STRUCTURAL GEOTECHNICAL REPORT

Central Park Ave. Bridge over I-290

Proposed Bridge S.N. 016-2091

Contract Number: 62K62, PTB 195-021

IDOT Job No. D-91-359-20

Cook County, Illinois

Prepared for:

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JOB NO. 20051
July 29, 2025

Geo Services, Inc.
Geotechnical, Environmental and Civil Engineering
An MBE - DBE Firm
An Interra Company

September 04, 2025

DB Sterlin Consultant Inc.
123 N. Wacker Drive, Suite 2000,
Chicago, IL 60606

Attn: Mr. Jay M. Masi, P.E. S.E.

Job No. 20051

Re: Phase II Structure Geotechnical Report (SGR)
Central Park Avenue Bridge over I-290
Proposed Bridge S.N. 016-2091
IDOT Job No. D-91-359-20
Contract No. 62K62, PTB 195-021
Cook County, Illinois

Dear Mr. Masi:

The following report presents the Phase II geotechnical analysis and recommendations for the proposed improvement of Central Park Avenue bridge (S.N. 016-2091). Borings associated with this bridge and associated retaining walls include a total of eight (8) structure borings (BSB-009 through BSB-012, BSB-017, BSB-018, RWB-005 and RWB-006). Borings were completed at the site by Geo Services, Inc. (GEO). Copies of these boring logs, along with soil profiles, are included in this report.

If there are any questions regarding the information submitted herein, please do not hesitate to contact us.

Very truly yours,

GEO SERVICES, Inc.

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SECTION 01: INTRODUCTION

This report presents the results of the geotechnical investigation for a proposed Phase II bridge improvements Central Park Avenue Bridge and associated retaining walls over the Interstate Highway 290, in Cook County, IL. The results of bridge and associated retaining wall borings were completed by Geo Services, Inc. (GEO). The attachments include general notes in Appendix A, site location map in Appendix B, boring location plans in Appendix C, boring logs in Appendix D, slope stability calculations in Appendix E, TS&L drawings in Appendix F, and H-Pile Analysis in Appendix G.

Boring locations were laid out in the field by Geo Services, Inc. personnel at the proposed locations.

This report includes recommendations pertaining to the design and construction of the proposed bridge abutment and pier foundations, description of soil and groundwater conditions, and general construction considerations for the site. In addition, analysis for the retaining walls including bearing capacity analysis for foundations, settlement analysis and slope stability analysis are included.

SECTION 02: PROJECT DESCRIPTION

The proposed improvements at Central Park Avenue Bridge include replacement of existing bridge structures, parapets and approach slabs.

The existing structure (SN 016-2072) is a 3-span bridge with concrete deck supported on reinforced concrete piers and abutments founded on creosote timber piles. The width of the existing bridge is 61’-0” out-to-out of deck and the length of the existing bridge is 202’-9” back-to-back of abutments.

The proposed structure (SN 016-2091) is a 3-span bridge with concrete deck supported on reinforced concrete piers and abutments. The width of the proposed bridge is approximately 61 feet out-to-out of deck and the length of the proposed bridge is approximately 245 feet back-to-back of abutments.

The proposed elevations at the bottom of pile cap are shown on the following Table 1

Table 1 – Bottom of Pile Cap Elevations

Location	Approximate Elevation (feet)	Approximate Total Strength Load (kip)
North Abutment	576.8 (At Bottom of Pile Cap)	4784
North Pier	577.8 (At Top of Shaft)	5851
South Pier	577.7 (At Top of Shaft)	5851
South Abutment	576.9 (At Bottom of Pile Cap)	4784

SECTION 03: SUBSURFACE INVESTIGATION PROCEDURES

The borings were performed in March and April of 2023 and September of 2024 with a truck-mounted drilling rig and were advanced by means of hollow stem augers or rotary drilling techniques. Representative soil samples were obtained employing split spoon sampling procedures in accordance with AASHTO Method T-206. Samples obtained in the field were delivered to GEO Services laboratory for further examination and testing.

Split spoon sampling involves driving a 2.0-inch outside diameter split-barrel sampler into the soil with a 140-pound weight falling freely through a distance of 30 inches. Blow counts are recorded at 6" intervals and the blow counts are shown on the boring logs. The number of blows required to advance the sampler the last 12 inches is termed the Standard Penetration Resistance (N). The N value is an indication of the relative density of the soil.

SECTION 04: LAB TESTING PROGRAM

The test procedures were performed in accordance with test procedures discussed in the Illinois Department of Transportation (IDOT) Geotechnical Manual. All split-spoon samples obtained from the drilling operation were visually classified in the field. Cohesive samples were tested for unconfined compressive strength using an IDOT modified RIMAC test device and/or calibrated penetrometer in the field.

The soil testing program included performing water content, density and either unconfined compression and/or calibrated penetrometer tests on the cohesive samples recovered. Water content tests were performed on the non-cohesive samples recovered. These tests were performed upon representative portions of the samples obtained in the field. The results of the above testing, along with a visual classification of

the material based upon both the Illinois textural classification and the AASHTO Soil Classification System, are indicated on the boring logs.

SECTION 05: SUBSURFACE & WATER TABLE CONDITIONS

Specific soil conditions encountered in the borings are shown on the boring logs in Appendix D. The following are descriptions for general soil and water table conditions for the bridge and associated retaining walls. All the elevations are based on Northern American Vertical Datum 1988 (NAVD88).

5.1 North Abutment

The borings associated with north abutment of the bridge are BSB-009 and BSB-010.

Borehole BSB-009 encountered 3.0 inches of asphalt and 9.0 inches of concrete at the surface. This was underlain by clay loam and clay to elevation 572. Below this was silt to elevation 562 and clay loam and silty clay to elevation 537. This was followed by silty loam to elevation 532 and clayey gravel to elevation 530. Possible top of bedrock was encountered at elevation 530 or 70 ft below grade of Central Park Avenue. The clay loam and clay had a moisture content ranging between 19% and 23% with an average of 23% and an unconfined compressive strength ranging from 0.25 tsf to 1.5 tsf with an average of 1 tsf. The silt had moisture content ranging from 19% to 21% with an average of 20% and an SPT N value of 38. The clay loam and silty clay had a moisture content ranging from 13% to 22% with an average of 16% and an unconfined compressive strength ranging from 0.5 tsf to 4.5 tsf with an average of 3.5 tsf.

Surficial soil conditions consisted of 12 inch thick asphalt followed by sand and gravel to a depth of 3 feet at elevation 578. Underlying the surficial soils a mix layer of clay loam and silty clay was encountered from elevation 578 to elevation 533. Underneath the mix layer of clay loam and silty clay, a layer of gravel was encountered from elevation of 533 to elevation 528. Possible top of bedrock was encountered at elevation 528 or 53 ft below grade of I-290. The mix layer of clay loam and silty clay had moisture contents ranging from 13%-25% with an average of 18%, and unconfined compressive strength ranging from .9-4.5 tsf with an average of 2.2 tsf. The gravel layer moisture contents ranging from 2% and SPT N value of 100 blows/ft.

Ground water was not encountered during drilling prior to switching to rotary drilling or after drilling. Ground water levels cannot be determined directly due to wash-rotary drilling methods used. Change in coloration of the soils from brow to gray can indicate long-term ground water levels. This coloration change was not observed in the borings.

5.2 South Abutment

Borings associated with South abutment of the bridge are BSB-011 and BSB-012.

At borehole BSB-011, surficial conditions consisted of 8.5 inch thick asphalt followed by sand and gravel to a depth of 3.5 feet at elevation 578. Underlying the surficial soils, a mix layer of clay and silt was encountered from elevation 578 to 543. Underlying the mix layer of clay and sand, a layer of silt from elevation 543 to the possible top of bedrock at elevation 529. The mix layer of clay loam had moisture contents ranging from 13%-24% with an average of 19% and blow counts ranging from 6-29 blows/ft with an average of 18 blows/ft and cohesion ranging from 0.4-4.5 tsf with an average 1 tsf. The layer of silt had moisture contents ranging from 11%-15% with an average of 13% and blow count ranging from 50-100 blows/ft with an average of 83 blows/ft.

Borehole BSB-012 encountered 3.0 inches of asphalt and 6.0 inches of concrete at the surface. This was underlain by clay loam and clay to elevation of 527 feet. Below this was silty loam to elevation 524 feet. Possible bedrock was encountered at elevation 524 feet. The clay loam an clay had a moisture content ranging from 8% to 29% with an average of 19%, and an unconfined compressive strength ranging from 0.25 tsf to 4.5 tsf with an average of 1.7 tsf.

Ground water was not encountered during drilling prior to switching to rotary drilling or after drilling. Ground water levels cannot be determined directly due to wash-rotary drilling methods used. Change in coloration of the soils from brow to gray can indicate long-term ground water levels. This coloration change was not observed in the borings.

5.3 North Retaining Wall

The boring associated with North Retaining Wall is RWB-005. Pavement consists of 2 inch thick layer of asphalt and 10 inch thick layer of concrete. Underlying the surficial soils, a layer of clay loam was encountered from elevation 598 to the termination of boring at 550.

The clay loam layer had moisture contents ranging from 14%-29% with an average of 20%, blow counts ranging from 0-42 blows/ft with an average of 19 blows/ft and cohesion ranging from 0.25-4.5 tsf with an average of 2 tsf.

Ground water was not encountered during drilling prior to switching to rotary drilling or after drilling. Ground water levels cannot be determined directly due to wash-rotary drilling methods used. Change in coloration of the soils from brow to gray can indicate long-term ground water levels. This coloration change was not observed in the boring.

5.4 South Retaining Wall

The boring associated with South Retaining Wall is RWB-006. Surficial soils consisted of approximately 2-inch-thick asphalt and 10-inch-thick concrete followed by a layer to gravely clay to a depth of 5 feet at elevation 594. Underlying the surficial soils, a layer of clay loam was encountered from elevation 594 to the termination of boring at elevation 550.

The clay loam layer had moisture contents ranging from 13%-28% with an average of 21%, blow counts ranging from 5-27 blows/ft with an average of 12 blows/ft and cohesion ranging from 0.25-4.5 tsf with an average of 1.3 tsf.

Ground water was not encountered during drilling prior to switching to rotary drilling or after drilling. Ground water levels cannot be determined directly due to wash-rotary drilling methods used. Change in coloration of the soils from brow to gray can indicate long-term ground water levels. This coloration change was not observed in the boring.

5.5 North Pier

The boring associated with the North Pier is BSB-017. BSB-017 encountered 9.0 inches of concrete at the surface. This was underlain by sand and gravel to elevation 581, clay loam and silty clay loam to elevation 569, silt to elevation 564, silty clay loam to elevation 562, silt to elevation 557, silty clay loam to elevation 534 and weathered limestone to elevation 529. The clay loam and silty clay loam had a moisture ranging from 11% to 20% with an average of 14% and an unconfined compressive strength ranging from 1 tsf to 4.5 tsf with an average of 3.3 tsf. The silt had a moisture content ranging from 14% to 30% with an average of 20% and an SPT N value ranging from 28 blows/feet to 38 blows per feet with an average of 32 blows per feet.

Bedrock was encountered at elevation 529. Rock coring was done from elevation 527 to elevation 520 (Run 1) and elevation 520 to elevation 512 (Run 2). Rock core Run 1 had an RQD of 74% and an unconfined compressive strength of 470 tsf. Rock core Run 2 had an RQD of 86% and an unconfined compressive strength of 1030 tsf.

Ground water was not encountered during drilling prior to switching to rotary drilling or after drilling. Ground water levels cannot be determined directly due to wash-rotary drilling methods used. Change in coloration of the soils from brow to gray can indicate long-term ground water levels. Based on the coloration change, water table is expected to sit approximately at 577 feet elevation.

5.6 South Pier

The boring associated with South Pier is BSB-018. BSB-018 encountered 9.0 inches of concrete at the surface. This was underlain by sand to 576 feet, clay loam to 566 feet, silty loam to 558 feet, silty clay loam to 553 feet and silty loam to 527 feet. The sand had a moisture between 13% and 23% with an average of 18% and an SPT N value between 2 blows/feet and 7 blows per feet with an average of 5 blows per feet. The clay loam and silty clay loam had moisture contents ranging from 12% to 21% with an average of 18% and unconfined compressive strengths ranging from 1 tsf to 4.5 tsf with an average of 2.2 tsf. The silty loam had a moisture between 9% and 30% with an average of 15% and an SPT N value between 13 blows/feet and 100 blows per feet with an average of 42 blows per feet.

Bedrock was encountered at 527 feet. Rock coring was done from elevation 525 to elevation 515 (Run 1) and elevation 515 to elevation 510 (Run 2). Rock core Run 1 had an RQD of 88% and an unconfined compressive strength of 970 tsf. Rock core Run 2 had an RQD of 100% and an unconfined compressive strength of 1080 tsf.

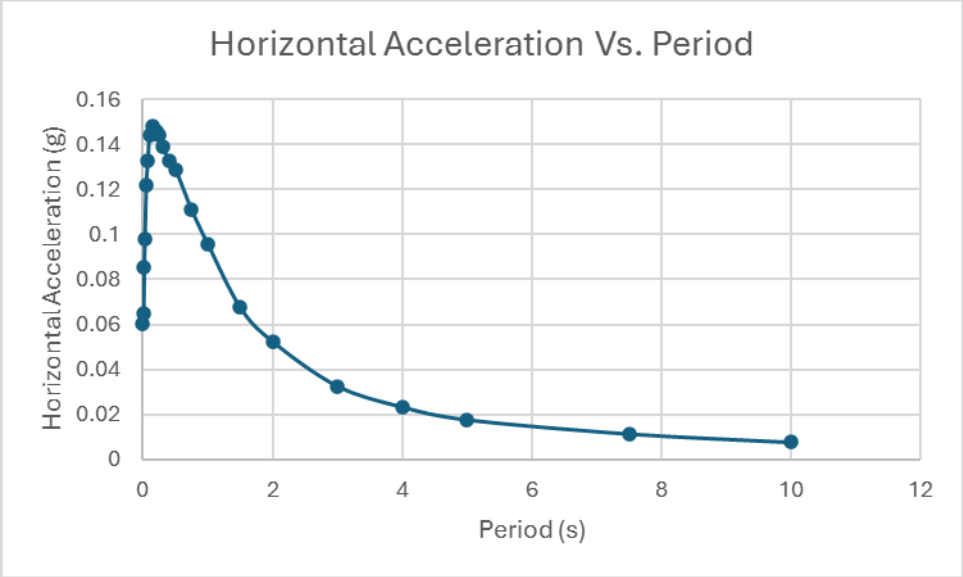
Groundwater was encountered at elevation of 578.5 feet in borehole BSB-018. Based on the recorded water level and the change of coloration of the soil from brown to gray, long-term water table is expected approximately at an elevation of 578.5 feet.

SECTION 06: SEISMIC DATA

The following seismic data is recommended in accordance with IDOT Seismic Manual.

Table 2 – Seismic Data

2023 AASHTO Seismic Hazard	
Soil Site Class	D
Latitude	41.874023 deg N
Longitude	87.715545 deg W
Performance Level	Operational
Design Spectral Acceleration, S_{D1}	0.096 g
Design Spectral Acceleration at 0.2 sec (SDS)	0.146 g
Vertical Acceleration	2/3* Horizontal Acceleration
Seismic Design Category (SDC)	A
Weighted Average Shear Wave Velocity	897 ft/sec
Soil Epoch	Pleistocene



According to IDOT Seismic Manual, no liquefaction analysis is required for SDC of A.

SECTION 07: GENERAL WALL RECOMMENDATIONS

For fill walls, Mechanically Stabilized Earth (MSE) wall, Cast-in-place T-Type wall or Soldier Pile wall can be considered with appropriate remedial treatment or supported on deep foundation system as recommended in the following report sections. Remedial treatments are determined from below the bottom of footing elevations assumed to be at 4 ft depth below the final surface elevation for frost protection.

Table 3 – Required Bearing Resistance vs. Wall Height

Retaining Wall ID	Max Exposed Wall Height (feet)	Maximum LRFD Factored Bearing Pressure Required (psf)
North Retaining Wall	17	6,600
South Retaining Wall	17	6,600

Soils should be verified in the field at the time of construction by a licensed Geotechnical Engineer or representative. Actual extents of any remedial treatments, if any, will be determined at this time. If soils with less than adequate bearing strength are noted at the foundation level during footing construction, the weaker soils encountered at the base of the footings should be undercut to reach suitable bearing soils, and the undercut area filled with lean concrete or an approved compacted structural (granular) fill material.

Any structural fill utilized to support footings should be extended at least 6 inches beyond the proposed footing limits and then one foot horizontally for each one foot of fill placed below the base of the footing. Any new fill should consist of inorganic material free of debris.

Structural fill should be placed in maximum 8-inch loose lifts. CA-6 is recommended for use and should be compacted to a minimum of 95% of the maximum dry density obtained in accordance with ASTM Standard D-1557, modified Proctor method. The moisture content of the CA-6 fill should be controlled within ± 2% of the optimum moisture content.

Embankment fill behind the wall should be placed in compliance with Section 205 of the IDOT Standard Specifications for Road and Bridge Construction. The backfill should consist of a compacted, free-draining granular material. A proper drainage system should be designed and provided behind the retaining wall. The chosen retaining wall type should be designed by an Illinois licensed Structural Engineer.

Economic, construction and scheduling factors should be evaluated for the decision of retaining wall design. For long walls, it may be economical to split the wall into smaller sections and design/construct different wall types based on remedial treatment needed.

The following sections provide a discussion of wall types and recommendations as they relate to the retaining wall construction.

SECTION 8: ANALYSIS AND RECOMMENDATIONS

8.1. Abutments

8.1.1 General Considerations for Abutment Foundations

The existing abutment foundations are supported on creosote timber piles. Based on the foundation loads anticipated and softer soil conditions near bearing elevation, shallow foundation options are not considered. Based on the borehole data and proposed structure elevations, the foundation options considered for the abutments are end bearing H-piles, metal shell piles, and drilled shaft foundations. Metal shell piles may not be able to achieve their nominal bearing due to the hard driving conditions expected below an approximate depth of 36 feet. End bearing H-piles can generate high capacities (their nominal bearing) due to bedrock at relatively shallow depths. H-piles are opted over drilled shaft foundations due to comparative ease of installation and cost effectiveness. Based on the above considerations, H-Piles are recommended for the bridge abutments. End bearing H-piles can be driven to refusal. Pile shoes are recommended as the piles are being driven to their maximum required nominal bearing through dense layers and into bedrock.

8.1.4. Driven Pile Foundation Recommendations for Abutments

Based on the soil conditions, depth to bedrock and proposed foundation loadings, end bearing H-piles may be used for the support of the proposed abutments. We estimate that the new driven H-piles will settle 1/2 inch or less excluding the elastic shortening of the pile due to loading.

Tables for estimated pile lengths for various pile sizes and pile capacities at each substructure unit are summarized in the Appendix G. Selection of the pile should be based on economic and construction considerations.

As per the All Geotechnical Manual User (AGMU) Design Guide 10.2 (2010), the Estimated H-Pile Length versus Capacity tables presented in the Appendices were calculated using LRFD Geotechnical Design Procedure equations. Maximum Nominal Required Bearing (NRB) values have been calculated using the empirical formulas outlined in the LRFD guidelines; this is reflected in the tables by limiting pile capacities and lengths to the acceptable limits as described by the LRFD Geotechnical Pile Design Procedure 3.10.1. A geotechnical resistance factor (ΦG) of 0.55 was used in calculations for the factored resistance available (FRA).

8.1.5. Pile Foundation Construction Considerations

We recommend that a minimum of one test pile be performed at each substructure unit. The piles should be driven until satisfactory driving resistance is developed in accordance with an appropriate pile driving formula. The test piles shall be driven to a Nominal Driven Bearing of 110 percent of the Nominal Required Bearing indicated on the plans.

Driving H-piles through existing timber pile foundations presents unique challenges due to potential obstructions and variable subsurface conditions.

To facilitate pile installation, pre-boring or pilot holes may be necessary to create a clear path for H-piles while maintaining lateral support. Core barrels, augers, or chisels can be used to remove large timber fragments or other obstructions that may impede driving. During pile installation, the pile hammer energy should be carefully controlled, starting with reduced energy to prevent pile deviation or excessive damage. If the pile encounters significant resistance, alternative driving techniques such as repositioning, jetting, or additional pre-drilling may be required.

Monitoring during pile driving is essential to ensure proper penetration and alignment. Blow count measurements (blows per foot) should be recorded to assess driving efficiency and confirm that the pile is reaching the required bearing depth. If refusal occurs at a shallow depth due to dense timber remnants or unexpected subsurface obstructions, IDOT specifications (Section 512 – Piling) should be consulted for alternative solutions, which may include localized removal of obstructions or modifying pile placement.

Once the H-piles are installed, load testing and integrity verification should be performed to confirm structural capacity. Pile Driving Analysis (PDA) or static load testing may be required based on IDOT guidelines to ensure proper load-bearing performance. After successful verification, piles should be cut to the required elevation and integrated into the foundation system per structural design requirements.

8.2 Piers

8.2.1 General Considerations for Pier Foundations

The existing pier foundations are supported on creosote timber piles. Based on the foundation loads anticipated and softer soil conditions near bearing elevation, shallow foundation options are not considered. Based on the borehole data and proposed structure elevations, the foundation options considered for the piers are end bearing H-piles, metal shell piles, and drilled shaft foundations. Metal shell piles may not be able to achieve their nominal bearing within drivable depths. End bearing H-piles can generate high capacities (their nominal bearing) due to bedrock at relatively shallow depths. However, driven H-piles or metal shell piles are not recommended for the pier foundations due to its proximity to the existing railway tracks. The estimated Peak Particle Velocity (PPV) exceeds the allowable values. Based on the above considerations, drilled shafts are recommended for the pier foundations.

8.2.2 Drilled-Shaft Recommendations

A deep foundation system consisting of drilled shafts (caisson) could be used to support both the piers. Drilled shafts are recommended to extend to the bedrock and be rock socketed. A maximum factored end bearing resistance of 200 kips per square foot (ksf) is recommended for use in design with a minimum rock socket length of one diameter of the rock socket into sound bedrock. LRFD resistance factor considered is 0.5. Drilled shaft design table is presented as Appendix H.

Based on the borehole parameters and the magnitude of the loads expected, we estimate a maximum settlement of ½ inch for drilled shaft extending to bedrock. It should be noted that these settlement values are for soil compression only and that elastic compression of the drilled shaft concrete should be added to these values.

It is recommended to provide permanent steel casing that extend down to bedrock for rock socketed drilled shafts. The steel casing can be incorporated into the structural design for the drilled shaft to optimize shaft design. A minimum caisson shaft diameter of 2.5 feet is recommended. The concrete slump should be in the range of 5 to 7 inches. The recommended minimum 28-day compression strength of the concrete should be a minimum of 4,000 psi. Please refer to Section 09 below for construction considerations for drilled shafts.

8.2.3 Deep Foundation Caisson Recommendations – Uplift Capacity

Drilled shafts should be adequately designed to resist any uplift forces. Drilled shafts which resist uplift forces should be provided with full length reinforcement extending to the bottom of the shaft including any bell or rock socket, if constructed. The ultimate uplift capacity of each drilled shaft can be estimated from the dead weight of the drilled shaft. A factor of safety of 1.3 is recommended for uplift when resistance is determined solely from dead weight and the uplift is due to transient loading.

8.3 Retaining Wall Recommendations

8.3.1 General Retaining Wall Recommendations

Allowances should be made for any surcharge loads adjacent to the retaining structure. Any retaining wall design should include a proper drainage system behind the walls. Maximum Retaining Wall heights are based on TS&L drawings provided by the client.

8.3.2 Retaining Wall Recommendations

The existing retaining walls on the north and south sides of the bridge are supported on creosote piles. Soil borings data indicate that the Cast-in-place T-Type wall on piles or Soldier Pile walls are feasible for the retaining walls associated with the bridge. The following table summarizes the maximum factored bearing resistance required at each retaining wall.

Table 4 – Required Bearing Resistance vs. Wall Height

Retaining Wall (Borings Associated)	Max Exposed Wall Height (feet)	Maximum LRFD Factored Bearing Resistance Required (psf)
North Retaining Wall (RWB-005)	17	6,600
South Retaining Wall (RWB-006)	17	6,600

The elevation of the retaining wall foundation bottom is expected to be approximately 577 feet. The required bearing resistance is higher than the available bearing resistance from the subgrade soils at foundation base elevation in both the boreholes.

We recommend Cast-in-place T-Type retaining walls supported on deep foundation system on both sides of the bridge.

Alternatively, soil improvement consisting of aggregate piers may be considered for design to increase the maximum factored bearing resistance to 6,600 psf for supporting the T-Type wall. Aggregate piers would be recommended to extend along both the North and South Retaining walls along their entire lengths.

It would be expected that a special geotechnical contractor would design the ground improvement system to provide a maximum, factored bearing resistance of 6,600 psf. The geotechnical specialty contractor may choose not to utilize a working platform and design the aggregate piers to sufficiently handle applied loads. The benefit of a ground improvement option would be that the large amount of excavation from the over excavation option would be minimized.

Typically, the ground improvement design (aggregate pier and working platform) will be specified as a performance-based specification with a required bearing pressure and tolerable settlement amount (typically 1 inch or less) specified. The geotechnical specialty contractor would be responsible for the design.

8.4. Lateral Parameter Recommendations

The following tables contain recommended lateral soil parameters to be used for design of retaining walls, abutments, and temporary soil retention.

Table 5 – Soil Parameters for Lateral Resistance North Abutment (BSB-009)

Material (elevation, feet)	Unit Weight (pcf)	Drained Friction Angle (°)	Undrained Shear Strength (psf)	Lateral Modulus of Subgrade Reaction (pci)	Active Earth Pressure Coefficient Ka	Passive Earth Pressure Coefficient Kp	Strain
Soft to Medium Stiff Clay (600 to 584)	127	27	500	55	0.38	2.66	0.015
Medium Stiff to Stiff Clay (584 to 572)	130	28	1,200	290	0.36	2.77	0.009
Dense Silt (572 to 561)	135	30	0	125	0.33	3.00	NA
Hard Clay (561 to 557)	138	32	4,000	1500	0.31	3.25	0.004
Medium Stiff to Very Stiff Clay (557 to 547)	130	28	1,800	520	0.36	2.77	0.007
Hard Clay (547 to 537)	138	32	4,000	1500	0.31	3.25	0.004
Very Dense Silt (537 to 526)	135	31	0	125	0.32	3.12	NA

Note: NA: Not Applicable

Table 6 - Soil Parameters for Lateral Resistance for South Abutment (BSB-012)

Material (elevation, feet)	Unit Weight (pcf)	Drained Friction Angle (°)	Undrained Shear Strength (psf)	Lateral Modulus of Subgrade Reaction (pci)	Active Earth Pressure Coefficient Ka	Passive Earth Pressure Coefficient Kp	Strain
Stiff to Hard Clay (600 to 587)	129	28	1,000	225	0.36	2.77	0.01
Soft to Medium Stiff Clay Loam (587 to 580)	126	26	250	28	0.39	2.56	0.023
Stiff Clay (580 to 567)	130	28	1,000	225	0.36	2.77	0.01
Hard Clay (567 to 562)	138	32	4,000	1500	0.31	3.25	0.004
Medium Stiff to Stiff Clay (562 to 547)	130	28	1,000	225	0.36	2.77	0.01
Very Stiff to Hard Clay (547 to 526)	134	29	3,400	1200	0.35	2.88	0.005

Table 7 - Soil Parameters for Lateral Resistance for South Retaining Wall (RWB-005)

Material	Unit Weight	Drained Friction	Undrained Cohesion	Lateral Modulus of	Active Earth Pressure	Passive Earth	Strain

(elevation, feet)	(pcf)	Angle (°)	(psf)	Subgrade Reaction (pci)	Coefficient Ka	Pressure Coefficient Kp	
Medium Stiff Clay (600 to 591)	127	27	500	55	0.38	2.66	0.015
Very Soft Clay (591 to 578)	124	25	100	10	0.41	2.46	0.044
Stiff Clay (578 to 571)	130	28	1,600	440	0.36	2.77	0.008
Hard Clay (571 to 558)	138	32	4,000	1500	0.31	3.25	0.004
Very Stiff Clay (558 to 549)	134	29	3,200	1120	0.35	2.88	0.005

Table 8 - Soil Parameters for Lateral Resistance for South Retaining Wall (RWB-006)

Material (elevation, feet)	Unit Weight (pcf)	Drained Friction Angle (°)	Undrained Cohesion (psf)	Lateral Modulus of Subgrade Reaction (pci)	Active Earth Pressure Coefficient Ka	Passive Earth Pressure Coefficient Kp	Strain
Soft to Medium Stiff Clay (598 to 582)	124	26	400	44	0.39	2.56	0.015
Hard Clay (582 to 579)	138	32	4,000	1500	0.31	3.25	0.004
Medium Stiff to Stiff Clay (579 to 556)	130	28	1,000	225	0.36	2.77	0.01
Stiff to Very Stiff Clay (556 to 550)	134	29	2,000	600	0.35	2.88	0.007

Allowances should be made for any surcharge loads adjacent to the retaining structure. Proper drainage should be provided behind the walls. For the long-term active case (permanent case), cohesion in the clay layers should be ignored and the effective stress condition (drained friction angle) should be used. For the long-term passive case, the undrained cohesion should be used at undisturbed depths below the frost line (greater than 4 feet below the ground line).

8.5 Slope Stability Recommendations

The north and south bridge abutments and retaining walls have been analyzed with the X-Stabl slope analysis program using Bishop's method of analysis.

For the north abutment a factor of safety of 2.2 was found for undrained analysis and a factor of safety of 1.9 was calculated for drained analysis. This is greater than the required factor of safety of 1.5 for a fill wall per IDOT standards. There are no slope stability concerns for the north abutment of Central Park Avenue bridge (SN 016-2091).

For the south abutment a factor of safety of 4.1 was found for undrained analysis and a factor of safety of 1.9 was calculated for drained analysis. This is greater than the required factor of safety of 1.5 for a fill wall per IDOT standards. There are no slope stability concerns for the south abutment of Central Park Avenue bridge (SN 016-2091).

For the north retaining wall a factor of safety of 3.8 was found for undrained analysis and a factor of safety of 1.9 was calculated for drained analysis. This is greater than the required factor of safety of 1.5 for a fill wall per IDOT standards. There are no slope stability concerns for the north abutment of Central Park Avenue (SN 016-2091).

For the south retaining wall a factor of safety of 3.1 was found for undrained analysis and a factor of safety of 1.8 was calculated for drained analysis. This is greater than the required factor of safety of 1.5 for a fill wall per IDOT standards. There are no slope stability concerns for the north abutment of Central Park Avenue (SN 016-2091).

8.6 Approach Slab Recommendations

The new approach slab will be supported on either new or existing embankment fill. We recommend using an assumed CBR of 2.0 for the compacted, fill for the embankment. Shallow footing for the new approach slab should be designed for a factored bearing resistance of 2,000 pounds per square foot. The new fill should be compacted per IDOT specifications for earth embankment. Any organics or soft, yielding subgrade (if any) should be removed prior to new fill placement. A qualified geotechnical engineer should observe the subgrade prior to any base course is placed. We estimate settlement of ½ inch or less for the approach slab.

8.7 Roadway Recommendations

Boreholes BSB-009, BSB-012, RWB-005 and RWB-006 were used to interpret the roadway subgrade conditions on Central Park Avenue, adjacent to the bridge, between West Harrison Street and West Congress Parkway. The proposed roadway elevations are expected to be close to Elev. 600.0 feet.

8.7.1 Subgrade Preparation-General

All the borings were done on the pavement surface. As such, topsoil was not encountered in the borings. A topsoil stripping depth of 6 inches is recommended for estimating purposes. Topsoil should be completely stripped and removed from the proposed pavement areas. The actual need for topsoil removal should be determined in the field. We recommend that all the topsoil that is stripped be sorted and reused for any proposed landscaping improvements.

Subgrade preparation should be performed in accordance with Article 301 of the IDOT Standard Specifications for Road and Bridge Construction (SSRBC, 2022). All new pavements or complete reconstruction should be supported on 12 inches of improved subgrade, per the IDOT Bureau of Design and Environment (BDE) Aggregate Subgrade Improvement Special Provision (April 1, 2022). The top eight (8) inches of the subgrade should be disked, air dried, and recompacted to achieve the required density and stability. After compaction, the subgrade should have a minimum dry density of 95

percent of standard laboratory dry density and a minimum IBV of 3.0 as it is assumed that plans include 12 inches of improved subgrade.

8.7.2 Removal and Replacement of Unstable/Unsuitable Soils

Boreholes BSB-009, RWB-005 and RWB-006 encountered medium stiff clay loam or silty clay loam at the subgrade elevation. Based on the soils encountered at the subgrade level, it is recommended to include a 12-inch undercut below the aggregate subgrade improvement layer for the proposed full depth pavement areas on Central Park Avenue, adjacent to the bridge, between West Harrison Street and West Congress Parkway. Geotextile fabric should be placed at the base of undercut areas.

If unsuitable or unstable soils are encountered during construction, they should be removed and replaced with material meeting the requirements of the IDOT Bureau of Design and Environment (BDE) Aggregate Subgrade Improvement Special Provision (April 1, 2022). The actual need for removal and replacement with Aggregate Subgrade Improvement should be determined in the field at the time of construction by the Geotechnical Engineer or soils inspector. Approximate quantity of Aggregate Subgrade Improvement for this purpose can be anticipated as 25% of the full depth pavement area, assuming a thickness of 12 inches.

Proof rolling should be performed in accordance with Section 3.3 of IDOT Subgrade Stability Manual to identify unstable/unsuitable subgrade soils. All potentially unstable soils should be tested with a dynamic cone penetrometer and the undercut recommendations shall be per guidelines in the IDOT Subgrade Stability Manual. We recommend placing geotextile fabric at the base of undercut areas where low strength subgrade soils are encountered. Fabric should meet the requirements of Article 210, Fabric for Ground Stabilization, of the SSRBC.

To provide drainage for the proposed pavement areas, we recommend installing longitudinal pipe underdrains under the new pavements and under the edge of new pavement in widening areas. However, we understand that if the proposed widening areas at the intersections are very narrow, and if the drainage structures are over 200 feet away, this may not be feasible at some locations. Drains should also be installed in low areas and at the base of any undercuts. The underdrains should tie into the storm water drainage system and should be installed per Article 601 in the IDOT Standard Specifications (Adopted January 1, 2022) and consist of Type 2 underdrains.

SECTION 09: CONSTRUCTION CONSIDERATIONS

Borings data indicate that the long-term water table will approximately be between elevation 578 and elevation 576.

Existing substructures consist of timber pile foundations. Drilled shafts at this site are expected to be feasible with proper groundwater management and adherence to IDOT specifications. Construction should proceed with appropriate stabilization techniques

while carefully monitoring artesian conditions. To ensure safe and efficient installation, groundwater control measures—such as casing, slurry stabilization, controlled dewatering, and pressure grouting—should be implemented. Pre-drilling probes are recommended to locate timber piles, with rock augers or coring barrels used for obstruction removal and temporary casing or slurry employed to stabilize the excavation. The shaft bottom must be cleaned and verified for full bedrock contact before concrete placement, following IDOT Standard Specifications (Section 516) and Guide Bridge Special Provision 86 (GBSP 86). Seating the casing into competent rock will help minimize groundwater inflow and improve shaft stability. Concrete should be placed using the tremie method per IDOT Section 1020 – Portland Cement Concrete, ensuring durability and preventing segregation. Shaft quality will be confirmed using Crosshole Sonic Logging (CSL) or Thermal Integrity Profiling (TIP), as required by GBSP 86. Additionally, pre-construction planning should incorporate monitoring wells or piezometers to assess groundwater conditions in real time and adapt mitigation measures as needed.

During excavation for the proposed improvements, movement of adjacent soils into the excavation should be prevented. All excavations should be performed in accordance with the latest Occupational Safety and Health Administration (OSHA) requirements. Allowances should be made for any surcharge loads adjacent to the retaining structures.

SECTION 10: GENERAL QUALIFICATIONS

The analysis and recommendations presented in this report are based upon the data obtained from the soil borings performed at the indicated locations and from any other information discussed in this report. This report does not reflect any variations that may occur between borings or across the site. In addition, the soil samples cannot be relied on to accurately reflect the strata variations that usually exist between sampling locations. The nature and extent of such variations may not become evident until construction. If variations appear evident, it will be necessary to reevaluate the recommendations of the report. In addition, it is recommended that Geo Services Inc. be retained to perform construction observation and thereby provide a complete professional geotechnical engineering service through the observational method.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No other warranties, either expressed or implied, are intended or made. In the event that any changes in the nature, design or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing by the geotechnical engineer. Also note that Geo Services Inc. is not responsible for any claims, damages, or liability associated with any other party's interpretation of this report's subsurface data or reuse of the report's subsurface data or engineering analyses without the express written authorization of Geo Services Inc.

TABLE OF CONTENTS

APPENDIX A

GENERAL NOTES

GENERAL NOTES

CLASSIFICATION

American Association of State Highway & Transportation Officials (AASHTO) System used for soil classification.

Cohesionless Soils

Relative Density	No. of Blows per foot N
Very Loose	0 to 4
Loose	4 to 10
Medium Dense	10 to 30
Dense	30 to 50
Very Dense	Over 50

Cohesive Soils

Consistency	Unconfined Compressive Strength - qu (tsf)
Very Soft	Less than 0.25
Soft	0.25 - 0.5
Medium Stiff	0.5 - 1.0
Stiff	1.0 - 2.0
Very Stiff	2.0 - 4.0
Hard	Over 4.0

TERMINOLOGY

Streaks are considered to be paper thick. **Lenses** are considered to be less than 2 inches thick. **Layers** are considered to be less than 6 inches thick. **Stratum** are considered to be greater than 6 inches thick.

DRILLING AND SAMPLING SYMBOLS

SS:	Split Spoon 1-3/8" I.D., 2" O.D.	HS:	Housel Sampler
ST:	Shelby Tube 2" O.D., except where noted	WS:	Wash Sample
AS:	Auger Sample	FT:	Fish Tail
DB:	Diamond Bit - NX: BX: AX	RB:	Rock Bit
CB:	Carboloy Bit - NX: BX: AX	WO:	Wash Out
OS:	Osterberg Sampler		

Standard "N" Penetration: Blows per foot of a 140 lb. hammer falling 30" on a 2" O.D. Split Spoon

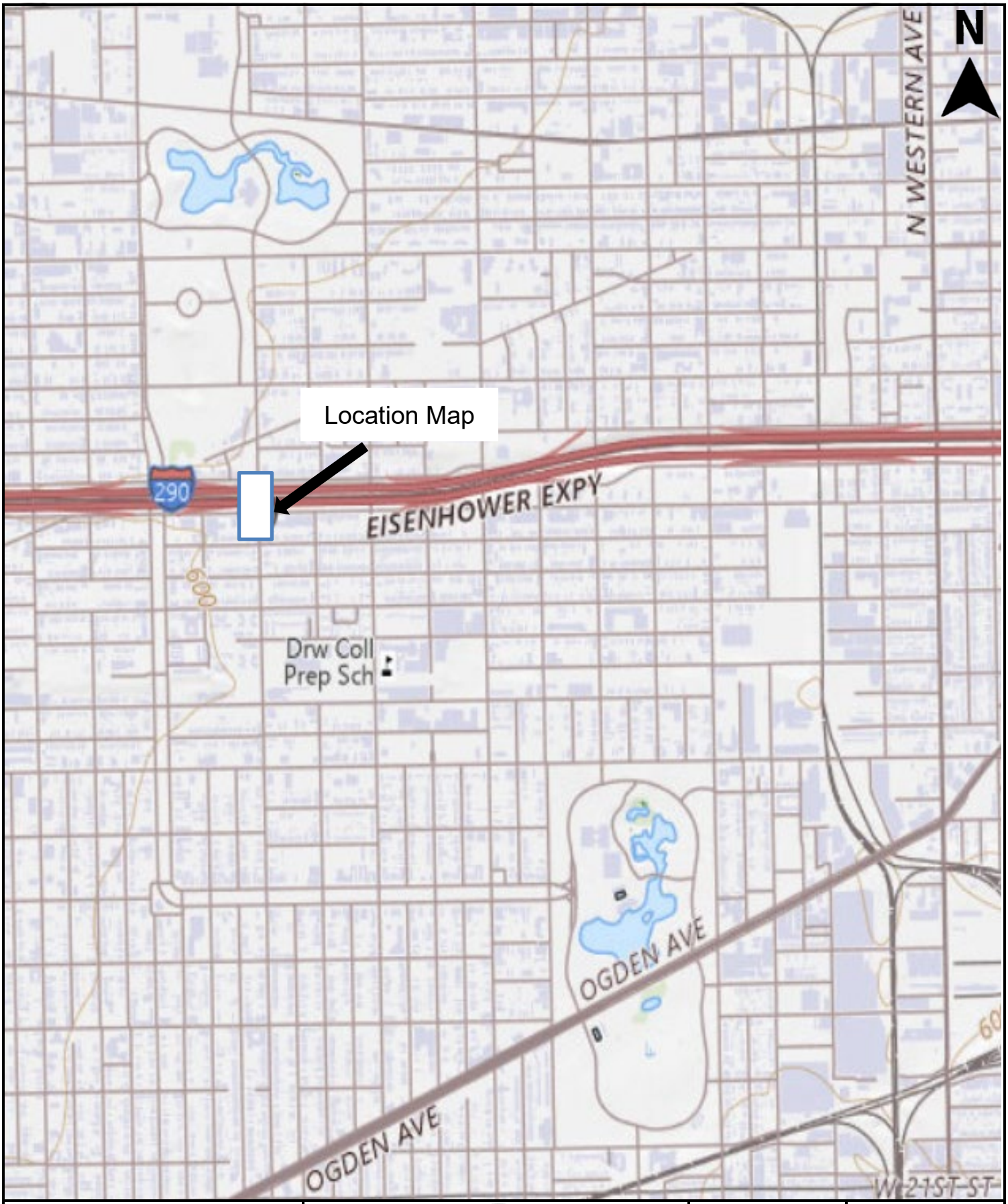
WATER LEVEL MEASUREMENT SYMBOLS

WL:	Water	WD:	While Drilling
WCI:	Wet Cave In	BCR:	Before Casing Removal
DCI:	Dry Cave In	ACR:	After Casing Removal
WS:	While sampling	AB:	After Boring

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable ground water levels. In impervious soils, the accurate determination of ground water elevations is not possible in even several days observation, and additional evidence on ground water elevations must be sought.

APPENDIX B

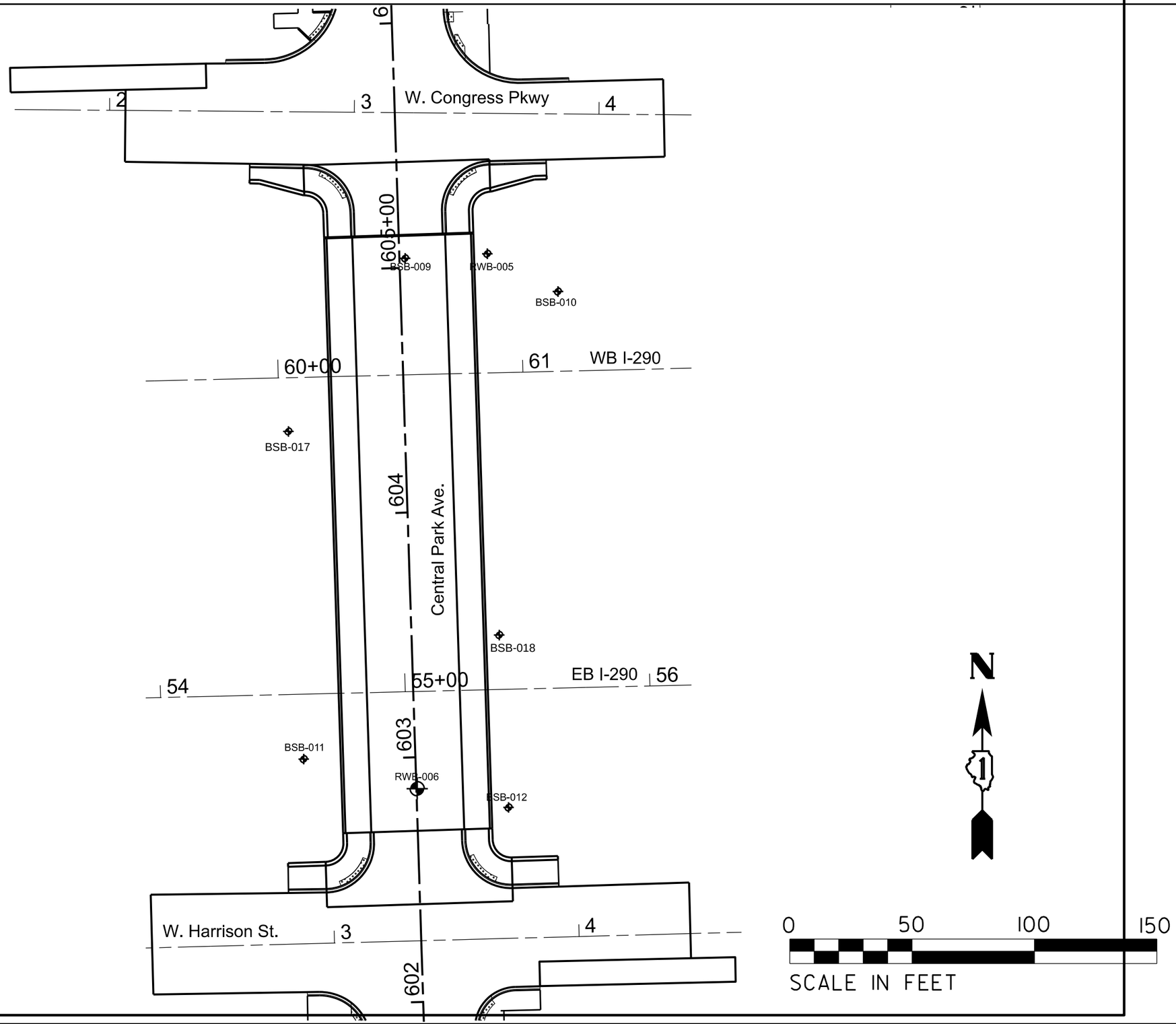
Site Map



Site Map			
DB Sterlin, Central Park Avenue Bridge over I-290, Cook County, IL	**Geo Services, Inc.** Geotechnical, Environmental & Civil Engineering 805 Amherst Court, Suite 204 Naperville, Illinois 60565 (630) 355-2838	DRAWN BY	QZ
		APPROVED BY	AMO
		DATE	June 10, 2023
		GSI JOB No.	20051
		SCALE	NTS

APPENDIX C

Plan & Profile



FILE NAME: $FILE$

DBS | DB STERLIN CONSULTANTS, INC.
123 N. Wacker Drive, Suite 2000
Chicago, Illinois 60606
312.897.1006

USER NAME	= $USER$	DESIGNED	- DB Sterlin	REVISED	-
PLOT SCALE	= $SCALE$	DRAWN	- Qayum Zazai	REVISED	-
PLOT DATE	= $DATE$	CHECKED	- Samuel Plummer	REVISED	-
PLOT TIME	= $TIME$	DATE	- 06/03/2024	REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Central Park Avenue Bridge over I-290

SCALE: N/A

F.A.I. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	2019-189-BR	COOK	$TOTAL	

CONTRACT NO. 62K62

ILLINOIS | FED. AID PROJECT

USER NAME = $USER$	DESIGNED - ___	REVISED -
	DRAWN - Qayum	REVISED -
PLOT SCALE = $SCALE$	CHECKED - Samuel	REVISED -
PLOT DATE = $DATE$	DATE - 06/06/24	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CentralPark Ave. Bridge

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	2019-189-BR	ST. CLAIR	02	01
		CONTRACT NO. 62K62		
		ILLINOIS FED. AID PROJECT		

USER NAME = $USER$	DESIGNED - ___	REVISED -	STATE OF ILLINOIS	F.A.P. RTE.: 290	SECTION: 2019-189-BR
	DRAWN - Oayum	REVISED -	DEPARTMENT OF TRANSPORTATION	COUNTY: ST. CLAIR	TOTAL SHEETS: 02
PLOT SCALE = $SCALE$	CHECKED - Samuel	REVISED -	CentralPark Ave. Bridge	SHEET NO.: 01	CONTRACT NO.62K62
PLOT DATE = $DATE$	DATE - 06/06/24	REVISED -		ILLINOIS	FED. AID PROJECT

PLAN
NOTE BOOK NO. ___
SURVEYED
PLOTTED
ALIGNMENT CHECKED
R.O.W. CHECKED
CADD FILE NAME
BY
DATE

PROFILE
NOTE BOOK NO. ___
SURVEYED
PLOTTED
GRADES CHECKED
B.M. NOTED
STRUCTURE NOTATIONS CHK'D
BY
DATE

$$$$$date_time$$$$$ $$user$$
$$$$$$$$$$$$dgn_name$$$$$$$$$$$$$$$$$$$$$$$$$

PLAN
DATE
BY
SURVEYED
DRAWN
PLOTTED
CHECKED
ALIGNMENT CHECKED
RT. OF WAY CHECKED
CADD FILE NAME
NOTE BOOK
NO.

PROFILE
SURVEYED
DRAWN
PLOTTED
CHECKED
PROFILES
B.M. NOTED
STRUCTURE NOTATIONS CHKD
NOTE BOOK
NO.

$$$$$$date_time$$$$$$ $$user$$
$$$$$$$$$$$$$$$$$$$$dgn_name$$$$$$$$$$$$$$$$$$$$

605 600 595 690 585 580 575 570 565 560 555 550 545 540 535 530 525 520

603+90 604+00 604+10 604+20 604+30 604+40

Boring BSB-017
STA: 604+33
OFFSET: 48L
Elev: 583.0 ft

	N	Qu (tsf)	M%
9" CONCRETE			2
SAND & GRAVEL	5		18
SILTY CLAY LOAM	9		11
	7	1.0	16
	13	4.0	20
CLAY LOAM	12	1.75	18
	30		22
SILT	38		14
	29	4.5	11
SILTY CLAY LOAM	34		30
SILT	28		14
	27	2.5	15
	20	2.75	12
	36	4.5	13
SILTY CLAY LOAM	48	4.5	
	53	4.5	11
	50/4"		2
CRUSHED LIME STONE, SILT, ROCKS			
BEDROCK			

LEGEND

BORING NUMBER
STATION
OFFSET
ELEVATION

N Qu W%

10 2.5P 22
9 NP 7
16 1.5B 14
27 - 12
EOB

SOIL STRENGTH (TSF)
B-BULGE
S-SHEAR
P-POCKET PENETROMETER
N-VALUE

MOISTURE CONTENT (%)
NR=NO RECOVERY

GROUNDWATER ELEVATION
▼ FIRST ENCOUNTER
▽ AT COMPLETION
▽ 24 HRS. WATER LEVEL

EOB=END OF BORING

NOTE:
Conversion from NAVD88 to CCD is:
NAVD88 (ft) = CCD (ft) + 579.19 (ft)

USER NAME = $USER$	DESIGNED - ___	REVISED -	
	DRAWN - Qayum	REVISED -	
PLOT SCALE = $SCALE$	CHECKED - Samuel	REVISED -	
PLOT DATE = $DATE$	DATE - 06/06/24	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
Central Park Ave. Bridge

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	2019-189-BR	ST. CLAIR	02	01
		CONTRACT NO.62K62		
	ILLINOIS	FED. AID PROJECT		

PLAN — SURVEYED, PLOTTED, ALIGNMENT CHECKED, RT. OF WAY CHECKED, CADD FILE NAME — NOTE BOOK NO. — BY — DATE

PROFILE — SURVEYED, PLOTTED, GRADES CHECKED, B.M. NOTED, STRUCTURE NOTAT'NS CH'KD — NOTE BOOK NO. — BY — DATE

$$$$$date_time$$$$$ $$user$$ $$$$$$$$$dgn_name$$$$$$$$$$$$$$$$$$$

USER NAME = $USER$	DESIGNED - ___	REVISED -	
	DRAWN - ___	REVISED -	
PLOT SCALE = $SCALE$	CHECKED - ___	REVISED -	
PLOT DATE = $DATE$	DATE - 01/30/09	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
CentralPark Avenue Bridge

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	2019-189-BR	Cook	02	02

CONTRACT NO. 62K62
ILLINOIS FED. AID PROJECT

APPENDIX D

BORING LOGS

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

SOIL BORING LOG

Date 3/9/23

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** DJ

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** 14, **TWP.** T39N, **RNG.** 13E, 3rd **PM**, **Northing** 1897401.763, **Easting** 1152448.813

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. BSB-009
Station 504+04
Offset 2 ft L
Ground Surface Elev. 599.89 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter Dry to -5.0 ft
Upon Completion n/a ft
After ____ **Hrs.** n/a ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material
599.64				3" ASPHALT
598.89				9" CONCRETE
				NO RECOVERY
596.89				
	3			CLAY-gray-soft to medium stiff
-5	3 3	0.50 B	24	
	1			
	2 1	0.25 B	28	
591.89				
	2			CLAY LOAM-gray-stiff
-10	2 3	1.25 B	24	
589.39				
	2			CLAY LOAM with Gravel-brown & gray-medium stiff
	2 2	0.50 B	26	
586.89				
	1			SANDY CLAY LOAM-black & gray-medium stiff
-15	0 1	0.50 B	26	
584.39				
	3			CLAY LOAM-gray-stiff
	6 7	1.50 B	19	
581.89				
	4			CLAY-gray-stiff
-20	6 7	1.50 B	19	
579.39				SILTY CLAY-gray-stiff
	5			
	5 6	1.50 B	19	
576.89				
	4			CLAY-gray-medium stiff to stiff
-25	5 8	1.50 B	19	
	7			
	9 12	0.50 B	29	
571.89				
	7			CLAYEY SILT-gray-dense
-30	16 22		21	
566.89				
	15			SANDY SILT-gray-dense
-35	17 21		19	
561.89				
	10			CLAY LOAM-gray-medium stiff to hard
-40	15 16	4.50 B	15	

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

BBS, form 137 (Rev. 8-99)

SOIL BORING 20051_LOG.GPJ IL_DOT.GDT 3/3/25

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

SOIL BORING LOG

Date 3/9/23

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** DJ

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** 14, **TWP.** T39N, **RNG.** 13E, 3rd **PM**, **Northing** 1897401.763, **Easting** 1152448.813

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. BSB-009
Station 504+04
Offset 2 ft L
Ground Surface Elev. 599.89 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter Dry to -5.0 ft
Upon Completion n/a ft
After ____ **Hrs.** n/a ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				CLAY LOAM-gray-medium stiff to hard *(continued)*
	7			
-45	8 12	0.50 B	22	
	10			
-50	13 20	3.50 B	13	
546.89				
	22			SILTY CLAY with Sand-gray-hard
-55	23 34	4.50 B	13	
541.89				
	18			SILTY CLAY-gray-hard
-60	20 27	4.50 B	16	
				SILTY CLAY-gray-hard *(continued)*
536.89				
	50/5"			SILTY LOAM- gray-very dense
-65			9	
531.89				
	50/2"			CLAYEY GRAVEL-gray-very dense
529.89 -70			14	
				Driller's observation: Possible bedrock at 74.0', additional 1'.0' was drilled to confirm the bedrock.
525.89	50/0"			
-75				
				EOB @75.0'. Boring was grouted and the surface patched with concrete.
-80				

SOIL BORING 20051_LOG.GPJ IL_DOT.GDT 3/3/25

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

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

SOIL BORING LOG

Date 2/28/23

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** TZ

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** 14, **TWP.** T39N, **RNG.** 13E, 3rd **PM**, **Northing** 1897385.014, **Easting** 1152520.959

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. BSB-010
Station 604+90
Offset 64 ft R
Ground Surface Elev. 581.15 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter Dry to -10.0 ft
Upon Completion n/a ft
After ____ **Hrs.** n/a ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				12.0" ASPHALT
580.15			2	
	4			SAND & Gravel (Fill)-black-medium dense
	5 7		4	
578.15				
	3			CLAY LOAM with Gravel-gray-medium stiff to stiff
	4	1.30	17	
-5	5	B		
	3			
	5	0.70	18	
	6	B		
	3			
	6	0.90	22	
-10	6	B		
570.65				
	19			SILTY CLAY-gray-very stiff
	18	3.50	21	
	14	B		
568.15				
	6			CLAY LOAM with Gravel-gray-stiff to very stiff
	9	3.40	14	
-15	15	B		
	6			
	8	1.60	21	
	12	B		
	4			
	7	1.70	18	
-20	10	B		
	4			CLAY LOAM with Gravel-gray-stiff to very stiff *(continued)*
	7	1.70	21	
	11	B		
	6			
	9	1.70	20	
-25	11	B		
555.65				
	5			SILTY CLAY LOAM-gray-medium stiff to hard
	11	0.90	25	
	11	B		
	5			
	8	1.30	13	
-30	8	B		
	14			
	22	3.10	15	
-35	29	B		
	25			
	43	4.50	17	
-40	50/3"			

SOIL BORING 20051_LOG.GPJ IL_DOT.GDT 3/3/25

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

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

SOIL BORING LOG

Date 2/28/23

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** TZ

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** 14, **TWP.** T39N, **RNG.** 13E, 3rd **PM**, **Northing** 1897385.014, **Easting** 1152520.959

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. BSB-010
Station 604+90
Offset 64 ft R
Ground Surface Elev. 581.15 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter Dry to -10.0 ft
Upon Completion n/a ft
After ____ **Hrs.** n/a ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	
				SILTY CLAY LOAM-gray-medium stiff to hard *(continued)*
	25			
	31	4.50	14	
-45	25			
				533.15
				GRAVEL-gray-very dense
	50/5"			
			2	
-50				
				528.15
				Drillers observation: Rock, gravel and boulder between 53.5 to 54.5. Possible bedrock at 55.0', 2.0' was drilled to confirm.
	50/2"			
			4	
-55				
				524.15
				End Of Boring @ -57.0'. Boring was grouted and the surface patched with concrete.
-60				

SOIL BORING 20051_LOG.GPJ IL_DOT.GDT 3/3/25

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

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

SOIL BORING LOG

Date 4/14/23

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** DJ

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** 14, **TWP.** T39N, **RNG.** 13E, 3rd **PM**, **Northing** 1897197.174, **Easting** 1152407.384

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. BSB-011
Station 603+00
Offset 0 ft
Ground Surface Elev. 582.24 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter Dry to -10.0 ft
Upon Completion n/a ft
After ____ **Hrs.** n/a ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				8.5" CONCRETE
				581.53
				SAND & GRAVEL-brown & gray-medium dense
	6			
	5		4	
	7			
				578.74
	2			CLAY LOAM with Gravel-gray-soft to medium stiff
	3	0.80	17	
-5	3	B		
	4			
	3	0.90	19	
	5	B		
	3			
	4	0.90	18	
-10	8	B		
	4			
	6	0.40	22	
	7	B		
	4			
	4	0.40	13	
-15	5	B		
	3			
	4	0.40	24	
	4	B		
				563.74
	5			CLAYEY SILT-gray-medium dense
	14		22	
-20	15			

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				CLAYEY SILT-gray-medium dense *(continued)*
	14			
	13		19	
	16			
				558.74
	12			SILTY CLAY LOAM-gray-stiff
	13	1.10	16	
-25	15	B		
				556.24
	10			SILTY CLAY LOAM with Gravel-gray-stiff to very stiff
	15	2.70	13	
	16	B		
	13			
	12	1.10	19	
-30	15	B		
	8			
	10	2.40	13	
-35	13	B		
				543.74
	45			SANDY SILT-gray-very dense
	50/4"		11	
-40				

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

BBS, form 137 (Rev. 8-99)

SOIL BORING 20051_LOG.GPJ IL_DOT.GDT 3/3/25

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

SOIL BORING LOG

Date 4/14/23

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** DJ

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** 14, **TWP.** T39N, **RNG.** 13E, 3rd **PM**, **Northing** 1897197.174, **Easting** 1152407.384

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. BSB-011
Station 603+00
Offset 0 ft
Ground Surface Elev. 582.24 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter Dry to -10.0 ft
Upon Completion n/a ft
After ____ **Hrs.** n/a ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	
				SANDY SILT-gray-very dense *(continued)*
538.74				
	15			SILTY CLAY with Gravel-gray-stiff
	21	1.40	15	
-45	29	B		
533.74				
	50/5"			SILT with Gravel-gray-very dense
			13	
-50				
529.24				
528.74				Drillers observation: Possible Top of bedrock at 53.0'. Drilled 6.0" into bed rock to confirm.
-55				End Of Boring @ -53.5'. Boring was grouted and the surface patched with concrete.
-60				

SOIL BORING 20051_LOG.GPJ IL_DOT.GDT 3/3/25

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

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

SOIL BORING LOG

Date

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** DJ

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** 14, **TWP.** T39N, **RNG.** 13E, 3rd **PM**,
Northing 1897177.439, **Easting** 1152491.107

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. BSB-012
Station 602+78
Offset 37 ft R
Ground Surface Elev. 599.59 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter Dry to -10.0 ft
Upon Completion n/a ft
After ____ **Hrs.** n/a ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				3" ASPHALT 599.34
				6" CONCRETE 598.84
	3			CLAY LOAM-brown, black & gray-stiff
	3 4	1.00 B	20	
	3			
-5	4 5	1.00 B	22	
				594.09
	3			CLAY LOAM-gray-medium stiff to stiff
	3 4	1.00 B	25	
	2			
-10	3 3	1.50 B	17	
	2			
	4 5	1.50 B	20	
	2			
-15	3 3	0.50 B	21	
				584.09
	2			CLAY LOAM-brown & gray-soft
	2 2	0.25 B	29	
				581.59
	3			CLAY-gray-soft to stiff
-20	3 5	0.25 B	25	
				CLAY-gray-soft to stiff *(continued)*
	4			
	6 6	1.00 B	18	
	4			
-25	7 8	1.00 B	21	
				574.09
	5			CLAY LOAM-gray-stiff
	6 8	1.00 B	20	
	4			
-30	5 7	1.50 B	19	
				566.59
	4			CLAY LOAM with Gravel-gray-hard
-35	6 12	4.50 B	18	
				561.59
	9			CLAY LOAM-gray-stiff to very stiff
-40	9 13	2.00 B	18	

SOIL BORING 20051_LOG.GPJ IL_DOT.GDT 3/3/25

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

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

SOIL BORING LOG

Date

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** DJ

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** 14, **TWP.** T39N, **RNG.** 13E, 3rd **PM**, **Northing** 1897177.439, **Easting** 1152491.107

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. BSB-012
Station 602+78
Offset 37 ft R
Ground Surface Elev. 599.59 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter Dry to -10.0 ft
Upon Completion n/a ft
After ____ **Hrs.** n/a ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
CLAY LOAM-gray-stiff to very stiff *(continued)*			
	8		
-45	14 13	1.00 B	15
551.59			
CLAY LOAM with Sand-gray-medium stiff	5		
-50	6 6	0.75 B	23
546.59			
CLAY LOAM with Gravel-gray-hard	16		
-55	21 23	4.50 B	13
541.59			
CLAY LOAM with Gravel-gray-hard	17		
-60	25 30	4.50 B	16
CLAY LOAM with Gravel-gray-hard *(continued)*			
536.59			
SANDY CLAY with Gravel & Sand-gray-very stiff	34		
-65	25 26	2.50 B	10
531.59			
CLAY with Gravel -gray-very stiff	50/5"		
-70		3.00 B	8
526.59			
SILTY LOAM-gray-very dense			
524.59 -75	50/5"		10
Driller's observation: Possible bedrock at 75.0', additional 2.0' was drilled to confirm the bedrock.			
522.59			
EOB @ 77.0'. Boring was grouted and the surface patched with concrete.			
-80			

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

BBS, form 137 (Rev. 8-99)

SOIL BORING 20051_LOG.GPJ IL_DOT.GDT 3/3/25

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
805 Amherst Court, Suite 204
Naperville, Illinois 60565
(630) 355-2838

SOIL BORING LOG

GEO Job No. 20051

Date 9/20/24

PROJECT FAI 290 (I-290 Bridges)

LOCATION Central Park Ave, NB Independence and SB Independence Bridge over I-290 Chicago, IL

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

CLIENT DB Sterlin

BORING NO. BSB-017
Northing 1897331
Easting 1152422
Ground Surface Elev. 583.0 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft
Groundwater Elev.:
First Encounter Dry to -10.0 ft
Upon Completion n/a ft
After Hrs. n/a ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	DRY DENSITY (pcf)	Soil Description
					9.0" CONCRETE
582.3					
			2		SAND & GRAVEL-brown-very dense
	3				
581.0	2		18		SILTY CLAY LOAM-brown-very stiff
	3				
	2				
	5	2.50 P	11	128	
-5	4				
577.0					
	2				CLAY LOAM-gray-stiff to hard becoming gray @ -6.0'
	3	1.00 P	16	114	
	4				
	5				
	5	4.00 P	20	107	
-10	8				
	4				
	5	1.75 P	18	108	
	7				
569.5					
	13				SILT-gray-dense
	12		22		
-15	18				
	19				
	20		14		
	18				
564.5					
	6				SILTY CLAY LOAM-gray-hard
	12	4.50 P	11	127	
-20	17				

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	DRY DENSITY (pcf)	Soil Description
					SILTY CLAY LOAM-gray-hard *(continued)*
562.0					
	11				SILT-gray-medium dense to dense
	14		30		
	20				
	18				
	15		14		
-25	13				
557.0					
	6				SILTY CLAY LOAM-gray-very stiff to hard
	13	2.50 P	15	120	
	14				
	10				
	9	2.75 P	12	128	
-30	11				
	13				
	15	4.50 P	13	125	
-35	21				
	16				
	21	4.50 P	11	130	
-40	27				

Z:\PROJECTS\2020\20051 DB STERLIN, IDOT PTB 195-021, I-290 AT INDEP. BLVD & CENTRAL PARK\20051 BORING LOGS\20051_LOG.GPJ 3/5/25

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

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
805 Amherst Court, Suite 204
Naperville, Illinois 60565
(630) 355-2838

SOIL BORING LOG

GEO Job No. 20051

Date 9/20/24

PROJECT FAI 290 (I-290 Bridges)

LOCATION Central Park Ave, NB Independence and SB Independence Bridge over I-290 Chicago, IL

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

CLIENT DB Sterlin

BORING NO. BSB-017
Northing 1897331
Easting 1152422
Ground Surface Elev. 583.0 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter Dry to -10.0 ft
Upon Completion n/a ft
After Hrs. n/a ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	DRY DENSITY (pcf)	
					SILTY CLAY LOAM-gray-very stiff to hard *(continued)*
	14				
-45	18 35	4.50 P	11	129	
534.5					
	50/4"				CRUSHED LIME STONE, SILT, ROCKS
-50			2		
529.5					
			NR		Driller's obserevation: Aparent top of bedrock @ -53.5', drilled 2.5' into bedrock to confirm.
-55					
527.0					
					Borehole continued with rock coring.
-60					

Z:\PROJECTS\2020\20051 DB STERLIN, IDOT PTB 195-021, I-290 AT INDEP. BLVD & CENTRAL PARK\20051 BORING LOGS\20051_LOG.GPJ 3/5/25

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

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

ROCK CORE LOG

Date 9/20/24

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** ZP

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** , **TWP.** , **RNG.** , 3rd **PM**,
Northing 1897330.797, **Easting** 1152422.443

COUNTY Cook **CORING METHOD** Rotary Wash

STRUCT. NO. SN 016-2091 **CORING BARREL TYPE & SIZE** NX Double Swivel-10 ft
Station 603+91.55

Core Diameter 2 in
Top of Rock Elev. 527.00 ft
Begin Core Elev. 527.00 ft

BORING NO. BSB-017
Station 604+33
Offset 48 ft L
Ground Surface Elev. 583.00 ft

		DEPTH (ft)	CORE (#)	RECOVERY (%)	R.Q.D. (%)	CORE TIME (min/ft)	STRENGTH (tsf)
RUN 1 (-56.0' to -63.0') SILURIAN SYSTEM, NIAGARAN SERIES DOLOMITE Light gray to gray with fine grain with horizontal bedding. Highly fractured throughout with some chert nodules.	527.00		1	95	74		470.00
		-60					
	520.00						
RUN 2 (-63.0' to -71.0') SILURIAN SYSTEM, NIAGARAN SERIES DOLOMITE Light gray to gray with fine grain with horizontal bedding. Highly fractured throughout with some chert nodules.		-65	2	100	86		1030.00
		-70					
	512.00						
End Of Boring @ -71.0'. Boring backfilled with cuttings. End of Boring		-75					

Color pictures of the cores Yes
Cores will be stored for examination until 5 yrs after const.
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

ROCK CORE LOG

Date 9/20/24

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** ZP

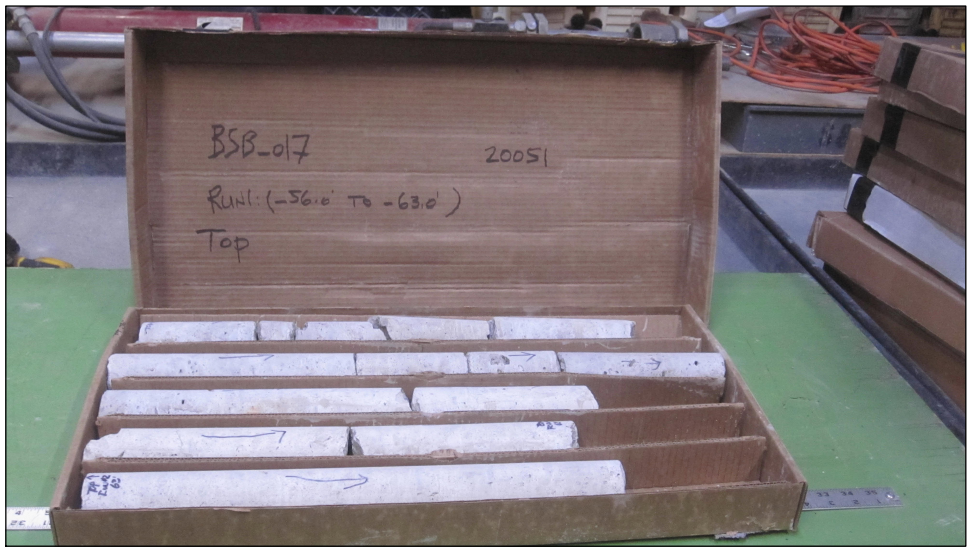
SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** , **TWP.** , **RNG.** , 3rd **PM**,
Northing 1897330.797, **Easting** 1152422.443

COUNTY Cook **CORING METHOD** Rotary Wash

STRUCT. NO. SN 016-2091 **CORING BARREL TYPE & SIZE** NX Double Swivel-10 ft
Station 603+91.55

BORING NO. BSB-017
Station 604+33
Offset 48 ft L
Ground Surface Elev. 583.00 **ft**

Core Diameter 2 **in**
Top of Rock Elev. 527.00 **ft**
Begin Core Elev. 527.00 **ft**



Color pictures of the cores Yes
Cores will be stored for examination until 5 yrs after const.
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

ROCK CORE LOG

Date 9/20/24

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** ZP

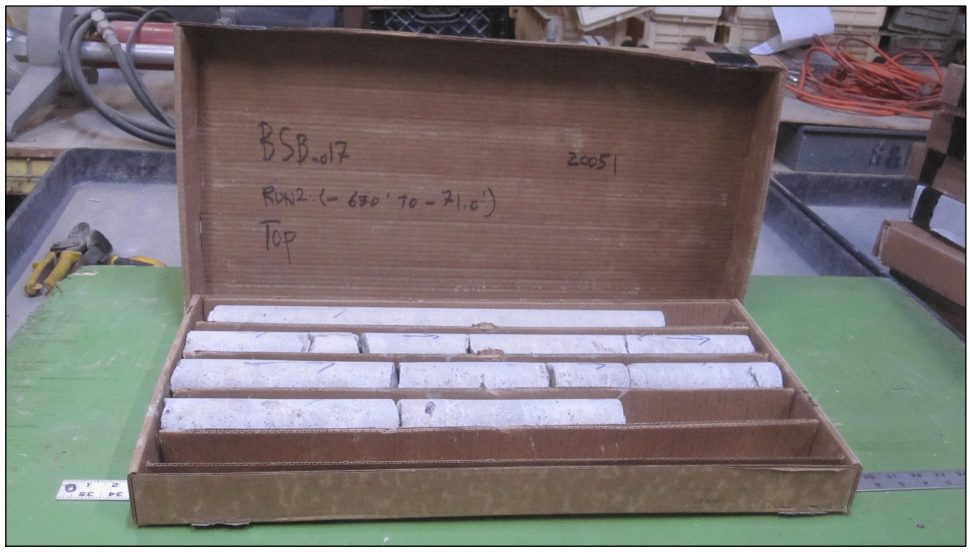
SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** , **TWP.** , **RNG.** , 3rd **PM**,
Northing 1897330.797, **Easting** 1152422.443

COUNTY Cook **CORING METHOD** Rotary Wash

STRUCT. NO. SN 016-2091 **CORING BARREL TYPE & SIZE** NX Double Swivel-10 ft
Station 603+91.55

BORING NO. BSB-017
Station 604+33
Offset 48 ft L
Ground Surface Elev. 583.00 **ft**

Core Diameter 2 **in**
Top of Rock Elev. 527.00 **ft**
Begin Core Elev. 527.00 **ft**



Color pictures of the cores Yes
Cores will be stored for examination until 5 yrs after const.
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

SOIL BORING LOG

Date 9/19/24

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** ZP

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** , **TWP.** , **RNG.** , 3rd **PM**,
Northing 1897247.603, **Easting** 1152508.837

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. BSB-018
Station 603+50
Offset 36 ft R
Ground Surface Elev. 582.00 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter 578.5 ft
Upon Completion n/a ft
After ____ **Hrs.** n/a ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				9.0" CONCRETE
581.25				
			7	CLAYEY SAND & GRAVEL-very loose
	2			
	1		13	
	1			
578.50 ▼				
	3			SILTY SAND-gray-loose
	3		23	
-5	4			
576.00				
	2			CLAY LOAM-gray-stiff
	3	1.00	17	
	5	P		
	3			
	4	1.00	21	
-10	5	P		
	3			
	3	1.00	21	
	6	P		
	2			
	4	1.00	21	
-15	7	P		
566.00				
	10			SILTY LOAM-gray-medium dense
	13		17	
	15			
	8			
	10		14	
-20	12			
				SILTY LOAM-gray-medium dense *(continued)*
	10			
	13		18	
	15			
558.50				
	9			SILTY CLAY LOAM-gray-hard
	10	4.50	12	
-25	12	P		
	8			
	10	4.50	15	
	12	P		
553.50				
	3			SILTY LOAM-gray-medium dense
	6		30	
-30	7			
548.50				
	12			SILTY LOAM-gray-dense to very dense
	19		11	
-35	26			
	12			
	22		12	
-40	30			

SOIL BORING 20051_LOG.GPJ IL_DOT.GDT 3/3/25

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

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

SOIL BORING LOG

Date 9/19/24

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** ZP

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** , **TWP.** , **RNG.** , 3rd **PM**,
Northing 1897247.603, **Easting** 1152508.837

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. BSB-018
Station 603+50
Offset 36 ft R
Ground Surface Elev. 582.00 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter 578.5 ft
Upon Completion n/a ft
After ____ **Hrs.** n/a ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
SILTY LOAM-gray-dense to very dense *(continued)*			
	12		
	17		12
-45	36		
	50/5"		
			9
-50			
	50/4"		
			6
527.00 -55			
Driller's obserevation: Aparent top of bedrock @ -55.0', drilled 2.0' into bedrock to confirm.			
525.00			
Borehole continued with rock coring.			
-60			

SOIL BORING 20051_LOG.GPJ IL_DOT.GDT 3/3/25

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

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

ROCK CORE LOG

Date 9/19/24

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** ZP

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** , **TWP.** , **RNG.** , 3rd **PM**,
Northing 1897247.603, **Easting** 1152508.837

COUNTY Cook **CORING METHOD** Rotary Wash

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. BSB-018
Station 603+50
Offset 36 ft R
Ground Surface Elev. 582.00 ft

CORING BARREL TYPE & SIZE NX Double Swivel-10 ft
Core Diameter 2 in
Top of Rock Elev. 525.00 ft
Begin Core Elev. 525.00 ft

		DEPTH (ft)	CORE (#)	RECOVERY (%)	R.Q.D. (%)	CORE TIME (min/ft)	STRENGTH (tsf)
RUN 1 (-57.0' to -67.0') SILURIAN SYSTEM, NIAGARAN SERIES DOLOMITE Light gray to gray with fine grain with horizontal bedding. Highly fractured throughout with some chert nodules.	525.00		1	100	88		970.00
		-60					
		-65					
	515.00						
RUN 2 (-67.0' to -72.0') SILURIAN SYSTEM, NIAGARAN SERIES DOLOMITE Light gray to gray with fine grain with horizontal bedding. Highly fractured throughout with some chert nodules.			2	100	100		1080.00
		-70					
	510.00						
End Of Boring @ -72.0'. Boring backfilled with cuttings. End of Boring		-75					

Color pictures of the cores Yes
Cores will be stored for examination until 5 yrs after const.
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

ROCK CORE LOG

Date 9/19/24

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** ZP

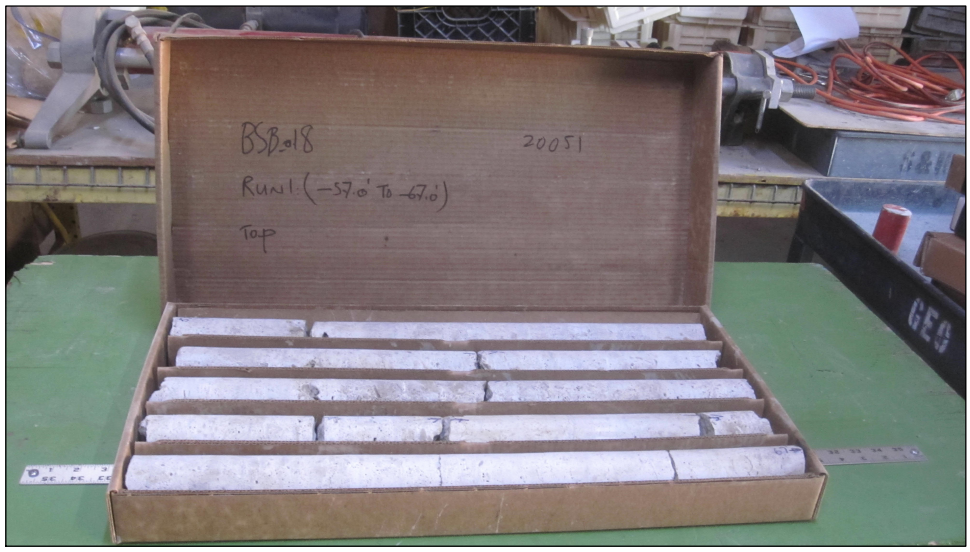
SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** , **TWP.** , **RNG.** , 3rd **PM**,
Northing 1897247.603, **Easting** 1152508.837

COUNTY Cook **CORING METHOD** Rotary Wash

STRUCT. NO. SN 016-2091 **CORING BARREL TYPE & SIZE** NX Double Swivel-10 ft
Station 603+91.55

Core Diameter 2 **in**
Top of Rock Elev. 525.00 **ft**
Begin Core Elev. 525.00 **ft**

BORING NO. BSB-018
Station 603+50
Offset 36 ft R
Ground Surface Elev. 582.00 **ft**



Color pictures of the cores Yes
Cores will be stored for examination until 5 yrs after const.
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

ROCK CORE LOG

Date 9/19/24

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** ZP

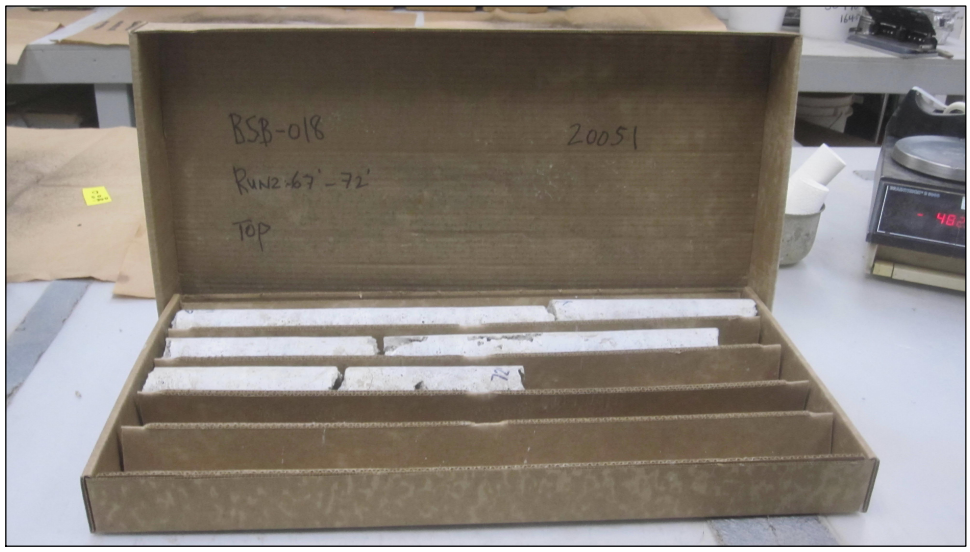
SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** , **TWP.** , **RNG.** , 3rd **PM**,
Northing 1897247.603, **Easting** 1152508.837

COUNTY Cook **CORING METHOD** Rotary Wash

STRUCT. NO. SN 016-2091 **CORING BARREL TYPE & SIZE** NX Double Swivel-10 ft
Station 603+91.55

BORING NO. BSB-018
Station 603+50
Offset 36 ft R
Ground Surface Elev. 582.00 **ft**

Core Diameter 2 **in**
Top of Rock Elev. 525.00 **ft**
Begin Core Elev. 525.00 **ft**



Color pictures of the cores Yes
Cores will be stored for examination until 5 yrs after const.
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

SOIL BORING LOG

Date 3/7/23

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** DJ

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** 14, **TWP.** T39N, **RNG.** 13E, 3rd **PM**, **Northing** 1897403.622, **Easting** 1152482.423

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. RWB-005
Station 605+07
Offset 36 ft R
Ground Surface Elev. 599.45 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter Dry to -5.0 ft
Upon Completion n/a ft
After ____ **Hrs.** n/a ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material
				2.0" ASPHALT, 10.0" CONCRETE
598.45				
	0			CLAY LOAM-brown & gray-medium stiff
	3 3	0.80 B	25	
	3			
-5	2 4	0.50 B	20	
	2			
	2 5	0.50 B	24	
591.45				
	3			SANDY CLAY with Gravel-black & gray-very soft
-10	2 3	<0.25	29	
	3			
	2 2	<0.25	29	
	W			
-15	O H	<0.25	31	
	W			
	O H	<0.25	27	
581.45				
	1			No Recovery
-20	2 3		NR	

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material
				No Recovery *(continued)*
578.45				
	4			CLAY LOAM-gray-stiff to very stiff
	6 8	1.50 P	21	
	5			
-25	7 11	2.00 P	21	
	4			
	8 12	1.50 P	21	
571.45				
	13			SILTY CLAY LOAM with Gravel-gray-very stiff to hard
	17	4.50	19	
-30	26	P		
	15			
	15	4.50	14	
-35	23	P		
	14			
	18	4.50	14	
-40	22	P		

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

BBS, form 137 (Rev. 8-99)

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

SOIL BORING LOG

Date 3/7/23

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** DJ

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** 14, **TWP.** T39N, **RNG.** 13E, 3rd **PM**, **Northing** 1897403.622, **Easting** 1152482.423

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. RWB-005
Station 605+07
Offset 36 ft R
Ground Surface Elev. 599.45 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter Dry to -5.0 ft
Upon Completion n/a ft
After ____ **Hrs.** n/a ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
SILTY CLAY LOAM with Gravel-gray-very stiff to hard *(continued)*				
		7		
		12	3.00	23
	-45	14	P	
		10		
		15	3.50	14
549.45	-50	16	P	
End Of Boring @ -50.0'. Boring was grouted and the surface patched with concrete.				
	-55			
	-60			

SOIL BORING 20051_LOG.GPJ IL_DOT.GDT 3/3/25

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

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

SOIL BORING LOG

Date 3/6/23

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** DJ

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** 14, **TWP.** T39N, **RNG.** 13E, 3rd **PM**, **Northing** 1897175.601, **Easting** 1152460.336

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. RWB-006
Station 602+87
Offset 0 ft
Ground Surface Elev. 599.62 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter Dry to -5.0 ft
Upon Completion n/a ft
After ____ **Hrs.** n/a ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
2.0" ASPHALT, 10.0" CONCRETE			
598.62			12
SILTY CLAY LOAM with Gravel-brown-soft to medium stiff	3		
	2 4	0.40 B	23
	2		
-5	3 3	0.90 B	23
594.12			
CLAY LOAM-gray-soft to medium stiff	2		
	2 3	0.50 P	23
	4		
-10	3 5	0.50 P	17
	3		
	2 3	0.25 P	17
	4		
-15	3 2	0.25 P	24
	3		
	3 4	0.50 P	28
581.62			
SILTY CLAY LOAM-gray-stiff to hard	5		
-20	6 5	4.50 P	16
SILTY CLAY LOAM-gray-stiff to hard *(continued)*	5		
	6 8	1.50 P	18
576.62			
CLAY LOAM-gray-medium stiff to stiff	6		
-25	5 8	1.00 P	17
	5		
	6 9	0.50 P	19
	5		
-30	7 8	1.00 P	23
566.62			
SILTY CLAY LOAM-gray-stiff	10		
-35	12 17	1.50 P	19
561.62			
CLAY LOAM-gray-very stiff	8		
-40	8 12	2.00 P	16

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

BBS, form 137 (Rev. 8-99)

SOIL BORING 20051_LOG.GPJ IL_DOT.GDT 3/3/25

Geo Services, Inc.
Geotechnical, Environmental & Civil Engineering
1235 East Davis Street
Arlington Heights, Illinois 60005
(847) 253-3845

SOIL BORING LOG

Date 3/6/23

ROUTE FAI 290 (I-290 Bridges) **DESCRIPTION** IDOT PTB 195-021 **LOGGED BY** DJ

SECTION 2019-189-B-R,2019-190-B-R **LOCATION** , **SEC.** 14, **TWP.** T39N, **RNG.** 13E, 3rd **PM**, **Northing** 1897175.601, **Easting** 1152460.336

COUNTY Cook **DRILLING METHOD** HSA/Rotary **HAMMER TYPE** CME Automatic

STRUCT. NO. SN 016-2091
Station 603+91.55

BORING NO. RWB-006
Station 602+87
Offset 0 ft
Ground Surface Elev. 599.62 ft

Surface Water Elev. n/a ft
Stream Bed Elev. n/a ft

Groundwater Elev.:
First Encounter Dry to -5.0 ft
Upon Completion n/a ft
After ____ **Hrs.** n/a ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
CLAY LOAM-gray-very stiff *(continued)*				
556.62				
SILTY CLAY LOAM-gray-very stiff		6		
		7	3.50	32
	-45	9	P	
551.62				
CLAY LOAM-gray-stiff		8		
		7	1.75	13
549.62	-50	10	P	
End Of Boring @ -50.0'. Boring was grouted and the surface patched with concrete.				
	-55			
	-60			

SOIL BORING 20051_LOG.GPJ IL_DOT.GDT 3/3/25

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

APPENDIX E

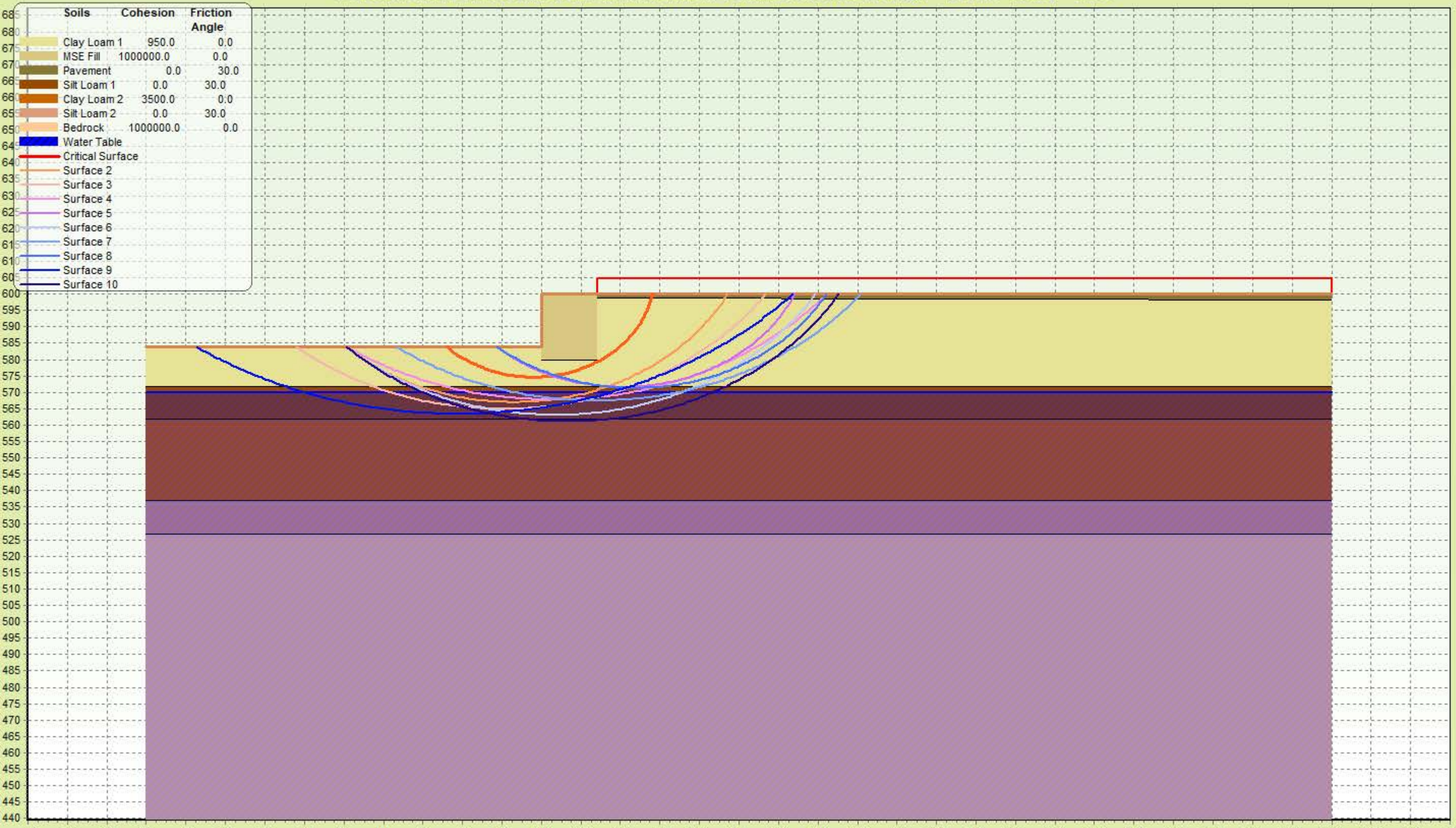
SLOPE STABILITY OUPUT (STABL)

Central Park Avenue Bridge

(SN 0162091)

Problem: UNDRAINED ANALYSIS: North Abutment-Central Park Avenue Bridge - FS Min- Bishop = 2.28

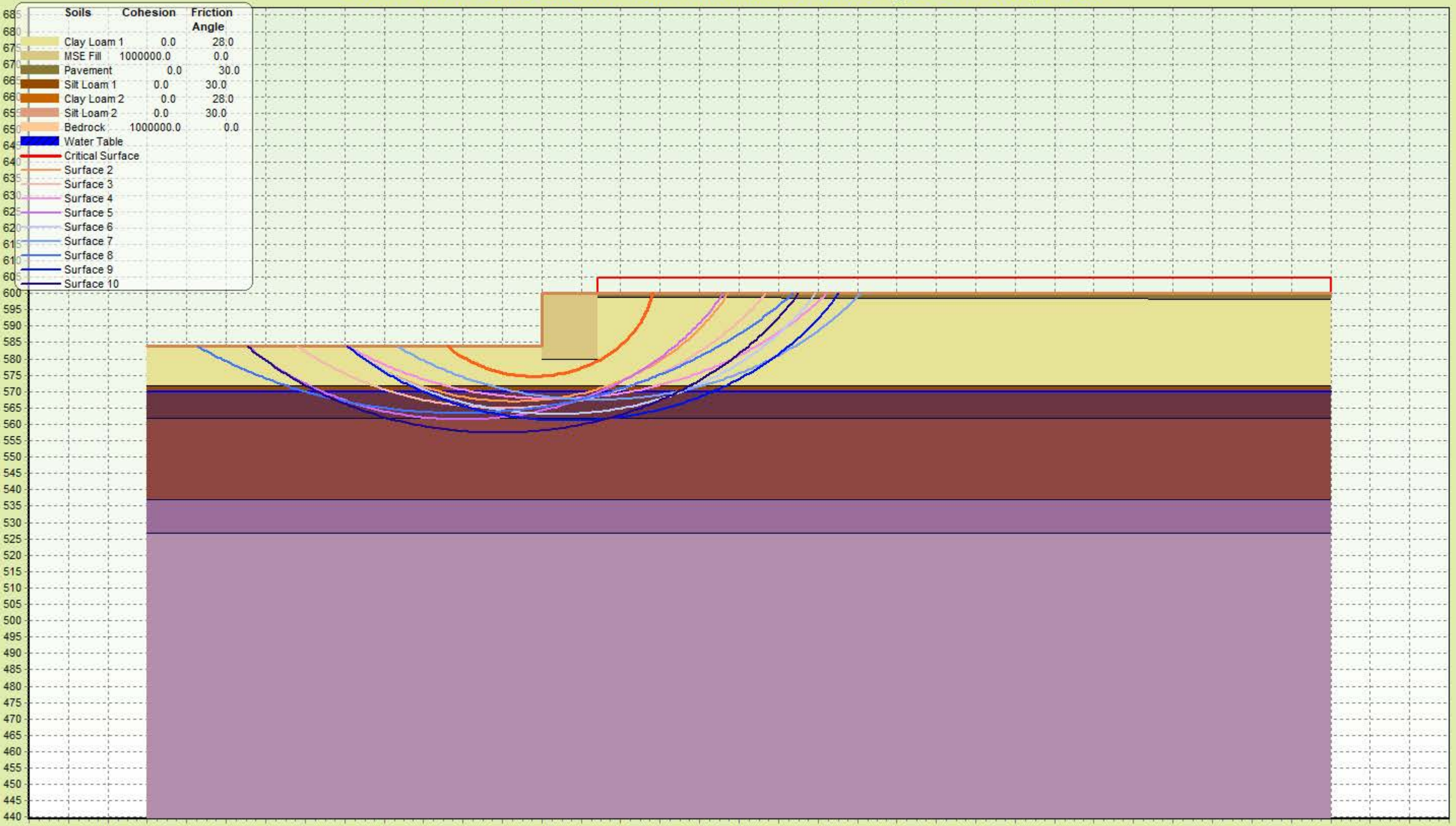
Soils	Cohesion	Friction Angle
Clay Loam 1	950.0	0.0
MSE Fill	1000000.0	0.0
Pavement	0.0	30.0
Silt Loam 1	0.0	30.0
Clay Loam 2	3500.0	0.0
Silt Loam 2	0.0	30.0
Bedrock	1000000.0	0.0
Water Table		
Critical Surface		
Surface 2		
Surface 3		
Surface 4		
Surface 5		
Surface 6		
Surface 7		
Surface 8		
Surface 9		
Surface 10		



Problem: DRAINED ANALYSIS: North Abutment-Central Park Avenue Bridge - FS Min- Bishop = 1.865

Soils	Cohesion	Friction Angle
Clay Loam 1	0.0	28.0
MSE Fill	1000000.0	0.0
Pavement	0.0	30.0
Silt Loam 1	0.0	30.0
Clay Loam 2	0.0	28.0
Silt Loam 2	0.0	30.0
Bedrock	1000000.0	0.0

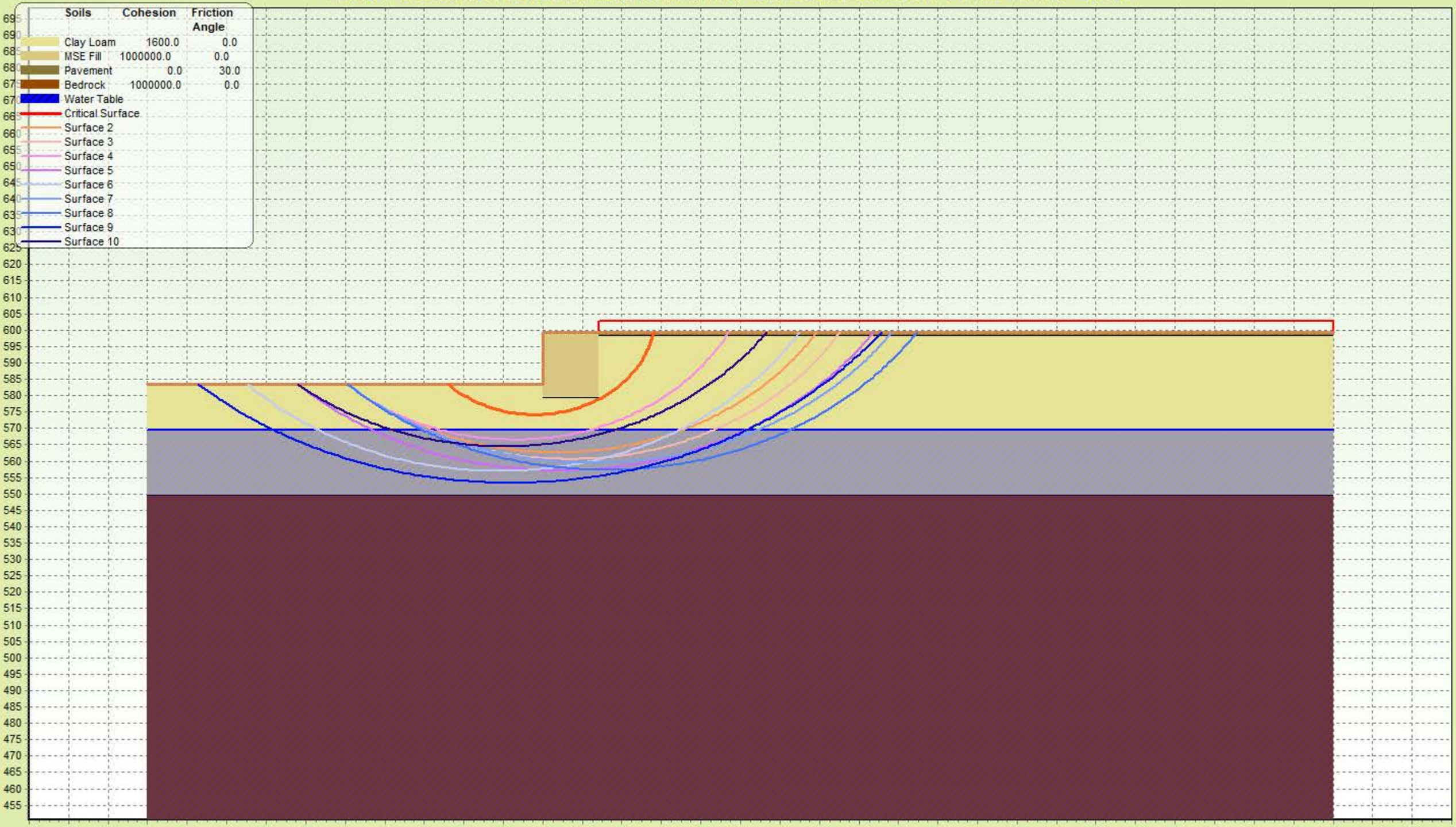
Water Table
Critical Surface
Surface 2
Surface 3
Surface 4
Surface 5
Surface 6
Surface 7
Surface 8
Surface 9
Surface 10



Problem: UNDRAINED ANALYSIS: North Retaining Wall-Central Park Ave. Bridge - FS Min- Bishop = 3.842

Soils	Cohesion	Friction Angle
Clay Loam	1600.0	0.0
MSE Fill	1000000.0	0.0
Pavement	0.0	30.0
Bedrock	1000000.0	0.0

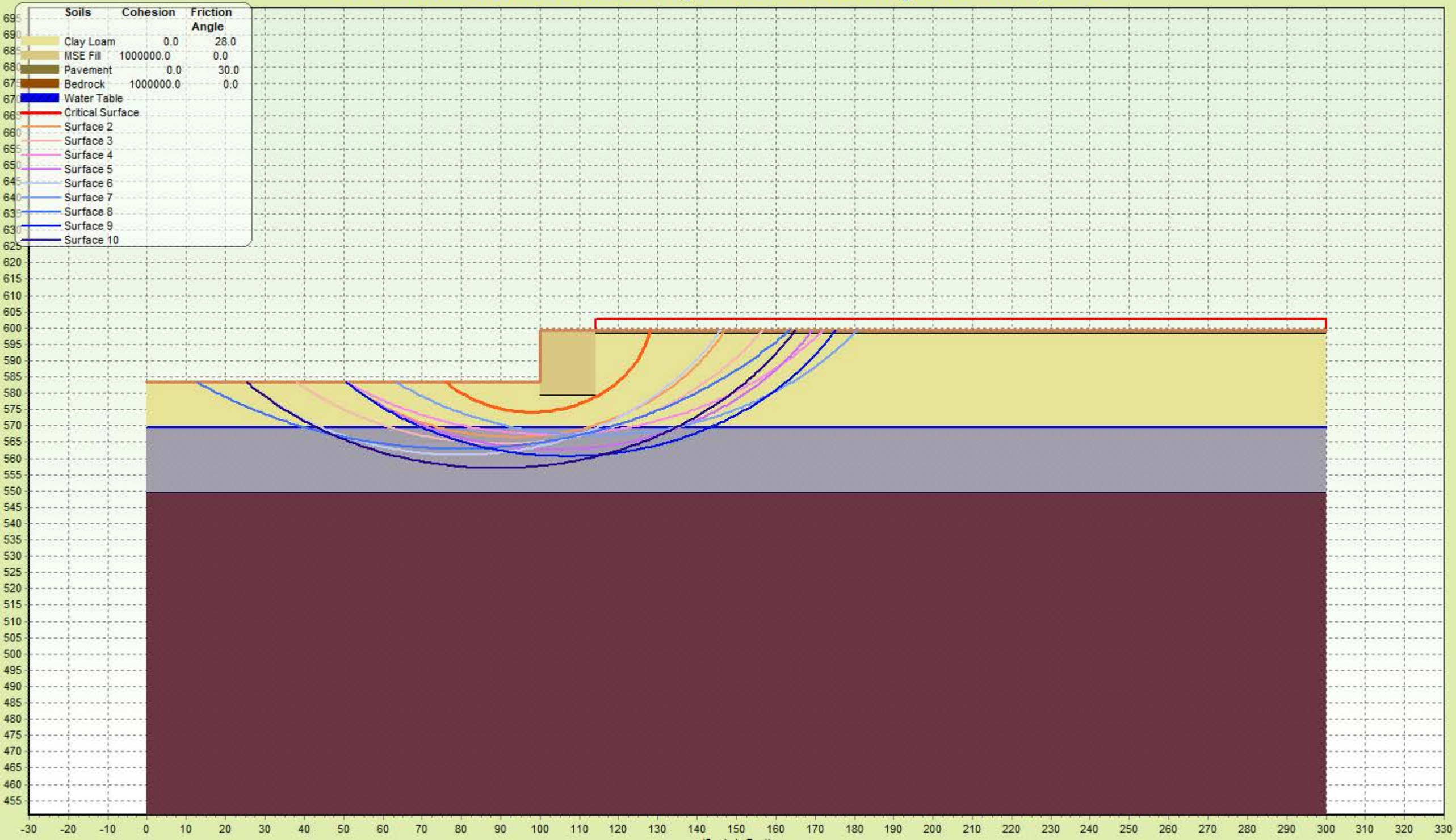
Water Table
Critical Surface
Surface 2
Surface 3
Surface 4
Surface 5
Surface 6
Surface 7
Surface 8
Surface 9
Surface 10



Problem: DRAINED ANALYSIS: North Retaining Wall-Central Park Ave. Bridge - FS Min- Bishop = 1.865

Soils	Cohesion	Friction Angle
Clay Loam	0.0	28.0
MSE Fill	1000000.0	0.0
Pavement	0.0	30.0
Bedrock	1000000.0	0.0

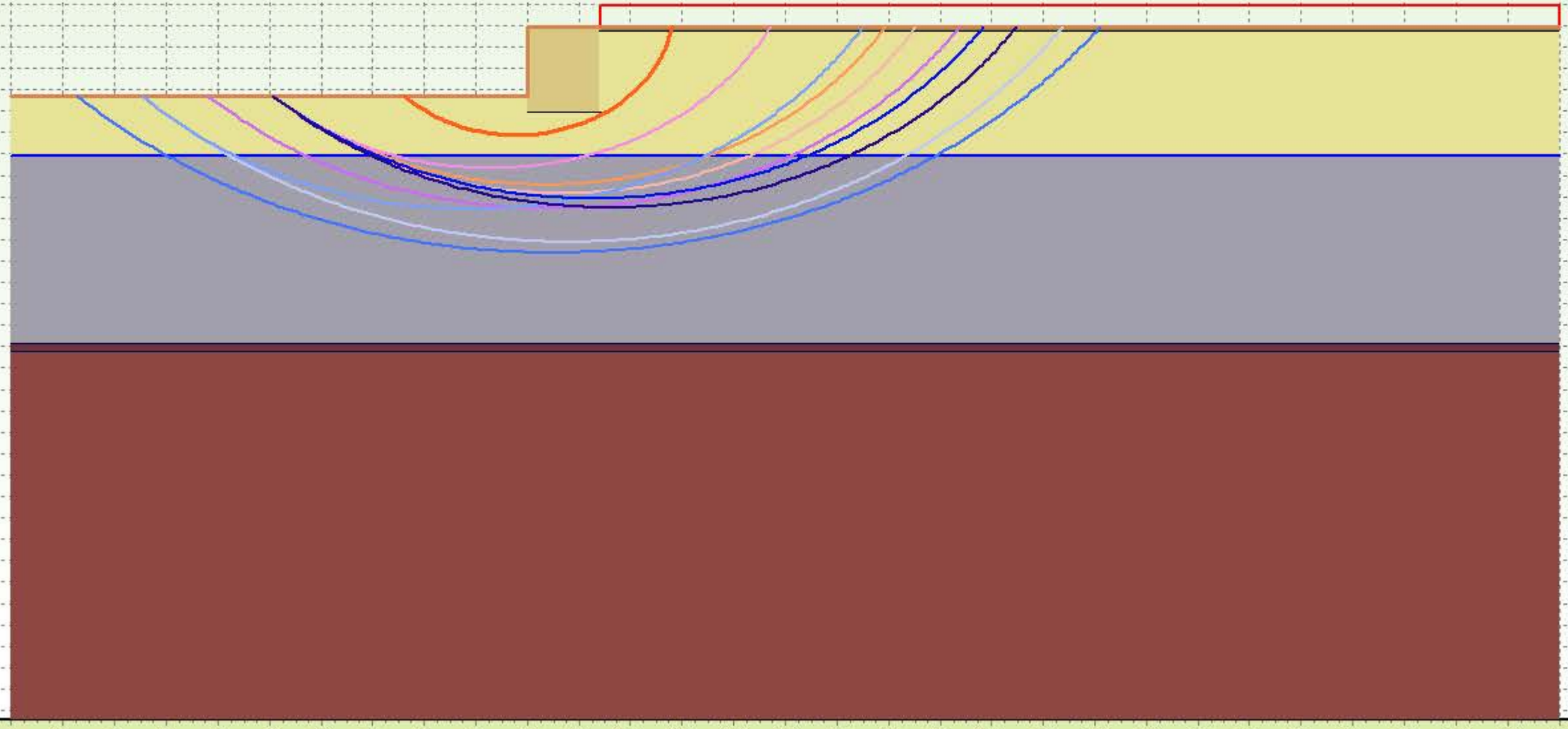
Water Table
Critical Surface
Surface 2
Surface 3
Surface 4
Surface 5
Surface 6
Surface 7
Surface 8
Surface 9
Surface 10



Problem: Undrained Analysis: South Abutment-Central Park Ave. Bridge - FS Min- Bishop = 4.091

Soils	Cohesion	Friction Angle
Clay Loam	1700.0	0.0
MSE Fill	1000000.0	0.0
Pavement	0.0	30.0
Silt Loam	0.0	30.0
Bedrock	1000000.0	0.0

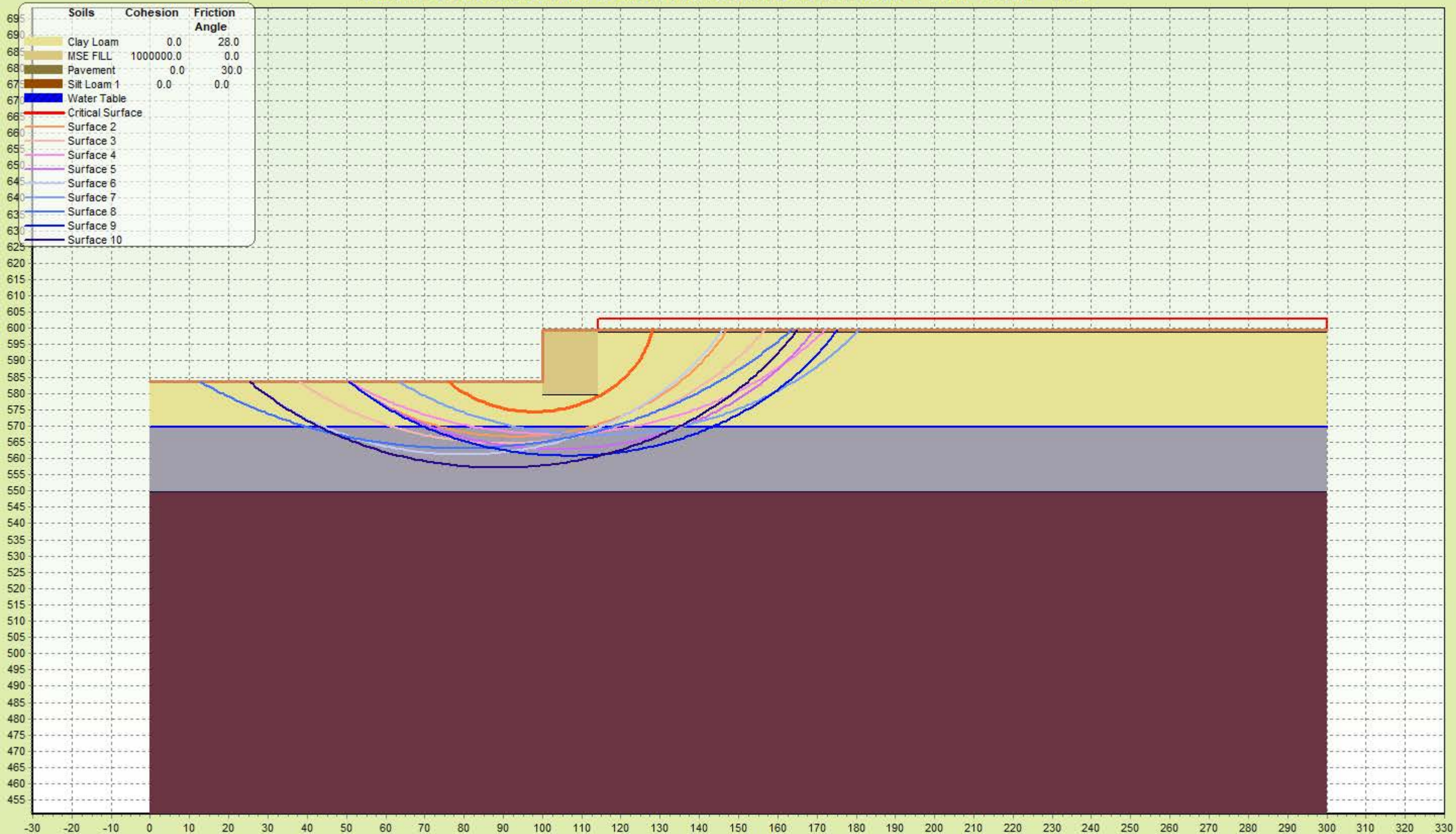
Water Table
Critical Surface
Surface 2
Surface 3
Surface 4
Surface 5
Surface 6
Surface 7
Surface 8
Surface 9
Surface 10



(Scale in Feet)

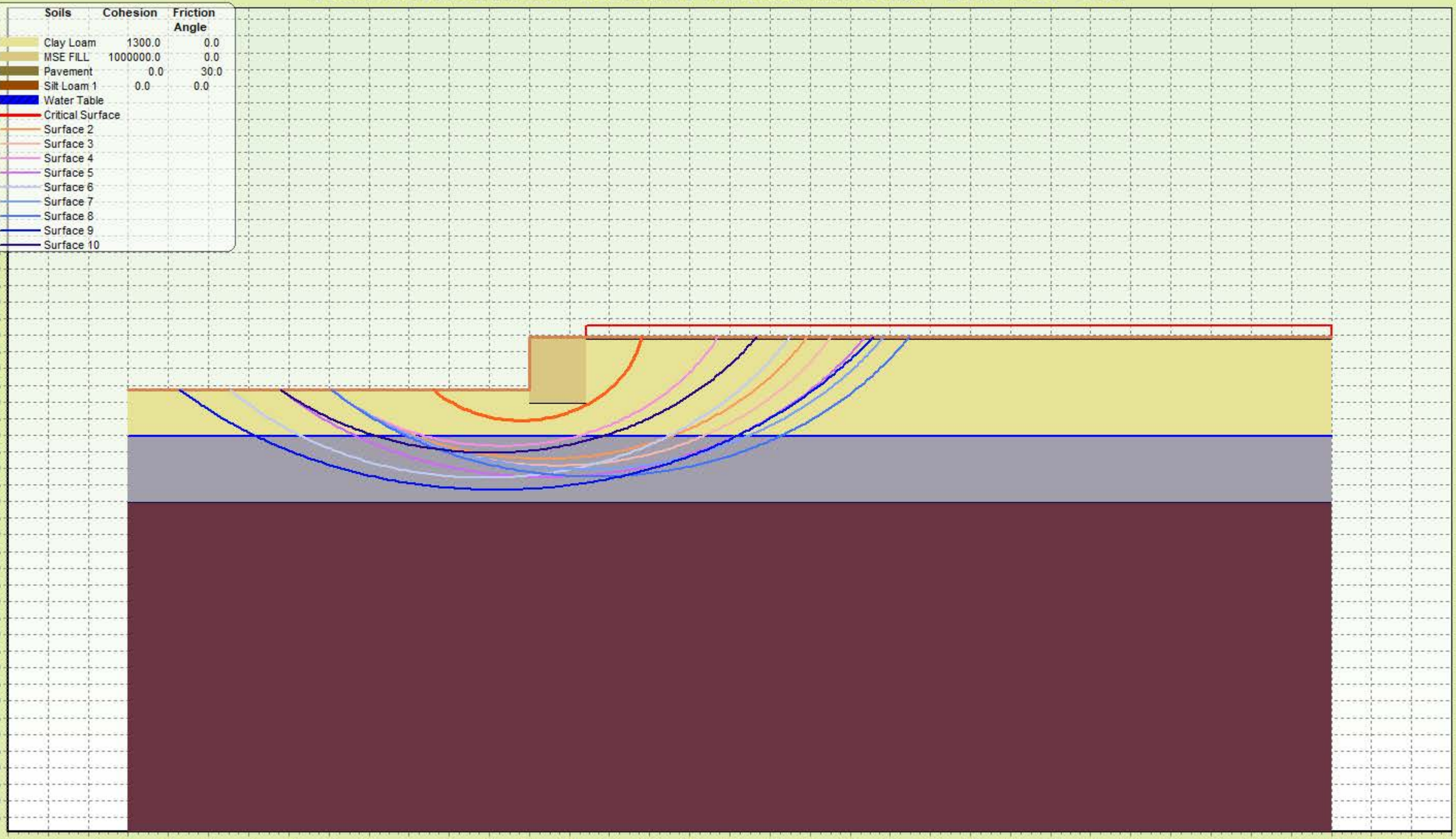
Problem: DRAINED ANALYSIS: South Abutment-Central Park Ave. Bridge - FS Min- Bishop = 1.865

Soils	Cohesion	Friction Angle
Clay Loam	0.0	28.0
MSE FILL	1000000.0	0.0
Pavement	0.0	30.0
Silt Loam 1	0.0	0.0
Water Table		
Critical Surface		
Surface 2		
Surface 3		
Surface 4		
Surface 5		
Surface 6		
Surface 7		
Surface 8		
Surface 9		
Surface 10		



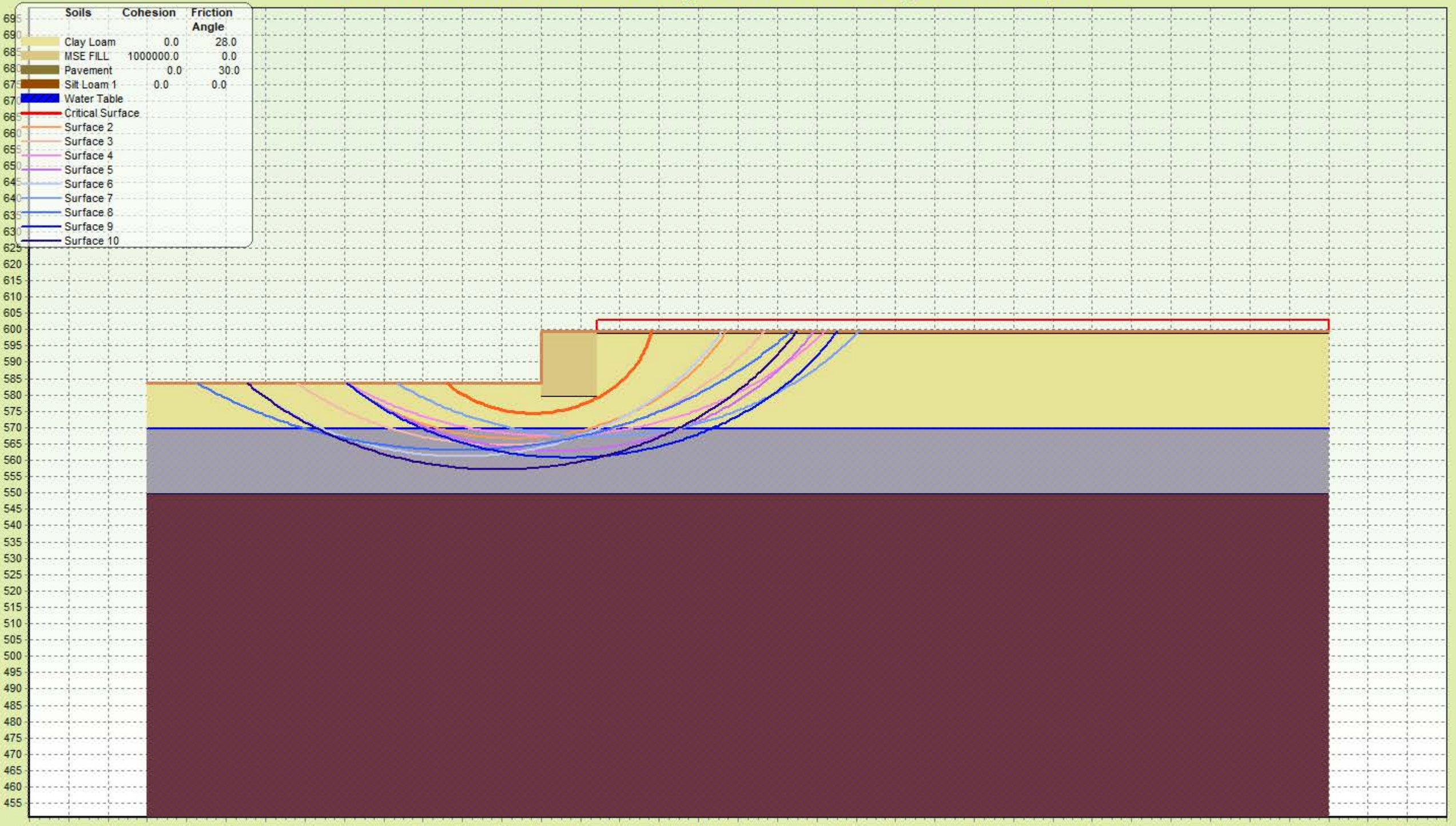
Problem: UNDRAINED ANALYSIS: South Retaining Wall-Central Park Ave. Bridge - FS Min- Bishop = 3.131

Soils	Cohesion	Friction Angle
Clay Loam	1300.0	0.0
MSE FILL	1000000.0	0.0
Pavement	0.0	30.0
Silt Loam 1	0.0	0.0
Water Table		
Critical Surface		
Surface 2		
Surface 3		
Surface 4		
Surface 5		
Surface 6		
Surface 7		
Surface 8		
Surface 9		
Surface 10		



Problem: DRAINED ANALYSIS: South Retaining Wall-Central Park Ave. Bridge - FS Min- Bishop = 1.865

Soils	Cohesion	Friction Angle
Clay Loam	0.0	28.0
MSE FILL	1000000.0	0.0
Pavement	0.0	30.0
Silt Loam 1	0.0	0.0
Water Table		
Critical Surface		
Surface 2		
Surface 3		
Surface 4		
Surface 5		
Surface 6		
Surface 7		
Surface 8		
Surface 9		
Surface 10		



APPENDIX F

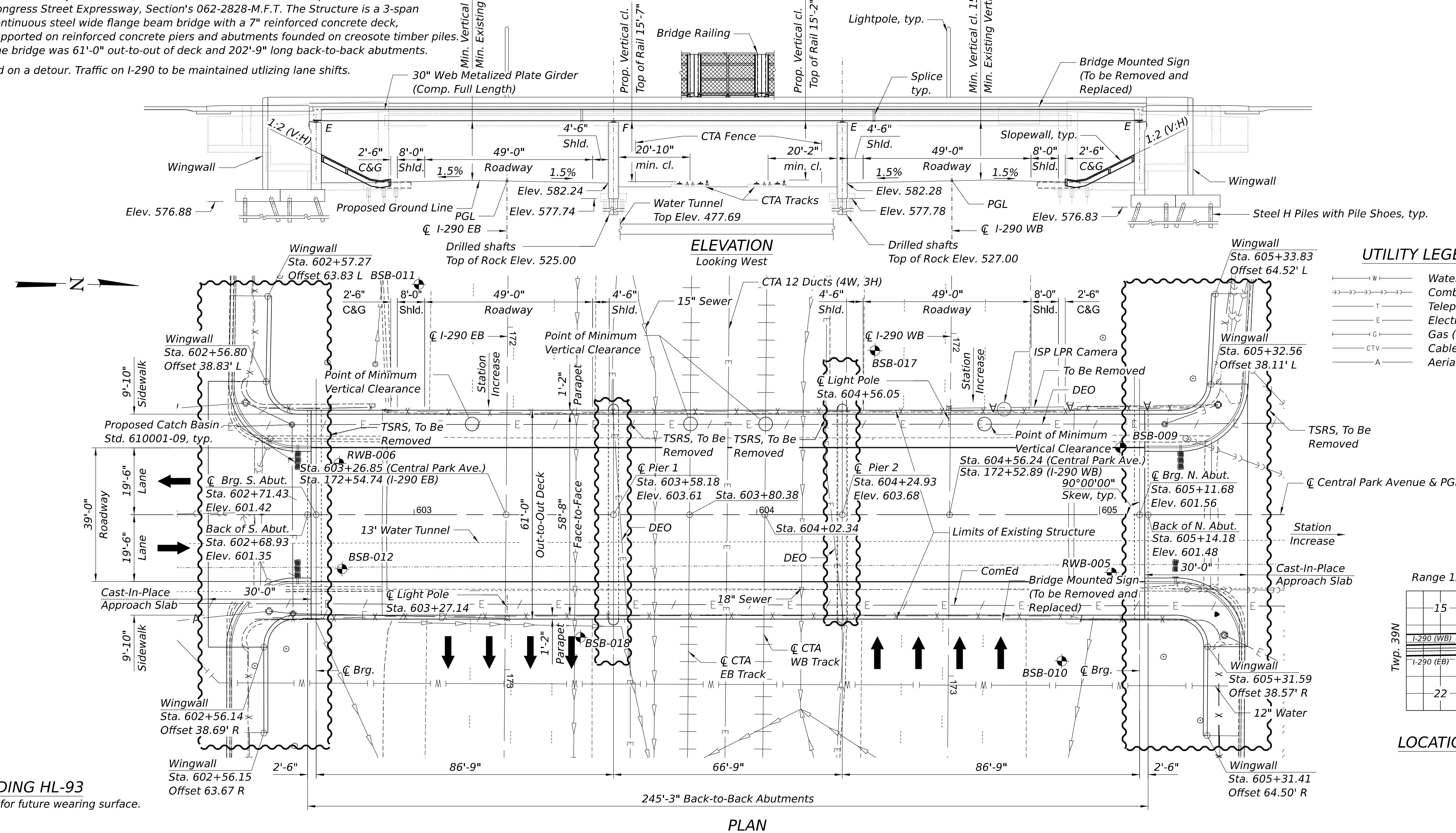
TS&L

B.M.: Benchmark CWA 6 is a 2 inch aluminum disk set on the east concrete curb south of the metal railing on south Central Ave. north of Fillmore Street
Elev. 610.40

Existing Structure: S.N. 016-2072 was originally constructed in 1953 as Federal Aid Highway on F.A. Route 131, Project U.I. 261(57), Central Park Avenue Grade Separation over Congress Street Expressway, Section's 062-2828-M.F.T. The Structure is a 3-span continuous steel wide flange beam bridge with a 7" reinforced concrete deck, supported on reinforced concrete piers and abutments founded on creosote timber piles. The bridge was 61'-0" out-to-out of deck and 202'-9" long back-to-back abutments.

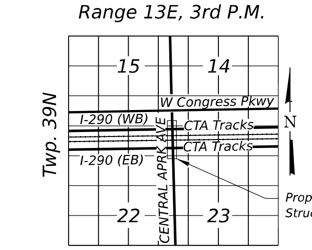
Traffic to be re-routed on a detour. Traffic on I-290 to be maintained utlizing lane shifts.

Salvage: None.



UTILITY LEGEND

- Water (CDWM)
- Combined Sewer (CDWM)
- Telephone (AT&T)
- Electric (DCOT-DEO, ComEd)
- Gas (Peoples Gas)
- Cable TV (Comcast)
- Aerial Wire



LOCATION SKETCH

LOADING HL-93

Allow 50#/sq. ft. for future wearing surface.

DESIGN SPECIFICATION

2020 AASHTO LRFD Bridge Design Specifications, 9th Edition

DESIGN STRESSES

FIELD UNITS

f'c = 3,500 psi (Substructure)
f'c = 4,000 psi (Superstructure)
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (M270 Grade 50)

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (SD1) = 0.084g
Design Spectral Acceleration at 0.2 sec. (SDS) = 0.144g
Soil Site Class D

HIGHWAY CLASSIFICATION

Central Park Ave. - FAU Rte. 2821	I-290 (Eisenhower Expy.) - FAI Rte. 290
Functional Class: Major Collector	Functional Class: Interstate
AADT: 8450 (2022)/6060 (2046)	AADT: 199700 (2022)/189981 (2046)
ADTT: 423 (2022)/303 (2046)	ADTT: 7988 (2022)/7599 (2046)
DHV: 845 (2022)/606 (2046)	DHV: 19970 (2022)/18998 (2046)
Design Speed: 30 mph	Design Speed: 55 mph
Posted Speed: 30 mph	Posted Speed: 55 mph
Directional Distribution 50:50	Directional Distribution 50:50
Two-Way Traffic	Two-Way Traffic

GENERAL PLAN & ELEVATION
CENTRAL PARK AVENUE OVER I-290 (EISENHOWER EXPRESSWAY) AND CTA
F.A.I. RTE. 290 - SECTION 2019-189-BR
COOK COUNTY
STA. 172+52.89 (WB) STA. 172+54.74 (EB)
STRUCTURE NO. 016-2091

FILE NAME: pw://dbsterlin-pw.bentley.com:dbsterlin-pw-01/Documents/Projects/PTB 195-021/62K62 Central Park/600 CADD Drawings/604 Structural/Bridge 2091/TSL/0162091-62K62-TSL01-GPE

Jacobs

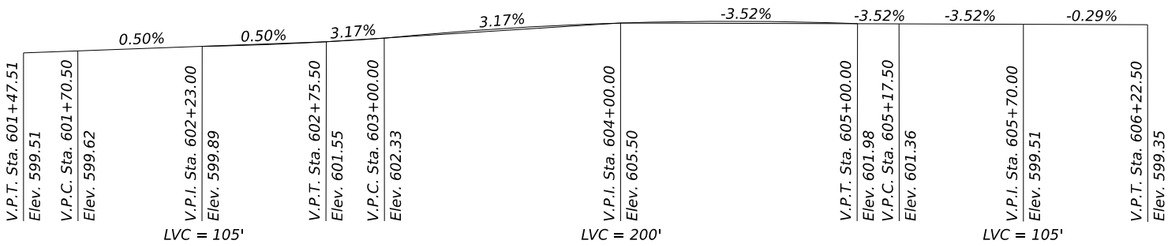
USER NAME = wellinvl	DESIGNED - JRB	REVISED -
PLOT SCALE =	DRAWN - VLW	REVISED -
PLOT DATE = 3/19/2025	CHECKED - JRB	REVISED -
PLOT TIME = 1:06:41 PM	DATE - 2024/12/20	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRUCTURE NO. 016-2091

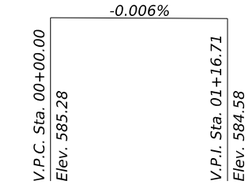
SCALE: NTS | Sheet 1 of 3 Sheets | Structure No. 016-2091

F.A.I. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	2019-190-B-R	COOK	186	
		CONTRACT NO. 62K62		
		ILLINOIS	FED. AID PROJECT	



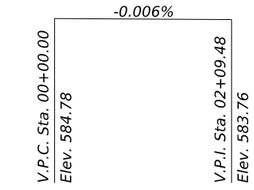
PROFILE GRADE

(Along ℄ Central Park Ave.)



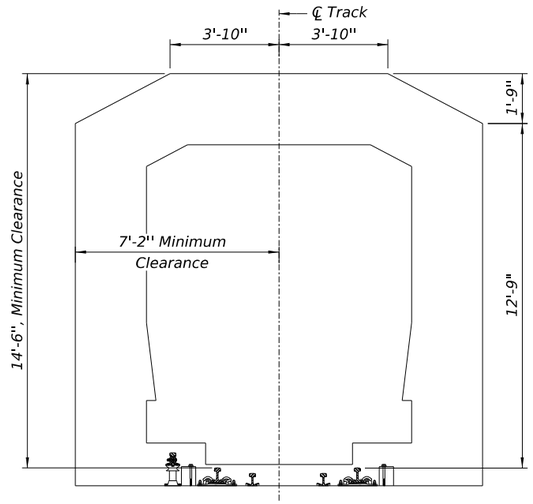
PROFILE GRADE

(Along ℄ Existing CTA EB Track at Top of Rail)

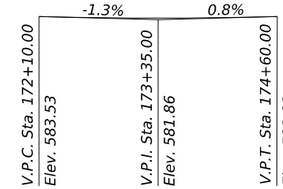


PROFILE GRADE

(Along ℄ Existing CTA WB Track at Top of Rail)



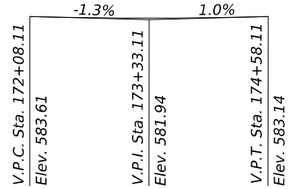
CTA TRAIN CLEARANCE DIAGRAM



LVC = 250'

PROFILE GRADE

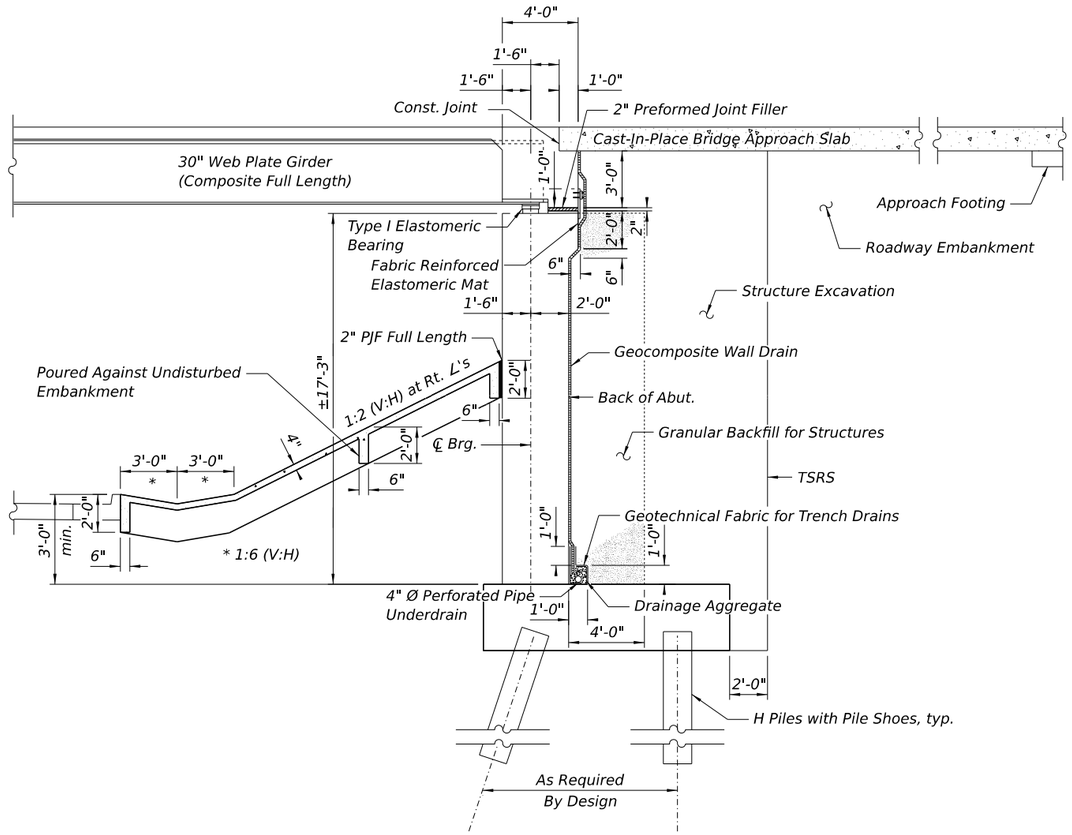
(Along ℄ Existing I-290 EB)



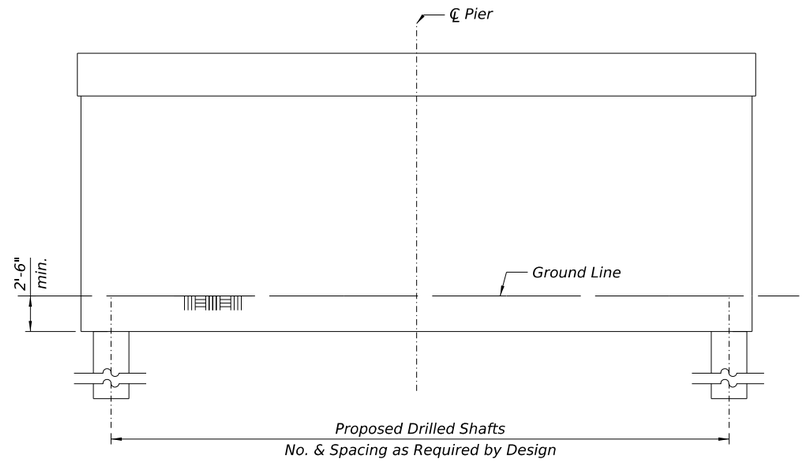
LVC = 250'

PROFILE GRADE

(Along ℄ Existing I-290 WB)



SECTION THRU SEMI-INTEGRAL ABUTMENT



PIER SKETCH

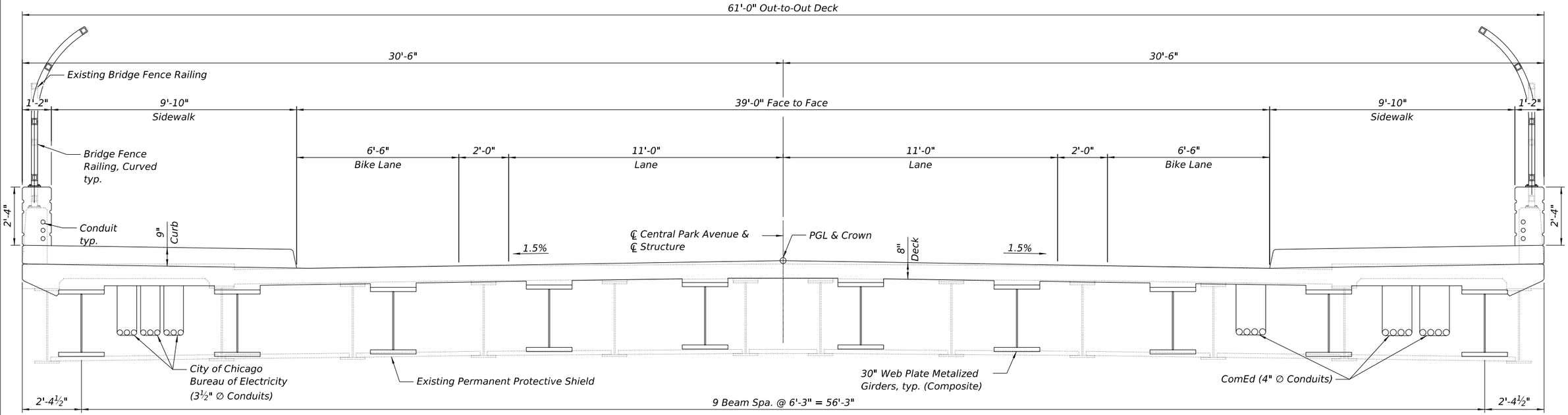
DETAILS
CENTRAL PARK AVENUE OVER I-290 (EISENHOWER EXPRESSWAY) AND CTA
F.A.I. RTE. 290 - SECTION 2019-189-BR
COOK COUNTY
STA. 172+52.89 (WB) STA. 172+54.74 (EB)
STRUCTURE NO. 016-2091

FILE NAME: pw://dbsteffin-pw.bentley.com:dbsteffin-pw-01/Documents/Projects/PTB 195-021/62K62 Central Park/600 CADD Drawings/604 Structural/Bridge 2091/TSL/016209

Jacobs

USER NAME = wellinvl	DESIGNED - JRB	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	STRUCTURE NO. 016-2091	
PLOT SCALE =	DRAWN - VLW	REVISED -		SCALE: NTS	Sheet 2 of 3 Sheets
PLOT DATE = 3/17/2025	CHECKED - JRB	REVISED -			Structure No. 016-2091
PLOT TIME = 4:19:44 PM	DATE - 2024/12/20	REVISED -			

F.A.I. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	2019-190-B-R	COOK	186	
		CONTRACT NO. 62K62		
		ILLINOIS	FED. AID PROJECT	



CROSS SECTION

(Looking North)

CROSS SECTION
CENTRAL PARK AVENUE OVER I-290
(EISENHOWER EXPRESSWAY) AND CTA
F.A.I. RTE. 290 - SECTION 2019-189-BR
COOK COUNTY
STA. 172+52.89 (WB) STA. 172+54.74 (EB)
STRUCTURE NO. 016-2091

FILE NAME: pw://dbsterlin-pw.bentley.com:dbsterlin-pw-01/Documents/Projects/PTB 195-021/62K62 Central Park/600 CADD Drawings/604 StructuralBridge 2091/TSL/016/2091-62K62-TSL03-Cross Section

Jacobs

USER NAME = wellinvl	DESIGNED - JRB	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	STRUCTURE NO. 016-2091
PLOT SCALE =	DRAWN - VLW	REVISED -		SCALE: NTS / Sheet 3 of 3 Sheets / Structure No. 016-2091
PLOT DATE = 3/17/2025	CHECKED - JRB	REVISED -		
PLOT TIME = 4:20:25 PM	DATE - 2024/12/20	REVISED -		

F.A.I. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
290	2019-190-B-R	COOK	186	
		CONTRACT NO. 62K62		
		ILLINOIS	FED. AID PROJECT	

APPENDIX G

Pile Design Tables

Pile Design Table for North Abutment utilizing Boring #BSB-009

Nominal Required Bearing (Kips)	Factored Resistance Available (Kips)	Estimated Pile Length (Ft.)
Metal Shell 12"Φ w/.25" walls		
392	216	32
Metal Shell 14"Φ w/.25" walls		
344	189	27
Metal Shell 14"Φ w/.312" walls		
344	189	27
498	274	32
521	286	37
Metal Shell 16"Φ w/.312" walls		
420	231	27
616	339	32
634	348	37
Metal Shell 16"Φ w/.375" walls		
420	231	27
616	339	32
634	348	37
Steel HP 8 X 36		
163	89	47

Nominal Required Bearing (Kips)	Factored Resistance Available (Kips)	Estimated Pile Length (Ft.)
Steel HP 10 X 42		
201	111	47
Steel HP 10 X 57		
415	228	53
Steel HP 12 X 53		
242	133	47
Steel HP 12 X 63		
250	137	47
Steel HP 12 X 74		
257	141	47
505	278	53
589	324	54

Nominal Required Bearing (Kips)	Factored Resistance Available (Kips)	Estimated Pile Length (Ft.)
Steel HP 12 X 84		
263	144	47
513	282	53
664	365	55
Steel HP 14 X 73		
295	162	47
Steel HP 14 X 89		
306	168	47
601	331	53
705	388	54
Steel HP 14 X 102		
313	172	47
610	336	53
810	445	55
Steel HP 14 X 117		
323	178	47
622	342	53
929	511	55
Precast 14"x 14"		
25	14	5

Pile Design Table for North Abutment utilizing Boring #BSB-010

Nominal Required Bearing (Kips)	Factored Resistance Available (Kips)	Estimated Pile Length (Ft.)
Metal Shell 12"Φ w/.25" walls		
302	166	31
Metal Shell 14"Φ w/.25" walls		
389	214	31
Metal Shell 14"Φ w/.312" walls		
389	214	31
Metal Shell 16"Φ w/.312" walls		
142	78	26
487	268	31
Metal Shell 16"Φ w/.375" walls		
142	78	26
487	268	31
Steel HP 8 X 36		
169	93	46

Nominal Required Bearing (Kips)	Factored Resistance Available (Kips)	Estimated Pile Length (Ft.)
Steel HP 10 X 42		
209	115	46
Steel HP 10 X 57		
218	120	46
Steel HP 12 X 53		
251	138	46
Steel HP 12 X 63		
259	143	46
Steel HP 12 X 74		
266	146	46
556	306	53
589	324	54

Nominal Required Bearing (Kips)	Factored Resistance Available (Kips)	Estimated Pile Length (Ft.)
Steel HP 12 X 84		
272	150	46
564	310	53
664	365	54
Steel HP 14 X 73		
307	169	46
Steel HP 14 X 89		
317	174	46
662	364	53
705	388	54
Steel HP 14 X 102		
325	179	46
671	369	53
810	445	54
Steel HP 14 X 117		
335	184	46
684	376	53
929	511	55
Precast 14"x 14"		
156	86	26

Pile Design Table for South Abutment utilizing Boring #BSB-011

Nominal Required Bearing (Kips)	Factored Resistance Available (Kips)	Estimated Pile Length (Ft.)
Metal Shell 12"Φ w/.25" walls		
132	72	30
Metal Shell 14"Φ w/.25" walls		
158	87	30
Metal Shell 14"Φ w/.312" walls		
158	87	30
Metal Shell 16"Φ w/.312" walls		
185	102	30
Metal Shell 16"Φ w/.375" walls		
185	102	30
Steel HP 8 X 36		
246	135	50

Nominal Required Bearing (Kips)	Factored Resistance Available (Kips)	Estimated Pile Length (Ft.)
Steel HP 10 X 42		
305	168	50
Steel HP 10 X 57		
436	240	51
Steel HP 12 X 53		
366	201	50
Steel HP 12 X 63		
376	207	50
Steel HP 12 X 74		
530	292	51

Nominal Required Bearing (Kips)	Factored Resistance Available (Kips)	Estimated Pile Length (Ft.)
Steel HP 12 X 84		
538	296	51
Steel HP 14 X 73		
334	183	45
444	244	50
578	318	51
Steel HP 14 X 89		
342	188	45
456	251	50
705	388	52
Steel HP 14 X 102		
348	192	45
464	255	50
810	445	52
Steel HP 14 X 117		
357	196	45
475	261	50
929	511	53
Precast 14"x 14"		
201	110	30

Pile Design Table for South Abutment utilizing Boring #BSB-012

	Nominal Required Bearing (Kips)	Factored Resistance Available (Kips)	Estimated Pile Length (Ft.)
Metal Shell 12"Φ w/.25" walls	276	152	47
Metal Shell 14"Φ w/.25" walls	129	71	27
Metal Shell 14"Φ w/.312" walls	327	180	47
Metal Shell 16"Φ w/.312" walls	379	209	47
Metal Shell 16"Φ w/.375" walls	379	209	47
Steel HP 8 X 36	178	98	52

	Nominal Required Bearing (Kips)	Factored Resistance Available (Kips)	Estimated Pile Length (Ft.)
Steel HP 10 X 42	221	122	52
Steel HP 10 X 57	387	213	55
Steel HP 12 X 53	265	146	52
Steel HP 12 X 63	463	254	55
Steel HP 12 X 74	470	259	55

	Nominal Required Bearing (Kips)	Factored Resistance Available (Kips)	Estimated Pile Length (Ft.)
Steel HP 12 X 84	626	344	56
Steel HP 14 X 73	548	301	55
Steel HP 14 X 89	560	308	55
Steel HP 14 X 102	744	409	56
Steel HP 14 X 117	758	417	56
Precast 14"x 14"	164	90	27

APPENDIX H

Drilled Shaft Design Tables

Drilled Shaft Design Table for Pier

Estimated Top of Rock Elevation: 525.00

SOCKET DEPTH (FT)	TIP ELEV. (FT)	NOMINAL SHAFT RESIST. (KIPS)	FACTORED SHAFT RESIST. (KIPS)	RESIST. METHOD	SETTLEMENT DATA Q_{C1} (KIPS)	w_{C1} (IN.)	w_{Rn} (IN.)
24 in. Diameter Drilled Shaft							
1	524	1662	831	TIP	--	--	1.275
2	523	1679	839	TIP	--	--	1.301
3	522	1695	847	TIP	--	--	1.327
4	521	1711	855	TIP	--	--	1.364
5	520	1726	863	TIP	--	--	1.378
6	519	1742	871	TIP	--	--	1.399
7	518	1797	898	TIP	--	--	1.474
8	517	1852	926	TIP	--	--	1.522
9	516	1907	954	TIP	--	--	1.594
10	515	1962	981	TIP	--	--	1.655
11	514	1977	988	TIP	--	--	1.665
12	513	881	485	SIDE	1810	0.347	-0.043
13	512	955	525	SIDE	2000	0.370	-0.039
14	511	1028	565	SIDE	2196	0.395	-0.034
15	510	1101	606	SIDE	2398	0.420	-0.030
30 in. Diameter Drilled Shaft							
1	524	2597	1299	TIP	--	--	1.584
2	523	2623	1311	TIP	--	--	1.606
3	522	2648	1324	TIP	--	--	1.642
4	521	2673	1336	TIP	--	--	1.692
5	520	2697	1349	TIP	--	--	1.706
6	519	2771	1386	TIP	--	--	1.767
7	518	2845	1423	TIP	--	--	1.842
8	517	2919	1459	TIP	--	--	1.883
9	516	2992	1496	TIP	--	--	1.946
10	515	3066	1533	TIP	--	--	2.016
11	514	1010	555	SIDE	1967	0.348	-0.072
12	513	1101	606	SIDE	2185	0.370	-0.069
13	512	1193	656	SIDE	2408	0.393	-0.065
14	511	1285	707	SIDE	2635	0.416	-0.061
15	510	1377	757	SIDE	2869	0.439	-0.057
36 in. Diameter Drilled Shaft							
1	524	3740	1870	TIP	--	--	1.898
2	523	3777	1888	TIP	--	--	1.922
3	522	3813	1907	TIP	--	--	1.971
4	521	3849	1924	TIP	--	--	1.994
5	520	3944	1972	TIP	--	--	2.082
6	519	4038	2019	TIP	--	--	2.129
7	518	4133	2066	TIP	--	--	2.210
8	517	4227	2113	TIP	--	--	2.258
9	516	4321	2161	TIP	--	--	2.340
10	515	1101	606	SIDE	2066	0.350	-0.102
11	514	1211	666	SIDE	2312	0.373	-0.099
12	513	1322	727	SIDE	2562	0.395	-0.095
13	512	1432	787	SIDE	2817	0.418	-0.091
14	511	1542	848	SIDE	3077	0.441	-0.087
15	510	1652	909	SIDE	3343	0.463	-0.084
42 in. Diameter Drilled Shaft							
1	524	5090	2545	TIP	--	--	2.222
2	523	5141	2570	TIP	--	--	2.258
3	522	5190	2595	TIP	--	--	2.292
4	521	5308	2654	TIP	--	--	2.358
5	520	5426	2713	TIP	--	--	2.444
6	519	5543	2772	TIP	--	--	2.491
7	518	5660	2830	TIP	--	--	2.548
8	517	5777	2888	TIP	--	--	2.625
9	516	1156	636	SIDE	2123	0.351	-0.137
10	515	1285	707	SIDE	2378	0.373	-0.130
11	514	1413	777	SIDE	2657	0.397	-0.126
12	513	1542	848	SIDE	2940	0.420	-0.122
13	512	1670	919	SIDE	3228	0.443	-0.118
14	511	1799	989	SIDE	3521	0.466	-0.114
15	510	1927	1060	SIDE	3819	0.488	-0.110