STRUCTURE GEOTECHNICAL REPORT
SACRAMENTO BOULEVARD BRIDGE
OVER INTERSTATE 290 AND THE CTA
SN 016-0754
CHICAGO, COOK COUNTY, ILLINOIS

For

Collins Engineers

550 West Jackson Blvd., Suite 1200

Chicago, IL. 60661

Submitted by

Wang Engineering, Inc.

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Original Report: June 5, 2024
Revised Report: January 22, 2025

Technical Report Documentation Page

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11. Abstract

The bridge and retaining wall systems carrying South Sacramento Boulevard over Interstate 290 and the Chicago Transit Authority (CTA) will be reconstructed. The reconstruction calls for the removal of the tall wall abutments and wingwall systems and replacement with integral abutments and wrap-around MSE walls. The main span piers will remain in place. The three-span bridge will have a back-to-back of abutment length of 242.8 feet and will have an out-to-out widths of 69.5 feet We estimate 23.5 feet of new fill will be placed as a combination of approach embankment and MSE retaining walls wrapping around both abutments. This report provides geotechnical recommendations for the design and reconstruction of the bridge and walls.

The lithological succession encountered during the subsurface exploration revealed medium stiff to hard silty clay to silty clay loam embankment fill extending down to an elevation of about 594 feet. Beneath the fill, the borings drilled on site encountered soft to very stiff silty clay followed by hard silty clay to silty clay loam. At elevation of 538 to 534, the borings encountered very poor to fair quality dolostone bedrock. Groundwater was observed while drilling at an elevation of 541.5 feet within the silty loam.

To establish a working platform for placement of the MSE wall leveling pad and select backfill we recommend removing the foundation soil down to an elevation of 575.5 feet prior to placement of the leveling slab. Following the removal and replacement the maximum estimated settlement within the foundation soils is about 1.0 inch. Global stability analyses show FOS meeting the IDOT minimum requirement of 1.5. The maximum factored bearing resistance for the approach slab footings is 5,500 psf.

We recommend supporting the bridge abutments on driven piles. Driven 16-inch MSP will provide factored resistance of about 256 to 360 kips at driven lengths of 54 to 60 feet. If steel H-Piles are proposed, they should be driven to maximum nominal bearing at the top of bedrock, which we estimate will be at elevations of about 531 to 537 feet. Steel H-Piles encountering the top of bedrock to achieve maximum nominal bearing should be designed as end bearing piles.

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FOR
COLLINS ENGINEERS

1.0 INTRODUCTION

This report presents the results of our subsurface investigation, laboratory testing, geotechnical evaluations, and recommendations to support the design and reconstruction of the proposed Sacramento Boulevard Bridge over Interstate 290 (I-290) in Chicago, Cook County, Illinois. A *Site Location Map* is presented as Exhibit 1.

The purpose of this investigation was to characterize the site soil and groundwater conditions, perform geotechnical engineering analyses, and provide recommendations for the design and construction of the proposed bridge.

1.1 Existing and Proposed Structures

Based on the *General Plan and Elevation (GPE)* drawing attached as Appendix D and provided by Collins Engineers, Wang Engineering, Inc. (Wang) understands that the existing bridge is a three-span structure supported by tall-wall concrete abutments, concrete wingwalls, and piers caps. Each of the existing foundations are supported on driven piling.

The existing abutments will be removed and replaced with new, integral abutments constructed approximately 10 to 12 feet behind the existing ones. The main span piers will remain with reconstructed bearing seats. The new bridge will have a back-to-back of abutment length of 242.8 feet and will have an out-to-out width of 69.5 feet. The profile grade along Sacramento Boulevard will be raised by about 3 inches. The combination of the tall-wall abutments, wingwalls, and fill between will be completely removed and replaced with mechanically-stabilized earth (MSE) walls that will wrap around each of the abutments and slope back up to the Sacramento Blvd elevation at a 1:3 (V:H) grade (Appendix D). The abutment base elevations are shown at 591.7 to 591.8 feet, while the MSE leveling pads will be placed at around 576 to 576.5 feet.

2.0 REGIONAL GEOLOGY

The site surface elevation is generally flat gently sloping southeast towards Lake Michigan. The surrounding land at the bridge location is entirely urban. The ground surface elevation ranges from about 600 feet along Sacramento Boulevard embankments, and about 580 feet along I-290 beneath the bridge carrying Sacramento Boulevard.

In the project area about 60 feet of drift covers the bedrock. The overburden is made of clayey lake sediments of the Equality Formation over unsorted silty clayey diamictons of the Wadsworth Formation. The Wadsworth formation is underline by pebbly sandy silty clay diamicton of the Lemont Formation (Hansel and Johnson 1996). The Equality lacustrine soil is characterized by high plasticity, medium to high moisture content, and moderate to high compressibility; the Wadsworth diamicton is characterized by low plasticity, medium to low moisture content, medium to very stiff consistency, poor permeability, and low compressibility. The Lemont Formation is characterized by high silt content, low moisture content and higher strength (Bauer et al. 1991). The bedrock is made up of shaly dolostone. Top of bedrock is mapped at about 535 feet elevation. There are no records of mining activity within the proposed wall site. Neither the overburden nor the upper bedrock is known to include significant sources of water supply (Woller and Sanderson 1983).

3.0 INVESTIGATION METHODS

The following sections outline the subsurface and laboratory investigations performed by Wang.

3.1 Field Investigation

The subsurface investigation consisted of two structure borings, designated as SAC-01 and SAC-02, drilled by Wang in May 2024. The borings were drilled at elevations of 598.5 and 600.2 feet and were advanced to a depth of 72.0 feet bgs. The as-drilled northings, eastings, and elevations were acquired by Wang with a mapping-grade GPS unit. Boring location data are presented in the *Boring Logs* (Appendix A) and the locations are shown in the *Boring Location Plan* (Exhibit 2).

Truck-mounted drilling rig, equipped with either hollow stem augers or rotary wash equipment, was used to advance and maintain open boreholes. Soil sampling was performed according to AASHTO T206, "*Penetration Test and Split Barrel Sampling of Soils*." The soil was sampled at 2.5-foot intervals to a depth of 30.0 feet bgs and at 5-foot intervals thereafter to the boring termination depths. Soil samples collected from each interval were placed in sealed jars and transferred to the laboratory

for further examination and testing. The bedrock was cored at each boring location in 5-to-10-foot runs with an NWD4-sized core barrel.

Field boring logs, prepared and maintained by Wang field engineers, include lithological descriptions, visual-manual soil (IDH Textural) Classifications, results of Rimac and pocket penetrometer unconfined compressive strength tests, and results of Standard Penetration Tests (SPT) recorded as blows per 6 inches of penetration.

Groundwater observations were made in the boreholes during and at the end of drilling operations. The borehole locations were backfilled upon completion with soil cuttings and/or bentonite chips and, where necessary, the pavement surface was restored as much as possible to its original condition.

3.2 Laboratory Testing

Soil samples were tested in the laboratory for moisture content. Atterberg limits and particle size analyses were also performed on selected samples. Field visual descriptions of the soil samples were verified in the laboratory and the tested samples were classified in accordance with the IDH Soil Classification System. Laboratory test results are shown in the *Boring Logs* (Appendix A) and *Laboratory Testing Results* (Appendix B).

4.0 INVESTIGATION RESULTS

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

4.1 Lithological Profile

Along the surface of Sacramento Blvd, the borings encountered a 5- to 6-inch-thick asphalt overlay on top of 7- to 9-inch-thick concrete and an aggregate base. In descending order, the general lithologic succession encountered beneath the surface includes: 1) man-made ground (fill); 2) soft to very stiff silty clay; 3) stiff to very stiff silty clay; 4) hard silty clay to silty clay loam; and 5) Strong, very poor to fair quality dolostone.

1) Man-made ground (fill)

Beneath the pavement, the borings revealed embankment consisting of medium stiff to hard silty clay

to silty clay loam fill down to an elevation of about 594 feet. The cohesive fill has unconfined compressive strength (Q_u) values of 0.5 to 4.4 tsf and moisture content values of 18 to 39%.

2) Soft to very stiff silty clay

Beneath the fill, the borings encountered a 7- to 8-foot thick, stiff to very stiff clayey crust overlying soft to medium stiff, gray glacial lake clay. The soft clay begins at an elevation of 586 to 587 feet and extends vertically to elevations of about 571 to 563 feet.

The upper stiff unit has Q_u values of about 1.4 to 3.8 tsf and moisture content values of 21 to 27%, while the soft cohesive soil unit has Q_u values of 0.25 to about 0.75 tsf and moisture content of values as high as 28%. Laboratory index testing of these soils shows liquid limit (L_L) value of 36% and plastic limit (P_L) value of 17%.

3) Stiff very stiff silty clay

Beneath the soft clay, the borings advanced back into stiff to very stiff, gray silty clay with Q_u values of 1.6 to 2.5 and moisture contents of 19 to 28%. This soil unit continues to elevations of about 552 to 548 feet.

4) Hard silty clay to silty clay loam

At elevations of 552 and 548 feet, the borings advanced through hard silty clay to silty clay loam 'hardpan'. This silty unit has unconfined compressive strength (Q_u) values of 5.2 to greater than 10 tsf and moisture content values of 9 to 16% and almost exclusively below 15%. Boring SAC-01 noted very dense silty loam at an elevation of 542 feet with N-value of 81 blows per foot of penetration.

4) Very poor to fair quality dolostone

At elevations of 538 and 534 feet, the borings encountered refusal at the top of bedrock. Bedrock coring recovered medium strong to strong, light gray, very poor to fair quality dolostone. The dolostone has a Rock Quality Designation (RQD) of 0 and 50%.

4.2 Groundwater Conditions

Groundwater was observed in Boring SAC-01 while drilling at an elevation of 542 feet within the silty loam. We estimate that groundwater on site is deep-seated and will not impact the construction of the abutments or the MSE wall. It should be noted, however, that fluctuations in groundwater level may occur due to variations in the rainfall, other climatic conditions, or other factors not evident at the time measurements were made and reported herein.

5.0 FOUNDATION ANALYSIS AND RECOMMENDATIONS

Geotechnical evaluations and recommendations for the approach embankments, approach slabs, and substructure foundations are included in the following sections. We recommend the proposed integral abutments be supported on driven piles. The existing profile grade along Sacramento Boulevard will be raised by only about 3 inches; however, the existing tall wall abutments and wingwall sections will be removed and replaced with new MSE wall systems. The MSE wall leveling pads will be established at elevations of 576 feet on the south side and 576.3 feet on the north. With a back of abutment elevation of about 599.5 feet on both sides the MSE wall systems could be up to 23.5 feet tall. The approach embankment slopes adjacent to the MSE walls are shown graded at 1:3 (V:H) in the GPE. The main span piers will be reused with no foundation modifications.

5.1 Seismic Design Considerations

The seismic hazard for the site was evaluated in accordance with IDOT (2020) and AASHTO (2022). The Seismic Soil Site Class was determined per the requirements of *All Geotechnical Manual Users* (AGMU) Memo 9.1, *Design Guide for Seismic Site Class Determination*, and the accompanying spreadsheet. A global Site Class Definition was determined for this project, and was found to be Soil Site Class D. The project location belongs to the Seismic Performance Zone 1. The seismic spectral acceleration parameters recommended for design in accordance with the *AASHTO LRFD Bridge Design Specification*s (AASHTO 2020) are summarized in Table 3. According to the IDOT *Bridge Manual* (IDOT 2023), liquefaction analysis is not required for structures located in Seismic Performance Zone 1.

Table 1: Recommended Seismic Design Parameters

Spectral Acceleration Period (sec)	Spectral Acceleration Coefficient[1)] (% g)	Site Factors	Design Spectrum for Site Class D (% g)
0.0	PGA= 4.2	F_{pga}= 1.6	**A_s= 6.8**
0.2	S_s= 9.1	F_a= 1.6	**S_{DS}= 14.6**
1.0	S_1= 3.6	F_v= 2.4	**S_{D1}= 8.6**

1) Spectral acceleration coefficients based on Site Class D

2) Site Class D Spectrum to be included on plans; $A_s = PGA*F_{pga}$; $S_{DS}= S_s*F_a$; $S_{D1}= S_1*F_v$

5.2 Retaining Walls

Wang has evaluated the potential settlement and global stability of the new wall systems. The existing pavement elevation along Sacrament Boulevard is approximately 599.5 feet at the abutments. Based on the GPE sheets (Appendix D), we estimate that the MSE walls will have a maximum total height of about 23.5 feet.

5.2.1 Bearing Capacity and Sliding

The top of the levelling pad for the MSE wall should be established at a minimum of 3.5 feet below the finished grade at the front face of the wall (IDOT 2023). The wall should be constructed in accordance with IDOT Section 522 (2022). The width of the MSE reinforcement zone should be taken as 0.7 times the total height or a minimum of 8.0 feet (AASHTO 2022).

Based on the *GPE* sheets (Appendix D), the MSE leveling pads will be at elevations of 576.0 to 576.3 feet and the walls will have a maximum total height of 23.5 feet. We estimate the walls will apply a maximum factored bearing pressure of 6,000 psf, which includes a 250 psf live load surcharge as well as vertical and lateral load factors (AASHTO 2020). The foundation leveling pad will be established primarily on medium stiff to stiff clayey soils below an elevation of 576 feet. This soil unit within the zone of influence beneath the walls has an average Q_u value of approximately 0.7 tsf.

The proposed MSE walls are a direct replacement for the existing tall-wall abutment, associated wingwalls, and backfill between them. Therefore, while the calculated maximum factored bearing pressure is 6,000 psf, we do not anticipate that there will be changes to the net dead load acting on the foundation soils. We have evaluated the settlement (see next section) based on an increase in the service dead load of 1,000 psf for the sake of conservatism. Regardless of the change in loading, however, we do not recommend placing the MSE leveling pads and selected backfill directly on top of the medium stiff silty clay soil. To establish a platform for the placement of leveling pads and compaction of new fill materials we recommend removing the foundation soil to an elevation of 575.5 feet and backfilling with structural fill. A separation fabric should be placed between the foundation subgrade soil and the structural fill. Following the removal, we estimate the foundation soils will have a factored bearing resistance of 6,900 psf based on a geotechnical resistance factor of 0.65 (AASHTO 2020).

Undercut areas should be replaced with granular structural fill in accordance with IDOT standard

construction requirements. The lateral limit of the structural fill should extend a minimum of 1 foot beyond the edge of the wall, then an additional 1 foot laterally for every 2 feet of structural fill depth. The granular structural fill should be placed and compacted to a minimum of 95% of the maximum dry standard Proctor density.

The estimated friction angle between the MSE base and the aggregate replacement is 32 degrees and the corresponding friction coefficient is 0.62. MSE retaining walls are designed based on a geotechnical sliding resistance factor of 1.0 for soil-on-soil contact. Based on our analysis of the wall, with widths of 0.7 times the maximum height, we estimate the sliding along the silty soils has sufficient resistance and the eccentricity lies within the required middle 2/3 of the wall (AASHTO 2022).

5.2.2 Settlement

The proposed MSE walls will replace the existing tall wall system and wrap around the proposed integral-type abutments and associated piles. Approximately 23.5 feet of fill will be required at the highest point in the proposed wall systems adjacent to the abutments, and we estimate a service dead load of about 3,000 psf. The select MSE wall fill and embankments, however, will replace existing fill soils and existing structures in-kind, and we estimate the net load increase on the foundation soils will be about 35 to 40 pcf. Following the recommended foundation soil treatment the maximum estimated settlement of the cohesive foundation soils is about 1.0 inch.

The differential settlement will be gradual along the length of the approach slab. We estimate the back ends of the approach slabs will undergo about ¼ of an inch of settlement leaving about ¾ inch over 30 feet of differential movement, or about 1/480.

5.2.3 Global Stability

The global stability of the MSE wall was analyzed based on the soil profile described in Section 4.1 and the information provided in the GPE. The ground behind the wall is assumed to be straight. The minimum required FOS for both short (undrained) and long-term (drained) conditions is 1.5 (IDOT 2012). *Slide v6.0* evaluation exhibits employing the Bishop Simplified method of analysis are shown in Appendix C. We estimate the slopes have a minimum undrained FOS of 1.6 (Appendix C-1) and a drained FOS of 2.4 (Appendix C-2). The FOS meets the minimum requirement.

5.2.4 Approach Slabs

We understand that the approach slabs will be supported on approach footings (IDOT 2023). The

approach footings will be supported mainly on the new embankment fill. We estimate the fill has a maximum factored bearing resistance of 5,500 psf calculated for a geotechnical resistance factor (Φb) of 0.50 (AASHTO 2020).

5.3 Structure Foundations

The foundation soils below the I-290 level consist of medium stiff to stiff clayey soils overlying hard silty loam and dolostone bedrock. Wang recommends supporting the abutments on driven metal shell piles (MSP) or steel H-piles driven to maximum nominal bearing.

5.3.1 Driven Piles

IDOT specifies the maximum nominal required bearing (R_{NMAX}) for each pile and states the factored resistance available (R_F) for steel H-piles and MSP should be based on a geotechnical resistance factor (ϕ_G) of 0.55 (IDOT 2012). Nominal tip and side resistance were estimated using the methods and empirical equations presented in the latest *IDOT Geotechnical Pile Design Guide* (IDOT 2020).

Both IDOT (2020a) and AASHTO (2020) standards require downdrag loading to be applied to piles with greater than 0.4 inch of relative settlement along the sides. We estimate that greater than 0.4 inches of settlement will remain following the construction of the embankment and subsequent pile driving. We estimate that downdrag allowances will be required for the abutments.

The R_F, R_N, estimated pile tip elevations, and pile lengths for 16-inch diameter MSP with 0.375-inch thick shells and various sizes of steel H-Pile driven to R_{Nmax} are summarized in Tables 2 and 3. Pile lengths assume a 2-foot pile embedment into the abutments. The MSP in Table 2 will likely not achieve R_{Nmax} prior to encountering bedrock and should not be considered end-bearing piles. The piles extending through the MSE wall full should have corrugated metal sleeves extending from the base of the abutments to depths of 10 feet below. These annular spaces should remain open in accordance with IDOT (2023).

Table 2: Estimated Pile Lengths and Tip Elevations for 16-inch Dia. MSP with 0.375-inch walls (R_{Nmax}=782 k)

Structure Unit (Reference Boring)	Pile Cap Base Elevations (feet)	Nominal Required Bearing, R_N (kips)	Factored Geotechnical Loss (kips)	Factored Resistance Available, R_F (kips)	Total Estimated Pile Length (feet)	Estimated Pile Tip Elevation (feet)
North Abutment Boring SAC-01	591.8	668	29	338	56	538
		681	29	346	57	537

Structure Unit (Reference Boring)	Pile Cap Base Elevations (feet)	Nominal Required Bearing, R_N (kips)	Factored Geotechnical Loss (kips)	Factored Resistance Available, R_F (kips)	Total Estimated Pile Length (feet)	Estimated Pile Tip Elevation (feet)
		695	29	353	58	536
		708	29	360	59	535
South Abutment Boring SAC-02	591.7	555	49	256	52	542
		568	49	263	53	541
		582	49	271	54	540
		595	49	278	55	539

Table 3: Estimated Pile Lengths and Tip Elevations for Steel H-Piles Driven to R_{NMAX}

Substructure Unit (Reference Boring)	Pile Cap Base Elevations (feet)	Pile Size	Nominal Required Bearing, R_N (kips)	Factored Geotechnical Losses (kips)	Factored Resistance Available, R_F (kips)	Total Estimated Pile Length (feet)	Estimated Pile Tip Elevation (feet)
North Abutment Boring SAC-01	591.8	HP12x53	418	18	212	61	533
		HP12x63	497	18	255	62	532
		HP14x73	578	21	297	62	532
		HP14x89	705	21	367	63	531
South Abutment Boring SAC-02	591.7	HP12x53	418	30	200	57	537
		HP12x63	497	30	243	58	536
		HP14x73	578	30	288	58	536
		HP14x89	705	30	358	58	536

5.3.2 Lateral Loading

Lateral loads on the piles should be analyzed for maximum moments and lateral deflections. Recommended lateral soil modulus and strain parameters required for analysis via the p-y curve

method are included in Table 4. Once final lateral loads are determined, any pile groups should be checked for maximum moments and lateral deflections considering the required P-multipliers for group effects. The group effect multipliers are discussed in AASHTO (2022) Section 10.7.2.4, with values dependent on pile and shaft spacing, provided in Table 10.7.2.4-1 and Figure 10.7.2.4-1.

Table 4: Recommended Soil Parameters for Lateral Load Analysis

Soil Type (Layer)	Unit Weight, γ (pcf)	Undrained Shear Strength, c_u (psf)	Estimated Friction Angle, Φ (°)	Estimated Lateral Soil Modulus Parameter, k (pci)	Estimated Soil Strain Parameter, ε_{50} (%)
M Stiff to Hard Silty Clay to Silty Clay Loam Fill EL 598 to 594 feet	120	1,700	0	500	0.7
Stiff to Very Stiff Silty Clay EL 594 to 586 feet	120	2,100	0	600	0.6
Soft to M Stiff Silty Clay EL 586 to 565 feet	115	500	0	50	1.5
Stiff to Very Stiff Silty Clay EL 565 to 550 feet	120	1,900	0	600	0.6
Hard Silty Clay to Silty Clay Loam EL 550 to 533.5 feet	125	4,000	0	2000	0.4

6.0 CONSTRUCTION CONSIDERATIONS

6.1 Site Preparation

Pavement and debris should be cleared and stripped where the structure and structural fill will be placed. The exposed subgrade should be observed and evaluated by a qualified engineer. If unstable or unsuitable materials are exposed during excavation, they should be removed and replaced with compacted structural fill as described in Section 6.3.

6.2 Excavation, Dewatering, and Utilities

Excavations should be performed in accordance with local, state, and federal regulations including current OSHA regulations. The potential effect of ground movements upon nearby utilities should be considered during construction. Temporary excavations for the construction of the bridge should be sloped at no steeper than 1:2 (V:H). Excavated material should not be stockpiled immediately

adjacent to the top of slopes, nor should equipment be allowed to operate too closely to open excavations.

Groundwater was observed in Boring SAC-01 while drilling at an elevation of 541.5 feet within the silty loam. The groundwater is deep-seated and will not affect the construction of the proposed abutments or removal of the existing abutments.

6.3 Filling and Backfilling

Fill material used to attain final design elevations should be pre-approved, compacted, cohesive or granular soil conforming to IDOT Section 205, *Embankment* (2022). The fill material should be free of organic matter and debris and should be placed in lifts and compacted according to the standard. Backfill material must be preapproved by the Resident Engineer and should be placed and compacted in accordance with the specification (IDOT 2022). The MSE walls, including the select backfill, should be in accordance with IDOT Section 522.09 (2022).

6.4 Earthwork Operations

The required earthwork can be accomplished with conventional construction equipment. Moisture and traffic will cause deterioration of exposed subgrade soils. Precautions should be taken by the Contractor to prevent water erosion of the exposed subgrade. A compacted subgrade will minimize water runoff erosion.

Earth moving operations should be scheduled to not coincide with excessive cold or wet weather (early spring, late fall or winter). Any soil allowed to freeze or soften due to the standing water should be removed. Wet weather can cause problems with subgrade compaction.

It is recommended that an experienced geotechnical engineer be retained to inspect the exposed subgrade, monitor earthwork operations, and provide material inspection services during the construction phase of this project.

6.5 Pile Installation

The driven piles shall be furnished and installed according to the requirements of IDOT Section 512, *Piling* (2022). Due to relatively similar soil conditions from one side of the bridge to the other, Wang recommends performing a minimum of one test pile prior to driving production piles.

7.0 QUALIFICATIONS

The analysis and recommendations submitted in this report are based upon the data obtained from the borings drilled at the locations shown on the boring logs and in Exhibit 2. This report does not reflect any variations that may occur between the borings or elsewhere on the site, variations whose nature and extent may not become evident until the course of construction. In the event that any changes in the design and/or location of the structure are planned, we should be timely informed so that our recommendations can be adjusted accordingly.

It has been a pleasure to assist Collins Engineers and the Illinois Department of Transportation on this project. Please call if there are any questions, or if we can be of further service.

Respectfully Submitted,

Wang Engineering, Inc. (A Terracon Company)

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Senior Geotechnical Engineer

Mickey Snider, P.E.
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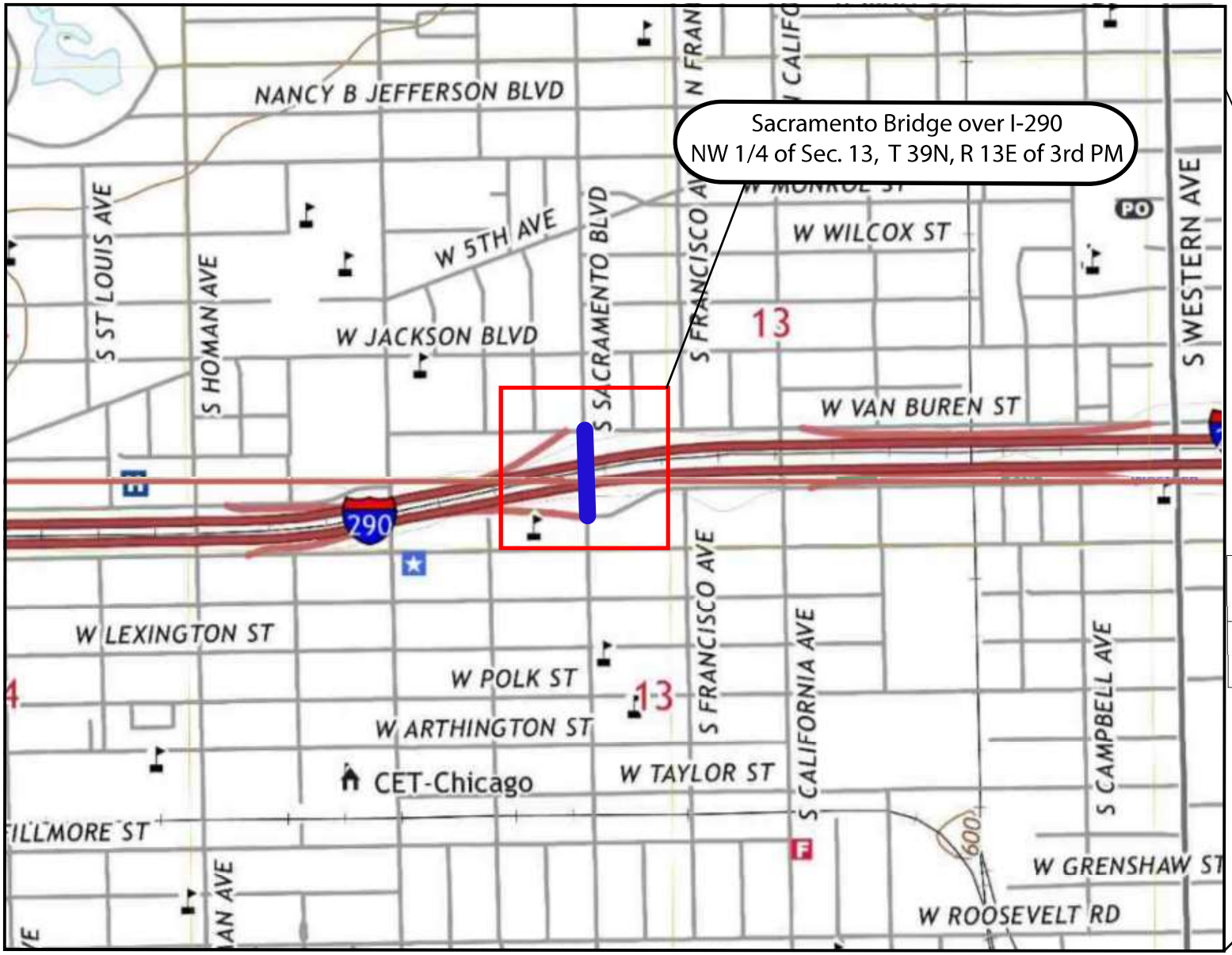
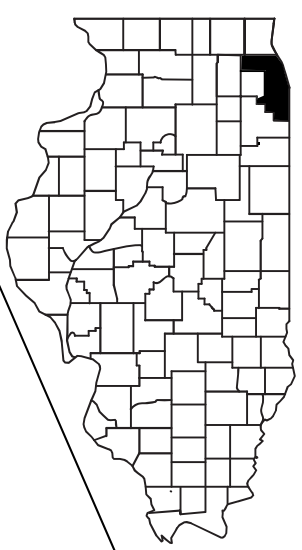
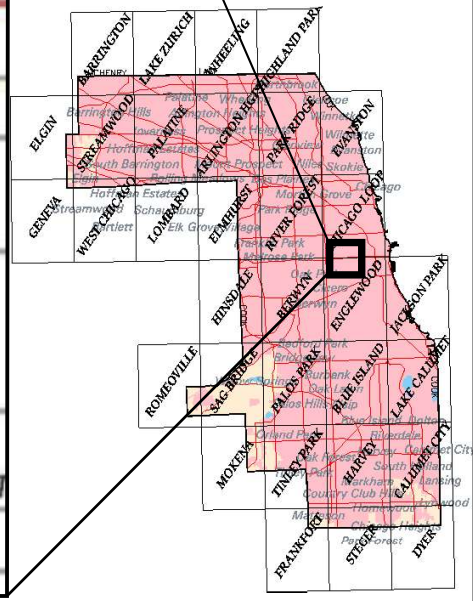
EXHIBITS







Cook County

0 0.5 1.0 Miles

SITE LOCATION MAP: PAULINA STREET AND SACRAMENTO BOULEVARD OVER I-290, CHICAGO, COOK COUNTY, ILLINOIS

SCALE: GRAPHICAL	EXHIBIT 1	DRAWN BY: J. Bensen CHECKED BY: M. Snider

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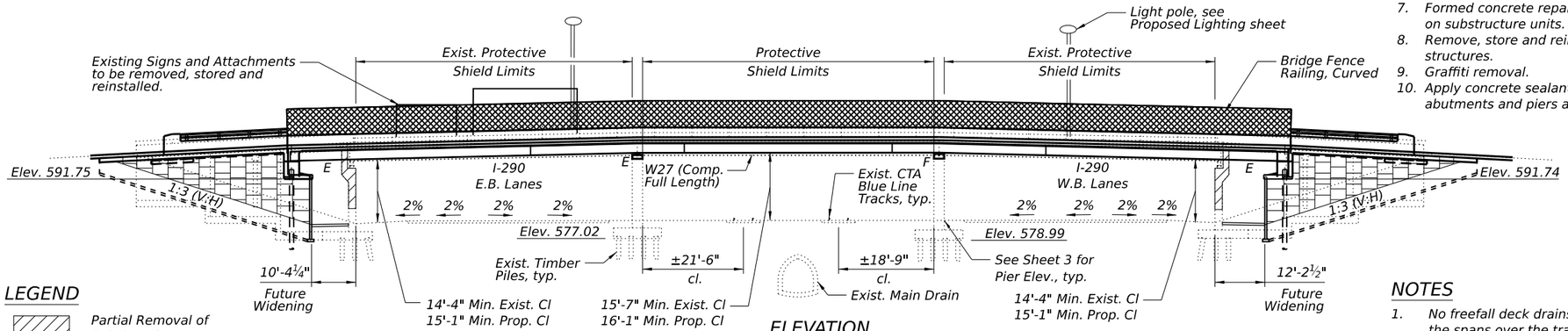
FOR COLLINS ENGINEERS | KE235325

Benchmark: Box cut on N.E. corner of IDOT traffic signal controller foundation at N.W. corner of W. Van Buren St. and S. Sacramento Blvd. Elev. 596.92.

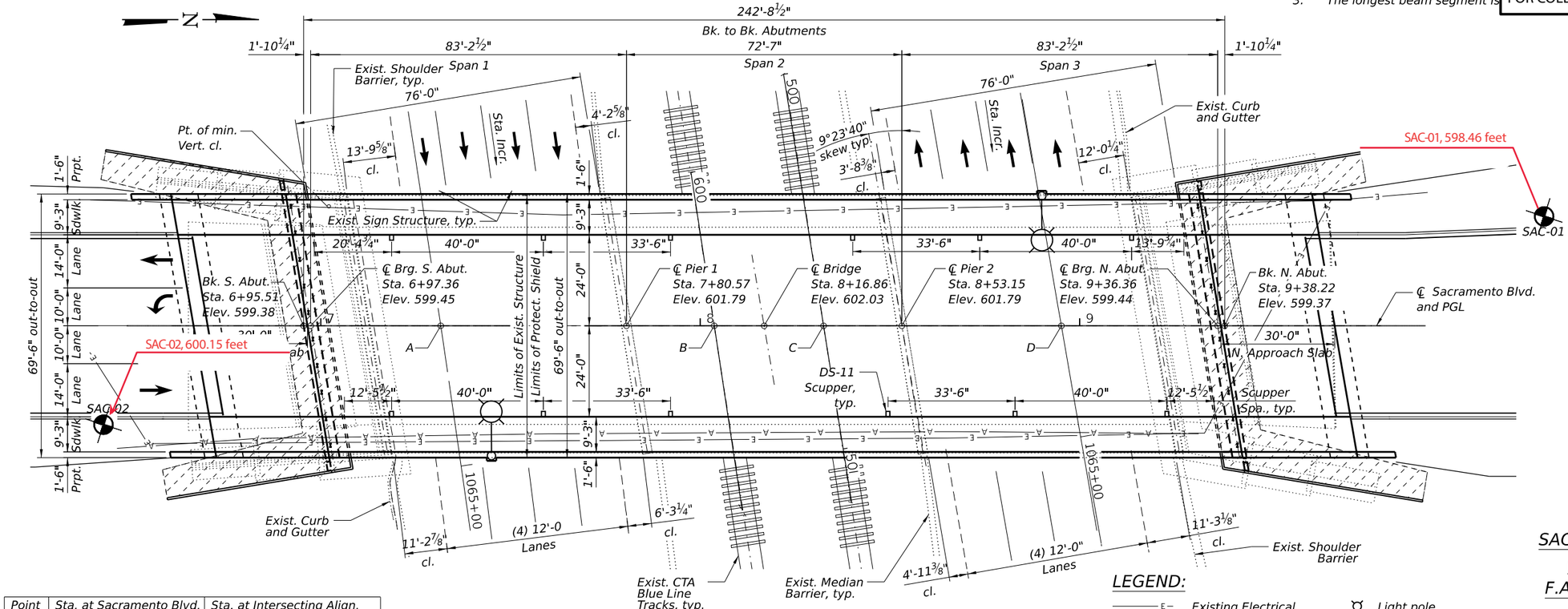
Existing Structure: S.N. 016-0754 was originally built in 1952 as F.A. Route 131, Sections 3-B-13 and 3-F-13. The structure consists of a three span non-composite continuous wide flange steel beam bridge with concrete closed vaulted wall abutments and two reinforced concrete piers all supported on timber piles. The concrete deck, in all spans, ranges from 7" to 7 1/8" thick and includes a 2" concrete overlay. The structure skew is 9°23'20" and an overall length of 213'-8 1/2" from back to back of abutments. The out-to-out width of the structure is 69'-6". Protective shielding was placed under the deck to protect traffic on I-290.

Traffic Control: Sacramento Blvd. to be closed during construction and traffic detoured.

Salvage: Aluminum handrails, bridge fence railing, light poles, mast arms, and luminaires.



ELEVATION
(Looking West)



Point	Sta. at Sacramento Blvd.	Sta. at Intersecting Align.
A	7+31.63	1064+62.65 (I-290 EB)
B	8+03.71	600+40.95 (CTA EB)
C	8+32.52	500+67.16 (CTA WB)
D	8+95.18	1064+70.28 (I-290 WB)

PLAN

LEGEND
Partial Removal of Existing Abutment

LEGEND:
Existing Electrical
Existing Aerial
Soil Boring
Limits of MSE wall soil reinforcement
Light pole

SCOPE OF WORK
1. Remove existing concrete deck, W36 steel beam superstructure, expansion joints, and bearings.
2. Remove existing vaulted approach spans and approach slabs.
3. Remove existing abutments and wingwalls.
4. Construct new integral abutments on MSE walls.
5. Reconstruct concrete seats for new elastomeric bearings on Pier 1 and new fixed bearing on Pier 2.
6. Construct proposed W27 steel beam superstructure with 8" concrete deck and approach slabs.
7. Formed concrete repair and epoxy crack sealing on substructure units.
8. Remove, store and reinstall existing sign structures.
9. Graffiti removal.
10. Apply concrete sealant to proposed MSE abutments and piers adjacent to I-290.

NOTES
1. No freefall deck drains will be
   the spans over the tracks.
2. All structural steel shall be ga
3. The longest beam segment is

HIGHWAY CLASSIFICATION
F.A.I. Rte. 290 - (I-290)
Functional Class: Interstate
ADT: 115,400 (2023); 182,608 (2046)
ADTT: 6,900 (2022); 11,000 (2046)
DHV: 16,099 (2046)
Design Speed: 55 m.p.h.
Posted Speed: 55 m.p.h.
2-Way Traffic
Directional Distribution: 55 (E.B.) : 45 (W.B.)

F.A.U. Rte. 2833 - (Sacramento Blvd.)
Functional Class: Major Collector
ADT: 11,600 (2023); 14,241 (2046)
ADTT: 350 (2022); 430 (2046)
DHV: 1,400 (2046)
Design Speed: 30 m.p.h.
Posted Speed: 30 m.p.h.
2-Way Traffic
Directional Distribution: 50:50

DESIGN SPECIFICATIONS
2020 AASHTO LRFD Bridge Design Specifications, 9th Edition

BORING LOCATION PLAN: PAULINA STREET AND SACRAMENTO BOULEVARD OVER I-290, CHICAGO, COOK COUNTY, ILLINOIS

SCALE: GRAPHICAL | EXHIBIT 2 | DRAWN BY: J. Bensen | CHECKED BY: M. Snider

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Lombard, IL 60148
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FIELD UNITS
(EXISTING CONSTRUCTION)
f'c = 3,000 psi
fy = 40,000 psi (Reinforcement)

LOADING HL-93
Allow 25#/sq. ft. for future wearing surface.
LL+IM Deflection = L/1,000

SIESMIC DATA
Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (SD1) = 0.09g
Design Spectral Acceleration at 0.2 sec. (SDS) = 0.15g
Soil Site Class = D

Range 13 E, 3rd P.M.

LOCATION SKETCH

GENERAL PLAN AND ELEVATION
SACRAMENTO BLVD. OVER F.A.I. RTE. 290
(EISENHOWER EXPRESSWAY) & CTA
F.A.U. RTE. 2833 - SECTION 2019-192B-R
COOK COUNTY
STATION 8+16.86
STRUCTURE NO. 016-0754

COLLINS ENGINEERS INC.

USER NAME =	DESIGNED - MPR	REVISED -	
	CHECKED - EKM	REVISED -	
PLOT SCALE =	DRAWN - KGZ	REVISED -	
PLOT DATE =	CHECKED - EKM	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

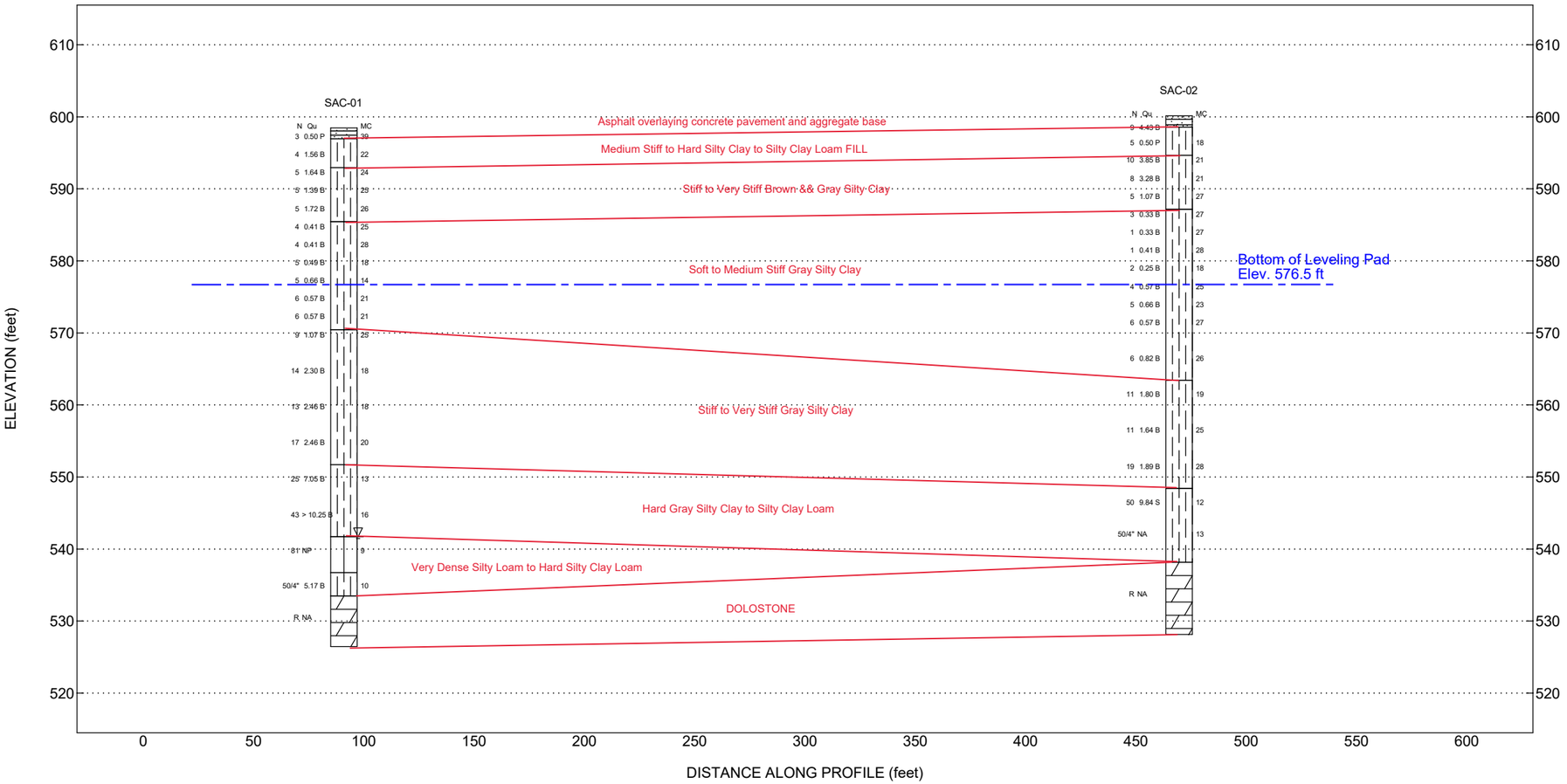
GENERAL PLAN AND ELEVATION
STRUCTURE NO. 016-0754
SHEET S-1 OF S-4 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2833	2019-192B-R	COOK		
		CONTRACT NO. 62K65		
	ILLINOIS	FED. AID PROJECT		

MODEL: Default
FILE NAME: P:\10-IL\14411-IDOT - Sacramento and Paulina over I-290\Work\CADD\Sacramento - Contract 62K65\CADD_Sheets\Structural\01 TSL D162K65-016075[illegible]-001-gpe.dgn
1/22/2025 9:10:31 AM

◄ N

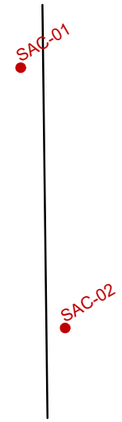
S ►



Lithology Graphics

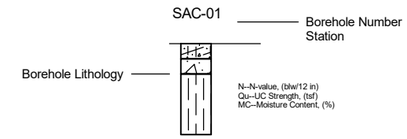
- Pavement
- Concrete
- Crushed stone
- IDH Silty Clay, Silty Clay Loam
- IDH Silt, Silty Loam
- Dolomite or Dolomitic Limestone
- Gravelly sand, sandy gravel

N



Site Map Scale 1 inch equals 220 feet

Explanation:



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

0 60

Horizontal Scale (feet)

Vertical Exaggeration: 3.5x

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Subsurface Data Profile
Sacramento Blvd. Bridge over I-290

WEI SINCE 1982

Paulina Street and Sacramento Blvd over Interstate 290
Chicago, Cook County, IL

JOB NUMBER	PLATE NUMBER
KE235325	EXHIBIT A-1

Wang Engineering
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Phone (630) 953-9928
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APPENDIX A

Wang Engineering
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Lombard, IL 60148
Telephone: (630) 953-9928
Fax:

BORING LOG SAC-01

WEI Job No.: KE235325

Client: **Collins Engineers**
Project: **Paulina Street and Sacramento Blvd over Interstate 290**
Location: **Chicago, Cook County, IL**

Datum: NAVD88
Elevation: 598.46 ft
North: 1897929.76 ft
East: 1156416.89 ft
Station:
Offset:

Depth (ft)	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Sample Type / recovery	Sample No.	SPT (blw/6 in) RQD (%)	Qu (tsf)	Moisture Content (%)
	598.0	5-inch thick ASPHALT					
	597.5	7-inch thick CONCRETE					
		--PAVEMENT--					
	597.0	Gray CRUSH STONE					
		--AGGREGATE BASE--					
		Medium stiff to stiff, dark brown to gray SILTY CLAY LOAM to SILTY CLAY, trace gravel and brick fragments					
		--FILL--					
5				1	4 2 1	0.50 P	39
				2	1 1 3	1.56 B	22
	593.0	Stiff, brown and gray SILTY CLAY, trace gravel					
		--RDR 2--					
				3	2 3 2	1.64 B	24
10				4	1 3 2	1.39 B	25
				5	2 2 3	1.72 B	26
	585.5	Soft to medium stiff, gray SILTY CLAY, trace gravel					
		--RDR 1--					
15				6	1 2 2	0.41 B	25
				7	0 2 2	0.41 B	28
20				8	0 2 3	0.49 B	18
25				9	0 2 3	0.66 B	14
				10	1 2 4	0.57 B	21
				11	2 3 3	0.57 B	21
30	570.5	Stiff to very stiff, gray SILTY CLAY, trace gravel					
		--RDR 2--					
				12	2 4 5	1.07 B	25
35				13	5 6 8	2.30 B	18
40				14	5 6 7	2.46 B	18

GENERAL NOTES

Begin Drilling: **05-08-2024** Complete Drilling: **05-08-2024**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20CME55T[81%]**
Driller: **RH&JD** Logger: **F. Bozga** Checked by: **JAB**
Drilling Method: **2.25" ID HSA to 10', mud rotary thereafter; backfilled upon completion**

WATER LEVEL DATA

While Drilling: **57.00 ft**
At Completion of Drilling: **WASH**
Time After Drilling: **NA**
Depth to Water: **NA**

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

WANGENGINC KE235325.GPJ WANGENG.GDT 6/3/24

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Lombard, IL 60148
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Fax:

BORING LOG SAC-01

WEI Job No.: KE235325

Client: **Collins Engineers**
Project: **Paulina Street and Sacramento Blvd over Interstate 290**
Location: **Chicago, Cook County, IL**

Datum: NAVD88
Elevation: 598.46 ft
North: 1897929.76 ft
East: 1156416.89 ft
Station:
Offset:

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT (blw/6 in) RQD (%)	Qu (tsf)	Moisture Content (%)
			45		15	4 7 10	2.46 B	20
	551.7	Hard, gray SILTY CLAY LOAM, trace gravel --RDR 2-4--						
			50		16	9 12 13	7.05 B	13
		--rig chatter; possible cobbles--						
			55		17	10 18 25	> 10.25 B	16
	541.7	Very dense, gray SILTY LOAM, trace gravel; wet --RDR 3--						
			60		18	33 42 39	NP	9
	536.7	Hard, gray SILTY CLAY LOAM, little gravel						
			65		19	16 12 50/4"	5.17 B	10
	533.5	Strong, light gray, very poor quality, DOLOSTONE; closely spaced, slightly weathered, horizontal, oblique, and vertical joints, with 0.05 - 0.2 inch opening, slicken walls, and <0.2 inch thick clay infill. --Run 1: 65 to 72 feet-- --Recovery: 15%-- --RQD: 0%--						
			70		1	0%		
	526.5	Boring terminated at 72.00 ft						
			75					
			80					

GENERAL NOTES

Begin Drilling: **05-08-2024** Complete Drilling: **05-08-2024**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20CME55T[81%]**
Driller: **RH&JD** Logger: **F. Bozga** Checked by: **JAB**
Drilling Method: **2.25" ID HSA to 10', mud rotary thereafter; backfilled upon completion**

WATER LEVEL DATA

While Drilling: **57.00 ft**
At Completion of Drilling: **WASH**
Time After Drilling: **NA**
Depth to Water: **NA**

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

WANGENGINC KE235325.GPJ WANGENG.GDT 6/3/24

Run #1

Boring SAC-01:
Run #1, 65.0 to 72.0 feet, RECOVERY=15%, RQD=0%

BEDROCK CORE PHOTOS: PAULINA STREET AND SACRAMENTO BOULEVARD OVER I-290, CHICAGO, COOK COUNTY, ILLINOIS		
SCALE: GRAPHICAL	APPENDIX A	DRAWN BY: J. Bensen CHECKED BY: M. Snider
Wang Engineering A Terracon Company		1145 N. Main Street Lombard, IL 60148 www.wangeng.com
FOR COLLINS ENGINEERS		KE235325

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Telephone: (630) 953-9928
Fax:

BORING LOG SAC-02

WEI Job No.: KE235325

Client: **Collins Engineers**
Project: **Paulina Street and Sacramento Blvd over Interstate 290**
Location: **Chicago, Cook County, IL**

Datum: NAVD88
Elevation: 600.15 ft
North: 1897551.86 ft
East: 1156481.42 ft
Station:
Offset:

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT (blw/6 in) RQD (%)	Qu (tsf)	Moisture Content (%)
	599.7	6-inch thick ASPHALT						
		9-inch thick CONCRETE						
	598.9	--PAVEMENT--						
	598.6	Gray GRAVEL --AGGREGATE BASE--						
		Medium stiff to hard, dark brown and brown SILTY CLAY to SILTY CLAY LOAM, trace gravel and brick fragments; moist --FILL--			1	3 4 5	4.43 B	
			5		2	7 3 2	0.50 P	18
	594.7	Stiff to very stiff, brown SILTY CLAY, trace gravel; moist --RDR 2--			3	3 4 6	3.85 B	21
			10		4	3 4 4	3.28 B	21
					5	2 2 3	1.07 B	27
	587.2	Soft to medium stiff, gray SILTY CLAY, trace gravel; moist --RDR 2--			6	0 1 2	0.33 B	27
			15		7	0 0 1	0.33 B	27
					8	0 0 1	0.41 B	28
			20					

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT (blw/6 in) RQD (%)	Qu (tsf)	Moisture Content (%)
					9	0 0 2	0.25 B	18
			25		10	2 1 3	0.57 B	25
					11	2 2 3	0.66 B	23
			30		12	1 3 3	0.57 B	27
	563.4	Stiff, gray SILTY CLAY, trace gravel; moist --RDR 2--			13	3 3 3	0.82 B	26
			35					
					14	3 5 6	1.80 B	19
			40					

GENERAL NOTES

Begin Drilling: **05-06-2024** Complete Drilling: **05-06-2024**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20CME55T[81%]**
Driller: **RH&JD** Logger: **L. Corral** Checked by: **JAB**
Drilling Method: **2.25" ID HSA to 10', mud rotary thereafter; backfilled upon completion**

WATER LEVEL DATA

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

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

WANGENGINC KE235325.GPJ WANGENG.GDT 6/3/24

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Fax:

BORING LOG SAC-02

WEI Job No.: KE235325

Client: **Collins Engineers**
Project: **Paulina Street and Sacramento Blvd over Interstate 290**
Location: **Chicago, Cook County, IL**

Datum: NAVD88
Elevation: 600.15 ft
North: 1897551.86 ft
East: 1156481.42 ft
Station:
Offset:

Depth (ft)	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Sample Type / recovery	Sample No.	SPT (blw/6 in) RQD (%)	Qu (tsf)	Moisture Content (%)
45				15	3 5 6	1.64 B	25
50				16	7 9 10	1.89 B	28
	548.4	Hard, gray SILTY CLAY to SILTY CLAY LOAM, trace gravel; moist --RDR 4--					
55				17	11 22 28	9.84 S	12
60				18	50/4"	NA	13
	538.2	Strong, light gray, fair quality, DOLOSTONE; closely spaced, moderately weathered, horizontal, oblique, and vertical joints, with <0.05 inch opening, slightly rough walls, and <0.2 inch thick clay infill. --Run 1: 62 to 72 feet-- --Recovery: 100%-- --RQD: 50%--					
65				1	50%		
70							
	528.2	Boring terminated at 72.00 ft					
75							
80							

GENERAL NOTES

Begin Drilling: **05-06-2024** Complete Drilling: **05-06-2024**
Drilling Contractor: **Wang Testing Services** Drill Rig: **20CME55T[81%]**
Driller: **RH&JD** Logger: **L. Corral** Checked by: **JAB**
Drilling Method: **2.25" ID HSA to 10', mud rotary thereafter; backfilled upon completion**

WATER LEVEL DATA

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

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

WANGENGINC KE235325.GPJ WANGENG.GDT 6/3/24

Run #1

0 6 inches

Boring SAC-02:
Run #1, 62.0 to 72.0 feet, RECOVERY=100%, RQD=50%

BEDROCK CORE PHOTOS: PAULINA STREET AND SACRAMENTO BOULEVARD OVER I-290, CHICAGO, COOK COUNTY, ILLINOIS		
SCALE: GRAPHICAL	APPENDIX A	DRAWN BY: J. Bensen CHECKED BY: M. Snider
Wang Engineering A Terracon Company		1145 N. Main Street Lombard, IL 60148 www.wangeng.com
FOR COLLINS ENGINEERS		KE235325

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A Terracon Company

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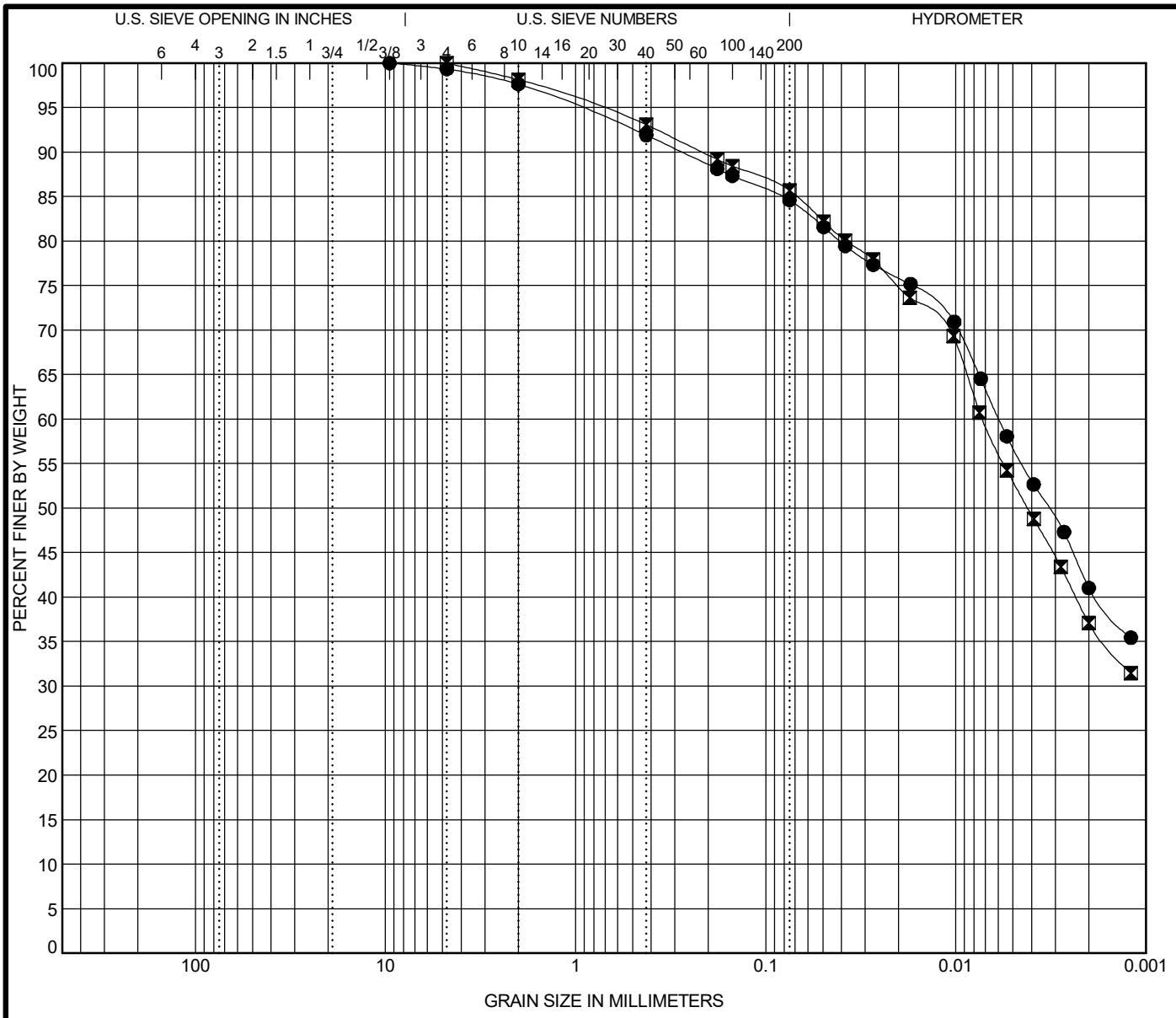
Phone (630) 953-9928
www.wangeng.com

APPENDIX B



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		USCS Classification	LL	PL	PI	Cc	Cu
●	SAC-01#7	16.0 ft	**LEAN CLAY with SAND(CL)**	**36**	**17**	**19**		
⊠	SAC-02#7	16.0 ft	**LEAN CLAY(CL)**	**36**	**17**	**19**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	SAC-01#7	16.0 ft	**9.5**	**0.006**			**0.7**	**14.7**	**27.8**	**56.8**
⊠	SAC-02#7	16.0 ft	**4.75**	**0.007**			**0.0**	**14.3**	**32.8**	**53.0**

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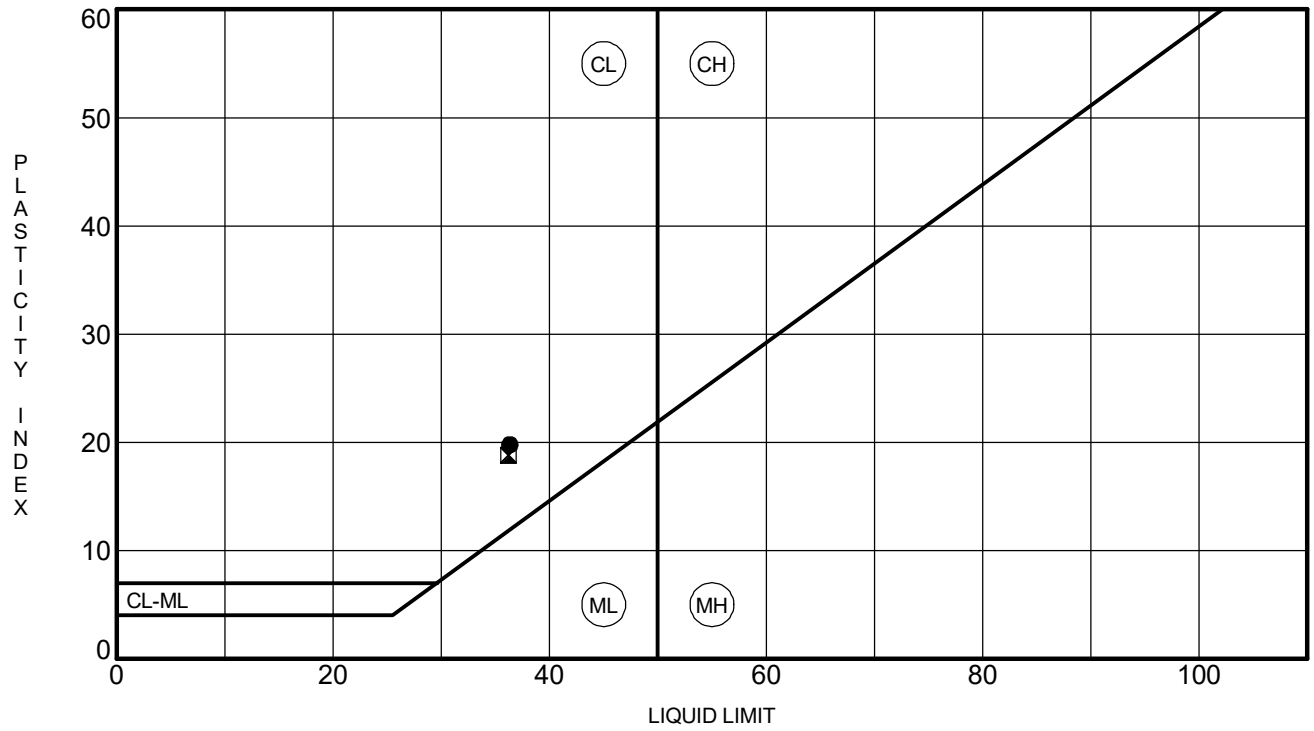
GRAIN SIZE DISTRIBUTION

Project: Paulina Street and Sacramento Blvd over Interstate 290

Location: Chicago, Cook County, IL

Number: KE235325

WEI GRAIN SIZE USCS KE235325.GPJ US LAB.GDT 5/31/24



	Specimen Identification		LL	PL	PI	Fines	USCS Classification
●	SAC-01#7	16.0 ft	36	17	19	85	LEAN CLAY with SAND(CL)
⊠	SAC-02#7	16.0 ft	36	17	19	86	LEAN CLAY(CL)

WEI SINCE 1982

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Lombard, IL 60148
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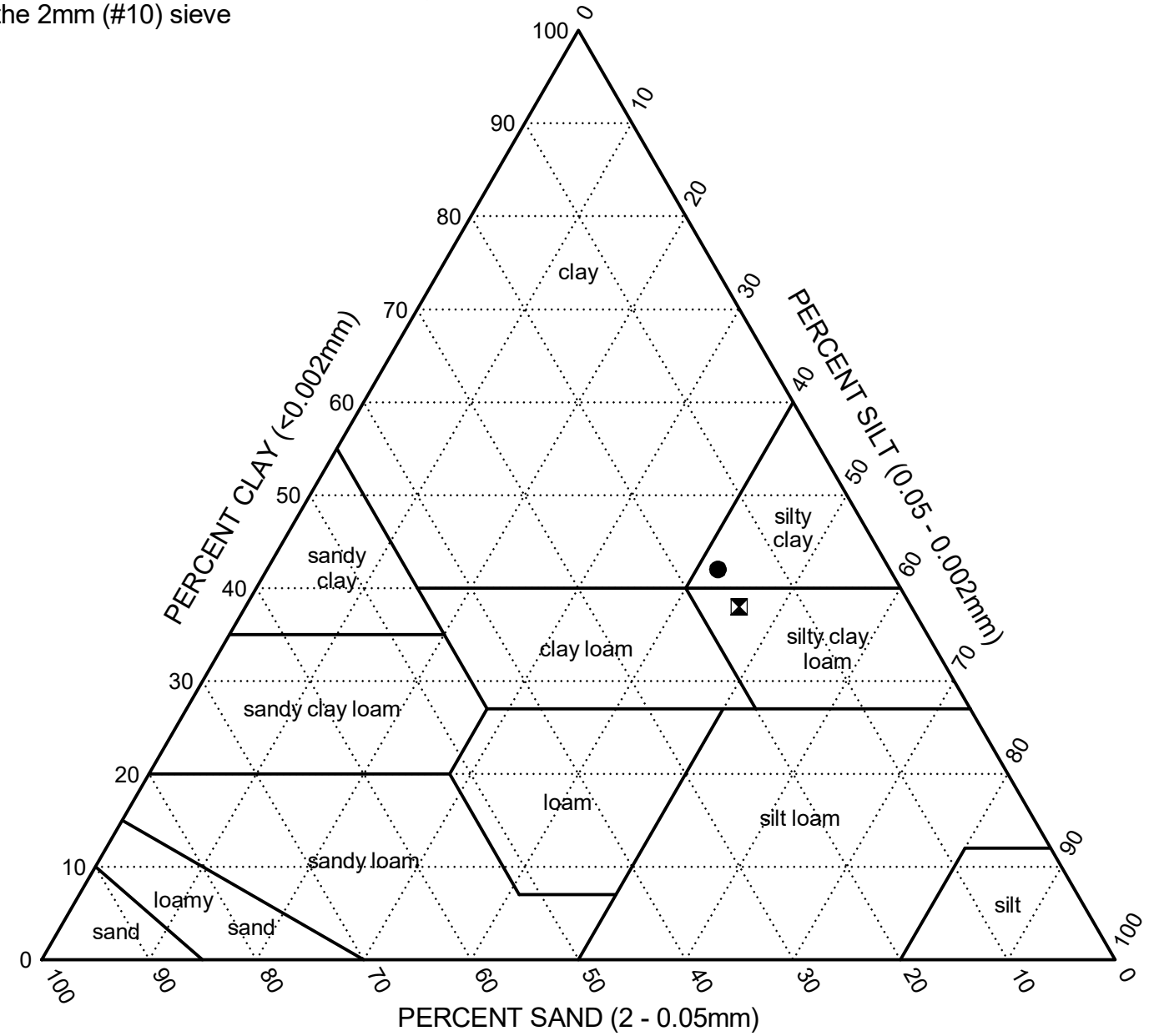
ATTERBERG LIMITS' RESULTS

Project: Paulina Street and Sacramento Blvd over Interstate 290

Location: Chicago, Cook County, IL

Number: KE235325

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



	Sample	Depth (ft)	USDA Classification	Sand (%)	Silt (%)	Clay (%)
●	**SAC-01#7**	**16.0**	**SILTY CLAY**	**16.4**	**41.6**	**42.0**
⧓	**SAC-02#7**	**16.0**	**SILTY CLAY LOAM**	**16.2**	**46.1**	**37.8**

WEI SINCE 1982

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Fax:

USDA Textural Classification Chart

Project: Paulina Street and Sacramento Blvd over Interstate 290

Location: Chicago, Cook County, IL

Number: KE235325

Wang Engineering
A Terracon Company

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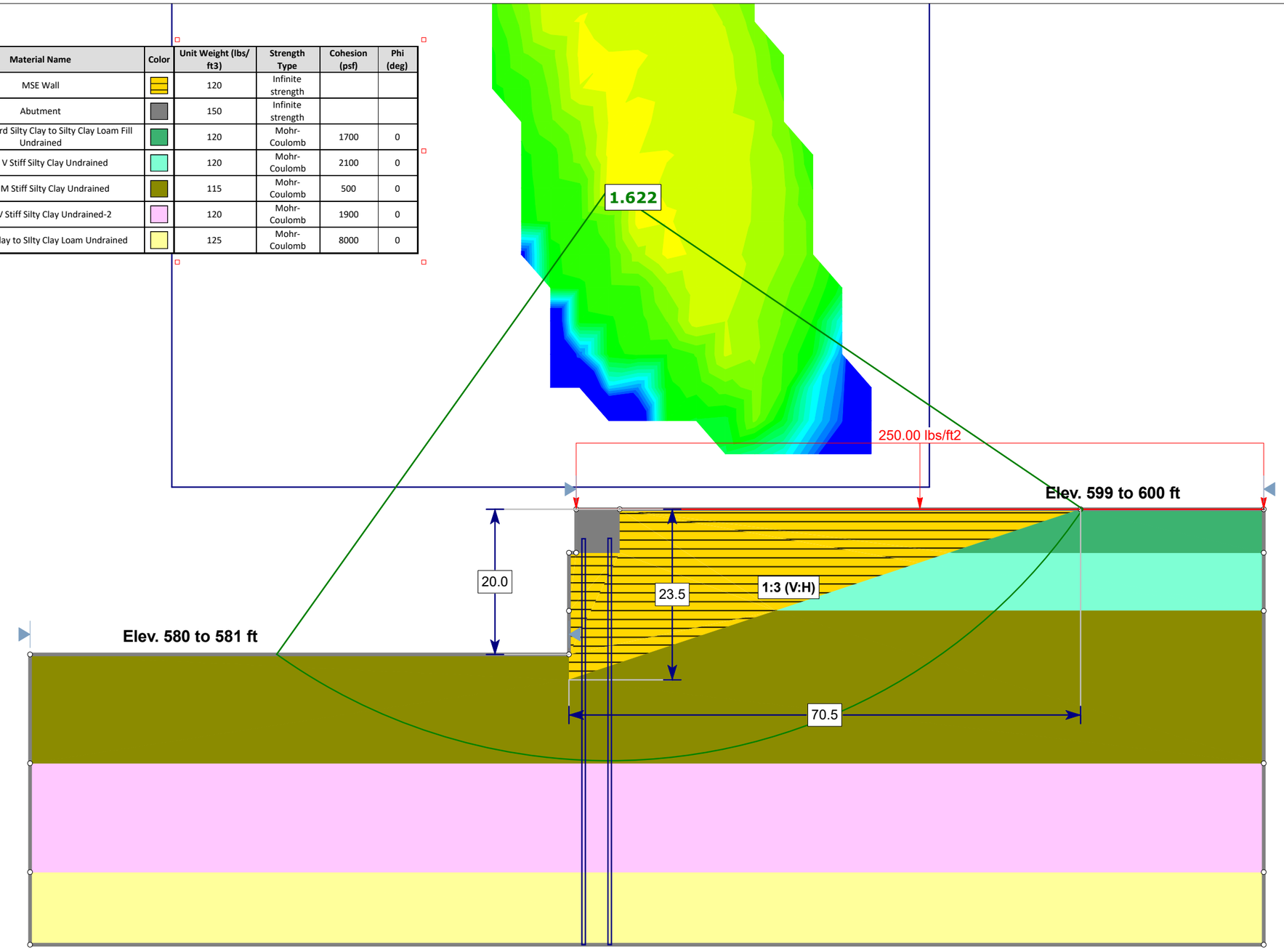
Lombard, Illinois 60148
Phone (630) 953-9928
www.wangeng.com

APPENDIX C

Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
MSE Wall		120	Infinite strength		
Abutment		150	Infinite strength		
M Stiff to Hard Silty Clay to Silty Clay Loam Fill Undrained		120	Mohr-Coulomb	1700	0
Stiff to V Stiff Silty Clay Undrained		120	Mohr-Coulomb	2100	0
Soft to M Stiff Silty Clay Undrained		115	Mohr-Coulomb	500	0
Stiff to V Stiff Silty Clay Undrained-2		120	Mohr-Coulomb	1900	0
Hard Silty Clay to Sllty Clay Loam Undrained		125	Mohr-Coulomb	8000	0



660
640
620
600
580
560
540
-100
-80
-60
-40
-20
0
20
40
60
80
100
120

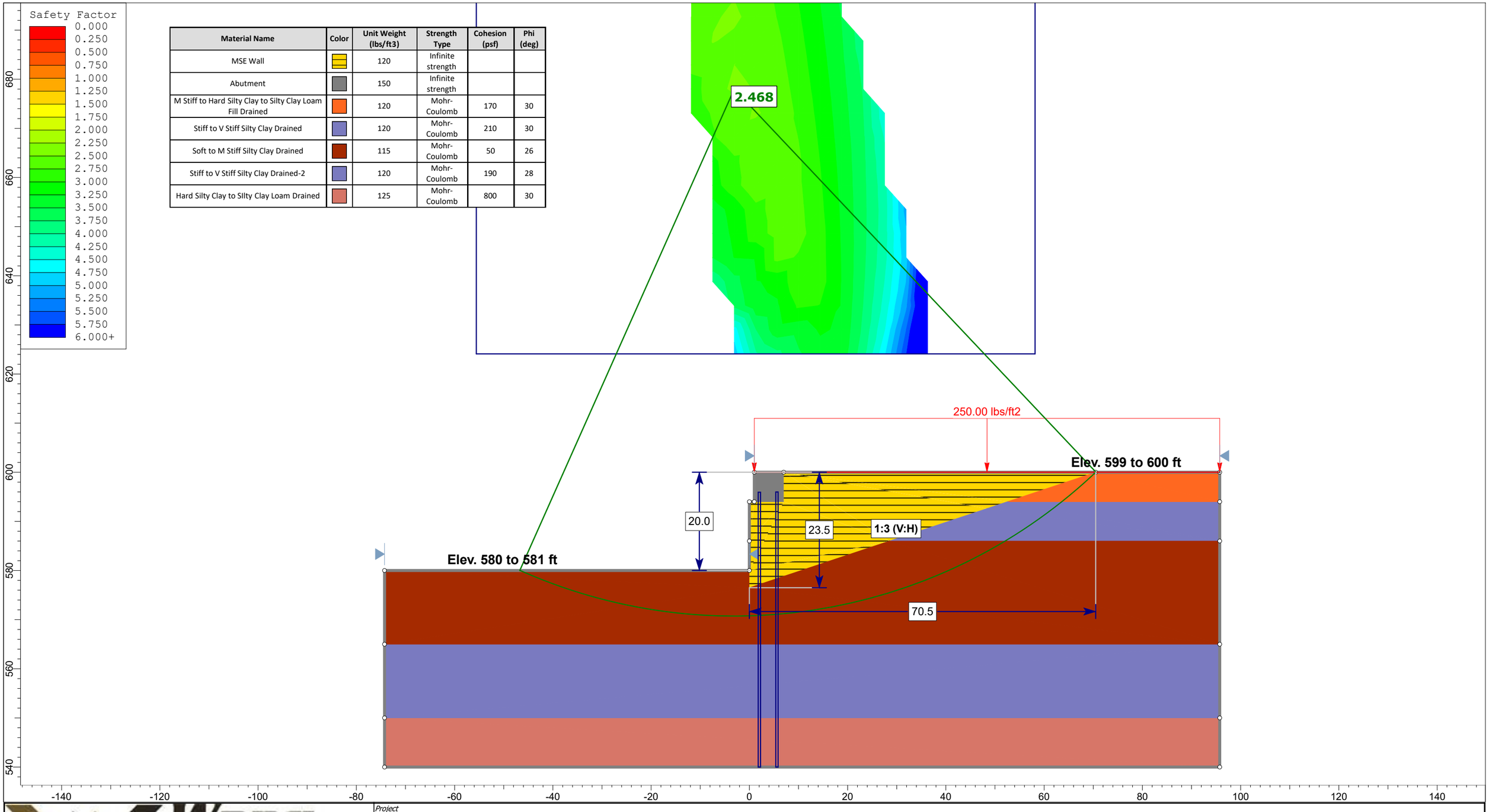
Wang Engineering
A Terracon Company

Project	SACRAMENTO BOULEVARD BRIDGE OVER I-290		
Group	Group 1	Scenario	Short Term Stability
Drawn By		Company	Wang Engineering, Inc. A Terracon Company
Date	5/31/2024	File Name	Slope Stability_v0.slmd

SLIDEINTERPRET 9.027

Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
MSE Wall		120	Infinite strength		
Abutment		150	Infinite strength		
M Stiff to Hard Silty Clay to Silty Clay Loam Fill Drained		120	Mohr-Coulomb	170	30
Stiff to V Stiff Silty Clay Drained		120	Mohr-Coulomb	210	30
Soft to M Stiff Silty Clay Drained		115	Mohr-Coulomb	50	26
Stiff to V Stiff Silty Clay Drained-2		120	Mohr-Coulomb	190	28
Hard Silty Clay to Silty Clay Loam Drained		125	Mohr-Coulomb	800	30



Wang Engineering
A Terracon Company

Project	SACRAMENTO BOULEVARD BRIDGE OVER I-290		
Group	Group 1	Scenario	Long Term Stability
Drawn By		Company	Wang Engineering, Inc. A Terracon Company
Date	5/31/2024	File Name	Slope Stability_v0.slmd

SLIDEINTERPRET 9.027

Wang Engineering
A Terracon Company

1145 North Main Street
Lombard, Illinois 60148
Phone (630) 953-9928
www.wangeng.com

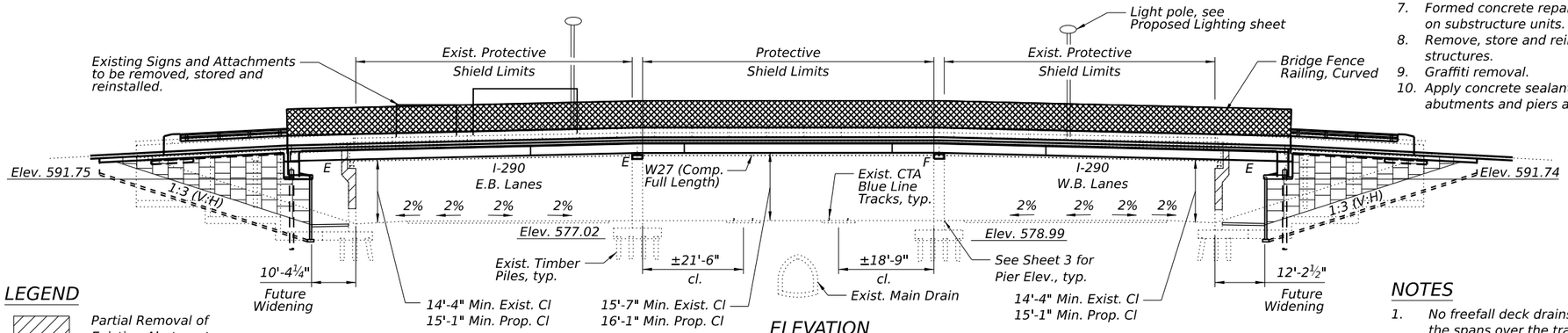
APPENDIX D

Benchmark: Box cut on N.E. corner of IDOT traffic signal controller foundation at N.W. corner of W. Van Buren St. and S. Sacramento Blvd. Elev. 596.92.

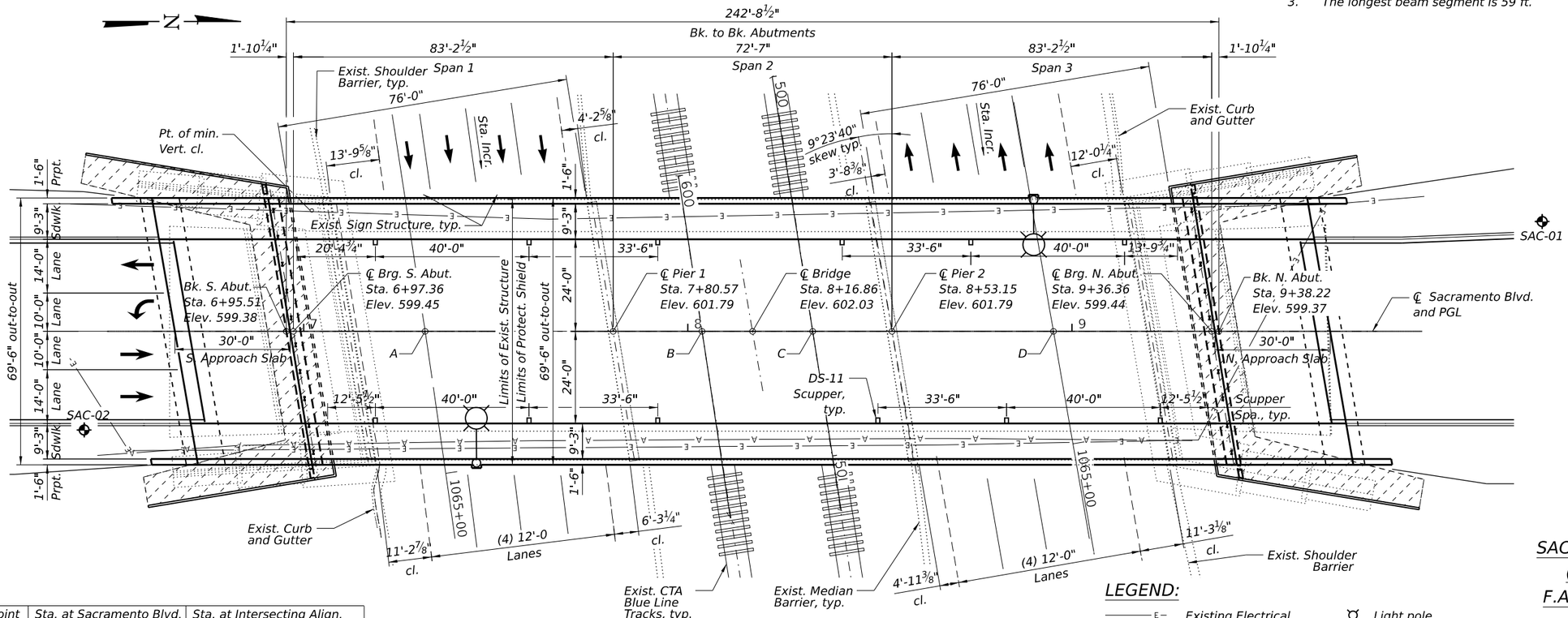
Existing Structure: S.N. 016-0754 was originally built in 1952 as F.A. Route 131, Sections 3-B-13 and 3-F-13. The structure consists of a three span non-composite continuous wide flange steel beam bridge with concrete closed vaulted wall abutments and two reinforced concrete piers all supported on timber piles. The concrete deck, in all spans, ranges from 7" to 7 1/8" thick and includes a 2" concrete overlay. The structure skew is 9°23'20" and an overall length of 213'-8 1/2" from back to back of abutments. The out-to-out width of the structure is 69'-6". Protective shielding was placed under the deck to protect traffic on I-290.

Traffic Control: Sacramento Blvd. to be closed during construction and traffic detoured.

Salvage: Aluminum handrails, bridge fence railing, light poles, mast arms, and luminaires.



ELEVATION
(Looking West)



PLAN

Point	Sta. at Sacramento Blvd.	Sta. at Intersecting Align.
A	7+31.63	1064+62.65 (I-290 EB)
B	8+03.71	600+40.95 (CTA EB)
C	8+32.52	500+67.16 (CTA WB)
D	8+95.18	1064+70.28 (I-290 WB)

LEGEND

Partial Removal of Existing Abutment

SCOPE OF WORK

1. Remove existing concrete deck, W36 steel beam superstructure, expansion joints, and bearings.
2. Remove existing vaulted approach spans and approach slabs.
3. Remove existing abutments and wingwalls.
4. Construct new integral abutments on MSE walls.
5. Reconstruct concrete seats for new elastomeric bearings on Pier 1 and new fixed bearing on Pier 2.
6. Construct proposed W27 steel beam superstructure with 8" concrete deck and approach slabs.
7. Formed concrete repair and epoxy crack sealing on substructure units.
8. Remove, store and reinstall existing sign structures.
9. Graffiti removal.
10. Apply concrete sealant to proposed MSE abutments and piers adjacent to I-290.

NOTES

1. No freefall deck drains will be permitted in the spans over the tracks.
2. All structural steel shall be galvanized.
3. The longest beam segment is 59 ft.

LEGEND:

- E – Existing Electrical
- A – Existing Aerial
- Soil Boring
- Limits of MSE wall soil reinforcement
- Light pole

HIGHWAY CLASSIFICATION

F.A.I. Rte. 290 - (I-290)
Functional Class: Interstate
ADT: 115,400 (2023); 182,608 (2046)
ADTT: 6,900 (2022); 11,000 (2046)
DHV: 16,099 (2046)
Design Speed: 55 m.p.h.
Posted Speed: 55 m.p.h.
2-Way Traffic
Directional Distribution: 55 (E.B.) : 45 (W.B.)

F.A.U. Rte. 2833 - (Sacramento Blvd.)
Functional Class: Major Collector
ADT: 11,600 (2023); 14,241 (2046)
ADTT: 350 (2022); 430 (2046)
DHV: 1,400 (2046)
Design Speed: 30 m.p.h.
Posted Speed: 30 m.p.h.
2-Way Traffic
Directional Distribution: 50:50

DESIGN SPECIFICATIONS

2020 AASHTO LRFD Bridge Design Specifications, 9th Edition

DESIGN STRESSES

FIELD UNITS
(NEW CONSTRUCTION)

f'c = 4,000 psi (Superstructure Concrete)
f'c = 3,500 psi (Substructure Concrete)
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (M270 Grade 50), (See Note 2)

FIELD UNITS
(EXISTING CONSTRUCTION)
f'c = 3,000 psi
fy = 40,000 psi (Reinforcement)

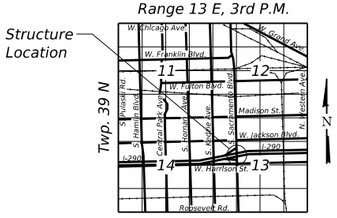
LOADING HL-93

Allow 25#/sq. ft. for future wearing surface.
LL+IM Deflection = L/1,000

SIESMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (SD1) = 0.09g
Design Spectral Acceleration at 0.2 sec. (SDS) = 0.15g
Soil Site Class = D

Range 13 E, 3rd P.M.



LOCATION SKETCH

GENERAL PLAN AND ELEVATION
SACRAMENTO BLVD. OVER F.A.I. RTE. 290
(EISENHOWER EXPRESSWAY) & CTA
F.A.U. RTE. 2833 - SECTION 2019-192B-R
COOK COUNTY
STATION 8+16.86
STRUCTURE NO. 016-0754

MODEL: Default
FILE NAME: P:\10-IL\14411-IDOT - Sacramento and Paulina over I-290\Work\CADD\Sacramento - Contract 62K65\CADD_Sheets\Structural\01 TSL D162K65-016075[illegible]-001-gpe.dgn
1/22/2025 9:10:31 AM

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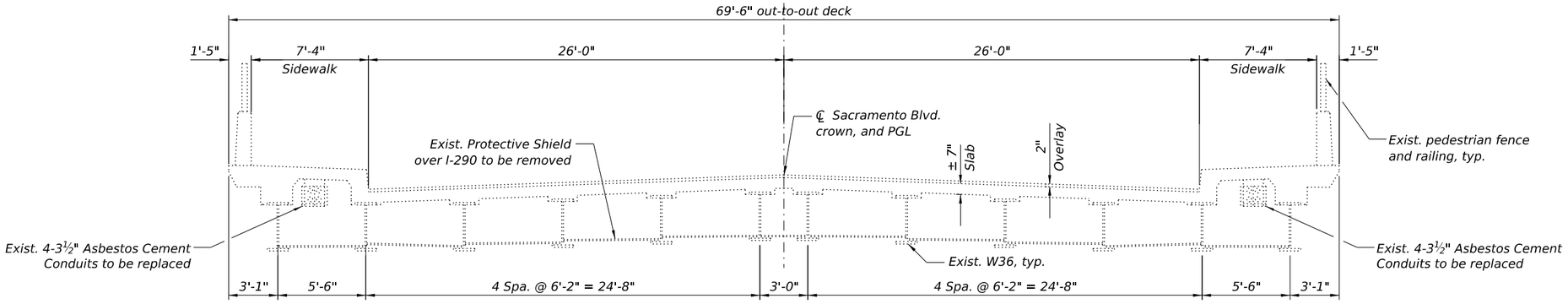
	CHECKED - EKM	REVISED -	
PLOT SCALE =	DRAWN - KGZ	REVISED -	
PLOT DATE =	CHECKED - EKM	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

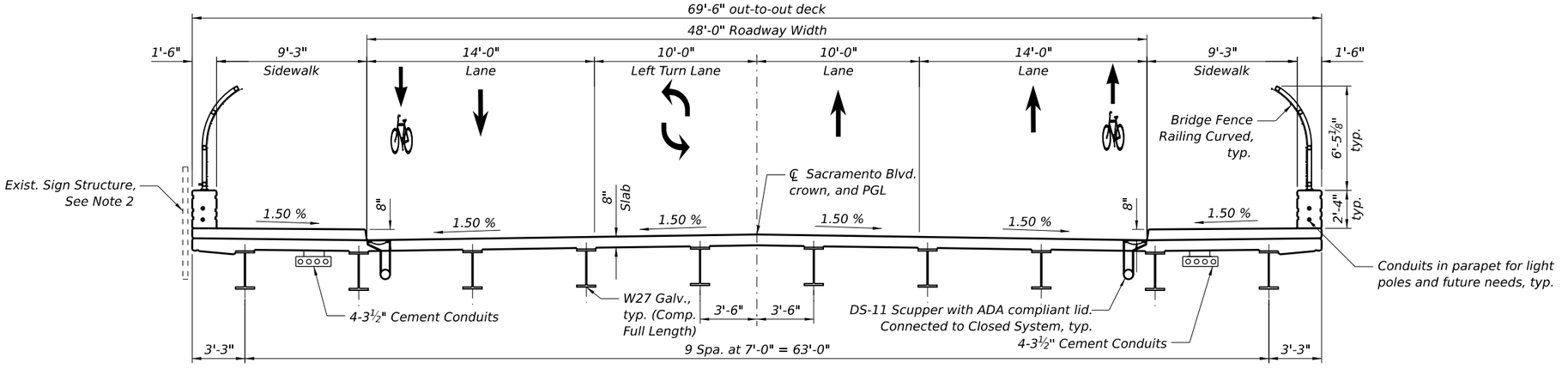
GENERAL PLAN AND ELEVATION
STRUCTURE NO. 016-0754
SHEET S-1 OF S-4 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2833	2019-192B-R	COOK		
		CONTRACT NO. 62K65		
	ILLINOIS	FED. AID PROJECT		



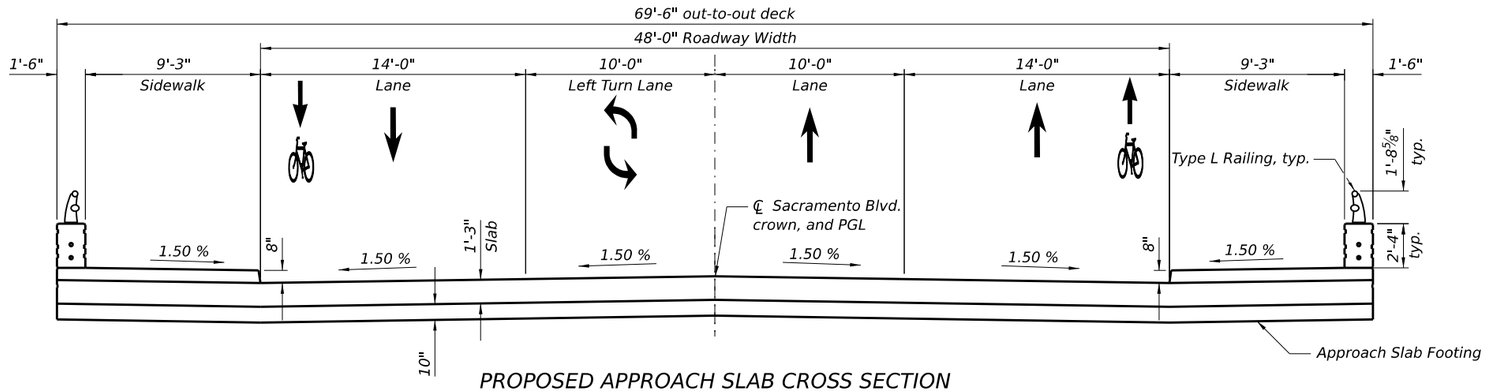
EXISTING CROSS SECTION

(Looking North)



PROPOSED CROSS SECTION

(Looking North)



PROPOSED APPROACH SLAB CROSS SECTION

(Looking North)

NOTES:

1. A detour is proposed during the construction of the bridge.
2. Existing Bridge Mounted Sign Structures to be removed, stored, and reattached.
3. The existing utility conduits contain asbestos and shall be replaced.
4. All existing utilities between girders will be supported or relocated to provide uninterrupted service during construction.
5. Existing permanent protective shield to be removed. Cost included with "Protective Shield (Permanent) Removal".
6. Removal of existing railings, joints, bearings, light posts, and all other appurtenances is included with "Removal of Existing Superstructures".

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PLOT DATE =	CHECKED - EKM	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CONSTRUCTION STAGING
STRUCTURE NO. 016-0754
SHEET S-2 OF S-4 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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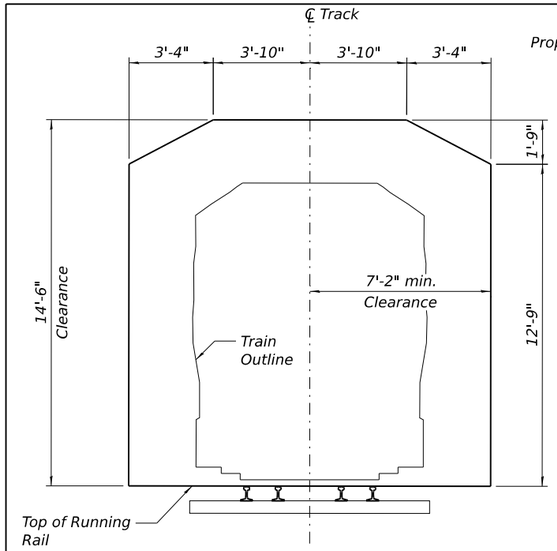
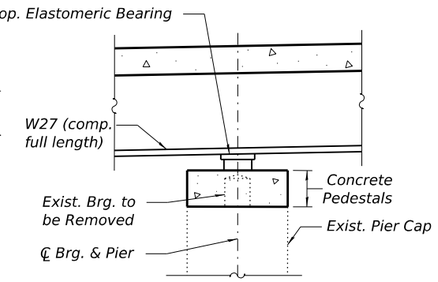
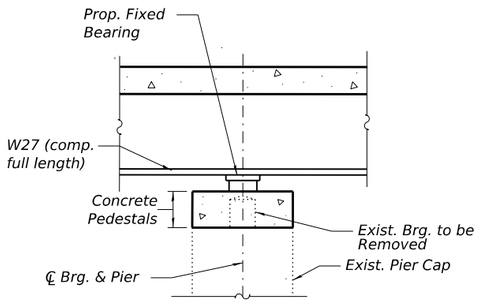
		CONTRACT NO. 62K65		
	ILLINOIS	FED. AID PROJECT		



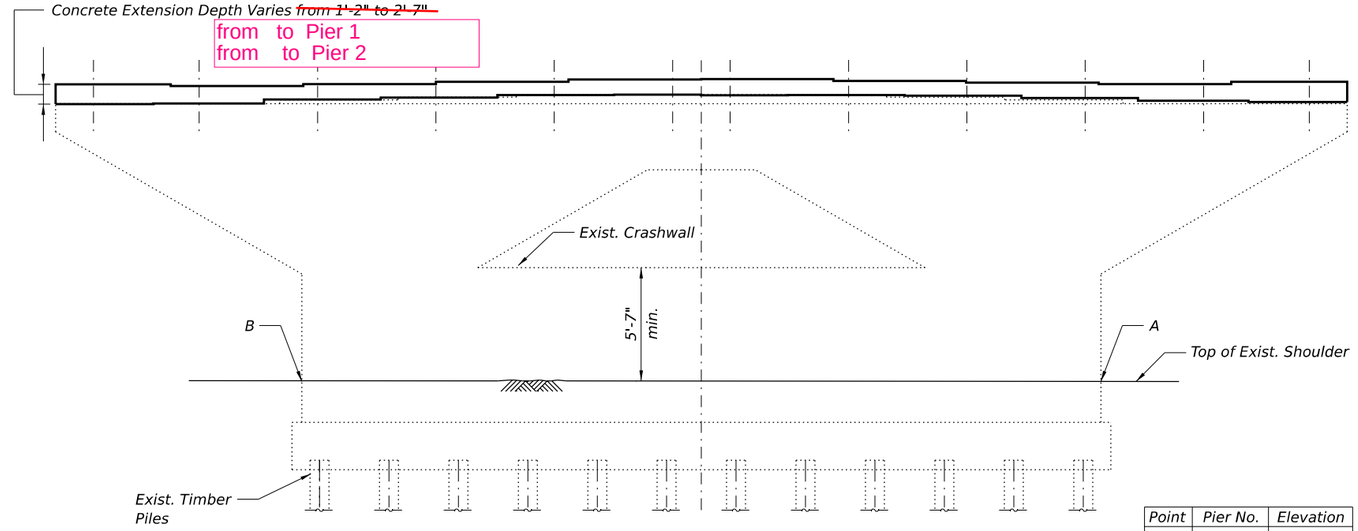
CTA TRAIN CLEARANCE DIAGRAM



SECTION THRU PIER 1



SECTION THRU PIER 2



Point	Pier No.	Elevation
A	1	581.52
A	2	582.01
B	1	580.66
B	2	581.21

PIER SKETCH

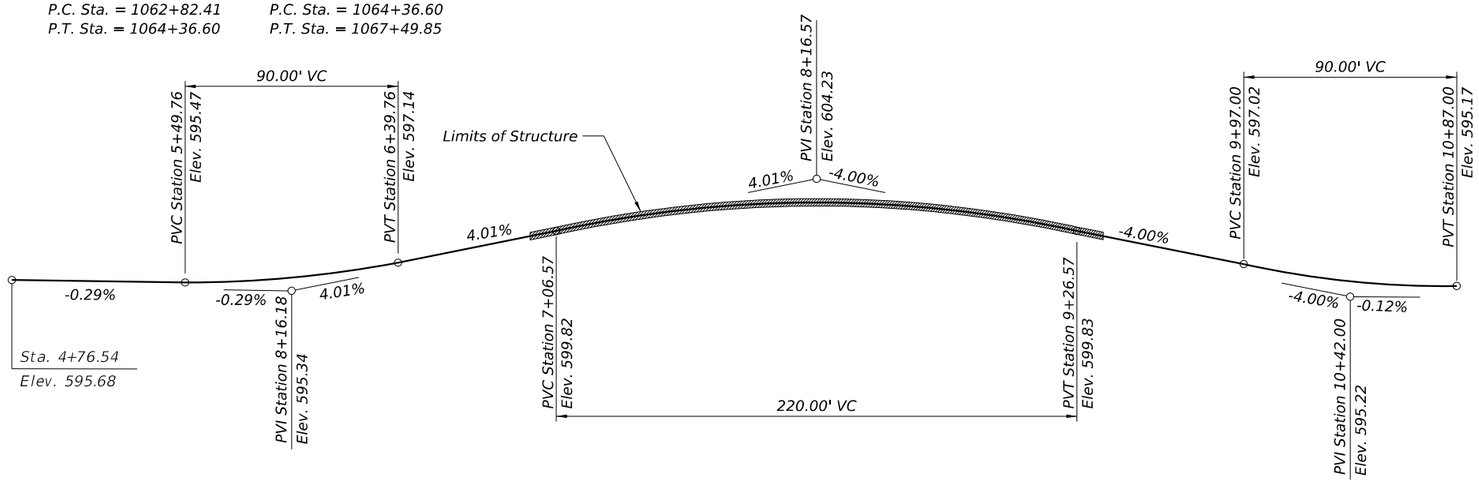
(Looking North)
Pier 1 shown, Pier 2 similar
*** Crashwall height near CTA tracks to be coordinated with CTA*

CURVE DATA

Exist. Curve 290 EB 6
P.I. Sta. = 1063+59.51
Δ = 1°12'15" (RT)
D = 0°46'51"
R = 7,336.76'
T = 77.09'
L = 154.18'
E = 0.41'
P.C. Sta. = 1062+82.41
P.T. Sta. = 1064+36.60

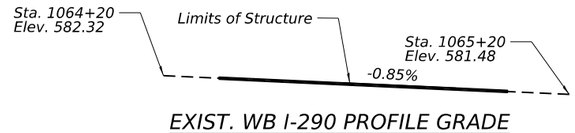
CURVE DATA

Exist. Curve 290 EB 7
P.I. Sta. = 1065+93.25
Δ = 2°26'47" (RT)
D = 0°46'52"
R = 7,336.30'
T = 156.65'
L = 313.25'
E = 1.67'
P.C. Sta. = 1064+36.60
P.T. Sta. = 1067+49.85



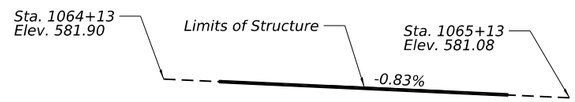
SACRAMENTO BOULEVARD PROFILE GRADE

Along ℄ Sacramento Blvd.
See Sheet S-1 for PGL location



EXIST. WB I-290 PROFILE GRADE

(Along WB I-290 Alignment)



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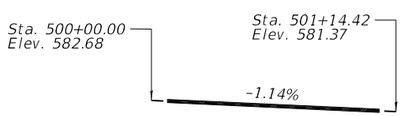
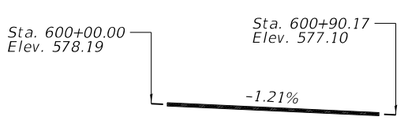


EXIST. WB CTA TRACKS PROFILE GRADE

(Along WB CTA Tracks Alignment)



EXIST. EB CTA TRACKS PROFILE GRADE

(Along EB CTA Tracks Alignment)

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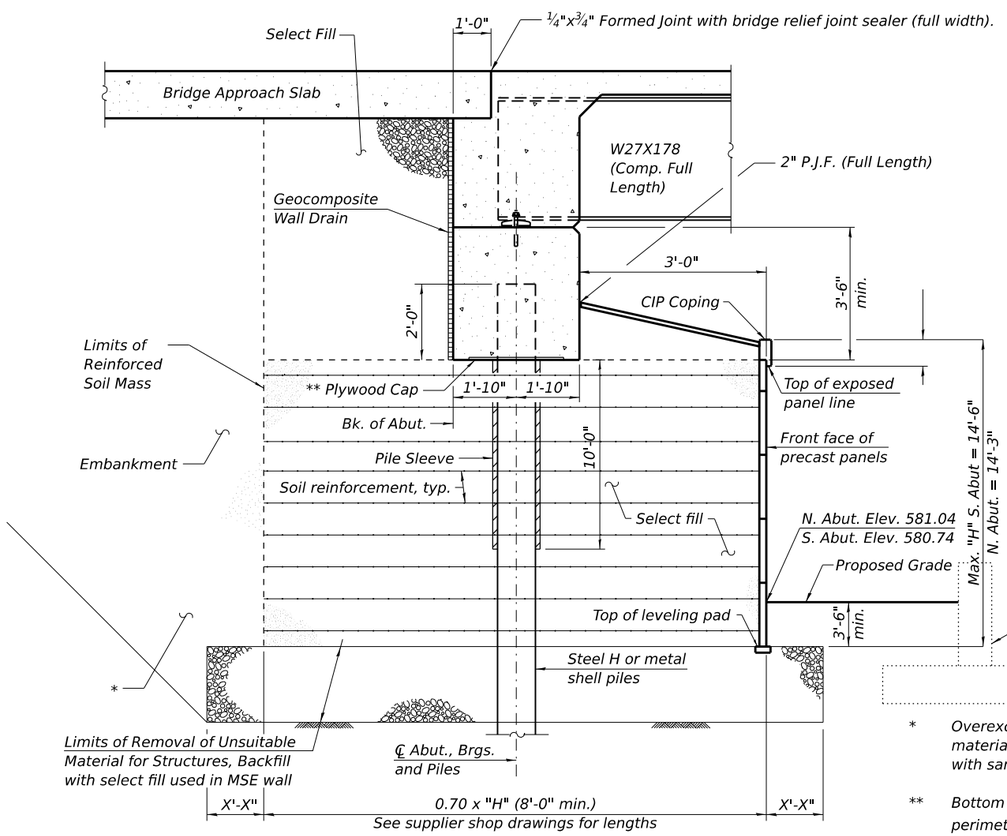
PLOT DATE =	CHECKED - EKM	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

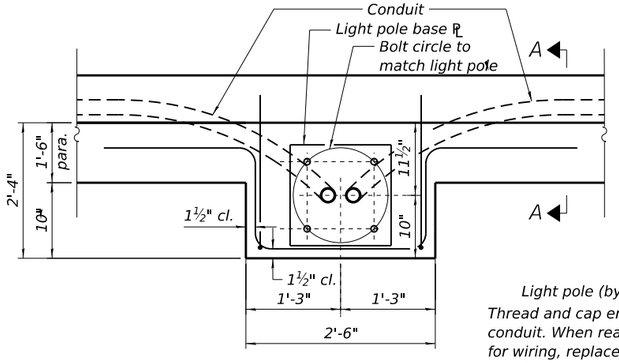
CONSTRUCTION STAGING
STRUCTURE NO. 016-0754
SHEET S-3 OF S-4 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2833	2019-192B-R	COOK	4	3
		CONTRACT NO. 62K65		
	ILLINOIS	FED. AID PROJECT		

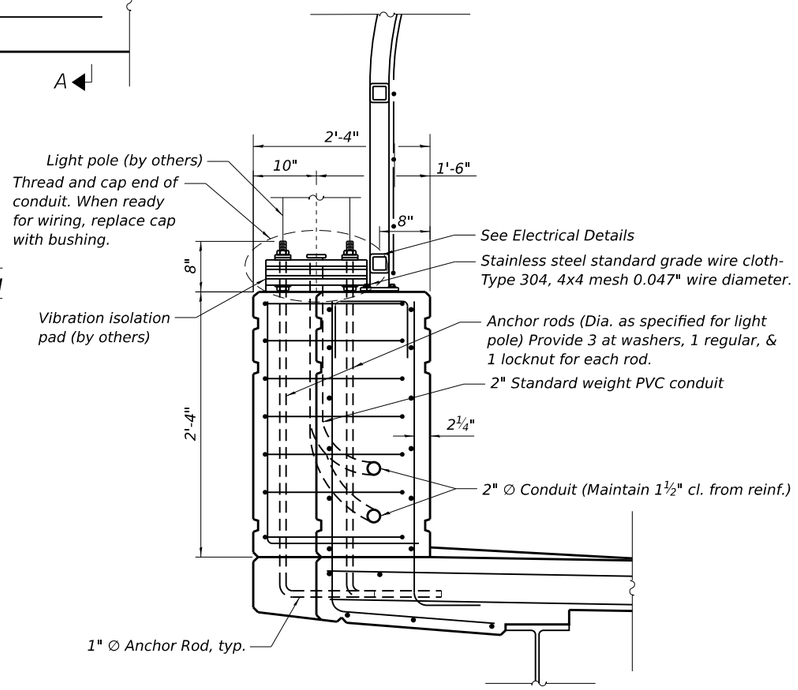


M.S.E. WALL SECTION AT INTEGRAL ABUTMENT

(Horiz. dim. at Rt. ∠'s)



LIGHT POLE MOUNTED ON CONCRETE PARAPET - PLAN

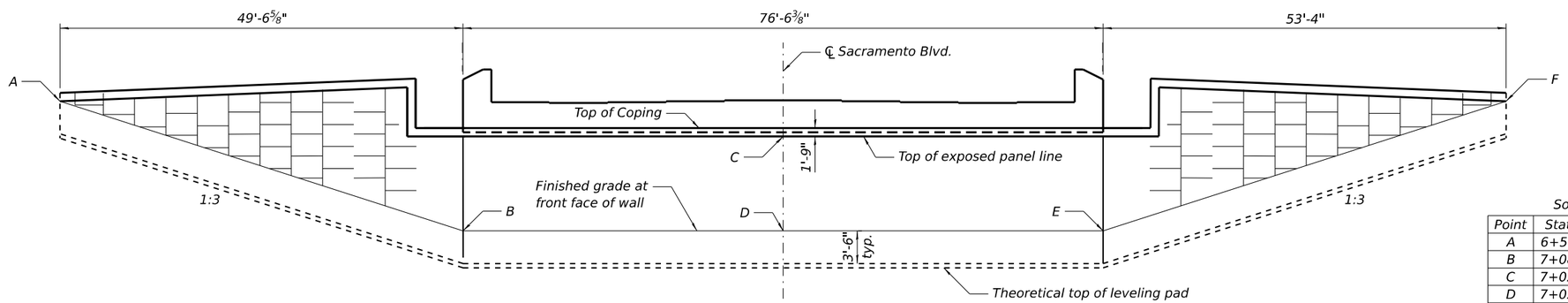


SECTION A-A: LIGHT POLE MOUNTED ON CONCRETE PARAPET

* Overexcavation beyond structure excavation and removal of unsuitable material. This area not measured for payment. Backfill overexcavation with same material used for select fill used in MSE wall.

** Bottom of cap poured against top of plywood. Cut opening to match pile perimeter within ⅛". Support with bars tack welded to webs rated for 500 lbs. Seal gaps to keep concrete out.

*** Sleeve to remain empty in hatched region.



ABUTMENT MSE WALL

(Unfolded elevation along front face of wall)
(South Abutment - Looking South)
(North Abutment - Looking North)

South Abutment

Point	Station	Offset	Elev.
A	6+59.61	45.84	xxx.xx
B	7+08.50	37.75	580.74
C	7+02.26	0.00	591.75
D	7+02.26	0.00	580.74
E	6+96.01	-37.75	580.74
F	6+43.40	-46.46	xxx.xx

North Abutment

Point	Station	Offset	Elev.
A	9+74.10	-45.84	xxx.xx
B	9+25.21	-37.75	581.04
C	9+31.46	0.00	591.74
D	9+31.46	0.00	581.04
E	9+37.70	37.75	581.04
F	9+90.33	46.46	xxx.xx

Note:
1. The MSE wall offsets are measured perpendicular to centerline of Sacramento Avenue.

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PLOT DATE =	CHECKED - EKM	REVISED -

STATE OF ILLINOIS
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MSE WALL DETAILS
STRUCTURE NO. 016-0754
SHEET S-4 OF S-4 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2833	2019-192B-R	COOK	4	4
		CONTRACT NO. 62K65		
	ILLINOIS	FED. AID PROJECT		