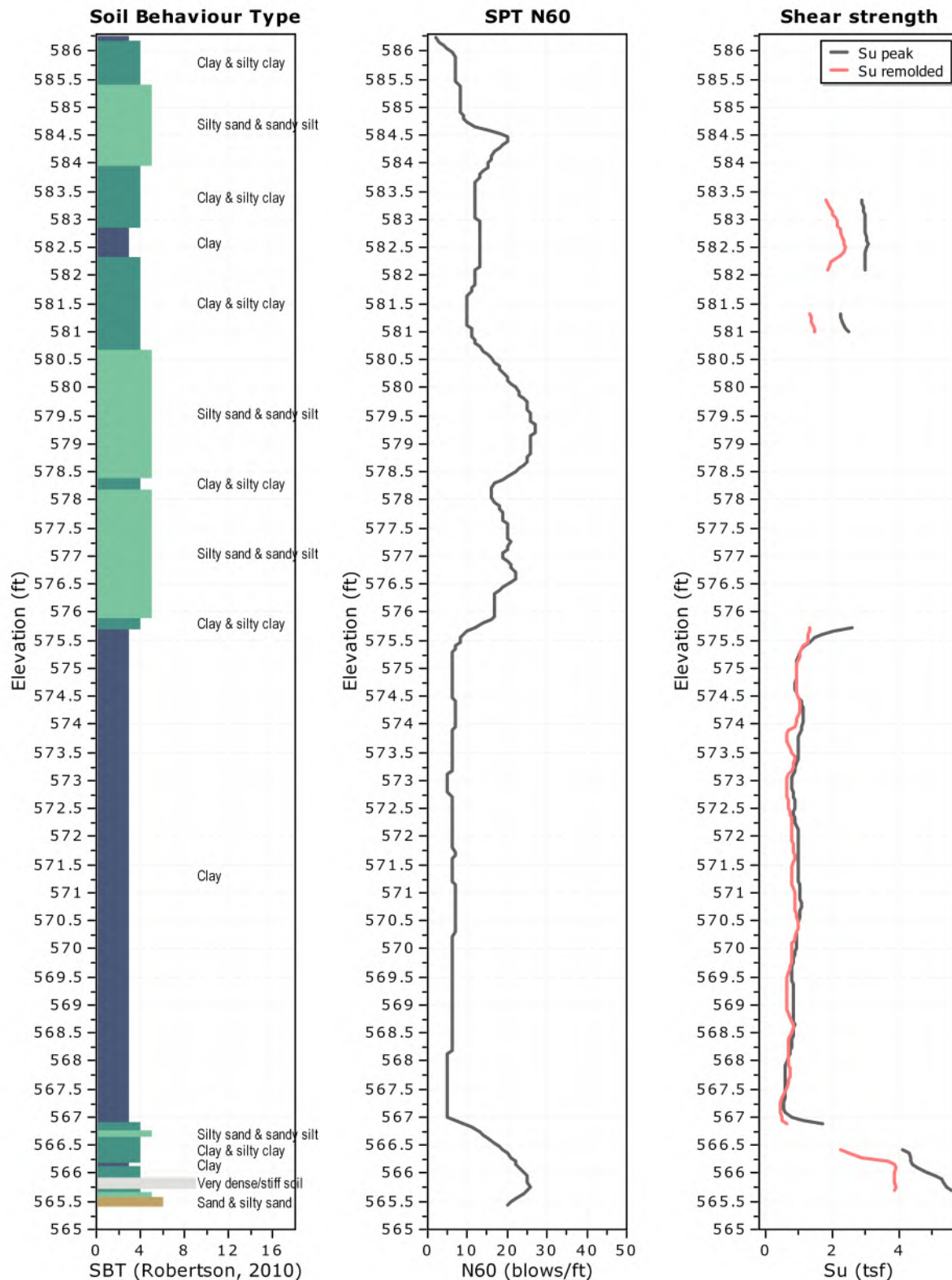
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Location: Springfield, Illinois



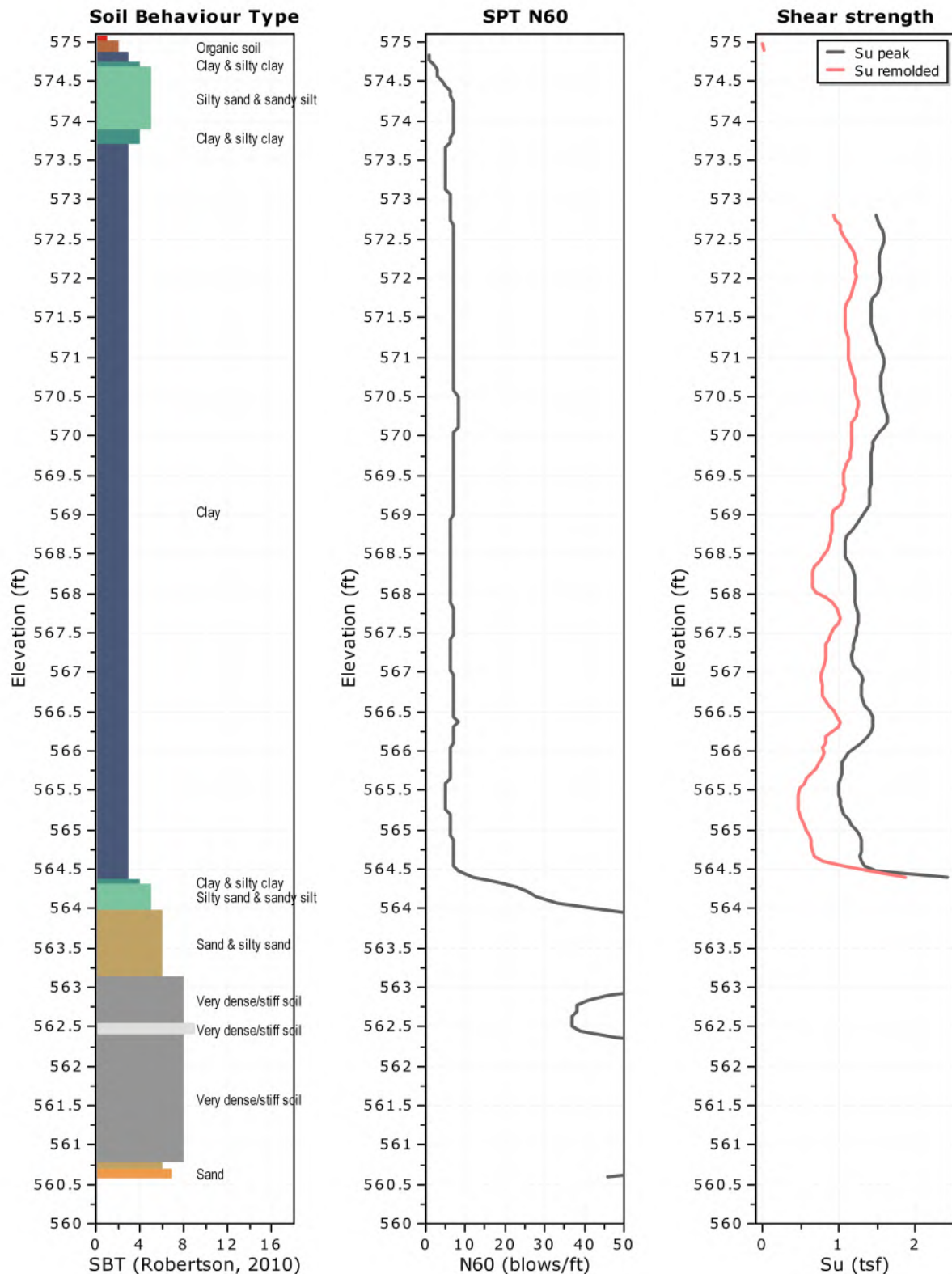
Project: G20.160 IDOT WO 3 RGR with Seeco

Location: Springfield, Illinois



Project: G20.160 IDOT WO 3 RGR with Seeco

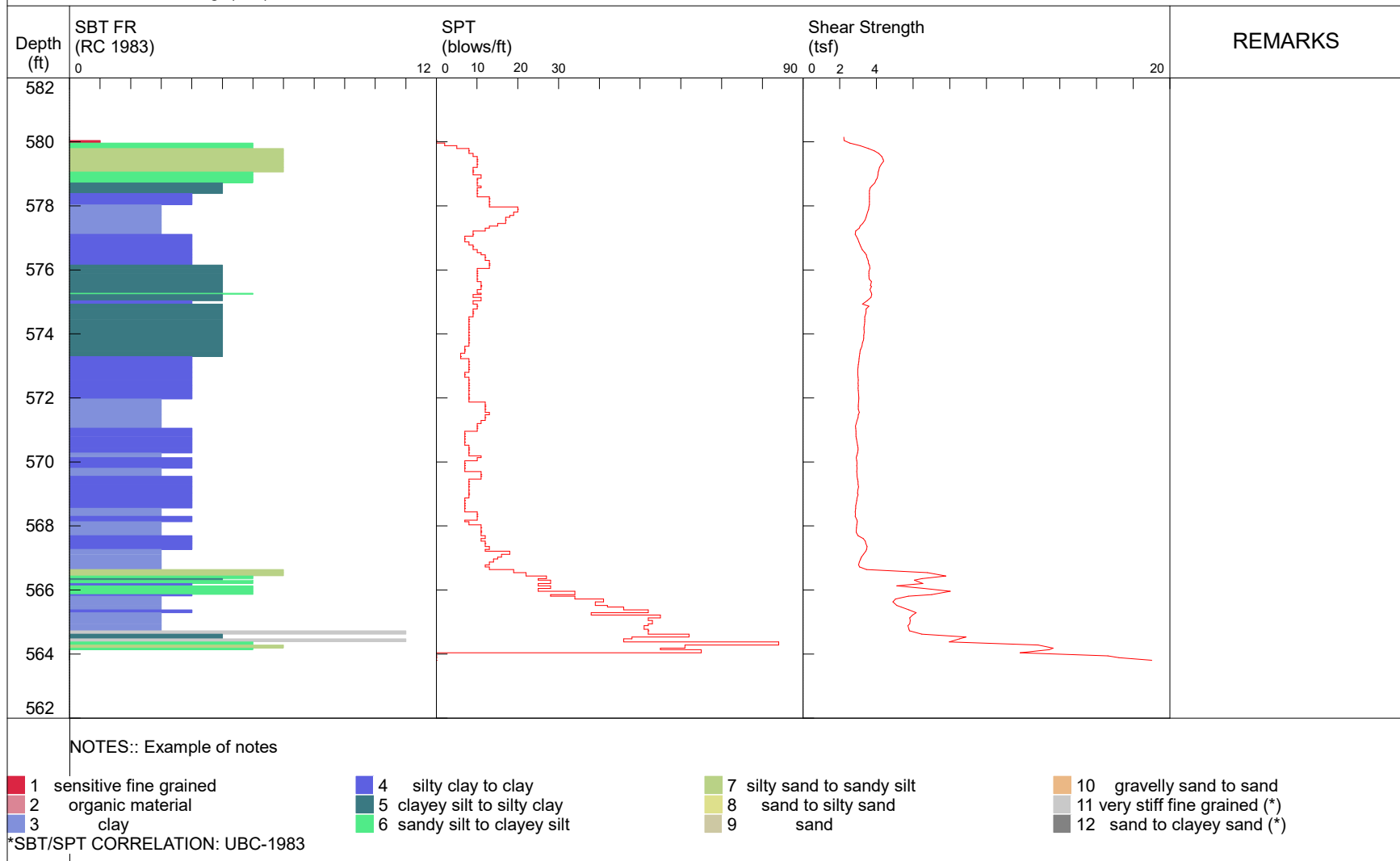
Location: Springfield, Illinois



NW-2

TOTAL DEPTH: 18.35 ft
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 SOUNDING
 COMPANY: Illinois DOT
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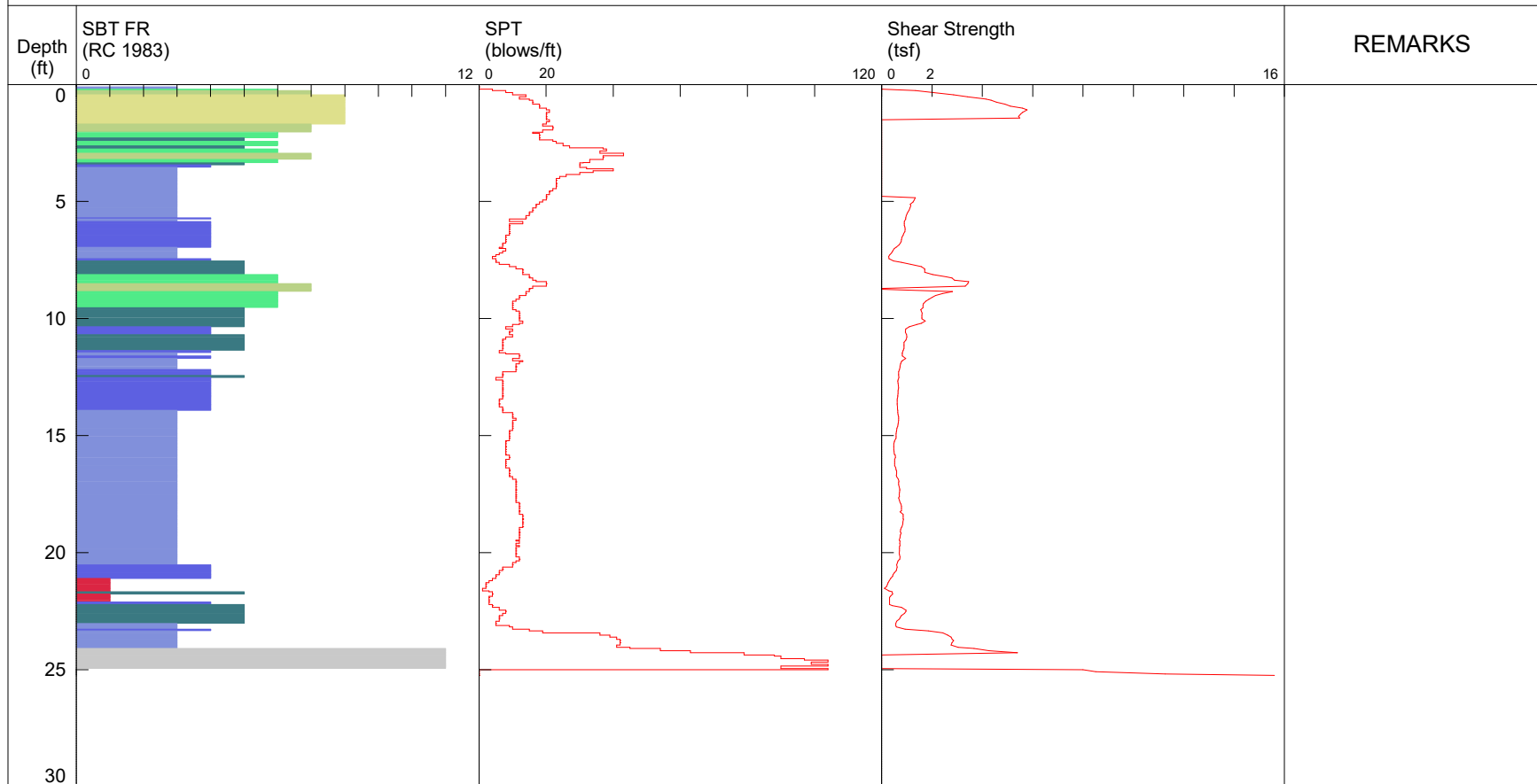
PROBE ID: 4644.186XX
 TEST ID: NW-2
 PROJECT: Contract 92621
 LOCATION: Sta. 848+00 60' LT



NW-3

TOTAL DEPTH: 25 ft
 SITE: il97nw
 SOUNDING
 COMPANY: Illinois DOT
 FILENAME: NW-3(001).DAT

PROBE ID: 4644.186XX TEST
 ID: NW-3
 PROJECT: Contract 92621
 LOCATION: Sta 857+00 85' LT



NOTES:: Example of notes

- | | | | |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay | 7 silty sand to sandy silt | 10 gravelly sand to sand |
| 2 organic material | 5 clayey silt to silty clay | 8 sand to silty sand | 11 very stiff fine grained (*) |
| 3 clay | 6 sandy silt to clayey silt | 9 sand | 12 sand to clayey sand (*) |

*SBT/SPT CORRELATION: UBC-1983

ILLINOIS DEPARTMENT OF TRANSPORTATION
Soil Survey Borings

ROUTE FAP 34 (IL 97)
SECTION S(X)&W(X,TS)
COUNTY Sangamon

PROJECT D96-501-95
Checked By M. Metcalf

B-1 (10)			Date 07/14/98 Logged By M. Tappan
Sta 10+200 O/S 1 m Right		Groundwater _____ m at _____ <u>Plugged</u> m	
Qu W kPa %	m	Ground Surface 175.34 m	
135 16 S-12	0.3	Light Reddish Brown Moist SILTY CLAY LOAM CLASSIFICATION # 1	
50 22 S-10	0.9		
190 19 P	1.2	Grey and Brown Moist V. Weathered CLAY LOAM (Till) CLASSIFICATION # 2	
95 19 B	2.1		
70 18 B	2.7		
	3.0	Boring Completed	
	3.3		
	3.6		

B-2 (9)			Date 07/14/98 Logged By M. Tappan
Sta 10+300 O/S 10 m Right		Groundwater _____ m at _____ <u>Plugged</u> m	
Qu W kPa %	m	Ground Surface 174.08 m	
115 28 S-12	0.3	Brown and Grey Moist SILTY CLAY LOAM (Fill) CLASSIFICATION # 3	
115 22 B	0.9		
135 25 B	1.2	Brown and Grey Moist CLAY LOAM (Till) Refer Class # 2	
145 16 S-13	2.1		
165 15 B	2.7		
	3.0	Boring Completed	
	3.3		
	3.6		

B-3 (12)			Date 07/14/98 Logged By M. Tappan
Sta 10+385 ✓ O/S 10 m Right			Groundwater _____ m at <u>Plugged</u> m
Qu kPa	W %	m	Ground Surface 178.27 m
75	26	0.0	Brown and Grey Moist SILTY CLAY (Fill) CLASSIFICATION # 4
S-12		0.3	
		0.6	
115	26	0.9	Light Tan and Grey Moist SILT CLASSIFICATION # 5
S-12		1.2	
		1.5	
65	24	1.8	Light Greyish Brown Moist SILTY CLAY LOAM CLASSIFICATION # 6
S-13		2.1	
		2.4	
10	26	2.7	Boring Completed
P		3.0	
		3.3	
105	22	3.6	
B			

B-4 (12)			Date 07/14/98 Logged By M. Tappan
Sta 10+500 ✓ O/S 10 m Right			Groundwater _____ m at <u>Plugged</u> m
Qu kPa	W %	m	Ground Surface 178.28 m
65	29	0.0	Grey and Brown Moist SILTY CLAY OPTIMUM # 7
B		0.3	
		0.6	
105	26	0.9	Light Brown and Grey Moist SILT OPTIMUM # 8
S-11		1.2	
		1.5	
20	24	1.8	Brown Moist SILTY CLAY Refer Class # 6
B		2.1	
		2.4	
10	28	2.7	Boring Completed
B		3.0	
		3.3	
60	24	3.6	
P			

B-5 (9)			Date 07/14/98 Logged By M. Tappan
Sta 10+600 ✓ O/S 2 m Right			Groundwater _____ m at 24 Hrs <u>Plugged</u> m
Qu kPa	W %	m	Ground Surface 179.09 m
50	24	0.0	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 9
P		0.3	
		0.6	
40	29	0.9	Brown and Grey Moist SILTY CLAY Refer Class # 10
S-10		1.2	
		1.5	
65	38	1.8	Light Brown and Grey Moist SILT Refer Class # 11
S-12		2.1	
		2.4	
75	23	2.7	Boring Completed
S-11		3.0	
		3.3	
50	26	3.6	
P			

B-6 (9)			Date 07/14/98 Logged By M. Tappan
Sta 10+700 ✓ O/S 10 m Right			Groundwater _____ m at 24 Hrs <u>Plugged</u> m
Qu kPa	W %	m	Ground Surface 179.15 m
75	22	0.0	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 9
S-11		0.3	
		0.6	
95	28	0.9	Brown and Grey Moist SILTY CLAY Refer Class # 10
S-14		1.2	
		1.5	
75	25	1.8	Light Brown and Grey Moist SILT Refer Class # 11
B		2.1	
		2.4	
65	23	2.7	Boring Completed
B		3.0	
		3.3	
10	25	3.6	
B			

B-7 (9)		Date 07/14/98 Logged By M. Tappan	
Sta 10+800 ✓ O/S 20 m Left		Groundwater _____ m at 24 Hrs <u>Plugged</u> m	
Qu kPa	W %	m	Ground Surface 179.18 m
105	25	0.0	
S-14		0.3	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 9
		0.6	Brown and Dark Grey Moist
85	32	0.9	SILTY CLAY Refer Class # 10
S-15		1.2	Grey and Brown
75	31	1.5	Light Brown and Grey Moist
B		1.8	SILT Refer Class # 11
40	25	2.1	
B		2.4	
40	28	2.7	Boring Complete
P		3.0	
		3.3	
		3.6	

B-8 (9)		Date 07/14/98 Logged By M. Tappan	
Sta 10+900 ✓ O/S 29 m Left		Groundwater _____ m at 24 Hrs <u>Plugged</u> m	
Qu kPa	W %	m	Ground Surface 179.18 m
125	23	0.0	
S-10		0.3	V. Dark Grey Moist SILTY CLAY LOAM CLASSIFICATION # 9
		0.6	Grey and Brown Moist
95	32	0.9	SILTY CLAY CLASSIFICATION # 10
S-15		1.2	
65	28	1.5	Light Brown and Grey Moist
B		1.8	SILT CLASSIFICATION # 11
95	25	2.1	
P		2.4	
50	32	2.7	Boring Completed
B		3.0	
		3.3	
		3.6	

B-9 (9)		Date 07/14/98 Logged By M. Tappan	
Sta 11+000 ✓ O/S 10 m Left		Groundwater _____ m at 24 Hrs <u>Plugged</u> m	
Qu kPa	W %	m	Ground Surface 178.88 m
40	31	0.0	
B		0.3	Brown and Grey Moist SILTY CLAY CLASSIFICATION # 12
		0.6	
50	27	0.9	Brown and Grey Moist SILTY CLAY CLASSIFICATION # 13
B		1.2	
10	29	1.5	
B		1.8	
145	27	2.1	
P		2.4	Brownish Grey Moist SILTY CLAY LOAM CLASSIFICATION # 14
95	23	2.7	Boring Completed
B		3.0	
		3.3	
		3.6	

B-10 () ✓		Date 06/26/98 Logged By M. Tappan	
Sta 11+100 O/S 10 m Right		Groundwater at 96 Hrs <u>178.31</u> m	
Qu kPa	W %	m	Ground Surface 178.61 m
40	31	0.0	
S-10		0.3	Brown and Grey Moist SILTY CLAY Refer Class # 16
		0.6	
30	25	0.9	Light Brown and Grey Moist SILT Refer Class # 17
B		1.2	
50	33	1.5	
B		1.8	
165	23	2.1	
B		2.4	V. Moist
95	23	2.7	
P		3.0	Boring Completed
		3.3	
		3.6	

B-11 () ✓		Date 06/26/98 Logged By M. Tappan	
Sta 11+200 O/S 5 m Left		Groundwater at <u>Plugged</u> m	
Qu kPa	W %	m	Ground Surface 178.68 m
95	23	0.0	
S-13		0.3	Dark Brownish Grey Moist SILTY CLAY LOAM Refer Class # 15
		0.6	
75	26	0.9	Brown and Grey Moist SILTY CLAY Refer Class # 16
B		1.2	
65	26	1.5	
B		1.8	
30	32	2.1	Light Brown and Grey V. Moist SILT Refer Class # 17
P		2.4	
75	27	2.7	
P		3.0	Boring Completed
		3.3	
		3.6	

B-12 () ✓		Date 06/26/98 Logged By M. Tappan	
Sta 11+300 O/S 10 m Right		Groundwater at 96 Hrs <u>179.46</u> m	
Qu kPa	W %	m	Ground Surface 180.56 m
50	19	0.0	
S-10		0.3	Dark Brownish Grey Moist SILTY CLAY LOAM Refer Class # 15
		0.6	
50	30	0.9	Brown and Grey Moist SILTY CLAY Refer Class # 16
S-12		1.2	
40	32	1.5	
B		1.8	Light Brown and Grey V. Moist SILT Refer Class # 17
30	27	2.1	
P		2.4	
40	26	2.7	
P		3.0	Boring Completed
		3.3	
		3.6	

B-13 () ✓		Date 06/26/98 Logged By M. Tappan	
Sta 11+400 O/S 10 m Left		Groundwater at 96 Hrs <u>179.98</u> m	
Qu kPa	W %	m	Ground Surface 180.78 m
50	31	0.0	
S-13		0.3	V. Dark Grey Moist SILTY CLAY LOAM CLASS # 15
		0.6	Brown and Grey Moist SILTY CLAY CLASS # 16
85	28	0.9	
S-14		1.2	Light Brown
65	30	1.5	
B		1.8	Light Brown and Grey V. Moist SILT CLASS # 17
50	27	2.1	
B		2.4	
40	26	2.7	
P		3.0	Boring Completed
		3.3	
		3.6	

B-14 ()		Date 06/26/98 Logged By M. Tappan	
Sta 11+500 ✓ O/S 10 m Right		Groundwater at 96 Hrs <u>180.30</u> m	
Qu kPa	W %	m	Ground Surface 181.20 m
30	24	0.0	
S-12		0.3	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 18
		0.6	
115	28	0.9	Brown and Grey Moist SILTY CLAY Refer Class # 19
S-14		1.2	
20	30	1.5	
B		1.8	Light Brown and Grey V. Moist SILT Refer Class # 20
		2.1	
75	25	2.4	
B		2.7	
10	29	3.0	Boring Completed
P		3.3	
		3.6	

B-15 ()		Date 06/26/98 Logged By M. Tappan	
Sta 11+600 ✓ O/S 10 m Left		Groundwater at 96 Hrs <u>180.60</u> m	
Qu kPa	W %	m	Ground Surface 181.20 m
60	29	0.0	
S-13		0.3	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 18
		0.6	
95	28	0.9	Brown and Grey Moist SILTY CLAY Refer Class # 19
B		1.2	
30	29	1.5	Light Brown and Grey V. Moist SILT Refer Class # 20
B		1.8	
75	24	2.1	
S-15		2.4	
		2.7	
75	26	3.0	Boring Completed
S-15		3.3	
		3.6	

B-16 ()		Date 06/26/98 Logged By M. Tappan	
Sta 11+700 ✓ O/S 10 m Right		Groundwater at 96 Hrs <u>180.65</u> m	
Qu kPa	W %	m	Ground Surface 181.55 m
40	27	0.0	
S-11		0.3	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 18
		0.6	
65	28	0.9	Brown and Grey Moist SILTY CLAY Refer Class # 19
B		1.2	
20	30	1.5	Light Brown and Grey V. Moist SILT Refer Class # 20
B		1.8	
20	24	2.1	
B		2.4	
20	26	2.7	Boring Completed
B		3.0	
		3.3	
		3.6	

B-17 ()		Date 06/26/98 Logged By M. Tappan	
Sta 11+800 ✓ O/S 10 m Left		Groundwater at 96 Hrs <u>180.68</u> m	
Qu kPa	W %	m	Ground Surface 181.58 m
75	22	0.0	
S-10		0.3	V. Dark Grey Moist SILTY CLAY LOAM CLASS # 18
		0.6	Light Brown Moist SILTY CLAY CLASS # 19
65	31	0.9	
S-14		1.2	Light Brown and Grey Mottled Moist SILT CLASS # 20
		1.5	
95	24	1.8	
P		2.1	
75	28	2.4	
P		2.7	Boring Completed
		3.0	
		3.3	
		3.6	

B-18 ()				Date 06/26/98
Logged By M. Tappan				
Sta 11+900		Groundwater		
O/S 10 m Right		at 96 Hrs		180.91 m
Qu	W	m	Ground Surface 181.71 m	
kPa	%	0.0		
75	25	0.3	V. Dark Grey	
S-11		0.6	Moist SILTY CLAY LOAM	
		0.9	Refer Class # 22	
10	28	1.2	Brown and Grey	
P		1.5	Moist	
		1.8	SILTY CLAY LOAM	
20	29	2.1	Refer Class # 23	
B		2.4	V. Moist	
		2.7	Light Brown and Grey	
		3.0	V. Moist SILTY CLAY LOAM	
75	25	3.3	Refer Class # 21	
B		3.6	Light Brown and Grey	
			Wet	
50	29		SILT	
P			Refer Class # 24	
			Boring Completed	

B-19 ()				Date 06/26/98
Logged By M. Tappan				
Sta 12+000		Groundwater		
O/S 10 m Left		at 96 Hrs		181.15 m
Qu	W	m	Ground Surface 182.05 m	
kPa	%	0.0		
50	25	0.3	V. Dark Grey	
S-10		0.6	Moist SILTY CLAY	
		0.9	Refer Class # 22	
115	31	1.2	Brown and Grey	
B		1.5	Moist	
		1.8	SILTY CLAY	
60	31	2.1	Refer Class # 23	
B		2.4	Light Brown and Grey V. Moist	
		2.7	SILT LOAM	
30	26	3.0	CLASS # 21	
P		3.3	Light Brown and Grey	
		3.6	Wet	
20	28		SILT	
P			Refer Class # 24	
			Boring Completed	

B-20 ()				Date 06/26/98
Logged By M. Tappan				
Sta 12+100		Groundwater		
O/S 10 m Right		at 96 Hrs		181.35 m
Qu	W	m	Ground Surface 182.15 m	
kPa	%	0.0		
60	24	0.3	V. Dark Grey	
S-12		0.6	Moist	
		0.9	SILTY CLAY LOAM	
105	28	1.2	Refer Class # 22	
B		1.5	Brown and Grey	
30	29	1.8	Moist	
P		2.1	SILTY CLAY LOAM	
		2.4	Refer Class # 23	
10	28	2.7	Light Brown and Grey	
P		3.0	Wet	
		3.3	SILT	
40	30	3.6	Refer Class # 24	
P			Boring Completed	

B-21 ()				Date 06/26/98
Logged By M. Tappan				
Sta 12+200		Groundwater		
O/S 10 m Left		at 96 Hrs		181.26 m
Qu	W	m	Ground Surface 182.16 m	
kPa	%	0.0		
40	20	0.3	V. Dark Grey	
S-11		0.6	Moist SILTY CLAY LOAM	
		0.9	CLASS # 22	
60	26	1.2	Brown and Grey	
S-13		1.5	Moist	
		1.8	SILTY CLAY LOAM	
105	30	2.1	CLASS # 23	
B		2.4	Light Brown and Grey	
		2.7	Wet	
50	38	3.0	SILT	
P		3.3	CLASS # 24	
30	28	3.6	Boring Completed	
P				

ILLINOIS DEPARTMENT OF TRANSPORTATION
Soil Survey Borings

ROUTE FAP 34 (IL 97)
SECTION S(X)&W(X,TS)
COUNTY Sangamon

PROJECT D96-501-95
Checked By M. Metcalf

B-22 (9)		Date 06/26/98 Logged By M. Tappan	
Sta 12+300 S 10 m Right		Groundwater _____ m at 96 Hrs <u>181.3</u> m	
Qu	W	m	Ground Surface 181.60 m
kPa	%		
60	28	0.0	V. Dark Grey Moist SILTY CLAY
8		0.3	Refer Class # 26
		0.6	Brown and Grey Mottled
50	32		Moist
8		0.9	SILTY CLAY
		1.2	Refer Class # 27
40	26		
8		1.5	
		1.8	Light Brown and Grey
30	26		V. Moist
8		2.1	SILT
		2.4	Refer Class # 25
20	26		
8		2.7	
		3.0	Boring Completed
		3.3	
		3.6	

B-23 (9) Date 06/26/98
Logged By M. Tappan

Sta 12+400 ✓
O/S 10 m Left

Groundwater at 96 Hrs 1 m
180.7 m

Qu kPa	W %	m	
		0.0	Ground Surface 181.25 m
85	25	0.3	V. Dark Grey Moist SILTY CLAY Refer Class # 26
B		0.6	Brown and Grey Mottled Moist
95	30	0.9	SILTY CLAY Refer Class # 27
S-14		1.2	
40	32	1.5	
B		1.8	Light Brown and Grey V. Moist
20	29	2.1	SILT Refer Class # 25
B		2.4	
10	29	2.7	
B		3.0	Boring Completed
		3.3	
		3.6	

B-24 (9) Date 06/26/98
Logged By M. Tappan

Sta 12+500 ✓
O/S 10 m Right

Groundwater at 96 Hrs 1 m
180.6 m

Qu kPa	W %	m	
		0.0	Ground Surface 180.86 m
75	24	0.3	V. Dark Grey Moist SILTY CLAY Refer Class # 26
S-9		0.6	
85	28	0.9	Grey and Brown Moist SILTY CLAY Refer Class # 27
S-15		1.2	
50	29	1.5	
B		1.8	Light Brown and Grey V. Moist SILT CLASSIFICATION # 25
65	27	2.1	
B		2.4	
40	26	2.7	
S-11		3.0	Boring Complete
		3.3	
		3.6	

B-25 (9) Date 06/26/98
Logged By M. Tappan

Sta 12+600 ✓
O/S 10 m Left

Groundwater at 96 Hrs 1 m
179.7 m

Qu kPa	W %	m	
		0.0	Ground Surface 180.58 m
105	22	0.3	V. Dark Grey Moist SILTY CLAY CLASSIFICATION # 26
S-10		0.6	
75	30	0.9	Grey and Brown Moist SILTY CLAY CLASSIFICATION # 27
S-12		1.2	
40	28	1.5	Light Tannish Grey V. Moist SILTY CLAY LOAM CLASSIFICATION # 28
B		1.8	
10	29	2.1	Tan and Grey -Free Water Wet SILT CLASSIFICATION # 29
P		2.4	
10	28	2.7	
P		3.0	Boring Completed
		3.3	
		3.6	

B-26 (9) Date 07/01/98
Logged By M. Tappan

Sta 12+700 ✓
O/S 6 m Left

Groundwater at 24 Hrs 1 m
179.6 m

Qu kPa	W %	m	
		0.0	Ground Surface 180.67 m
50	27	0.3	V. Dark Grey Moist SILTY CLAY LOAM CLASSIFICATION # 30
S-8		0.6	
60	28	0.9	Brown and Grey Moist SILTY CLAY CLASSIFICATION # 31
S-10		1.2	
50	30	1.5	
S-11		1.8	Light Brown and Grey Moist SILT CLASSIFICATION # 32
50	27	2.1	
P		2.4	
95	26	2.7	
P		3.0	Boring Completed
		3.3	
		3.6	

B-27 (9)		Date 07/01/98 Logged By M. Tappan	
Sta 12+800 O/S 10 m Right		Groundwater at 24 Hrs <u>179.4</u> m	
Qu kPa	W %	m	Ground Surface 180.62 m
50	24	0.0	
S-10		0.3	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 30
		6.6	Brown and Grey
65	27	0.9	Moist SILTY CLAY Refer Class # 31
S-10		1.2	
50	28	1.5	Light Brown and Grey Moist SILT Refer Class # 32
P		1.8	
50	27	2.1	V. Moist
P		2.4	
75	27	2.7	
B		3.0	Boring Completed
		3.3	
		3.6	

B-28 (9)		Date 07/01/98 Logged By M. Tappan	
Sta 12+900 O/S 10 m Left		Groundwater at 24 Hrs <u>180.0</u> m	
Qu kPa	W %	m	Ground Surface 181.15 m
115	24	0.0	
S-10		0.3	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 30
		0.6	
60	29	0.9	Brown and Grey Moist SILTY CLAY Refer Class # 31
S-9		1.2	
40	29	1.5	Light Brown and Grey V. Moist SILT Refer Class # 32
S-10		1.8	
40	27	2.1	
B		2.4	
65	26	2.7	
B		3.0	Boring Completed
		3.3	
		3.6	

B-29 (9)		Date 07/01/98 Logged By M. Tappan	
Sta 13+000 O/S 10 m Right		Groundwater at 24 Hrs <u>179.2</u> m	
Qu kPa	W %	m	Ground Surface 180.26 m
40	26	0.0	
S-12		0.3	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 30
		0.6	
50	29	0.9	Brown and Grey Moist SILTY CLAY Refer Class # 31
S-10		1.2	
40	32	1.5	Light Brown and Grey Moist SILT Refer Class # 32
S-12		1.8	
40	28	2.1	
B		2.4	
75	27	2.7	
S-14		3.0	Boring Completed
		3.3	
		3.6	

B-30 (9)		Date 07/01/98 Logged By M. Tappan	
Sta 13+100 O/S 10 m Left		Groundwater at 24 Hrs <u>179.5</u> m	
Qu kPa	W %	m	Ground Surface 180.39 m
50	26	0.0	
S-10		0.3	V. Dark Grey Moist SILTY CLAY CLASSIFICATION # 33
		0.6	
40	31	0.9	Brown and Grey Moist SILTY CLAY CLASSIFICATION # 34
S-10		1.2	
75	24	1.5	Brown and Grey Moist SILT LOAM CLASSIFICATION # 35
S-6		1.8	
95	27	2.1	
S-12		2.4	
95	26	2.7	
S-12		3.0	Boring Completed
		3.3	
		3.6	

B-31 (9)			Date 07/01/98 Logged By M. Tappan
Sta 13+200 O/S 10 m Right		Groundwater _____ m at 24 Hrs <u>179.7</u> m	
Qu kPa	W %	m	Ground Surface 180.61 m
50	30	0.0	
S-10		0.3	V. Dark Grey Moist SILTY CLAY Refer Class # 33
		0.6	Brown and Grey Moist
75	29	0.9	SILTY CLAY Refer Class # 34
S-7		1.2	
40	30	1.5	Light Brown and Grey
B		1.8	V. Moist
20	29	2.1	SILT LOAM Refer Class # 35
P		2.4	
50	29	2.7	
P		3.0	Boring Completed
		3.3	
		3.6	

B-32 (9)			Date 07/01/98 Logged By M. Tappan
Sta 13+300 O/S 10 m Right		Groundwater _____ m at 24 Hrs <u>179.7</u> m	
Qu kPa	W %	m	Ground Surface 180.62 m
60	30	0.0	
S-8		0.3	V. Dark Grey Moist SILTY CLAY Refer Class # 33
		0.6	Brown and Grey Moist SILTY CLAY Refer Class # 34
40	25	0.9	
S-8		1.2	Light Brown and Grey Moist
40	27	1.5	SILT LOAM Refer Class # 35
S-6		1.8	
115	25	2.1	
S-8		2.4	
145	26	2.7	
S-11		3.0	Boring Completed
		3.3	
		3.6	

B-33 (9)			Date 07/01/98 Logged By M. Tappan
Sta 13+400 O/S 10 m Right		Groundwater _____ m at 24 Hrs <u>179.7</u> m	
Qu kPa	W %	m	Ground Surface 180.86 m
40	28	0.0	
S-5		0.3	V. Dark Grey Moist SILTY CLAY Refer Class # 33
		0.6	Brown and Grey Moist
60	28	0.9	SILTY CLAY Refer Class # 34
S-8		1.2	
75	26	1.5	Light Brown and Grey Moist
B		1.8	SILT LOAM Refer Class # 35
40	26	2.1	
B		2.4	
60	28	2.7	
S-10		3.0	Boring Completed
		3.3	
		3.6	

B-34 (9)			Date 07/01/98 Logged By M. Tappan
Sta 13+500 O/S 10 m Left		Groundwater _____ m at <u>Plugged</u> m	
Qu kPa	W %	m	Ground Surface 181.03 m
50	25	0.0	
S-6		0.3	V. Dark Grey Moist SILTY CLAY Refer Class # 33
		0.6	Brown and Grey Moist
65	27	0.9	SILTY CLAY Refer Class # 34
S-12		1.2	
30	27	1.5	Light Brown and Grey Moist
S-10		1.8	SILT LOAM Refer Class # 35
65	24	2.1	
S-10		2.4	
95	24	2.7	
P		3.0	Boring Completed
		3.3	
		3.6	

B-35 (9)		Date 07/01/99 Logged By M. Tappan	
Sta 13+600 O/S 10 m Right		Groundwater _____ m at _____ <u>Plugged</u> m	
Qu kPa	W %	m	
50	25	0.0	Ground Surface 181.34 m
S-7		0.3	V. Dark Grey Moist SILTY CLAY LOAM CLASSIFICATION # 36
		0.6	Brown and Grey Moist
60	27	0.9	SILTY CLAY CLASSIFICATION # 37
S-11		1.2	
50	31	1.5	
B		1.8	Light Brown and Grey Moist
50	25	2.1	SILT CLASSIFICATION # 38
S-10		2.4	
75	26	2.7	
B		3.0	Boring Completed
		3.3	
		3.6	

B-36 (9)		Date 07/02/98 Logged By M. Tappan	
Sta 13+700 O/S 10 m Left		Groundwater _____ m at 96 Hrs <u>Plugged</u> m	
Qu kPa	W %	m	
50	21	0.0	Ground Surface 181.65 m
S-6		0.3	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 36
		0.6	Brown and Grey Moist
65	29	0.9	SILTY CLAY Refer Class # 37
S-10		1.2	
50	28	1.5	
S-12		1.8	Light Brown and Grey Moist
95	25	2.1	SILT Refer Class # 38
P		2.4	V. Moist
30	29	2.7	
B		3.0	Boring Completed
		3.3	
		3.6	

B-37 (9)		Date 07/02/98 Logged By M. Tappan	
Sta 13+800 O/S 10 m Right		Groundwater _____ m at 96 Hrs <u>Plugged</u> m	
Qu kPa	W %	m	
40	22	0.0	Ground Surface 181.43 m
S-5		0.3	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 36
		0.6	Brown and Grey Moist
40	30	0.9	SILTY CLAY Refer Class # 37
S-6		1.2	
30	30	1.5	
B		1.8	Tan and Grey V. Moist
40	27	2.1	SILT Refer Class # 38
B		2.4	
60	28	2.7	
B		3.0	Boring Completed
		3.3	
		3.6	

B-38 (9)		Date 07/02/98 Logged By M. Tappan	
Sta 13+900 O/S 10 m Left		Groundwater _____ m at 96 Hrs <u>180.5</u> m	
Qu kPa	W %	m	
40	22	0.0	Ground Surface 181.25 m
S-5		0.3	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 36
		0.6	Brown and Grey Moist
50	31	0.9	SILTY CLAY Refer Class # 37
S-5		1.2	
40	29	1.5	
S-12		1.8	Tan and Grey V. Moist
95	24	2.1	SILT Refer Class # 38
S-13		2.4	
145	25	2.7	
P		3.0	Boring Completed
		3.3	
		3.6	

ILLINOIS DEPARTMENT OF TRANSPORTATION
Soil Survey Borings

ROUTE FAP 34 (IL 97)
SECTION S(X)+W(X,TS)
COUNTY Sangamon

PROJECT D96-501-95

Checked By M. Metcalf

B-39 (9)		Date 07/02/98 Logged By M. Tappan	
Sta 14+00 O/S 10 m Right		Groundwater at 96 Hrs <u>179.9</u> m	
Qu kPa	W %	m	Ground Surface 180.75 m
50	26	0.0	
S-5		0.3	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 36
		0.6	Brown and Grey Moist
40	31	0.9	SILTY CLAY Refer Class # 37
S-10		1.2	
50	33	1.5	
B		1.8	Brown and Grey V. Moist SILT Refer Class # 38
95	26	2.1	
S-10		2.4	
105	31	2.7	
S-12		3.0	Boring Completed
		3.3	
		3.6	

B-40 (9)		Date 07/02/98 Logged By M. Tappan	
Sta 14+100 O/S 10 m Left		Groundwater at 96 Hrs <u>178.6</u> m	
Qu kPa	W %	m	Ground Surface 180.05 m
50	25	0.0	
S-6		0.3	V. Dark Grey Moist SILTY CLAY LOAM CLASSIFICATION # 39
		0.6	Brown and Grey Moist
60	28	0.9	SILTY CLAY CLASSIFICATION # 40
S-10		1.2	
50	29	1.5	
B		1.8	Tan and Grey Moist SILT CLASSIFICATION # 41
95	26	2.1	
S-10		2.4	
105	31	2.7	
S-12		3.0	Boring Completed
		3.3	
		3.6	

B-41 (9)		Date 07/02/98 Logged By M. Tappan	
Sta 14+200 O/S 10 m Right		Groundwater at 96 Hrs <u>178.4</u> m	
Qu kPa	W %	m	Ground Surface 179.85 m
95	21	0.0	
S-13		0.3	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 39
		0.6	Brown and Grey Moist
40	27	0.9	SILTY CLAY Refer Class # 40
S-10		1.2	
50	30	1.5	
B		1.8	Tan and Grey V. Moist SILT Refer Class # 41
10	29	2.1	
B		2.4	Tan and Grey V. Moist SILT LOAM CLASSIFICATION # 44
95	25	2.7	
P		3.0	Boring Completed
		3.3	
		3.6	

B-42 (9)		Date 07/02/98 Logged By M. Tappan	
Sta 14+300 O/S 10 m Left		Groundwater at <u>Plugged</u> m	
Qu kPa	W %	m	Ground Surface 179.46 m
65	24	0.0	
S-14		0.3	V. Dark Grey Moist SILTY CLAY LOAM Refer Class # 39
		0.6	Brown and Grey Moist SILTY CLAY Refer Class # 40
30	27	0.9	Brown and Grey Moist SILT Refer Class # 41
S-9		1.2	
75	31	1.5	
S-15		1.8	
105	27	2.1	
B		2.4	Grey V. Moist SILT LOAM Refer Class # 42
60	24	2.7	
P		3.0	Boring Completed
		3.3	
		3.6	

B- Bulge S- Shear P- Penetrometer E- Estimated

B-43 (9)		Date 07/02/98 Logged By M. Tappan	
Sta 14+400 O/S 10 m Right		Groundwater at 96 Hrs <u>180.0</u> m	
Qu kPa	W %	m	Ground Surface <u>180.88</u> m
50	22	0.0	V. Dark Grey Moist SILTY CLAY LOAM
S-14		0.3	Refer Class # 39
		0.6	Brown and Grey
40	27	0.9	Moist
S-12			SILTY CLAY
			Refer Class # 40
50	27	1.2	Tan and Grey
B		1.5	Moist
			SILT
			Refer Class # 41
40	27	1.8	
B		2.1	
		2.4	
200	24	2.7	
S-14			Boring Completed
		3.0	
		3.3	
		3.6	

B-44 (9)		Date 07/02/98 Logged By M. Tappan	
Sta 14+500 O/S 10 m Left		Groundwater at 96 Hrs <u>181.1</u> m	
Qu kPa	W %	m	Ground Surface <u>181.66</u> m
40	24	0.3	V. Dark Grey Moist SILTY CLAY LOAM
S-12			CLASSIFICATION # 43
		0.6	Brown and Grey
50	31	0.9	Moist
S-11			SILTY CLAY
			CLASSIFICATION # 44
30	28	1.2	Light Brown and Grey
P		1.5	V. Moist
			SILT
			CLASSIFICATION # 45
95	26	1.8	
P		2.1	
		2.4	
20	31	2.7	
P			Boring Completed
		3.0	
		3.3	
		3.6	

B-45 (9)		Date 07/02/98 Logged By M. Tappan	
Sta 14+600 O/S 10 m Right		Groundwater at 96 Hrs <u>181.8</u> m	
Qu kPa	W %	m	Ground Surface <u>182.43</u> m
20	25	0.3	V. Dark Grey Moist SILTY CLAY LOAM
S-8			Refer Class # 43
		0.6	Brown and Grey
60	25	0.9	Moist
S-13			SILTY CLAY
			Refer Class # 44
75	27	1.2	Light Brown and Grey
P		1.5	V. Moist
			SILT
			Refer Class # 45
50	25	1.8	
B		2.1	
		2.4	
10	25	2.7	
B			Boring Completed
		3.0	
		3.3	
		3.6	

B-46 (9)		Date 07/02/98 Logged By M. Tappan	
Sta 14+700 O/S 2 m Right		Groundwater at 96 Hrs <u>182.2</u> m	
Qu kPa	W %	m	Ground Surface <u>182.95</u> m
40	22	0.3	V. Dark Grey Moist
S-8			SILTY CLAY LOAM
			Refer Class # 43
65	30	0.6	Brown and Grey
S-11		0.9	Moist
			SILTY CLAY
			Refer Class # 44
50	30	1.2	
B		1.5	Brown and Grey
			V. Moist
10	30	1.8	SILT
P		2.1	Refer Class # 45
		2.4	
50	25	2.7	
P			Boring Completed
		3.0	
		3.3	
		3.6	

Appendix A.6 Soil Testing

State Job Number D-96-501-95 Route FAP 67 (IL 97) Project _____

Section S(X) 8 W(X,TS) City or County Sangamon

Sample No.	1	2	3	4	5
Lab No.	98172	98173	98174	98175	98176
Station	10+200	10+200	10+300	10+385	10+385
Location	1 m Rt	1 m Rt	10 m Rt	10 m Rt	10 m Rt
Depth (Meters)	0 - 0.9	0.9-3.0	0-0.9	0-1.2	1.2-3.0
HRB Classification & Group Index	A-6(13)	A-6(8)	A-6(12)	A-7-6(24)	A-6(10)
Grain Size Classification	SiCL	CL	SiCL	SiC	Silt
Gradation - Passing 25.0 mm Sieve					
19.0 mm Sieve					
12.5 mm Sieve					
4.75 mm Sieve					
2.00 mm Sieve					
0.425 mm Sieve	98.04	90.78	98.06	99.66	99.68
0.150 mm Sieve	93.92	74.42	93.66	99.20	99.64
0.075mm Sieve	92.42	67.64	91.62	98.72	99.28
Sand	8.0	32.0	8.0	1.0	1.0
Silt	72.0	39.0	69.0	65.0	84.0
Clay	20.0	29.0	23.0	34.0	15.0
Liquid Limit	30.6	33.2	31.8	42.5	27.7
Plasticity Index	17.5	16.0	13.9	21.2	10.7
Illinois Bearing Ratio					
IBR Soaked Moisture					
Standard Dry Density AASHTO T99 kg/m ³					
Optimum Moisture %					

Remarks:

State Job Number D-96-501-95 Route FAP 67 (IL 97) Project _____

Section S(X) 8 W(X,TS) City or County Sangamon

Sample No.	6	7	8	9	10
Lab No.	98177	98181	98182	98178	98179
Station	10+385	10_500	10+500	10+900	10+900
Location	10 m Rt	10 m Rt	10 m Rt	29 m Lt	29 m Lt
Depth (Meters)	3.0-3.7	0-0.9	0.9-3.0	0-0.6	0.6-1.5
HRB Classification & Group Index	A-6(10)	A-7-6(25)	A-6(10)	A-6(17)	A-7-6(25)
Grain Size Classification	SiCL	SiC	Silt	SiCL	SiC
Gradation - Passing 25.0 mm Sieve					
19.0 mm Sieve					
12.5 mm Sieve					
4.75 mm Sieve					
2.00 mm Sieve					
0.425 mm Sieve	97.12	99.33	99.78	98.04	98.84
0.150 mm Sieve	92.82	98.73	99.68	96.16	98.28
0.075mm Sieve	90.26	98.29	99.54	95.0	97.84
Sand	10.0	2.0	1.0	5.0	2.0
Silt	65.0	61.0	81.0	68.0	63.0
Clay	25.0	37.0	18.0	27.0	35.0
Liquid Limit	30.6	48.2	28.2	39.2	46.9
Plasticity Index	13.3	23.6	11.0	17.0	22.1
Illinois Bearing Ratio					
IBR Soaked Moisture					
Standard Dry Density AASHTO T99 kg/m ³		1692	1772		
Optimum Moisture %		21.6	15.9		

Remarks:

State Job Number D-96-501-95 Route FAP 67 (IL 97) Project _____

Section S(X) 8 W(X,TS) City or County Sangamon

Sample No.	11	12	13	14	15
Lab No.	98180	98054	98055	98056	98050
Station	10+900	11+000	11+000	11+000	11+400
Location	29 m Lt	10 m Lt	10 m Lt	10 m Lt	10 m Lt
Depth (Meters)	1.5-2.7	0-0.8	0.8-2.4	2.4-2.7	0-0.3
HRB Classification & Group Index	A-6(12)	A-7-6(20)	A-4(6)	A-6(13)	A-6(26)
Grain Size Classification	Silt	SiC	SiC	SiCL	SiCL
Gradation - Passing 25.0 mm Sieve					
19.0 mm Sieve					
12.5 mm Sieve					
4.75 mm Sieve					
2.00 mm Sieve					
0.425 mm Sieve	99.82	99.78	99.64	98.98	98.54
0.150 mm Sieve	99.60	99.54	99.02	96.66	97.38
0.075mm Sieve	99.26	99.22	98.42	94.8	96.48
Sand	1.0	1.0	2.0	5.0	4.0
Silt	84.0	65.0	67.0	69.0	68.0
Clay	15.0	34.0	31.0	26.0	28.0
Liquid Limit	28.7	44.1	29.6	33.2	37.2
Plasticity Index	12.6	16.6	7.4	13.8	12.2
Illinois Bearing Ratio					
IBR Soaked Moisture					
Standard Dry Density AASHTO T99 kg/m ³					
Optimum Moisture %					

Remarks:

State Job Number D-96-501-95 Route FAP 67 (IL 97) Project _____

Section S(X) 8 W(X,TS) City or County Sangamon

Sample No.	16	17	18	19	20
Lab No.	98051	98052	98047	98048	98049
Station	11+400	11+400	11+800	11+800	11+800
Location	10 m Lt	10 m Lt	10 m Lt	10 m Lt	10 m Lt
Depth (Meters)	0.3-1.5	1.5-2.7	0-0.5	0.5-1.1	1.1-2.7
HRB Classification & Group Index	A-7-6(34)	A-4(8)	A-7-6(16)	A-7-6(22)	A-4(9)
Grain Size Classification	SiC	Silt	SiCL	SiC	Silt
Gradation - Passing 25.0 mm Sieve					
19.0 mm Sieve					
12.5 mm Sieve					
4.75 mm Sieve					
2.00 mm Sieve					
0.425 mm Sieve	98.94	99.72	98.02	98.96	99.62
0.150 mm Sieve	98.3	99.32	96.92	98.28	99.38
0.075mm Sieve	97.96	98.96	95.14	97.8	99.16
Sand	2.0	1.0	5.0	2.0	1.0
Silt	63.0	83.0	66.0	64.0	82.0
Clay	35.0	16.0	29.0	34.0	17.0
Liquid Limit	44.6	28.9	42.9	46.5	28.4
Plasticity Index	19.6	9.2	14.1	20.1	8.7
Illinois Bearing Ratio					
IBR Soaked Moisture					
Standard Dry Density AASHTO T99 kg/m ³					
Optimum Moisture %					

Remarks:

State Job Number D-96-501-95 Route FAP 67 (IL 97) Project _____

Section S(X) 8 W(X,TS) City or County Sangamon

Sample No.	21	22	23	24	25
Lab No.	98046	98043	98044	98045	98042
Station	12+000	12+200	12+200	12+200	12+500
Location	10 m Lt	10 m Lt	10 m Lt	10 m Lt	10 m Rt
Depth (Meters)	1.5-2.0	0-0.6	0.6-1.5	1.5-2.7	1.5-2.7
HRB Classification & Group Index	A-6(13)	A-6(16)	A-7-6(21)	A-4(9)	A-4(9)
Grain Size Classification	SiCL	SiCL	SiC	Silt	Silt
Gradation - Passing 25.0 mm Sieve					
19.0 mm Sieve					
12.5 mm Sieve					
4.75 mm Sieve	99.8	98.2	99.1	99.9	99.8
2.00 mm Sieve	99.6	96.9	98.4	99.7	99.6
0.425 mm Sieve	99.3	96.3	97.4	99.5	99.2
0.150 mm Sieve	1.0	4.0	3.0	1.0	1.0
0.075mm Sieve	77.0	68.0	62.0	81.0	84.0
Sand	22.0	28.0	35.0	18.0	15.0
Silt	32.8	39.4	44.9	28.6	28.4
Clay	13.0	14.9	18.8	8.0	8.1
Liquid Limit					
Plasticity Index					
Illinois Bearing Ratio					
IBR Soaked Moisture					
Standard Dry Density AASHTO T99 kg/m ³					
Optimum Moisture %					

Remarks:

State Job Number D-96-501-95 Route FAP 67 (IL 97) Project _____

Section S(X) 8 W(X,TS) City or County Sangamon

Sample No.	26	27	28	29	30
Lab No.	98038	98039	98040	98041	98070
Station	12+600	12+600	12+600	12+600	12+700
Location	10 m Lt	10 m Lt	10 m Lt	10 m Lt	6 m Lt
Depth (Meters)	0-0.6	0.6-1.4	1.4-1.8	1.8-2.7	0-0.6
HRB Classification & Group Index	A-7-6(19)	A-7-6(23)	A-6(15)	A-6(10)	A-7-6(19)
Grain Size Classification	SiC	SiC	SiCL	Silt	SiCL
Gradation - Passing 25.0 mm Sieve					
19.0 mm Sieve					
12.5 mm Sieve					
4.75 mm Sieve					
2.00 mm Sieve					
0.425 mm Sieve	97.8	98.4	99.4	99.8	98.78
0.150 mm Sieve	96.5	97.5	99.0	99.6	98.04
0.075mm Sieve	95.8	94.6	98.5	99.3	97.52
Sand	4.0	5.0	2.0	1.0	3.0
Silt	64.0	59.0	74.0	82.0	67.0
Clay	32.0	36.0	24.0	17.0	30.0
Liquid Limit	44.7	50.2	34.5	29.7	43.3
Plasticity Index	16.9	20.5	14.2	10.1	16.5
Illinois Bearing Ratio					
IBR Soaked Moisture					
Standard Dry Density AASHTO T99 kg/m ³					
Optimum Moisture %					

Remarks:

State Job Number D-96-501-95 Route FAP 67 (IL 97) Project _____

Section S(X) 8 W(X,TS) City or County Sangamon

Sample No.	31	32	33	34	35
Lab No.	98071	98072	98073	98074	98075
Station	12+700	12+700	13+100	13+100	13+100
Location	6 m Lt	6 m Lt	10 m Lt	10 m Lt	10 m Lt
Depth (Meters)	0.6-1.5	1.5-2.7	0-0.5	0.5-1.2	1.2-2.7
HRB Classification & Group Index	A-7-6(22)	A-6(9)	A-7-6(18)	A-7-6(19)	A-6(22)
Grain Size Classification	SiC	Silt	SiC	SiC	SiL
Gradation - Passing 25.0 mm Sieve					
19.0 mm Sieve					
12.5 mm Sieve					
4.75 mm Sieve					
2.00 mm Sieve					
0.425 mm Sieve	98.6	99.7	98.72	97.76	99.52
0.150 mm Sieve	98.1	99.62	97.74	97.0	99.2
0.075mm Sieve	97.68	99.46	97.26	96.5	98.2
Sand	2.0	1.0	3.0	4.0	2.0
Silt	58.0	85.0	64.0	64.0	79.0
Clay	40.0	14.0	33.0	32.0	19.0
Liquid Limit	52.2	29.8	43.2	41.0	31.2
Plasticity Index	21.9	10.2	15.5	17.9	10.2
Illinois Bearing Ratio					
IBR Soaked Moisture					
Standard Dry Density AASHTO T99 kg/m ³					
Optimum Moisture %					

Remarks:

State Job Number D-96-501-95 Route FAP 67 (IL 97) Project _____

Section S(X) 8 W(X,TS) City or County Sangamon

Sample No.	36	37	38	39	40
Lab No.	98076	98077	98078	98079	98080
Station	13+600	13+600	13+600	14+100	14+100
Location	10 m Rt	10 m Rt	10 m Rt	10 m Lt	10 m Lt
Depth (Meters)	0-0.5	0.5-1.5	1.5-2.7	0-0.5	0.5-1.5
HRB Classification & Group Index	A-7-6(16)	A-7-6(20)	A-4(8)	A-7-6(18)	A-7-6(20)
Grain Size Classification	SiCL	SiC	Silt	SiCL	SiC
Gradation - Passing 25.0 mm Sieve					
19.0 mm Sieve					
12.5 mm Sieve					
4.75 mm Sieve					
2.00 mm Sieve					
0.425 mm Sieve	96.96	97.16	99.64	99.2	99.72
0.150 mm Sieve	95.74	96.18	99.46	98.32	99.32
0.075mm Sieve	94.8	95.5	99.06	97.6	98.98
Sand	5.0	5.0	1.0	2.0	1.0
Silt	67.0	57.0	86.0	72.0	67.0
Clay	28.0	38.0	13.0	26.0	32.0
Liquid Limit	41.7	52.0	29.1	42.4	43.2
Plasticity Index	14.7	22.2	8.9	15.5	17.6
Illinois Bearing Ratio					
IBR Soaked Moisture					
Standard Dry Density AASHTO T99 kg/m ³					
Optimum Moisture %					

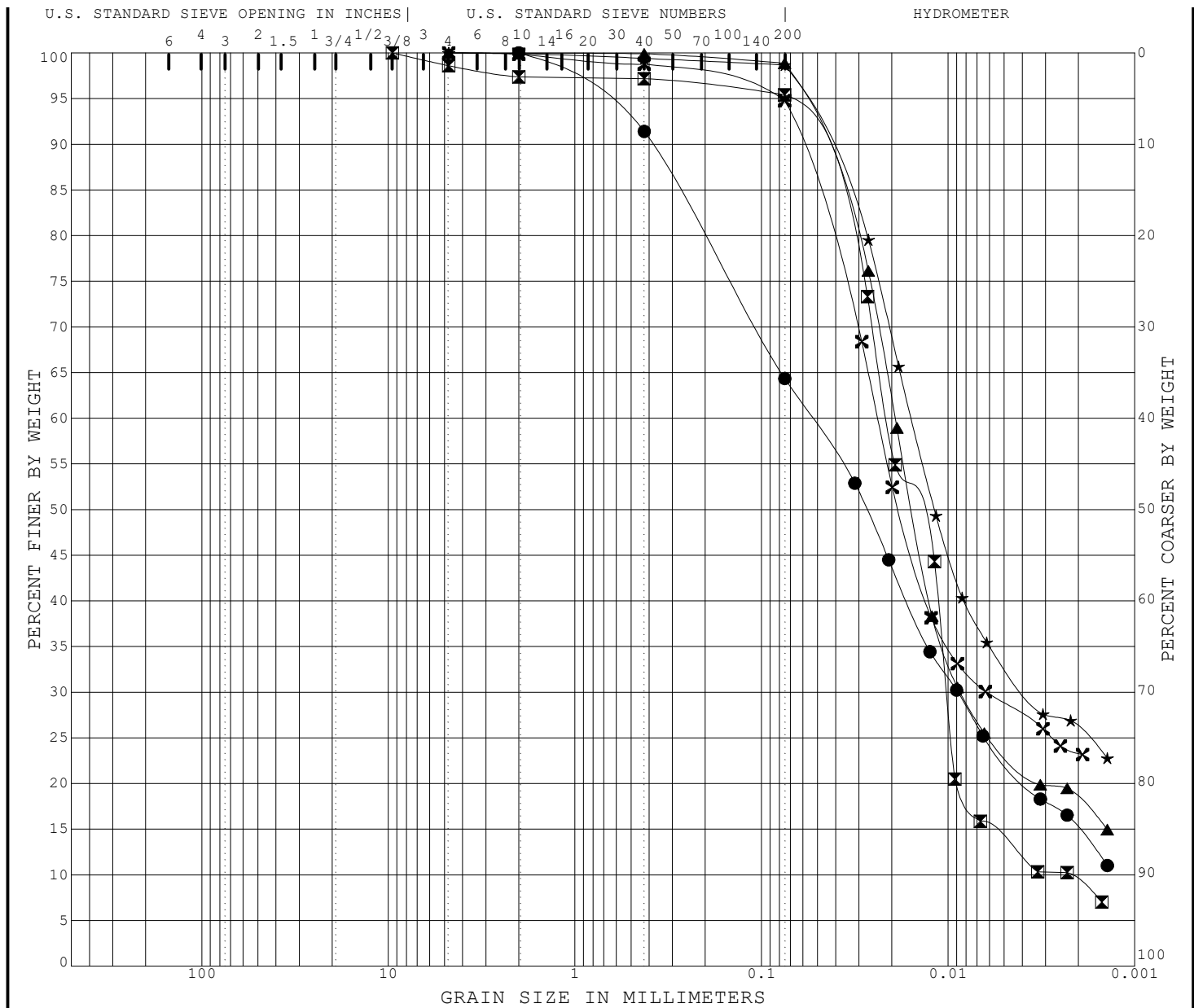
Remarks:

State Job Number D-96-501-95 Route FAP 67 (IL 97) Project _____

Section S(X) 8 W(X,TS) City or County Sangamon

Sample No.	41	42	43	44	45
Lab No.	98081	98082	98083	98084	98085
Station	14+100	14+200	14+500	14+500	14+500
Location	10 m Lt	10 m Rt	10 m Lt	10 m Lt	10 m Lt
Depth (Meters)	1.5-2.7	2.3-2.7	0-0.5	0.5-1.2	1.2-2.7
HRB Classification & Group Index	A-6(11)	A-6(10)	A-6(15)	A-7-6(24)	A-4(9)
Grain Size Classification	Silt	SiL	SiCL	SiC	Silt
Gradation - Passing 25.0 mm Sieve					
19.0 mm Sieve					
12.5 mm Sieve					
4.75 mm Sieve					
2.00 mm Sieve					
0.425 mm Sieve	99.6	99.12	98.72	98.82	99.7
0.150 mm Sieve	98.96	97.42	97.74	98.26	99.38
0.075mm Sieve	98.6	95.94	96.02	97.84	99.02
Sand	1.0	4.0	4.0	2.0	1.0
Silt	81.0	76.0	69.0	65.0	83.0
Clay	18.0	20.0	27.0	33.0	16.0
Liquid Limit	30.4	30.1	39.0	48.2	28.1
Plasticity Index	11.2	11.7	14.2	21.8	8.8
Illinois Bearing Ratio					
IBR Soaked Moisture					
Standard Dry Density AASHTO T99 kg/m ³					
Optimum Moisture %					

Remarks:



Boulders	Gravel	Sand		Silt	Clay
		coarse	fine		

Boring No.	Depth	Lab. No.	AASHTO Soil Classification (Textural)	MC%	LL	PL	PI
● S-640	9.25'	#111	Loam, Brown, Tr. Blk (A-4(2))	9.3	22	15	7
✕ S-640	14.25'	#112	Silt, Brown & Gray (A-4)	18.8			
▲ S-650	1.88'	#113	Silt, Brown & Gray (A-4)	16.9			
★ S-845	4.25'	#114	Silty Clay Loam, Brown & Gray (A-6)	14.8			
✕ S-850	1.75'	#115	Silty Clay Loam, Brn, Tr. Drk Brn (A-6(13))	19.4	33	19	14

	%< 3"	%Pass#10	%Pass#40	%Pass#200	%<.002mm	%Gravel	%Sand	%Silt	%Clay	%Colloids
●		100.0	91.4	64.3	15.0	0.0	35.7	49.4	14.9	
✕		97.4	97.2	95.4	9.2	2.6	2.0	86.2	9.2	
▲		100.0	99.9	98.9	18.2	0.0	1.1	80.7	18.2	
★		99.9	99.4	98.7	26.0	0.1	1.2	72.6	26.1	
✕		99.9	98.8	94.8	23.3	0.1	5.1	71.4	23.4	

SEECO Consultants, Inc. Tinley Park, Illinois 60477	Project	IL-97/125 4-Lane Expressway							
	Location	Sangamon County, IL							
	Date	2/5/21	Job No.	12444G	GRADATION CURVES				



Route	FAP 67, FAU 8049 (IL 97/125)
Section	S (X), W (X, TS)
County	Sangamon
Location	Sangamon County, IL
Job No.	12444G

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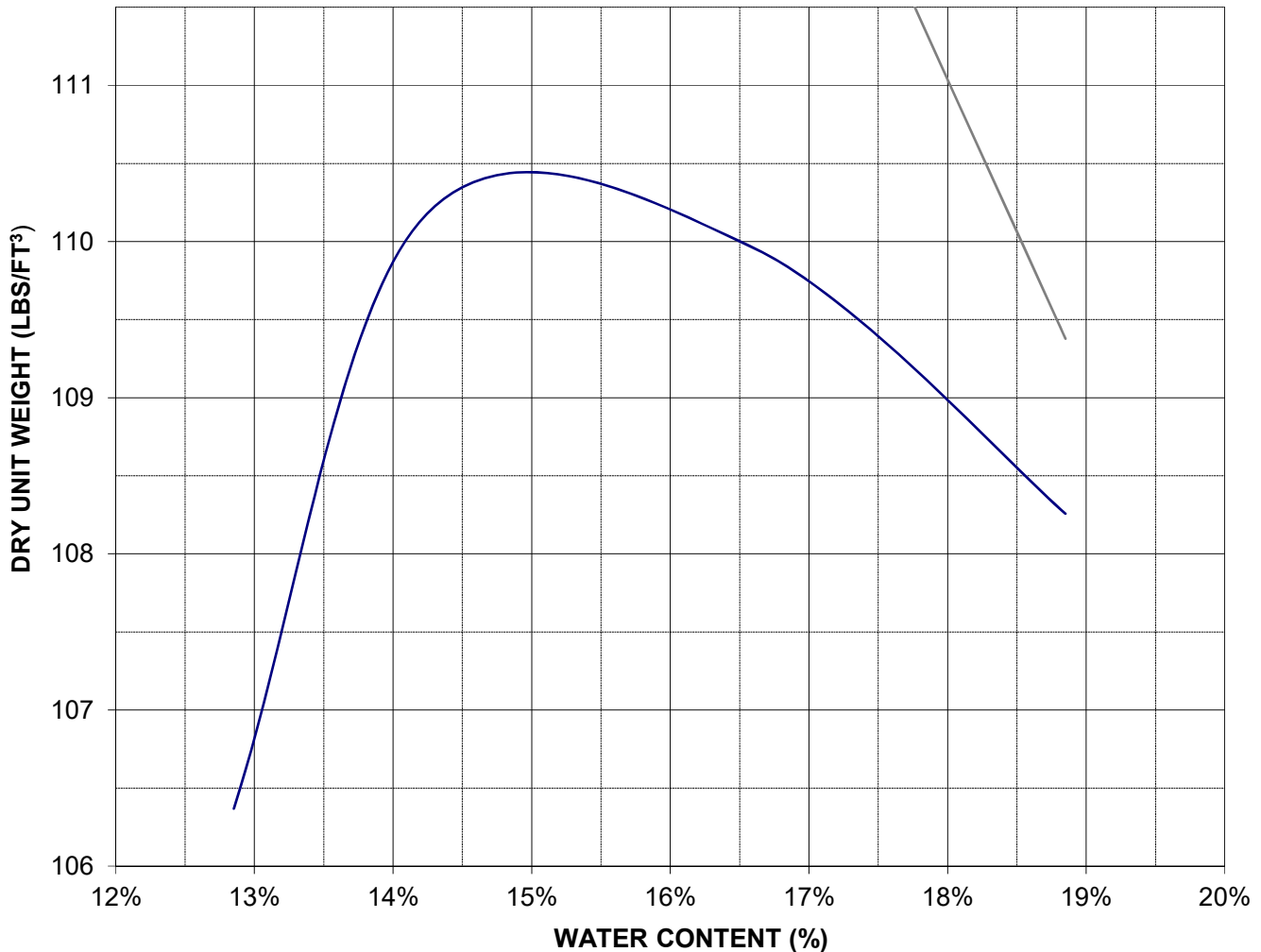
SEECO CONSULTANTS, INC.

7350 DUVAN DRIVE
TINLEY PARK, IL. 60477

MOISTURE DENSITY RELATIONSHIPS OF SOILS

PROJECT: IL -97/125 4-Lane Expressway
CLIENT: IDOT District 6

DATE SAMPLED: 11/03/20
JOB NUMBER: 12444G



TEST METHOD: AASHTO T 99-19, Method A

DATE TESTED: 11/19/20

MATERIAL TYPE: Brn, Tr. Dark Brown Silty Clay Loam, Tr. Sand (A-6(13))

TESTED BY: PG

MATERIAL SOURCE: S-850 (1 to 8 Feet)

MAXIMUM DRY UNIT WEIGHT: 110.4 PCF

OPTIMUM MOISTURE CONTENT: 15.0 %