STRUCTURE GEOTECHNICAL REPORT
INTERSTATE 55 RAMP AA BRIDGE
OVER INTERSTATE 55
PR SN 099-8330, CONTRACT 62R62
WILL COUNTY, ILLINOIS

For
Stantec

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Submitted by

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11. Abstract

A new two-span bridge will carry Ramp AA over Interstate 55 in Will County, Illinois. The proposed structure will have a back-to-back of abutment length of 189.8 feet and an out-to-out width of 43.8 feet. The proposed east and west abutment cap base elevations are 595.86 to 597.36 and 597.33 to 598.83 feet, respectively, whereas the proposed pier cap base elevation is estimated as 581.0 feet. Mechanically Stabilized Earth (MSE) walls are proposed in front of each of the abutments. The walls will have maximum total heights of 20.3 and 23.1 feet at the east and west abutments, respectively. This report provides geotechnical recommendations for the design and construction of the proposed approach embankments, approach slabs, retaining walls, and bridge foundations.

Beneath the topsoil or pavement, the general lithologic profile includes up to 5.5 feet of embankment material consisting of very stiff to hard clay loam to silty clay loam fill followed by stiff to hard silty clay to silty clay loam overlying very weathered bedrock. Dolostone bedrock was encountered at elevations of about 574 to 572 feet. The groundwater level was measured at elevations ranging from 577 to 573 feet.

With the recommended foundation treatment, the MSE walls will undergo long-term consolidation settlements of up to 0.3 inch. Global stability analyses at the MSE walls show FOS meeting the IDOT minimum requirement of 1.5. The maximum factored soil bearing resistance for the approach footings is 2,500 psf.

The bridge abutments could be supported on drilled piles set into bedrock. We do not anticipate the need for downdrag allowances on the piles. The pier could be supported on either drilled piles set into rock or rock-socketed drilled shafts.

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STANTEC

1.0 INTRODUCTION

This report presents the results of our subsurface investigation, laboratory testing, geotechnical evaluations, and recommendations in support of the design and construction of the new bridge carrying the proposed Interstate 55 (I-55) Ramp AA. The ramp will carry southbound I-55 traffic over I-55 to eastbound Interstate 80 (I-80) in Will County, Illinois. The project site is located in west central Will County, within Troy Township. On the USGS *Channahon Quadrangle 7.5 Minute Series* map, the project is located in the SE ¼ of Section 28 and SW ¼ of Section 27, Tier 35 N, Range 9 E of the Third Principal Meridian. A *Site Location Map* is presented as Exhibit 1. This bridge construction is part of the proposed widening and reconstruction of I-80 from east of Ridge Road to west of Houbolt Road in Will County, Illinois and will be constructed as part of Contract INT-2.

The purpose of this investigation was to characterize the site soil and groundwater conditions, perform geotechnical analyses, and provide recommendations for the design and construction of the proposed bridge foundations, approach embankments, approach slabs, and retaining walls.

1.1 Existing Structures and Ground Conditions

There is no existing structure at the proposed bridge location. Based on the in-progress *Cross-sections* (Appendix F) provided by Stantec and dated November 2, 2023, new embankment fill will be placed along the proposed Ramp AA alignment, south of the I-80/I-55 interchange, which will allow for the construction of the bridge. The existing ground surface is at an elevation of about 579 to 583 feet.

The site surface elevation is generally flat gently sloping westward toward the DuPage River and steeper eastward toward Rock Run Creek. The Ramp AA bridge over I-55 is about halfway between the two valleys. The DuPage River runs south about 0.7 miles west of the new bridge and Rock Run Creek runs south about 0.6 miles east of the bridge. The ground surface is about 580.0 feet along the proposed bridge location.

In the project area (see Exhibit 2), about 5-foot thick mainly cohesive man-made ground, the roadway embankment, is placed over about up to 10 feet of overburden made up of low to moderate plasticity, medium to high strength, and low to moderate moisture content silty clayey diamicton resting over granular, very dense, low compressibility silty loam diamicton unconformably covers the bedrock (Bauer et al. 1991, Hansel and Johnson 1996, Leighton et al. 1948, Willman et al. 1971).

The top of dolostone bedrock is mapped at about 575.0 feet elevation. The site is located just north of the inactive Sandwich Fault Zone (Kolata 2005). The shallow bedrock is highly to moderately weathered and may show the presence of cavities more likely filled with fine sediment. There are no records of mining activity within the bridge site. Neither the overburden nor the upper bedrock is known to include significant sources of water supply (Woller and Sanderson 1983).

1.2 Proposed Structures

Based on the proposed *General Plan and Elevation Drawing* (Appendix E), provided by Stantec and dated January 12, 2024, Wang understands the structure will be a new, two-span bridge with stub abutments and a multi-column pier. The bridge will have a back-to-back of abutment length of 189.8 feet and an out-to-out width of 43.8 feet to accommodate a 16-foot wide lane, 6- to 19-foot wide shoulders, and 1.4-foot wide parapets.

The in-progress *Cross-sections* (Appendix F) indicate the profile grade along Ramp AA will require the placement of about 26 to 30 feet of new fill along the east and west approach embankments, respectively. The side slopes will be graded at 1:3 (V: H) behind the approach slabs whereas the section of the approach embankment between the abutments and approach slabs will have side slopes of 1:2 (V: H).

MSE walls will support the new embankment fill at the bridge approaches and behind the abutments. The east MSE wall and north end of the west MSE wall will extend around the approaches whereas the south end of the west MSE wall will run parallel to I-55. The walls will have lengths of 115.8 to 120.8 feet along the east and west abutments, respectively, with maximum total heights of 20.3 and 23.1 feet at the east and west abutments, respectively.

2.0 METHODS OF INVESTIGATION

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

2.1 Field Investigation

The subsurface investigation consisted of three bridge borings, designated as AA-BSB-01 to AA-BSB-03, and four retaining wall borings, designated as AA-RWB-07 to AA-RWB-10, drilled by Wang Testing Services (WTS) between December 2022 and January 2023. The borings were drilled from elevations of 579.5 to 582.9 feet and were advanced to depths of 8.0 to 24.0 feet bgs. The as-drilled northings and eastings were acquired with a mapping-grade GPS unit. Stations, offsets, and elevations were provided by Stantec. Boring location data are presented in the *Boring Logs* (Appendix A) and the as-drilled boring locations are shown in the *Boring Location Plan* (Exhibit 3).

A combination of ATV- and truck-mounted drilling rigs, equipped with hollow stem augers, 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 the top of bedrock. Bedrock cores were collected from Borings AA-BSB-01 to AA-BSB-03, AA-RWB-08, and AA-RWB-10 in 5- and 10-foot runs with an NWD4-sized core barrel. Soil samples collected from each sampling interval were placed in sealed jars and rock cores were placed into marked core boxes and transported to the laboratory for further examination and testing.

Field boring logs, prepared and maintained by Wang field engineers, included 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 levels were measured while drilling and at completion of drilling the borings. Prior to being backfilled, Borings AA-RWB-07, AA-RWB-09, and AA-RWB-10 were left open to record 24-hour water level readings. Each borehole location was 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.

2.2 Laboratory Testing

The soil samples were tested in the laboratory for moisture content (AASHTO T265). Atterberg limits (AASHTO T89 and T90) and particle size analysis (AASHTO T88) tests were performed on selected samples. Unconfined compressive strength tests were performed on selected bedrock cores. Field visual descriptions of the soil samples were verified in the laboratory and index tested soils were classified according to the IDH soil Classification System. The laboratory test results are shown in the *Boring Logs* (Appendix A) and in the *Laboratory Test Results* (Appendix B).

3.0 INVESTIGATION RESULTS

Detailed descriptions of the soil conditions encountered during the subsurface investigation are presented in the *Boring Logs* (Appendix A) and in the *Soil Profile* (Exhibit 4). 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.

Our subsurface investigation results fit into the local geologic context. The borings drilled in the project area revealed the native sediments consists of silty clay to silty clay loam and silty loam diamicton with occasional saturated sand lenses (unit 2) resting over weathered bedrock. Top of dolostone bedrock was encountered at elevations of 572 to 574 feet (7.5 to 9.0 feet bgs). The borings did not expose the presence of sediment filled cavities; however, the geologic site information indicates the possible presence of cavities.

3.1 Lithological Profile

Boring AA-BSB-02 was drilled along the northbound I-55 shoulder and revealed the pavement structure consists of 12 inches of asphalt overlying cohesive fill. Borings AA-BSB-01, AA-BSB-03, and AA-RWB-07 to AA-RWB-10 were drilled in the infield areas within the southeast and southwest quadrants of the I-80/I-55 interchange and sampled 8 to 11 inches of silty clay topsoil. In descending order, the general lithologic succession encountered beneath the pavement or topsoil includes: 1) man-made ground (fill); 2) stiff to hard silty clay to silty clay loam and silty loam; and 3) strong, very poor to fair quality dolostone.

1) Man-made ground (fill)

Beneath the topsoil or pavement, Borings AA-BSB-02, AA-BSB-03, and AA-RWB-09 encountered up to 5.5 feet of fill. The cohesive fill consists of very stiff to hard, brown, clay loam to silty clay loam and silty clay with unconfined compressive strength (Q_u) values of 2.0 to 4.9 tsf and moisture content values of 11 to 20%.

2) Stiff to hard silty clay to silty clay loam and silty loam

Beneath the fill or topsoil, at elevations of 577 to 579 feet, the borings advanced through 2.5 to 6.5 feet of stiff to hard, brown to gray clay, silty clay to silty clay loam, and silty loam characterized by

Q_u values of 1.5 to 8.3 tsf and moisture content values of 12 to 28%. Laboratory index testing on samples from this layer showed liquid (L_L) values of 24 to 49% and plastic limit (P_L) values of 15 to 17%. A 1.0-inch thick brown and orange, saturated sand seam was noted in Boring AA-RWB-08 within the cohesive soil.

3) Strong, very poor to fair quality dolostone

At elevations of 575 to 573 feet, the borings advanced through 1.0 to 2.5 feet of very dense, weathered bedrock. This soil unit has N-values of greater than 50 blows per 5 inches and moisture content values of 5 to 12%.

At elevations of 574 to 572 feet (depths of 7.5 to 9.0 feet bgs), Borings AA-BSB-01 to AA-BSB-03, AA-RWB-08, and AA-RWB-10 encountered and cored strong, very poor to fair quality, slightly to highly weathered dolostone bedrock. The Rock Quality Designation (RQD) ranges from 0 to 61% and uniaxial compressive strength tests revealed Q_u values of 8,591 to 13,700 psi. The bedrock core data is shown in the *Bedrock Core Photographs* (Appendix C).

3.2 Groundwater Conditions

Groundwater was encountered while drilling the borings at elevations of 576 to 573 feet (4 to 7 feet bgs). At the completion of drilling, Borings AA-BSB-01, AA-BSB-03, and AA-RWB-08 recorded groundwater at elevations of 577 to 574 feet (depths of 3.0 to 6.0 feet bgs). At the end of drilling, Borings AA-RWB-07, AA-RWB-09, and AA-RWB-10 were left open to measure the 24-hour groundwater levels. Due to weather and safety conditions, the earliest groundwater level in Boring AA-RWB-07 was measured after 120 hours and the initial groundwater level was at an elevation of 576 feet (3.0 feet bgs). The 24-hour water level in Boring AA-RWB-10 was recorded at an elevation of 573 feet (7.0 feet bgs) within the weathered bedrock. For our analysis, we considered the groundwater at elevation 577 feet. It should be noted that groundwater levels might change with seasonal rainfall patterns and long-term climate fluctuations or may be influenced by local site conditions.

4.0 FOUNDATION ANALYSIS AND RECOMMENDATIONS

The profile grade along Ramp AA will require the placement of about 26 to 30 feet of new fill along the east and west approach embankments, respectively. The side slopes will be graded at 1:3 (V: H) behind the approach slabs and approach embankment section between the abutments and approach slabs will have side slopes of 1:2 (V: H).

MSE walls are proposed in front of each of the abutments with maximum total heights of 20.3 and 23.1 feet at the east and west abutments. The MSE walls will support the new embankment fill at the bridge approaches and will have lengths of 115.8 to 120.8 feet along the east and west abutments, respectively.

Wang has evaluated the possible foundation types that could be considered for support of the proposed bridge structure. Considering the presence of shallow bedrock, we recommend supporting the stub abutments on steel H-piles drilled and set into the bedrock. The pier could be supported on rock-socketed drilled shafts or on piles drilled and set into the rock. Geotechnical evaluations and recommendations for the approach embankments, approach slabs, substructure foundations, and retaining walls are included in the following sections.

4.1 Seismic Design Considerations

The seismic site class was determined in accordance with the IDOT *Geotechnical Manual* (IDOT 2020). The soils within the top 100 feet have a weighted average S_u value of 4.51 ksf (Method C controlling) and the results classify the site in the Seismic Site Class C. The project location belongs to the Seismic Performance Zone 1 (IDOT 2020). The seismic spectral acceleration parameters recommended for design in accordance with the AASHTO *LRFD Bridge Design Specifications* (AASHTO 2020) are summarized in Table 1. According to the IDOT *Bridge Manual* (IDOT 2012), liquefaction analysis is not required for sites 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 C[2)] (% g)
0.0	PGA= 4.9	F_{pga}= 1.2	**A_s= 5.9**
0.2	S_s= 10.6	F_a= 1.2	**S_{DS}= 12.7**
1.0	S_1= 4.0	F_v=1.7	**S_{D1}= 6.8**

1) Spectral acceleration coefficients based on Site Class C

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

4.2 Mechanically Stabilized Earth Walls

The plans indicate MSE walls are proposed in front of each of the abutments. The walls will support the new embankment fill behind the abutments and will have lengths of 115.8 to 120.8 feet along the east and west abutments. Based on the GPE, we understand the MSE walls will have approximate top of leveling pad elevations of 577.5 to 589.9 feet and 576.3 to 589.6 feet at the east and west walls, respectively. The GPE indicates that a section of the walls on the south end will be supported on the new embankment fill. The wall station limits and maximum total wall heights are summarized in Table 2.

Table 2: Proposed MSE Walls

Retaining Wall ID	Station Limits	Maximum Total Height (feet)
East Abutment MSE Wall	24+95.04, 44.79 LT to 24+95.80, 49.97 RT	20.3
West Abutment MSE Wall	22+69.22, 46.15 LT to 22+96.43, 63.42 RT	23.1

The following sections provide bearing resistance, settlement, sliding, and global stability analyses for the MSE walls supporting the abutments and approach embankments. The borings show primarily low moisture, cohesive soils within the zone of influence of strength and deformation. With some exceptions, Wang estimates these soils will provide adequate bearing resistance and global stability along with suitable total and differential long-term consolidation settlement performance.

4.2.1 Bearing Resistance

The top of the MSE leveling pads should be established at a depth of at least 3.5 feet below the finished grade at the front face of the wall (IDOT 2012). The reinforcement width should be taken as 0.7 times the total height or a minimum of 8.0 feet. For our geotechnical evaluation, we estimate equivalent factored bearing pressures of 5,700 and 6,300 psf for maximum total wall heights of approximately 20.3 and 23.1 feet at the east and west walls, respectively.

Based on the GPE, we understand sections of the east wall, north and south of the bridge, along with the north section of the west wall will be primarily established on new embankment fill. Wang evaluated the suitability of the soils encountered below the estimated top of the leveling pad proposed at elevations of 576.3 to 589.9 feet. The foundation soils primarily consist of stiff to hard silty clay to silty clay loam and clay loam. However, Boring AA-RWB-10, drilled at the southeast corner of the proposed east abutment wall location, encountered silty clay at or near the proposed top of levelling pad elevation with a moisture content value of 28% indicating possible unsuitable soils. To provide sufficient bearing resistance and minimize potential settlement, we recommend removing the unsuitable soil to an approximate elevation of 577.0 feet and replacing it with compacted granular fill. Before placing the granular fill, the base of the excavation should be underlain with geotextile fabric. Additionally, at the proposed top of leveling pad elevation of 578.0 feet, Boring AA-RWB-09 sampled very stiff clay to silty clay with a moisture content of 26% and LL value of 43%, indicating potentially compressible soils. Other patches of similar unsuitable soils may occur near the leveling pad elevation in the vicinity of Boring AA-RWB-10 and AA-RWB-09 or elsewhere within the footprint of the retaining walls. We recommend including in the contract documents a pay item for soil removal and replacement. Approximate limits for the areas that may require removal and replacement are summarized in Table 3.

Table 3: Summary of Foundation Soil Treatment Recommendations

Approximate Wall Station Limits From GPE	Treatment Width(1)	Treatment Vertical Extent (inches)	Reference Borings, Concerns
24+69.17, 23.42 RT to 24+76.26, 30.8 RT (East Abutment MSE Wall)	MSE Wall Reinforcement Width	4.0	AA-RWB-10 (MC=28%)

(1) Foundation treatment should extend a minimum of 1.0 foot outside the foundation footprint.

The actual need for removal and replacement of soils, including the required width and depth of improvement shown in Table 3, should be determined in the field at the time of construction. Following the recommended foundation treatment, we estimate the foundation soils will provide a maximum factored bearing resistance of 7,000 psf based on a geotechnical resistance factor of 0.65 (AASHTO 2020).

4.2.2 Lateral Design Pressure and Resistance

Lateral earth pressure distribution for the design of the MSE walls should be taken as per the 2020 AASHTO LRFD *Bridge Design Specifications* Article 3.11.5.8 (AASHTO 2020); and applicable 2012 IDOT *Bridge Manual* (IDOT 2012). Design lateral pressure from surcharge loads due to roadway traffic and construction equipment should be added to the lateral earth pressure load. The estimated friction angles between the base of the MSE walls and the underlying silty clay or granular backfill are 28° and 30°, respectively and the corresponding friction coefficients are 0.53 and 0.58, respectively (AASHTO 2020). MSE retaining walls are designed based on an AASHTO sliding resistance factor of 1.0 for soil-on-soil contact (AASHTO 2020). We estimate the eccentricity lies within the middle 2/3 of the walls and resistance against overturning is sufficient. The MSE walls must have both internal and external stability. The wall supplier is responsible for all internal stability aspects of the wall design.

4.2.3 Settlement

Settlement estimates have been made based on correlations to measured index properties obtained from the laboratory tests (Appendix B). Based on the soil conditions, we estimate with the recommended foundation treatment, the MSE walls will undergo maximum long-term consolidation settlements of up to 0.3 inch. As such, the estimated settlements are appropriate for the construction of the approach slabs and MSE walls and we do not anticipate downdrag allowances for the proposed abutment piles. The settlement of the approach embankments, beyond the abutment MSE walls, is addressed in the Roadway Geotechnical Report (RGR) for Contract INT-02.

4.2.4 Global Stability

The global stability of the MSE walls was analyzed at the critical sections based on the soil profile described in Section 3.1 and the information provided in the *General Plan and Elevation* and *Cross-sections* (Appendixes E and F). The analysis discounts the beneficial effect of the abutment piles. The minimum required FOS for both short (undrained) and long-term (drained) conditions is 1.5 (IDOT 2012). The FOS values meet the minimum requirement. *Slide2* evaluation exhibits employing the Bishop Simplified method of analysis are shown in Appendix D.

4.2.5 Approach Slabs

The approach slabs will be supported on spread footing foundations (IDOT 2012). Based on the design drawings, the approach footings will be supported on the new approach embankment fill. We estimate the fill has a maximum factored soil bearing resistance of 2,500 psf for a new fill with unconfined compressive strength of 1.0 tsf and calculated for a geotechnical resistance factor (Φ_b) of 0.45 (AASHTO 2020). The settlement of approach footings estimated to be less than 1.0 inch.

4.3 Structure Foundations

The soil conditions along the structures show stiff to hard clayey soils followed by very dense weathered bedrock overlying dolostone bedrock. Considering the presence of shallow bedrock, Wang recommends supporting the stub abutments on steel H-piles drilled and set in rock. The pier could be supported on either rock-socketed drilled shafts or piles drilled and set in rock. The preliminary factored loading information provided by Stantec on November 6, 2023 and proposed abutment and pier cap base elevations as shown in the *GPE* are summarized in Table 4.

Table 4: Preliminary Factored Loads and Proposed Pile Cap Elevations

Substructure	Pile Cap Elevations (feet)	Total Factored Load (kips)
West Abutment	597.33 to 598.83	1623
Pier	581.0	3528
East Abutment	595.86 to 597.36	1522

4.3.1 Piles Set in Rock

Due to the presence of shallow bedrock, piles drilled and set into bedrock could be considered to increase axial capacity and provide sufficient resistance to lateral loads at the abutment and pier locations. At the west abutment, the top of the bedrock elevation ranges from 571.7 to 572.0 feet or 27.0 below the proposed bottom of pile cap base elevations (Borings AA-BSB-01 and AA-RWB-08). At the east abutment, the top of the bedrock elevation ranges from 572.7 to 573.1 feet or 25.0 below the proposed bottom of pile cap base elevations (Borings AA-BSB-03 and AA-RWB-10). At the pier, Boring AA-BSB-02 indicates the top of bedrock is at an approximate elevation of 573.9 feet or 7.0 feet below the proposed bottom of pile cap base elevation.

The socket diameter should be specified in 6-inch increments and be just large enough to allow a pile to be placed into the socket with sufficient room to permit placement of concrete such that it completely encases the pile. The socket length should be checked to determine if it adequately carries the lateral load and, if necessary, the socket length can be increased to carry the lateral load (IDOT 2020).

As per the IDOT *Geotechnical Manual* (IDOT 2020), the design axial capacity of a pile set in rock can be larger than the maximums allowed in the IDOT *Bridge Manual* (IDOT 2012) for driven piles. This is because piles set in rock are not subjected to high driving stresses, which limit the maximum nominal capacity of driven piles. The maximum nominal capacity of driven H-piles is limited to 54% of its yield strength, while the nominal capacity of piles set in rock is 100% of its yield strength. Additionally, piles set in rock use a more favorable resistance factor of 0.7 for non-driven undamaged piles according to Article 6.5.4.2 of the "*AASHTO LRFD Bridge Design Specifications*" (AASHTO 2020) compared to 0.55 used for driven piles (IDOT 2020). The R_F, R_N for HP12x53, HP 12x74, HP14x73, and HP 14x89 along with approximate top of bedrock elevations are summarized in Table 5. As indicated in the GPE, the bottom of the abutments will step up by about 1 to 2 feet at each end. Our analyses considered the highest pile cap elevation at each abutment.

Table 5: Estimated Resistances for Piles Set in Rock

Structure Unit (Reference Borings)	Proposed Pile Cap Base Elevations (feet)	Approximate Top of Bedrock Elevation (feet)	Pile Size	Cross-sectional Area (square inches)	Nominal Resistance, R_N (kips)	Factored Resistance Available, R_F (kips)
West Abutment (AA-BSB-01, AA-RWB-07, and AA-RWB-08)	598.83	571.7 to 572.0	HP 12x53	15.49	775	542
			HP12x74	21.80	1090	763
			HP14x73	21.40	1070	749
			HP 14x89	26.11	1305	913
Pier (AA-BSB-02)	581.0	573.9	HP 12x53	15.49	775	542
			HP12x74	21.80	1090	763
			HP14x73	21.40	1070	749
			HP 14x89	26.11	1305	913
East Abutment (AA-BSB-03, AA-RWB-09, and AA-RWB-10)	597.36	572.7 to 573.1	HP 12x53	15.49	775	542
			HP12x74	21.80	1090	763
			HP14x73	21.40	1070	749
			HP 14x89	26.11	1305	913

Due to the presence of groundwater and granular soils above the bedrock, the recommended construction method for piles set into bedrock, similar to that of shaft construction, is to install casing to the top of the rock to maintain clean open holes during excavation. Loss of water circulation was not noted while coring, however, cavities are known to be present in this area, as discussed in Section 1.1. The quality of bedrock should be verified during construction. The pile installation should be as per IDOT Section 512, *Piling* (IDOT 2022). A value engineering analysis is recommended to select the most suitable type of foundation system at the pier.

4.3.2 Drilled Shafts

The piers could also be supported on drilled shafts socketed 5.0- to 10.0-feet into the bedrock. As per the 2012 IDOT *Bridge Manual*, drilled shafts extending into rock, in most cases, should be designed utilizing only end bearing or side resistance in rock, whichever is larger. For shafts socketed into the bedrock less than 10-foot long, we estimate the end bearing will give more capacity than the side resistance. Therefore, we recommend considering only the end bearing resistance. The shafts should be designed for end bearing with a tip resistance factor (ϕ_{stat}) of 0.50 (AASHTO 2020). Above the bedrock, the shafts should have diameters 6 inches larger than the sockets.

The bedrock resistance was evaluated in accordance with the Geologic Strength Index (GSI) method provided by AASHTO (2020). The R_F, R_N, and estimated base elevations for rock-socketed shafts are summarized in Table 6. The shaft lengths were estimated assuming the shafts start from the estimated bottom of cap at the pier location as shown on the GPE (Appendix E). For the anticipated loads (Table 2), we estimate shaft settlements of less than 0.5 inch.

Boring AA-BSB-02, drilled at the proposed pier location, did not encounter groundwater. However, the borings drilled in the vicinity for this bridge all measured water at elevations of 577.0 to 573.2 feet (depths of 3 to 7 feet). Due to the possible presence of groundwater and granular soils above the bedrock, the recommended construction method for shafts socketed into bedrock is to install casing to the top of the rock to maintain clean, open shafts during excavation. Loss of water circulation was not noted while coring, however, cavities are known to be present in this area, as discussed in Section 1.1. The quality of bedrock at the pier should be verified during construction.

Table 6: Estimated Drilled Shaft Resistances and Base Elevations (Rock-Socketed Shafts)

Structure Unit (Reference Boring)	Shaft Cap Base Elevation (feet)	Approximate Top of Bedrock Elevation (feet)	Socket Diameter (feet)	Nominal Unit Resistance (ksf)	Nominal Resistance, R_N (kips)	Factored Resistance Available, R_F (kips)	Total Socket Length (feet)	Estimated Total Shaft Length(1) (feet)
Pier (AA-BSB-02)	581.0	573.9	3.0	220	1555	778	5.0	12.0
			4.0		2764	1382		
			5.0		4319	2159		
			3.0	240	1696	848	10.0	17.0
			4.0		3015	1508		
			5.0		4712	2356		

(1) Total shaft lengths were measured from the estimated cap base elevation at the pier location.

4.3.5 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 Tables 7 to 10.

Table 7: Recommended Soil Parameters for Lateral Load Analysis at West Abutment
Reference Borings AA-BSB-01, AA-RWB-07, and AA-RWB-08

Elevation Range (feet) 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} (%)
598.83(1) to 576.3(2) MSE Wall Select FILL	120	0	35	50	--
576.3(2) to 573.1 Hard SILTY CLAY to SILTY LOAM	120	4000	0	2000	0.4
573.1 to 571.7(4) WEATHERED BEDROCK	58(3)	0	35	125	--

(1) Pile cap base elevation

(2) Approximate top of leveling pad elevation

(3) Submerged unit weight

(4) Approximate top of bedrock

Table 8: Recommended Soil Parameters for Lateral Load Analysis at Pier
Reference Boring AA-BSB-02

Elevation Range (feet) 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} (%)
581.0(1) to 577.4 Very Stiff CLAY LOAM FILL	120	2800	0	1000	0.5
577.4 to 574.9 Hard SILTY CLAY	120	4000	0	2000	0.4
574.9 to 573.9(3) WEATHERED BEDROCK	58(2)	0	35	125	--

(1) Estimated shaft base elevation at proposed pier location

(2) Submerged unit weight

(3) Approximate top of bedrock

Table 9: Recommended Soil Parameters for Lateral Load Analysis at East Abutment

Reference Borings AA-BSB-03, AA-RWB-09, and AA-RWB-10

Elevation Range (feet) 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} (%)
597.36(1) to 577.5(2) MSE Wall Select FILL	120	0	35	50	--
577.5(2) to 575.1 Stiff to V Stiff SILTY CLAY	120	1600	0	500	0.7
575.1 to 574.1 V Stiff SILTY LOAM	58(3)	2500	0	1000	0.5
574.1 to 573.1(4) WEATHERED BEDROCK	58(3)	0	35	125	--

(1) Pile cap base elevation

(2) Approximate top of leveling pad elevation

(3) Submerged unit weight

(4) Approximate top of bedrock

Table 10: Bedrock Parameters for Lateral Load Analysis

Reference Borings AA-BSB-01 to AA-BSB-03, AA-RWB-08, and AA-RWB-10

Bedrock	Total Unit Weight, γ (pcf)	Modulus of Rock Mass (ksi)	Uniaxial Compressive Strength (psi)	RQD (%)	Strain Factor
Dolostone	140	200	8,591 to 13,700	0 to 61	0.0005

4.4 Stage Construction

There is no stage construction identified in the *GPE* at this time.

5.0 CONSTRUCTION CONSIDERATIONS

5.1 Site Preparation

Vegetation, surface topsoil, pavements, and debris should be cleared and stripped where the structures will be placed. If unstable or unsuitable materials are exposed during excavation, they should be removed and replaced with compacted structural fill as described in Section 5.3.

5.2 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. Any slope that cannot be graded at 1:2 (V: H) should be properly shored. Due to the presence of hard cohesive soils with Q_u values of greater than 4.5 tsf and/or shallow bedrock, we estimate excavations may not be supported with cantilever steel sheet piling, and we recommend including the pay item, *Temporary Soil Retention System* for shoring. 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.

During the subsurface investigation, the groundwater was encountered at elevations ranging from 577 to 573 feet, as discussed in Section 3.2. The groundwater was encountered at elevations below the proposed top of leveling pad elevations at the east MSE wall. However, we anticipate groundwater will be encountered during excavations for the west MSE wall and the contractor should be prepared for dewatering efforts. Additionally, excavations to bedrock at the abutments and pier will encounter groundwater and the Contractor should be prepared for dewatering efforts. It should be noted that perched or temporary water may be encountered during times of heavy precipitation while excavating within the upper fill soils and will require dewatering efforts. Water that does accumulate in open excavations by seepage or runoff should be immediately removed by sump pump.

5.3 Filling and Backfilling

Fill material used to attain final design elevations should be pre-approved, cohesive or granular soil conforming to Section 204, *Borrow and Furnished Excavation* (IDOT 2022). The fill material should be free of organic matter and debris and should be placed in lifts and compacted according to Section 205, *Embankment* (IDOT 2022).

Backfill materials for the abutments must be pre-approved by the Resident Engineer. To backfill the abutments, we recommend porous granular material conforming to the requirements specified in Section 586, *Granular Backfill for Structures* (IDOT 2022).

5.4 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.

5.5 Pile Installation

The drilled piles shall be furnished and installed according to the requirements of IDOT Section 512, *Piling* (IDOT 2022). Due to the presence of groundwater and granular soils above the bedrock, the recommended construction method for piles set into bedrock, similar to that of shaft construction, is to install casing to the top of the rock to maintain clean open holes during excavation. Loss of water circulation was not noted while coring, however, cavities are known to be present in this area, as discussed in Section 1.1.

5.6 Drilled Shafts

Drilled shafts should be installed as per Section 516, *Drilled Shafts* (IDOT 2022). Due to the possible presence of groundwater and granular soils above the bedrock, the recommended construction method for shafts socketed into bedrock is to install casing to the top of the rock to maintain clean, open shafts during excavation. Loss of water circulation was not noted while coring, however, cavities are known to be present in this area, as discussed in Section 1.1. The quality of bedrock at the proposed pier location should be verified during construction.

6.0 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 3. 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 Stantec 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.

Azza Hamad, P.E.
Senior Geotechnical Engineer

Nesam Balakumaran, P.E. (WI)
Project Geotechnical Engineer

Mickey Snider, P.E.
QC/QA Reviewer

REFERENCES

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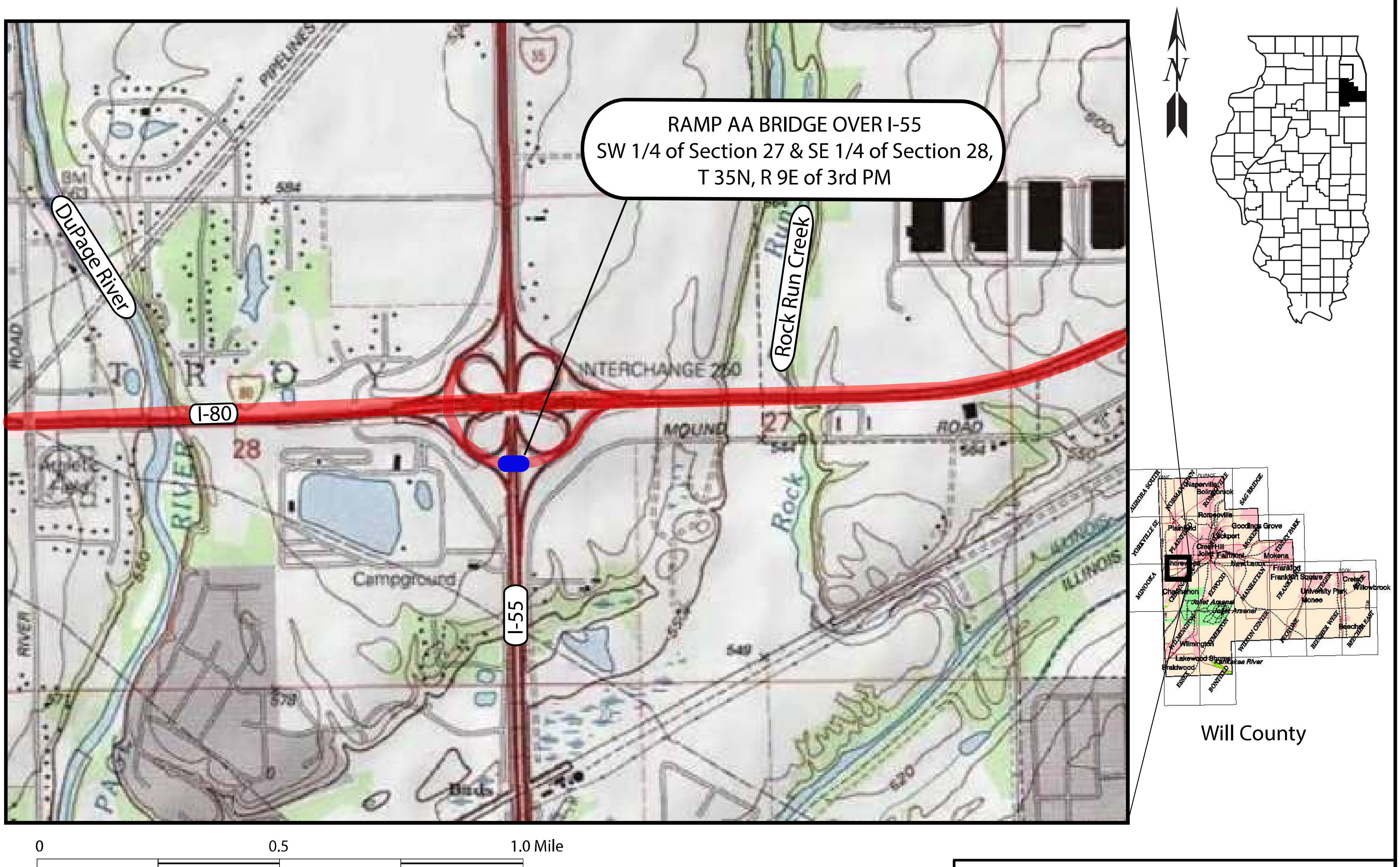
EXHIBITS



SITE LOCATION MAP: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	EXHIBIT 1	DRAWN BY: J. Bensen CHECKED BY: A. Hamad

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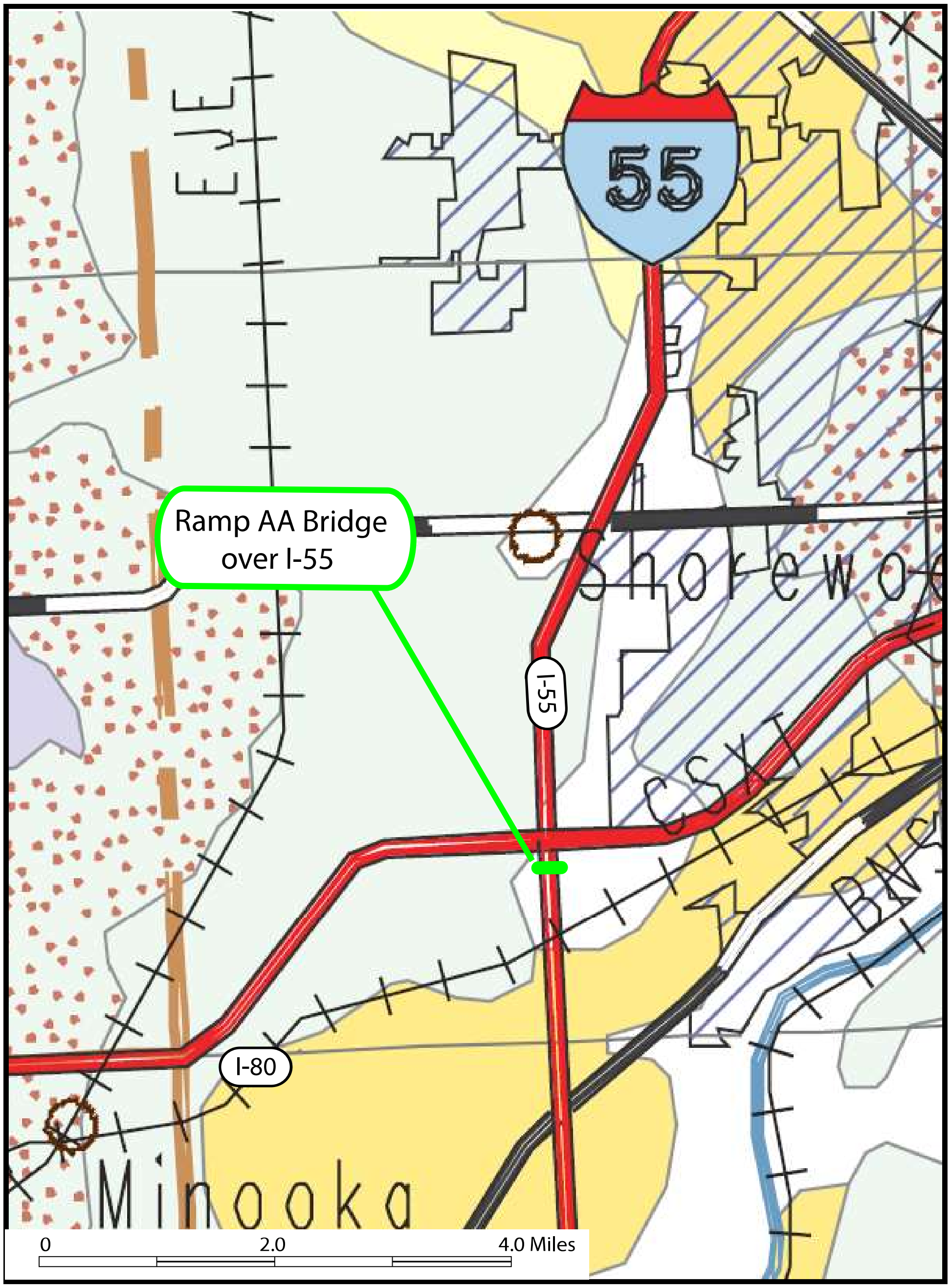
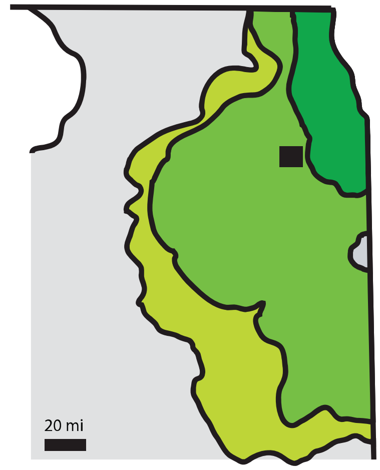


Modified after William W. Shilts (2000)

REGIONAL GEOLOGY



Wedron Group

- Wadsworth Formation
- Lemont Formation
- Tiskilwa Formation

Modified after Hansel and Johnson (1996)

Legend

Cahokia Formation
Bedded silts, clays and sand and gravel deposited in floodplains and channels of modern rivers and streams

Equality Formation
Laminated silt, clay, or fine sand deposited in slackwater, glacial, and postglacial lakes; massive to bedded, calcareous

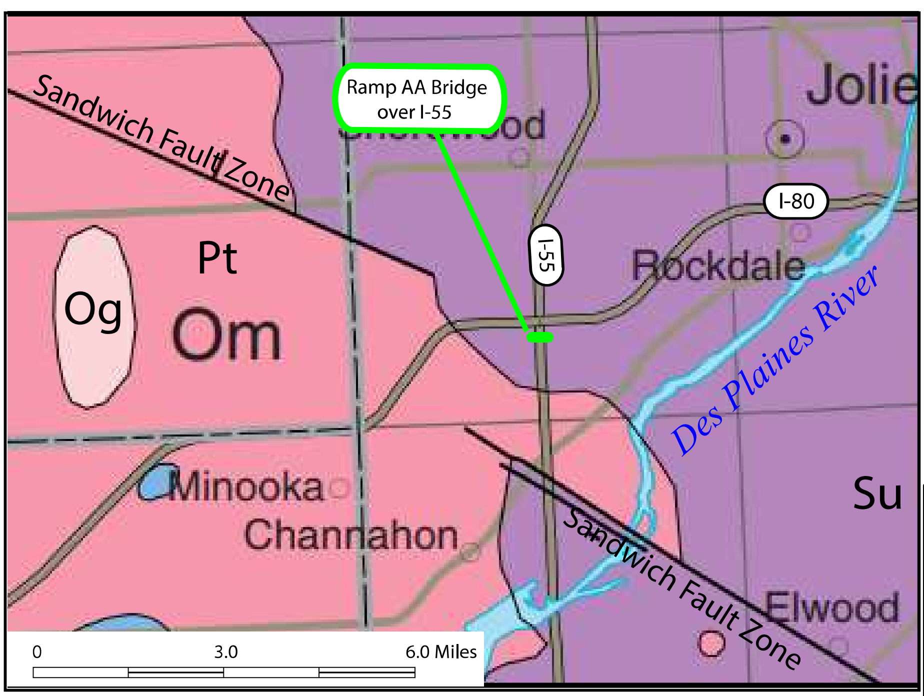
Henry Formation
Predominantly stratified sand and gravel; locally occurring silt, clay, organic debris, wood, shell lenses; outwash on floodplains

Lemont Formation
Diamicton; silty clay loam to silty clay; fine grained matrix; unsorted, unstratified mixture of gravel, sand, silt, and clay; containing lenses of sand, gravel and/or silt.

Bedrock near or at the surface

Major metropolitan area

Modified after William W. Shilts (2000)



Modified after Dennis R. Kolata (2005)

Legend

Pt	Pennsylvanian Shale	Tadewater Formation
Su	Silurian Dolomitic Limestone	
Om	Ordovician Formation	Maquoketa Group
Og	Ordovician Formation	Galena Group

SITE AND REGIONAL GEOLOGY: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	EXHIBIT 2	DRAWN BY: J. Bensen CHECKED BY: L. Iordache

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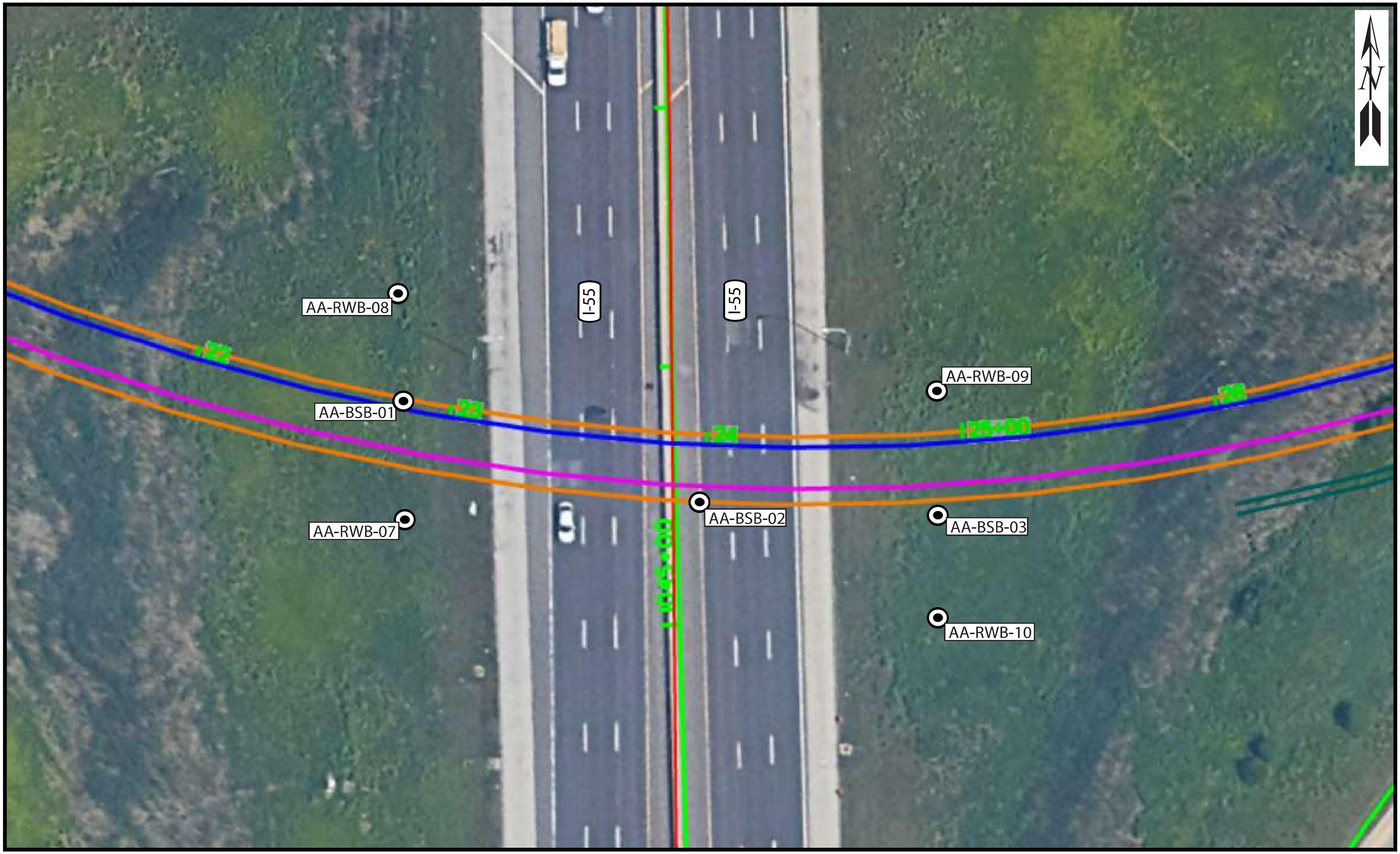

Legend

Boring Location

0 100 200 Feet

BORING LOCATION PLAN: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS		
SCALE: GRAPHICAL	EXHIBIT 3	DRAWN BY: J. Bensen CHECKED BY: A. Hamad
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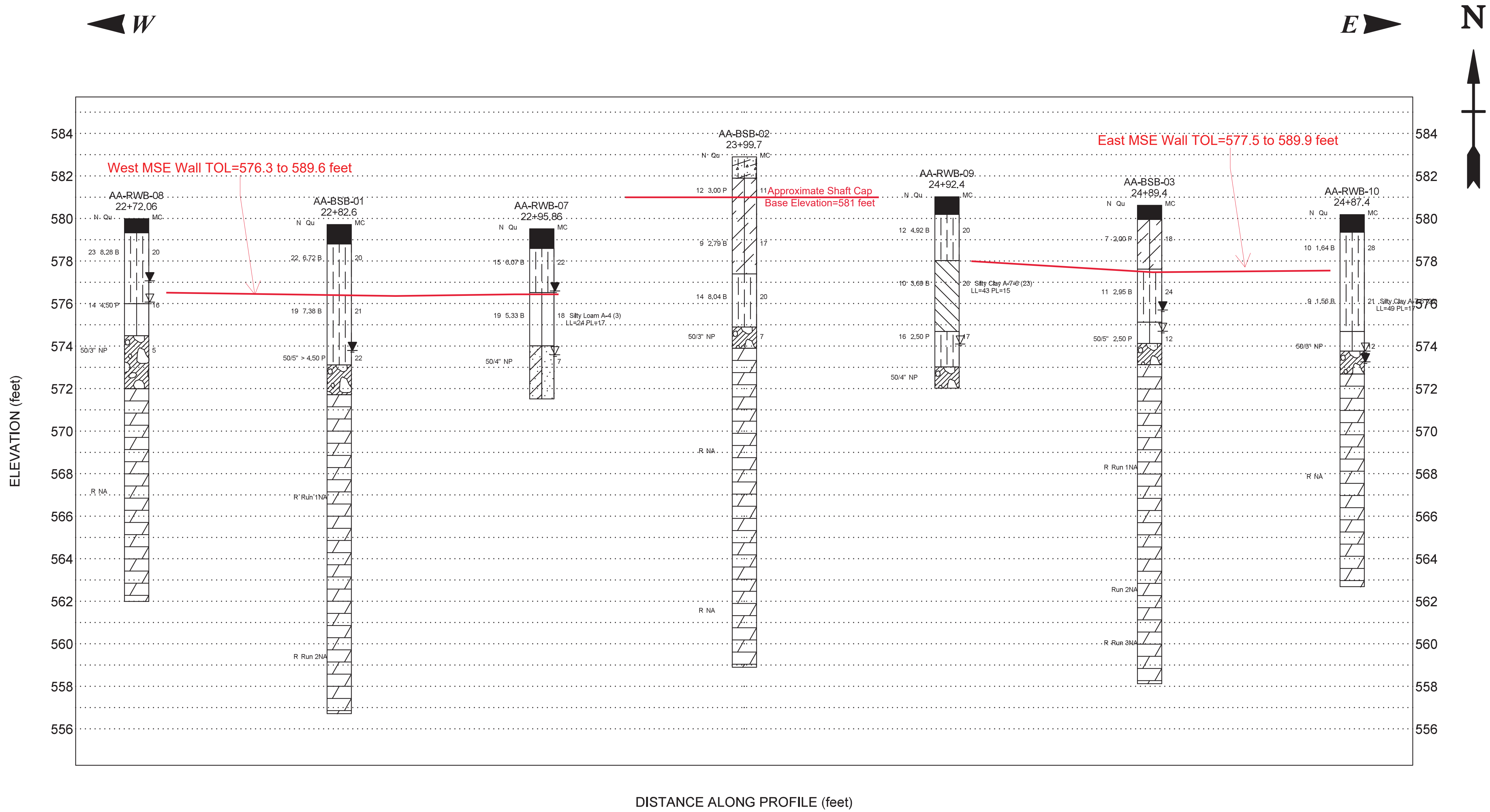
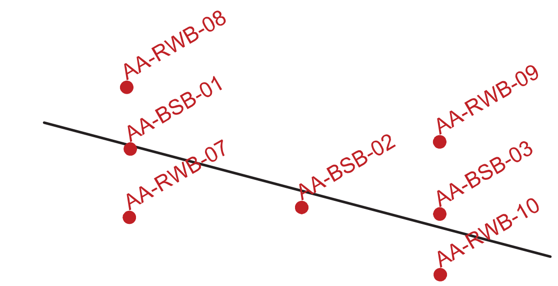
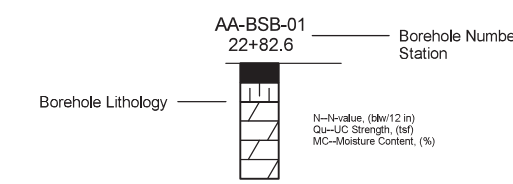




Site Map Scale 1 inch equals 130 feet

Explanation:



Water Level Reading at time of drilling.

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

Horizontal Scale (feet)

Vertical Exaggeration: 6x

Lithology Graphics

- Topsoil
- Pavement
- IDH Clay
- IDH Silty Clay, Silty Clay Loam
- IDH Clay Loam
- Weathered bedrock
- IDH Silt, Silty Loam
- Dolomite or Dolomitic Limestone
- IDH Loam

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Soil Profile
I-55 Ramp AA Bridge Over I-55

I-80 Reconstruction, Ridge Road to Houbolt Road
Will County, Illinois

WEI SINCE 1982

JOB NUMBER	PLATE NUMBER
255-39-01	EXHIBIT 4

WEI 11X17 2553901.GPJ WANGENG.GDT 2/23/23

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APPENDIX A

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BORING LOG AA-BSB-01

WEI Job No.: 255-39-01

Client: **Stantec**
Project: **I-80 Reconstruction, Ridge Road to Houbolt Road**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 579.72 ft
North: 1754609.97 ft
East: 1021399.04 ft
Station: 22+82.6
Offset: 4.2 LT

Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
578.8	11-inch thick, brown SILTY CLAY, trace gravel; damp --TOPSOIL--					
	Hard, brown and gray SILTY CLAY, trace gravel; damp --RDR 2--		1	7 9 13	6.72 B	20
		5	2	4 8 11	7.38 B	21
573.1			3	3 50/5"	> 4.50 P	22
571.7	Very dense, brown and gray Gravelly SILTY LOAM; wet --RDR 2-3--					
	Strong, light gray, very poor rock quality, DOLOSTONE; closely spaced, moderately weathered, horizontal and oblique joints, with <0.05 inch opening, slightly rough walls, and <0.2 inch thick clay infill. --RUN 1: 8.0 to 18.0 feet-- --Recovery: 100%-- --RQD: 23%--	10, 15	4	CORE	Run 1	
	--RUN 2: 18.0 to 23.0 feet-- --Recovery: 100%-- --RQD: 24%--	20	5	CORE	Run 2	
556.7	Boring terminated at 23.00 ft	25, 30, 35, 40				

GENERAL NOTES

Begin Drilling **12-27-2022** Complete Drilling **12-27-2022**
Drilling Contractor **Wang Testing Services** Drill Rig **21D120A[78%]**
Driller **NC&DZ** Logger **B. Miller** Checked by **C. Marin**
Drilling Method **3.25" ID HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **6.00 ft**
At Completion of Drilling: **6.00 ft**
Time After Drilling: **NA**
Depth to Water: **NA**

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

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BORING LOG AA-BSB-02

WEI Job No.: 255-39-01

Client: **Stantec**
Project: **I-80 Reconstruction, Ridge Road to Houbolt Road**
Location: **Will County, Illinois**

Datum: NAVD 88
Elevation: 582.90 ft
North: 1754571.00 ft
East: 1021513.55 ft
Station: 23+99.7
Offset: 21.4 RT

Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	12-inch thick ASPHALT --PAVEMENT--					
581.9	Very stiff, brown CLAY LOAM, trace gravel; dry --FILL-- --RDR 2--		1	14 7 5	3.00 P	11
		5	2	3 5 4	2.79 B	17
577.4	Hard, brown SILTY CLAY, trace gravel; damp --RDR 2--		3	5 5 9	8.04 B	20
574.9	Very dense, brown SANDY GRAVEL; damp		4	50/3"	NP	7
573.9	--Weathered BEDROCK-- Strong, light gray, very poor quality, DOLOSTONE; very closely to closely spaced, highly weathered, horizontal and oblique joints, with <0.05 inch opening, slightly rough walls, and 0 - 0.2 inch thick clay infill. --RUN 1: 9.0 to 19.0 feet-- --Recovery: 93%-- --RQD: 4%--	10, 15	5	CORE		
	--RUN 2: 19.0 to 24.0 feet-- --Recovery: 93%-- --RQD: 0%-- --Qu= 8,591 psi	20	6	CORE		
558.9	Boring terminated at 24.00 ft	25, 30, 35, 40				

GENERAL NOTES

Begin Drilling: **01-16-2023** Complete Drilling: **01-16-2023**
Drilling Contractor: **Wang Testing Services** Drill Rig: **17B57T [91%]**
Driller: **KG&TC** Logger: **B. Miller** Checked by: **C. Marin**
Drilling Method: **3.25" ID HSA; boring backfilled upon completion**

WATER LEVEL DATA

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

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

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BORING LOG AA-BSB-03

WEI Job No.: 255-39-01

Client **Stantec**
Project **I-80 Reconstruction, Ridge Road to Houbolt Road**
Location **Will County, Illinois**

Datum: NAVD 88
Elevation: 580.62 ft
North: 1754566.58 ft
East: 1021605.88 ft
Station: 24+89.4
Offset: 26.6 RT

Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
580.0	8-inch thick, brown SILTY CLAY, trace gravel; damp --TOPSOIL--					
577.6	Very stiff, brown CLAY LOAM to SILTY CLAY LOAM, trace gravel; damp --FILL-- --RDR 2--		1	3 3 4	2.00 P	18
575.1	Very stiff, brown and gray SILTY CLAY, trace gravel; damp --RDR 2--	5	2	4 4 7	2.95 B	24
574.1	Very stiff, gray SILTY LOAM, trace gravel; wet					
573.1	Very dense, orange and gray Sandy GRAVEL; damp --Weathered BEDROCK--		3	6 50/5"	2.50 P	12
	Strong, light brown and gray, very poor to fair rock mass quality, cherty and vuggy, slightly weathered DOLOSTONE; closely to very closely spaced, moderately weathered joints, mainly horizontal joints, with <0.05 inch opening, slightly rough walls, and <0.2 inch thick clay infill. --RUN 1: 7.5 to 17.5 feet-- --Recovery: 99%-- --RQD: 0%--	10, 15	4	CORE	Run 1	
	--RUN 2: 17.5 to 19.0 feet-- --Recovery: 92%-- --RQD: 26%-- --Qu=9,120 psi--		5		Run 2	
558.1	--RUN 3: 19.0 to 22.5.0 feet-- --Recovery: 93%-- --RQD: 61%--	20	6	CORE	Run 3	
	Boring terminated at 22.50 ft	25, 30, 35, 40				

GENERAL NOTES

Begin Drilling **12-08-2022** Complete Drilling **12-19-2022**
Drilling Contractor **Wang Testing Services** Drill Rig **21D120A[78%]**
Driller **RR&JD** Logger **B. Miller** Checked by **C. Marin**
Drilling Method **3.25" ID HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ▽ **6.00 ft**
At Completion of Drilling ▼ **5.00 ft**
Time After Drilling **NA**
Depth to Water ▼ **NA**

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

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BORING LOG AA-RWB-07

WEI Job No.: 255-39-01

Client **Stantec**
Project **I-80 Reconstruction, Ridge Road to Houbolt Road**
Location **Will County, Illinois**

Datum: NAVD 88
Elevation: 579.51 ft
North: 1754564.37 ft
East: 1021398.40 ft
Station: 22+95.86
Offset: 39.73 RT

Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
578.6	11-inch thick, brown SILTY CLAY, trace gravel; damp --TOPSOIL--						
576.5	Hard, brown and gray SILTY CLAY, trace gravel; damp to moist --RDR 2--			1	5 6 9	6.07 B	22
574.0	Hard, brown and gray SILTY LOAM, trace gravel; damp to wet --RDR 2-- --L_L(%)=24, P_L(%)=17-- --%Gravel=4.0-- --%Sand=16.1-- --%Silt=66.7-- --%Clay=13.2--	5		2	5 9 10	5.33 B	18
571.5	Very dense, brown and gray LOAM, little to some gravel; wet --RDR 2-3--			3	14 50/4"	NP	7
	--AUGER REFUSAL-- Boring terminated at 8.00 ft	10					
		15					
		20					

GENERAL NOTES

Begin Drilling **12-22-2022** Complete Drilling **12-22-2022**
Drilling Contractor **Wang Testing Services** Drill Rig **21D120A[78%]**
Driller **NC&DZ** Logger **B. Miller** Checked by **C. Marin**
Drilling Method **3.25" ID HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ▽ **6.00 ft**
At Completion of Drilling ▼ **NA**
Time After Drilling **120 hours**
Depth to Water ▼ **3.00 ft**

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

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BORING LOG AA-RWB-08

WEI Job No.: 255-39-01

Client **Stantec**
Project **I-80 Reconstruction, Ridge Road to Houbolt Road**
Location **Will County, Illinois**

Datum: NAVD 88
Elevation: 579.99 ft
North: 1754651.16 ft
East: 1021396.65 ft
Station: 22+72.06
Offset: 44.14 LT

Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
579.3	8-inch thick, brown SILTY CLAY, trace gravel; damp --TOPSOIL--					
	Hard, brown and gray SILTY CLAY, trace gravel; damp to moist --RDR 2--		1	6 9 14	8.28 B	20
576.0	--1-inch orange and brown sand seam; saturated--		2	8 7 7	4.50 P	16
574.5	Hard, brown and gray SILTY LOAM, trace gravel; wet --RDR 2--	5				
572.0	Very dense, orangish brown and brown Gravelly SILTY LOAM; wet --RDR 2-3-- --Weathered BEDROCK--		3	11 50/3"	NP	5
562.0	Strong, light brown and gray, very poor rock quality, DOLOSTONE; closely spaced, highly weathered, horizontal and oblique joints, with <0.05 inch opening, slightly rough walls, and <0.2 inch thick clay infill. -- Run 1: 8.0 to 18.0 feet-- --Recovery = 100%-- --RQD = 21%-- --Qu=13,700 psi	10, 15	4	CORE		
	Boring terminated at 18.00 ft	20				

GENERAL NOTES

Begin Drilling **12-22-2022** Complete Drilling **12-22-2022**
Drilling Contractor **Wang Testing Services** Drill Rig **21D120A[78%]**
Driller **NC&DZ** Logger **B. Miller** Checked by **C. Marin**
Drilling Method **3.25" ID HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ∇ **4.00 ft**
At Completion of Drilling ▼ **3.00 ft**
Time After Drilling **NA**
Depth to Water ▼ **NA**

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

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BORING LOG AA-RWB-09

WEI Job No.: 255-39-01

Client **Stantec**
Project **I-80 Reconstruction, Ridge Road to Houbolt Road**
Location **Will County, Illinois**

Datum: NAVD 88
Elevation: 581.02 ft
North: 1754614.76 ft
East: 1021605.81 ft
Station: 24+92.4
Offset: 21.5 LT

Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
580.2	10-inch thick, brown SILTY CLAY, trace gravel; damp --TOPSOIL--					
578.0	Hard, brown SILTY CLAY, trace gravel; damp --FILL-- --RDR 2--		1	5 5 7	4.92 B	20
574.7	Very stiff, brown and gray CLAY to SILTY CLAY, trace gravel; damp --RDR 2-- --L_L(%)=43, P_L(%)=15-- --%Gravel=8.2-- --%Sand=8.9-- --%Silt=47.1-- --%Clay=35.8--	5	2	3 3 7	3.69 B	26
573.0	Very stiff, orange and gray SILTY CLAY LOAM, some gravel; moist to wet --RDR 2--		3	4 5 11	2.50 P	17
572.0	Very dense, orange GRAVEL; damp --RDR 2-3-- --Weathered BEDROCK--		4	50/4"	NP	
	--AUGER REFUSAL-- Boring terminated at 9.00 ft	10				
		15				
		20				

GENERAL NOTES

Begin Drilling **12-28-2022** Complete Drilling **12-28-2022**
Drilling Contractor **Wang Testing Services** Drill Rig **21D120A[78%]**
Driller **NC&DZ** Logger **B. Miller** Checked by **C. Marin**
Drilling Method **3.25" ID HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ∇ **7.00 ft**
At Completion of Drilling ▼ **NA**
Time After Drilling **24 hours**
Depth to Water ▼ **Dry (cave in 3 ft) ft**

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

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BORING LOG AA-RWB-10

WEI Job No.: 255-39-01

Client **Stantec**
Project **I-80 Reconstruction, Ridge Road to Houbolt Road**
Location **Will County, Illinois**

Datum: NAVD 88
Elevation: 580.19 ft
North: 1754526.15 ft
East: 1021606.17 ft
Station: 24+87.4
Offset: 67.0 RT

Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
579.4	10-inch thick, brown SILTY CLAY, trace gravel; damp --TOPSOIL--						
	Stiff, brown SILTY CLAY, trace gravel; damp --RDR 2--			1	3 4 6	1.64 B	28
574.7	--L_L(%)=49, P_L(%)=17-- --%Gravel=2.5-- --%Sand=11.9-- --%Silt=54.1-- --%Clay=31.5--	5		2	2 3 6	1.56 B	21
573.8	(4.5P) Hard, brown SILTY LOAM, trace gravel; damp --RDR 2-3--			3	42 50/3"	NP	12
572.7	Very dense, orangish brown and gray GRAVEL; wet --some clay-- --Weathered BEDROCK--						
562.7	Strong, light gray, very poor rock quality, DOLOSTONE; closely spaced, highly weathered, horizontal and vertical joints, with <0.05 inch opening, slightly rough walls, and <0.2 inch thick clay infill. -- Run 1: 7.5 to 17.5 feet-- --Recovery = 100%-- --RQD = 8%--	10, 15		4	CORE		
	Boring terminated at 17.50 ft	20					

GENERAL NOTES

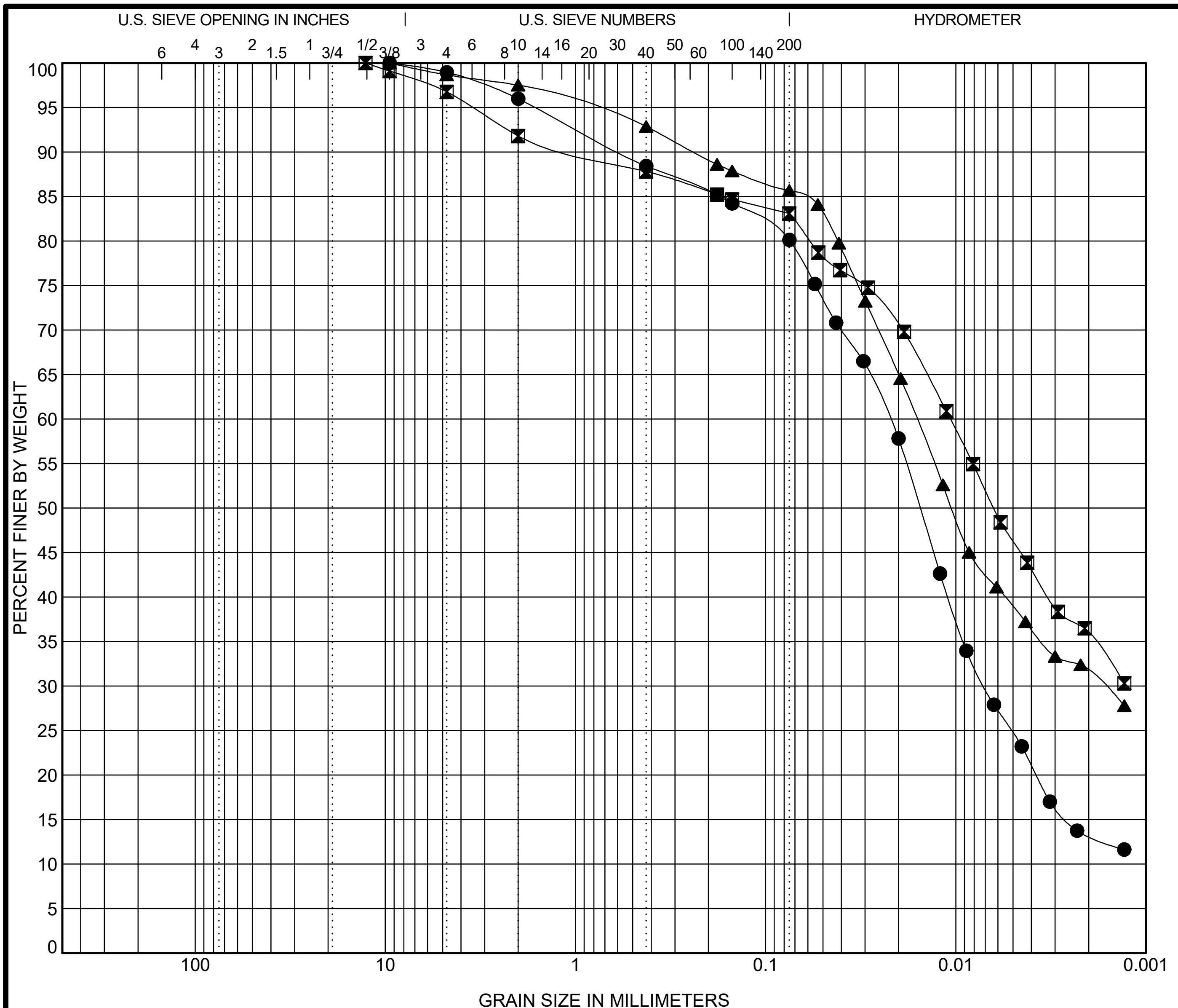
Begin Drilling **12-28-2022** Complete Drilling **12-29-2022**
Drilling Contractor **Wang Testing Services** Drill Rig **21D120A[78%]**
Driller **NC&DZ** Logger **B. Miller** Checked by **C. Marin**
Drilling Method **3.25" ID HSA; boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ▽ **6.50 ft**
At Completion of Drilling ▼ **NA**
Time After Drilling **24 hours**
Depth to Water ▼ **7.00 ft**

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

APPENDIX B



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

	Specimen Identification		IDH Classification	LL	PL	PI	Cc	Cu
●	**AA-RWB-07#2**	**3.5 ft**	**Silty Loam**	**24**	**17**	**7**		
⧗	**AA-RWB-09#2**	**3.5 ft**	**Silty Clay**	**43**	**15**	**28**		
▲	**AA-RWB-10#2**	**3.5 ft**	**Silty Clay**	**49**	**17**	**32**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**AA-RWB-07#2**	**3.5 ft**	**9.5**	**0.022**	**0.007**		**4.0**	**16.1**	**66.7**	**13.2**
⧗	**AA-RWB-09#2**	**3.5 ft**	**12.7**	**0.011**			**8.2**	**8.9**	**47.1**	**35.8**
▲	**AA-RWB-10#2**	**3.5 ft**	**9.5**	**0.016**	**0.002**		**2.5**	**11.9**	**54.1**	**31.5**

WEI
SINCE 1982
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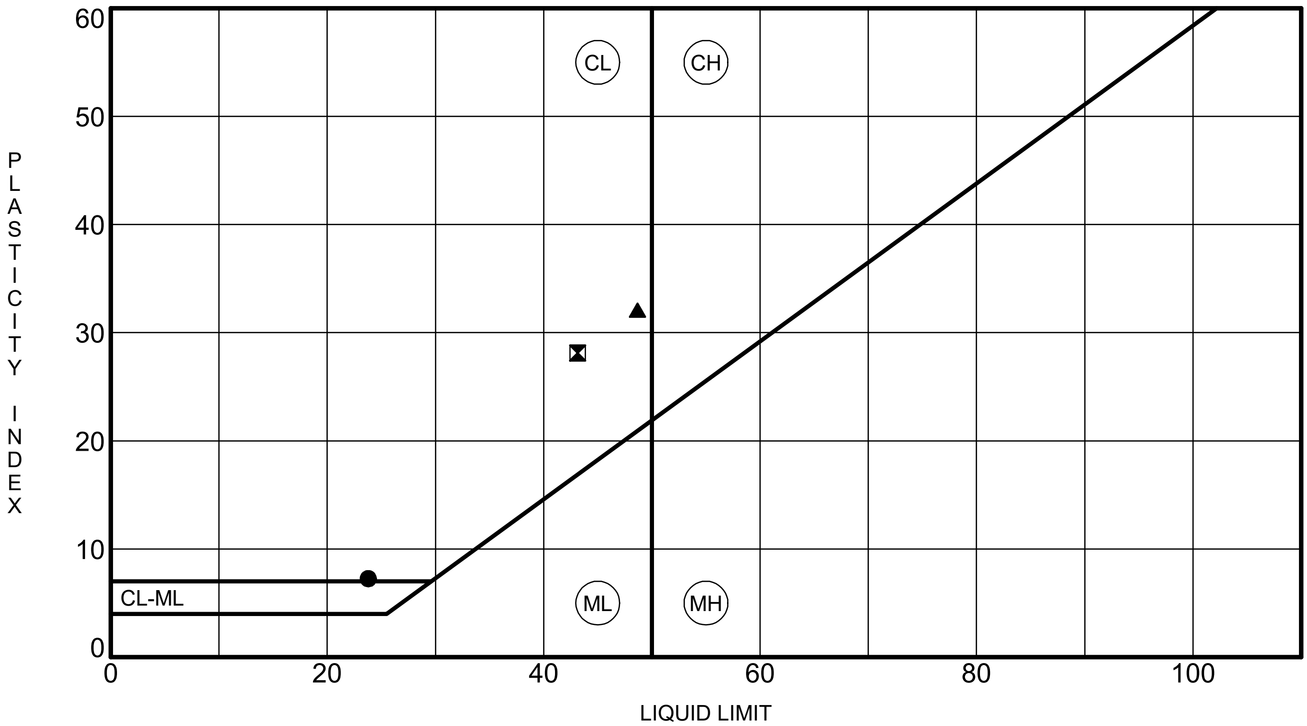
Fax: 630 953-9938

GRAIN SIZE DISTRIBUTION

Project: I-80 Reconstruction, Ridge Road to Houbolt Road

Location: Will County, Illinois

Number: 255-39-01



	Specimen Identification		LL	PL	PI	Fines	IDH Classification
●	**AA-RWB-07#2**	**3.5 ft**	**24**	**17**	**7**	**80**	**Silty Loam**
⧗	**AA-RWB-09#2**	**3.5 ft**	**43**	**15**	**28**	**83**	**Silty Clay**
▲	**AA-RWB-10#2**	**3.5 ft**	**49**	**17**	**32**	**86**	**Silty Clay**

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ATTERBERG LIMITS' RESULTS

Project: I-80 Reconstruction, Ridge Road to Houbolt Road

Location: Will County, Illinois

Number: 255-39-01

Unconfined Compressive Strength of Intact Rock Core Specimens

Project: I-80

Client: Stantec

WEI Job No.: KE225039

Field Sample ID	Run #	Depth (ft)	Location	Sample Description	Length (in) Before Capping	Length (in) After Capping	Diameter (in)	Total Load (lbs)	Total Pressure (psi)	Fracture Type*	Break Date	Tested By	Area (in^2)
AA-BSB-02	2	19.5	Pier	Dolostone	4.00	NA	2.04	28080	8591	3	1/24/23	KJ	3.27
AA-BSB-03	2	18.5	East Abutment	Dolostone	4.00	NA	2.04	29750	9120	3	1/24/23	KJ	3.26
AA-RWB-08	1	12.0	West Abutment Wall	Dolostone	4.05	NA	2.04	44780	13700	3	1/3/23	KJ	3.25

*** Fracture Types:**

Type 1 - Reasonably well-formed cones on both ends, less than 1 in. [25 mm] of cracking through caps;
Type 2 - Well-formed cone on one end, vertical cracks running through caps, no well defined cone on other end;
Type 3 - Columnar vertical cracking through both ends, no well-formed cones;
Type 4 - Diagonal fracture with no cracking through ends; tap with hammer to distinguish from Type 1;
Type 5 - Side fractures at top or bottom (occur commonly with unbonded caps);
Type 6 - Similar to Type 5 but end of cylinder is pointed.

Prepared by:______________________________

Checked by: ______________________________

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APPENDIX C

Run #1

0 6 inches

Boring AA-BSB-01:
Run #1, 8.0 to 18.0 feet, RECOVERY=100%, RQD=23%

BEDROCK CORE: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS		
SCALE: GRAPHICAL	APPENDIX C-1	DRAWN BY: D. You CHECKED BY: A. Hamad
Wang Engineering		1145 N. Main Street Lombard, IL 60148 www.wangeng.com
FOR STANTEC		255-39-01

Run #2

0 6 inches

Boring AA-BSB-01:
Run #2, 18.0 to 23.0 feet, RECOVERY=100%, RQD=24%

BEDROCK CORE: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS		
SCALE: GRAPHICAL	APPENDIX C-2	DRAWN BY: D. You CHECKED BY: A. Hamad
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Run #1

Boring AA-BSB-02:
Run #1, 9.0 to 19.0 feet, RECOVERY=93%, RQD=4%

BEDROCK CORE: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS		
SCALE: GRAPHICAL	APPENDIX C-3	DRAWN BY: D. You CHECKED BY: A. Hamad
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FOR STANTEC		255-39-01

Run #2

Boring AA-BSB-02:
Run #2, 19.0 to 24.0 feet, RECOVERY=93%, RQD=0%

BEDROCK CORE: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS		
SCALE: GRAPHICAL	APPENDIX C-4	DRAWN BY: D. You CHECKED BY: A. Hamad
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FOR STANTEC		255-39-01

Run #1

0 6 inches

Boring AA-BSB-03:
Run #1, 7.5 to 17.5 feet, RECOVERY=99%, RQD=0%

BEDROCK CORE: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS		
SCALE: GRAPHICAL	APPENDIX C-5	DRAWN BY: D. You CHECKED BY: A. Hamad
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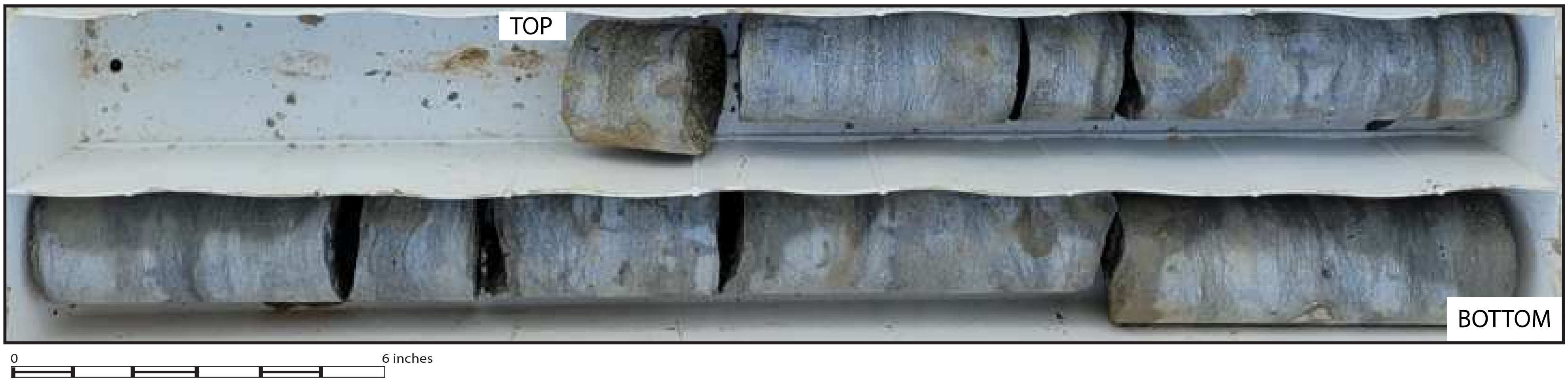
Run #2

Run #3



Boring AA-BSB-03:
Run #2, 17.5 to 19.0 feet, RECOVERY=92%, RQD=26%
Run #3, 19.0 to 22.5 feet, RECOVERY=93%, RQD=61%

BEDROCK CORE: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS		
SCALE: GRAPHICAL	APPENDIX C-6	DRAWN BY: D. You CHECKED BY: A. Hamad
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FOR STANTEC		255-39-01

Run #1

0 6 inches

Boring AA-RWB-08:
Run #1, 8.0 to 18.0 feet, RECOVERY=100%, RQD=21%

BEDROCK CORE: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS		
SCALE: GRAPHICAL	APPENDIX C-7	DRAWN BY: D. You CHECKED BY: A. Hamad
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Run #1

0 6 inches

Boring AA-RWB-10:
Run #1, 7.5 to 17.5 feet, RECOVERY=100%, RQD=8%

BEDROCK CORE: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS		
SCALE: GRAPHICAL	APPENDIX C-8	DRAWN BY: D. You CHECKED BY: A. Hamad
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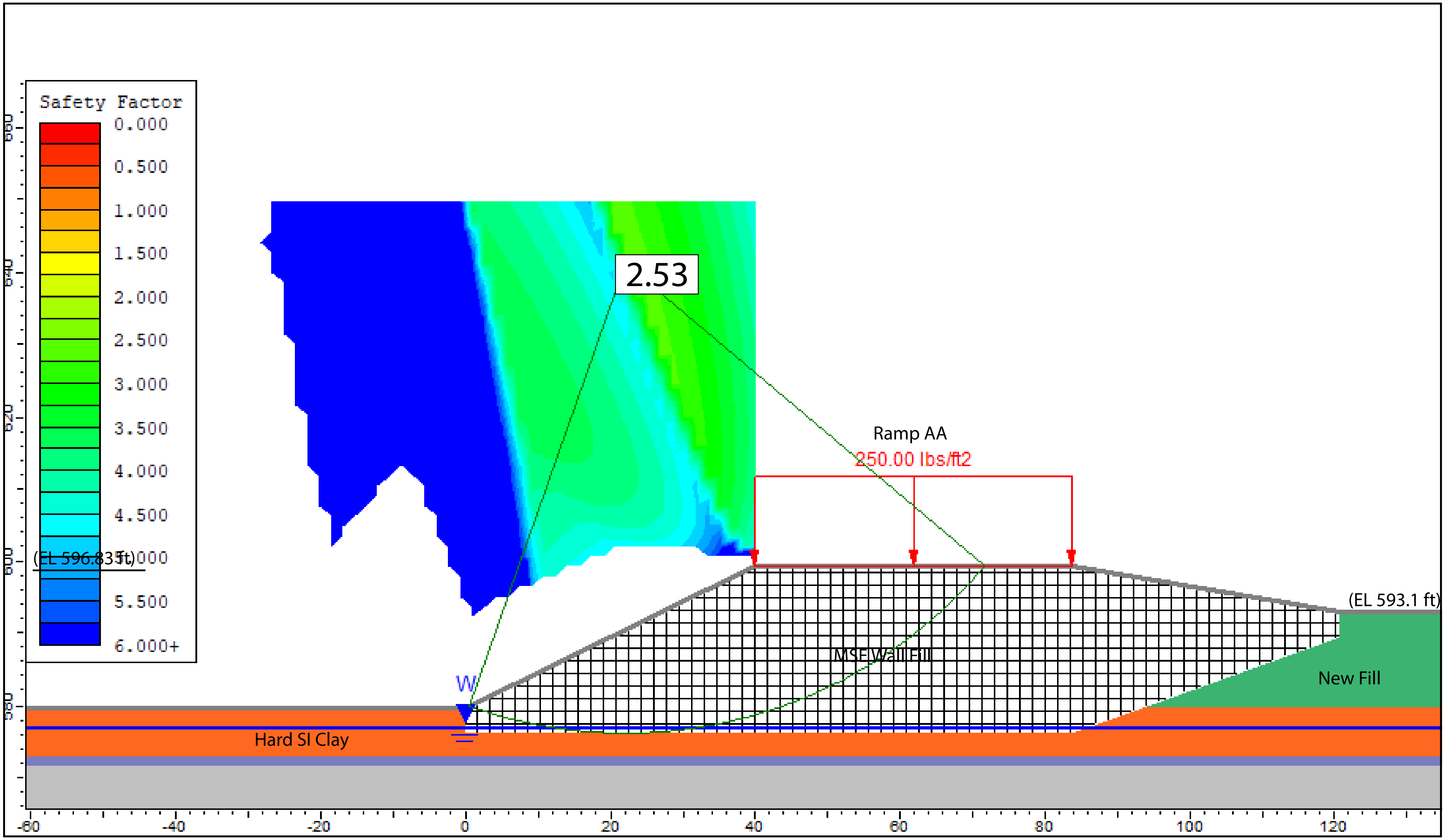
APPENDIX D



Undrained Analysis, Sta.22+69.22, West Abutment, Ref Boring: AA-BSB-01, AA-RWB-07 & AA-RWB-08

Layer ID	Description	Total Unit Weight (pcf)	Undrained Cohesion (psf)	Undrained Friction Angle (degrees)
1	MSE Wall Fill	130	1000	
2	New Fill	125	1000	
3	Hard SI Clay	125	4000	

GLOBAL STABILITY: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL | APPENDIX D-1 | DRAWN BY: D. You | CHECKED BY: A. Hamad

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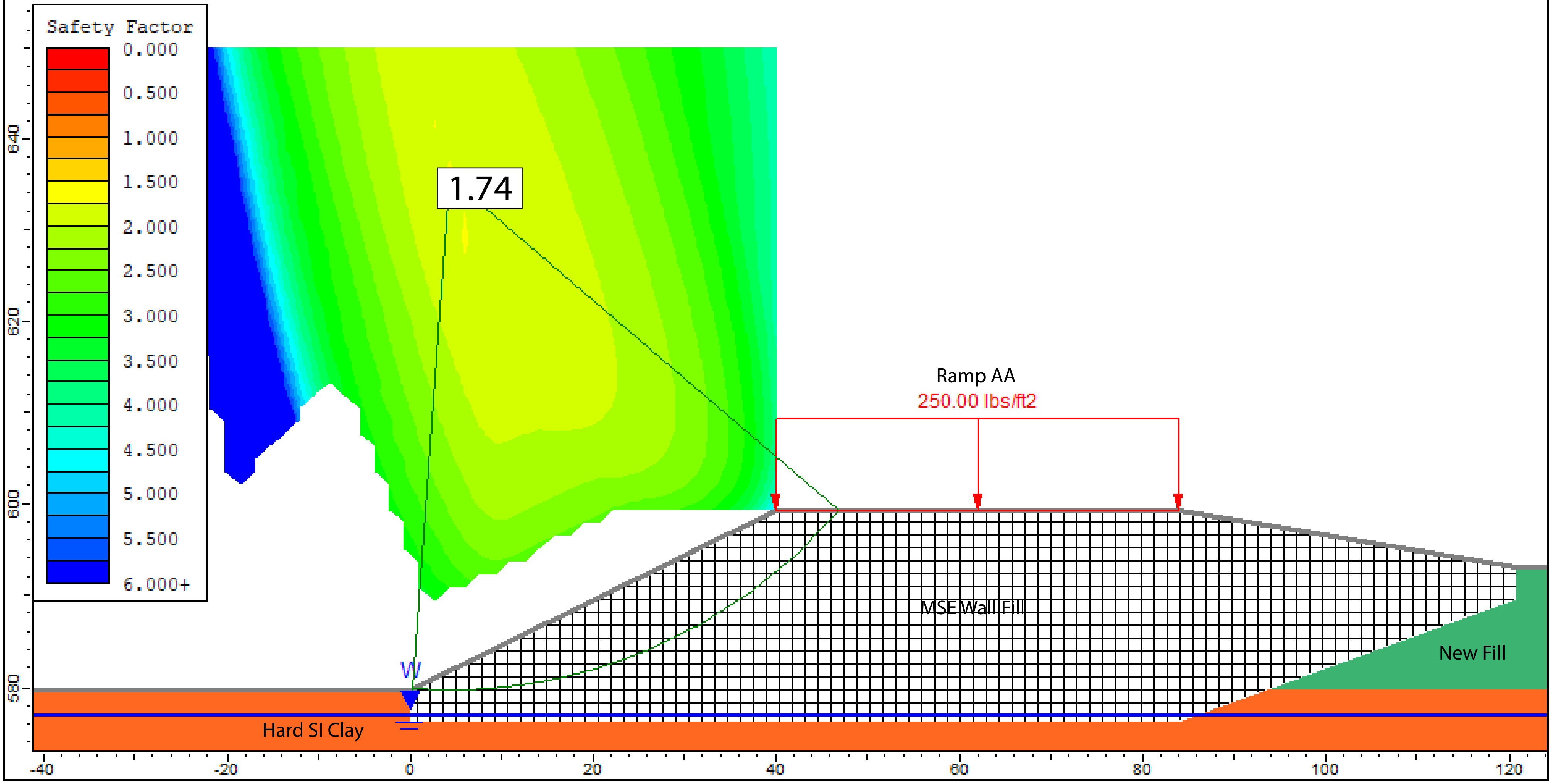

Drained Analysis, Sta.22+86.78, West Abutment, Ref Boring: AA-BSB-01, AA-RWB-07 & AA-RWB-08

Layer ID	Description	Total Unit Weight (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
1	MSE Wall Fill	130	100	30
2	New Fill	125	100	30
3	Hard Sl Clay	125	100	32

GLOBAL STABILITY: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL	APPENDIX D-2	DRAWN BY: D. You CHECKED BY: A. Hamad

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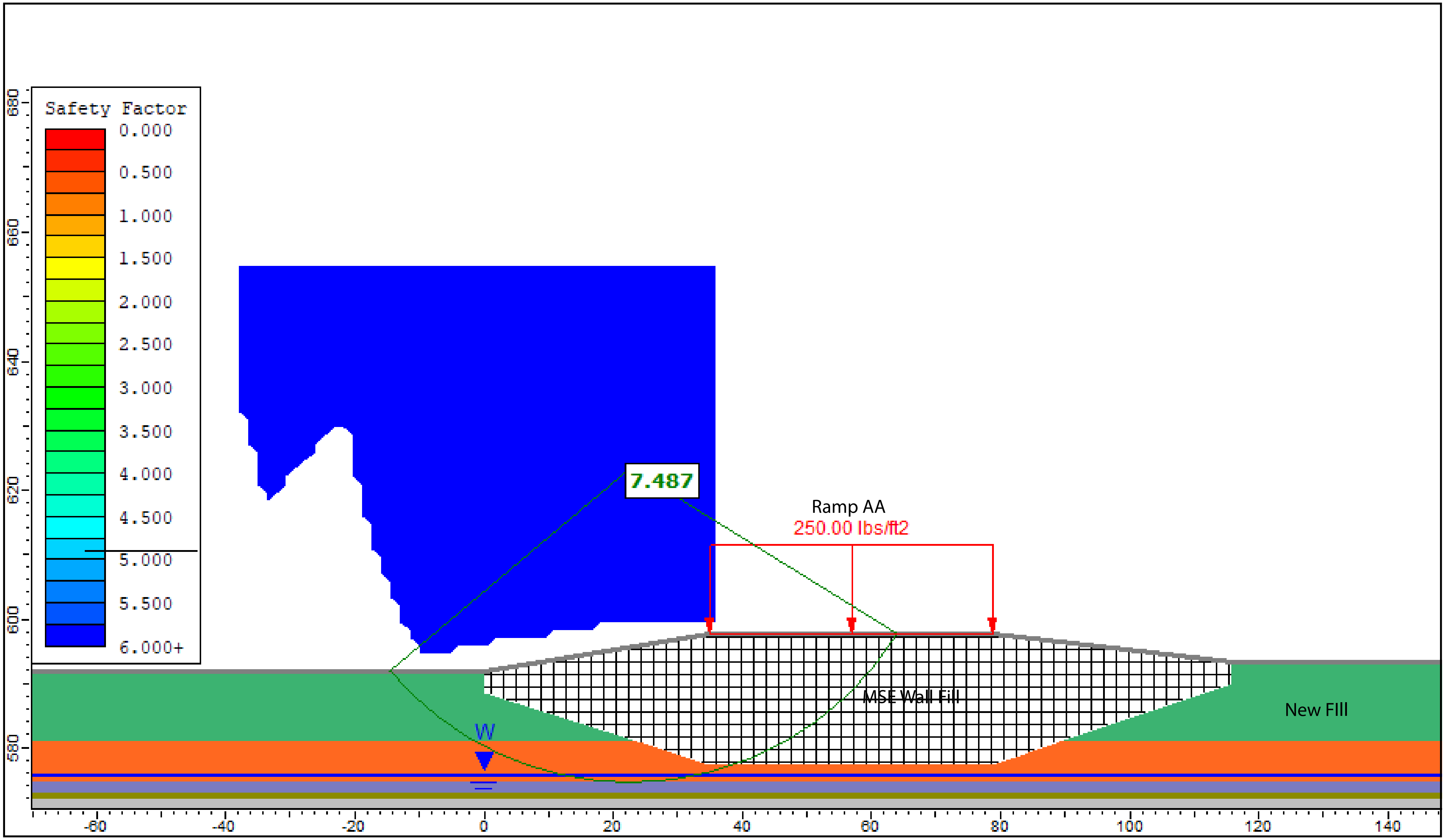

Undrained Analysis, Sta.24+69.17, East Abutment, Ref Boring: AA-BSB-03, AA-RWB-09 & AA-RWB-10

Layer ID	Description	Total Unit Weight (pcf)	Undrained Cohesion (psf)	Undrained Friction Angle (degrees)
1	MSE Wall Fill	130	1000	0
2	New Fill	125	1000	0
3	Stiff SI Clay	120	1600	0

GLOBAL STABILITY: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL

APPENDIX D-3

DRAWN BY: D. You
CHECKED BY: A. Hamad

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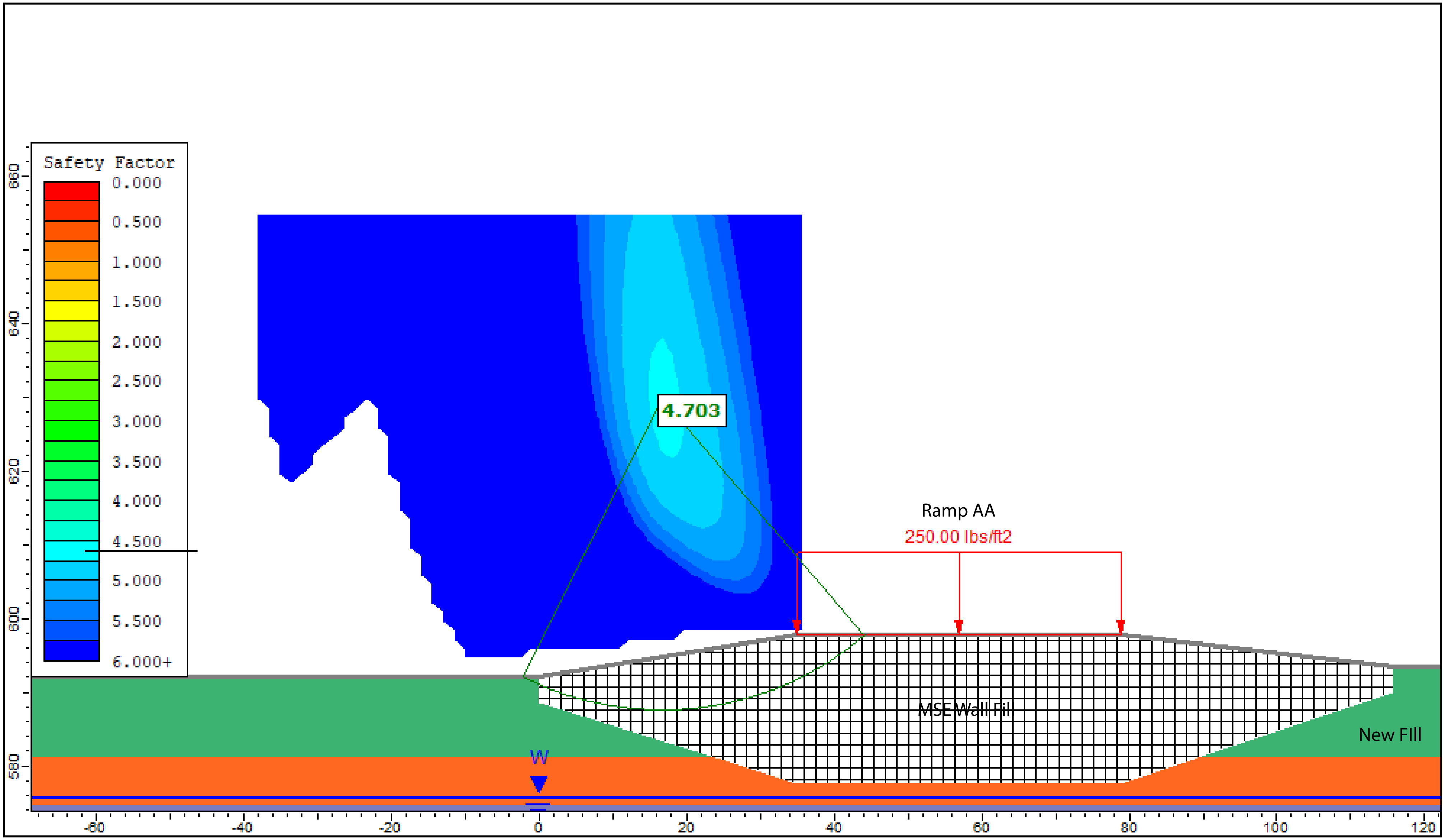

Drained Analysis, Sta.24+69.17, East Abutment, Ref Boring: AA-BSB-03, AA-RWB-09 & AA-RWB-10

Layer ID	Description	Total Unit Weight (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
1	MSE Wall Fill	130	100	30
2	New Fill	125	100	30
3	Stiff SI Clay	120	100	30

GLOBAL STABILITY: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL

APPENDIX D-3

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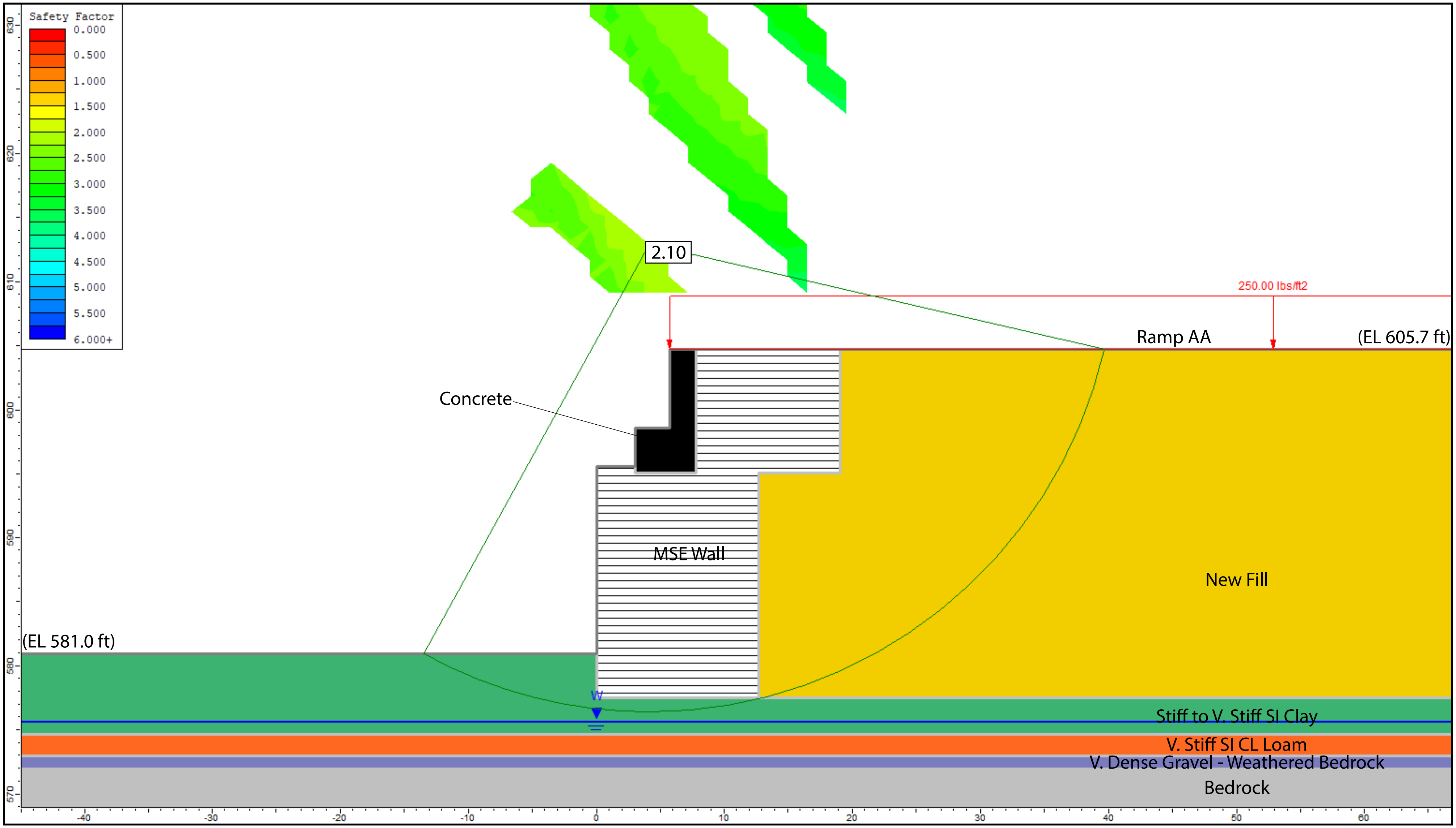

Undrained Analysis, East Abutment, End MSE Wall, Ref Boring: AA-BSB-03, AA-RWB-09 & AA-RWB-10

Layer ID	Description	Total Unit Weight (pcf)	Undrained Cohesion (psf)	Undrained Friction Angle (degrees)
1	New Fill	125	1000	0
2	Stiff to V. Stiff SI Clay	120	1600	0
3	V. Stiff SI CL Loam	120	2500	0
4	V. Dense Gravel - Weathered Bedrock	125	0	35

GLOBAL STABILITY: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL

APPENDIX D-5

DRAWN BY: D. You
CHECKED BY: A. Hamad

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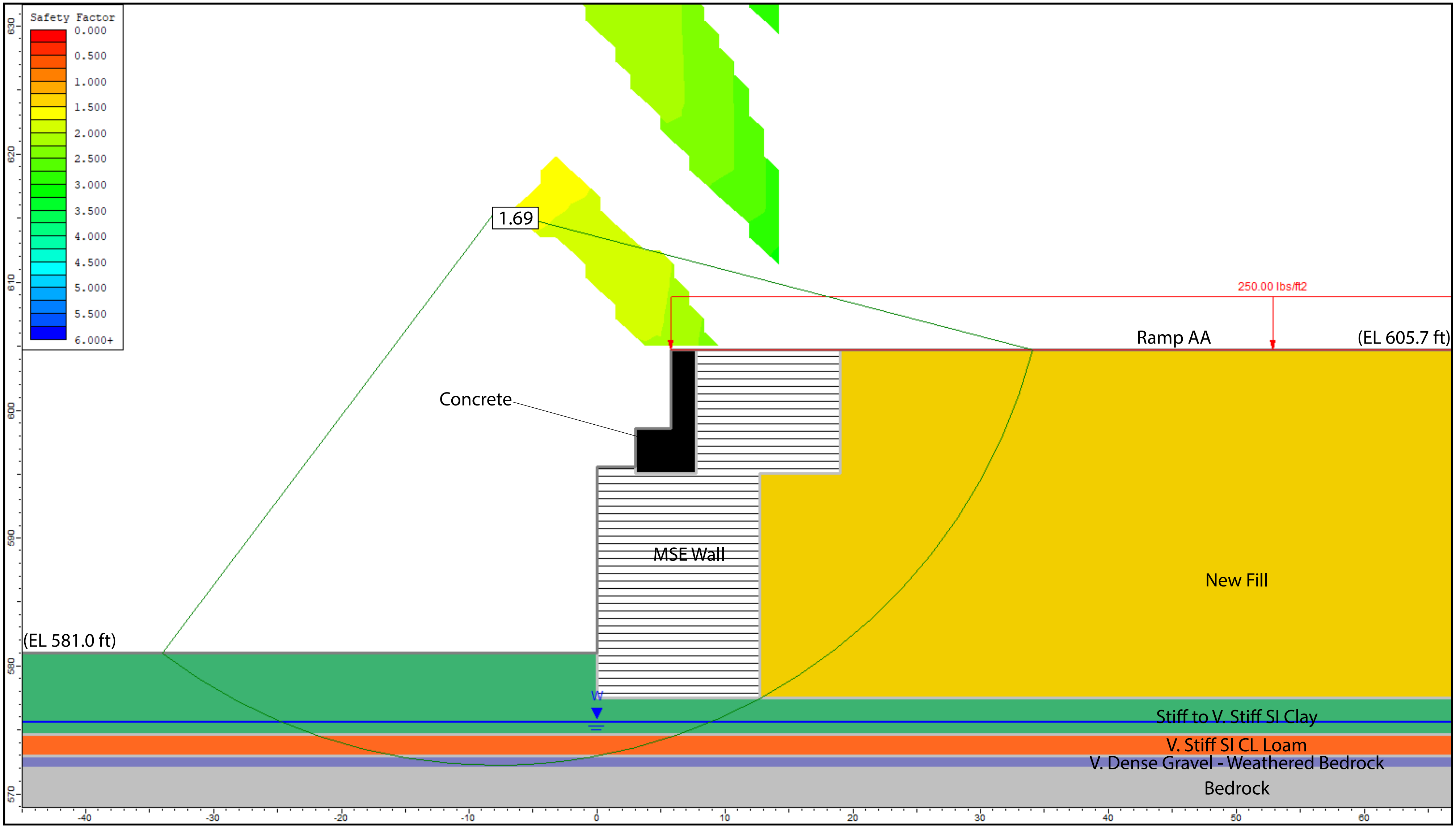

Drained Analysis, East Abutment, End MSE Wall, Ref Boring: AA-BSB-03, AA-RWB-09 & AA-RWB-10

Layer ID	Description	Total Unit Weight (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
1	New Fill	125	100	30
2	Stiff to V. Stiff SI Clay	120	100	30
3	V. Stiff SI CL Loam	120	100	30
4	V. Dense Gravel - Weathered Bedrock	125	0	35

GLOBAL STABILITY: RAMP AA BRIDGE OVER I-55; I-80 RECONSTRUCTION FROM EAST OF RIDGE RD TO HOUBOLT RD; WILL COUNTY, ILLINOIS

SCALE: GRAPHICAL

APPENDIX D-6

DRAWN BY: D. You
CHECKED BY: A. Hamad

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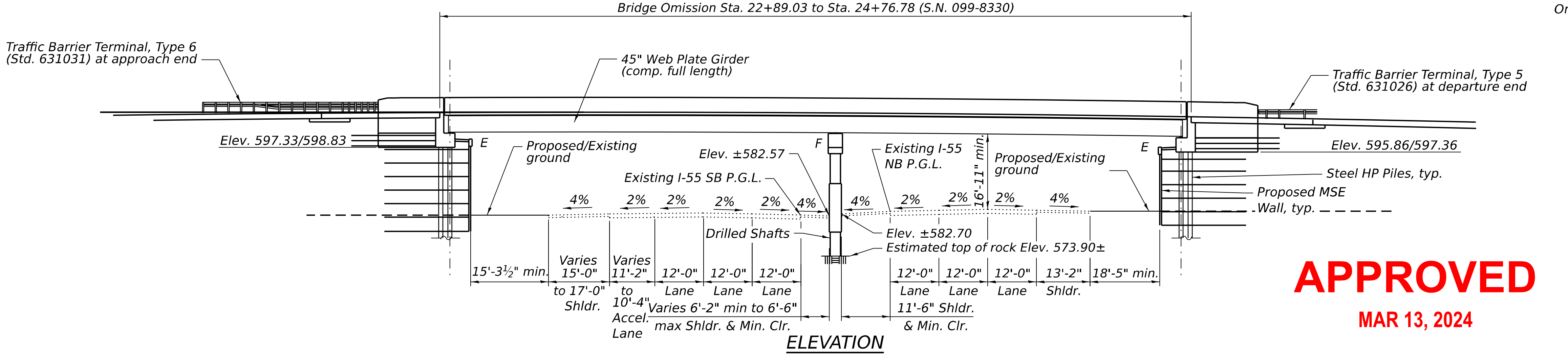
APPENDIX E

Benchmark: Set 2" CWA aluminum disc in concrete camera pole base east side of I-55, approximately 780' north of I-80 centerline and southwest of westbound I-80 ramp to I-55 northbound. Elev. 568.25

Existing Structure: None

Traffic Control: None

No Salvage.



ELEVATION

APPROVED

MAR 13, 2024

AS A BASIS FOR PREPARATION OF DETAILED PLANS

HIGHWAY CLASSIFICATION

FAI Rte. 55 - I-55 Ramp AA
Functional Class: Interstate
ADT: 7,600 (2021); 15,800 (2040)
ADTT: 1,930 (2021); 5,060 (2040)
DHV: 2,270 (2040)
Design Speed: 50 m.p.h.
Posted Speed: 50 m.p.h.
One-Way Traffic

FAI Rte. 55 - I-55
Functional Class: Interstate
ADT: 60,100 (2021); 84,900 (2040)
ADTT: 14,600 (2021); 20,630 (2040)
DHV: 10,200 (2040)
Design Speed: 70 m.p.h.
Posted Speed: 65 m.p.h.
Two-Way Traffic
Directional Distribution: 50:50

LOADING HL-93

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

DESIGN SPECIFICATIONS

2020 AASHTO LRFD Bridge Design Specifications, 9th Edition

DESIGN STRESSES

FIELD UNITS

f'c = 3,500 psi
f'c = 4,000 psi (Superstructure)
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (M270 Grade 50)
All Structural Steel shall be metalized

SEISMIC DATA

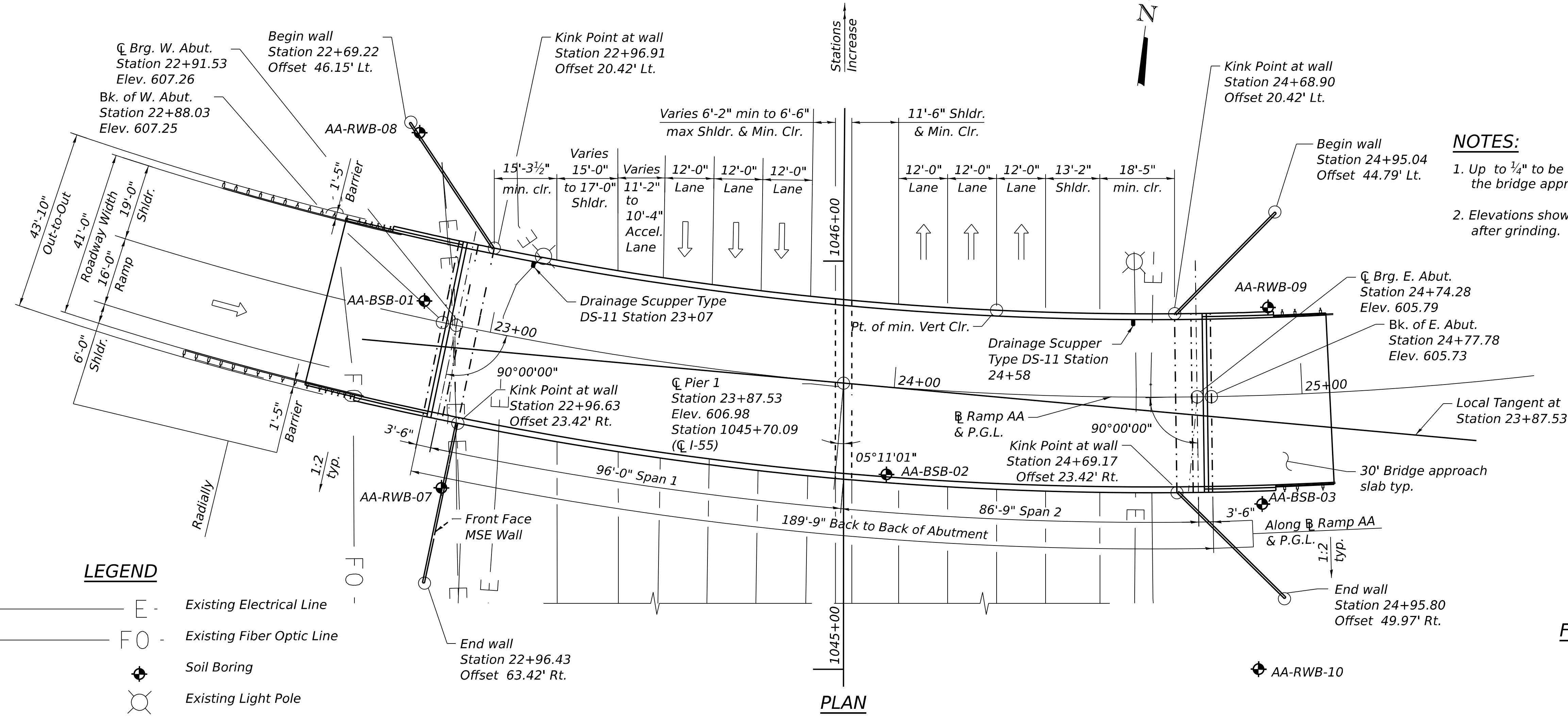
Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (SD1) = 0.068g
Design Spectral Acceleration at 0.2 sec. (SDS) = 0.127g
Soil Site Class = C

CURVE DATA

PRBL_RAMPAA-3
P.I. Sta. = 26+31.25
Δ = 51°28'35"
D = 06°51'42"
R = 835.00'
T = 402.54'
L = 750.19'
E = 91.97'
e = 6.0%
T.R. = N/A
S.E. Run = N/A
P.C. Sta. = 22+28.70
P.T. Sta. = 29+78.90

NOTES:

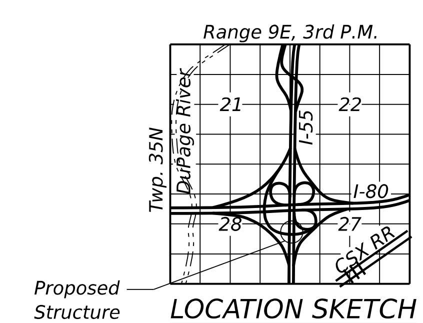
1. Up to ¼" to be ground off the bridge deck and the bridge approach slabs
2. Elevations shown on plan represent elevations after grinding.



PLAN

LEGEND

- E - Existing Electrical Line
- FO - Existing Fiber Optic Line
- Soil Boring
- Existing Light Pole



LOCATION SKETCH

GENERAL PLAN AND ELEVATION
I-55 RAMP AA OVER I-55
F.A.I. ROUTE 80 - SEC. FAOI 80 21 STRUCTURE 5
WILL COUNTY
STA. 23+87.53
STRUCTURE NO. 099-8330

MODEL: Default
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Stantec

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET OF SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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		CONTRACT NO. 62R26		
	ILLINOIS	FED. AID PROJECT		

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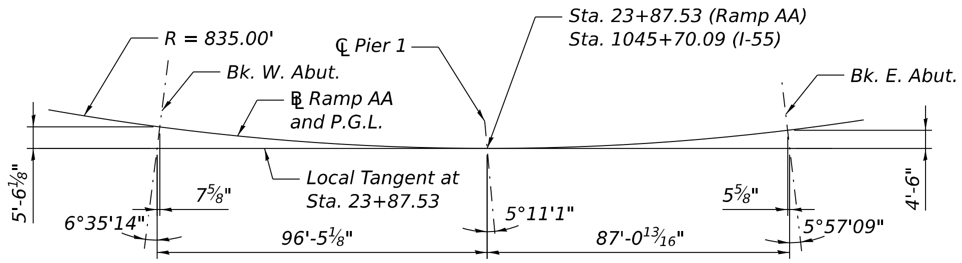
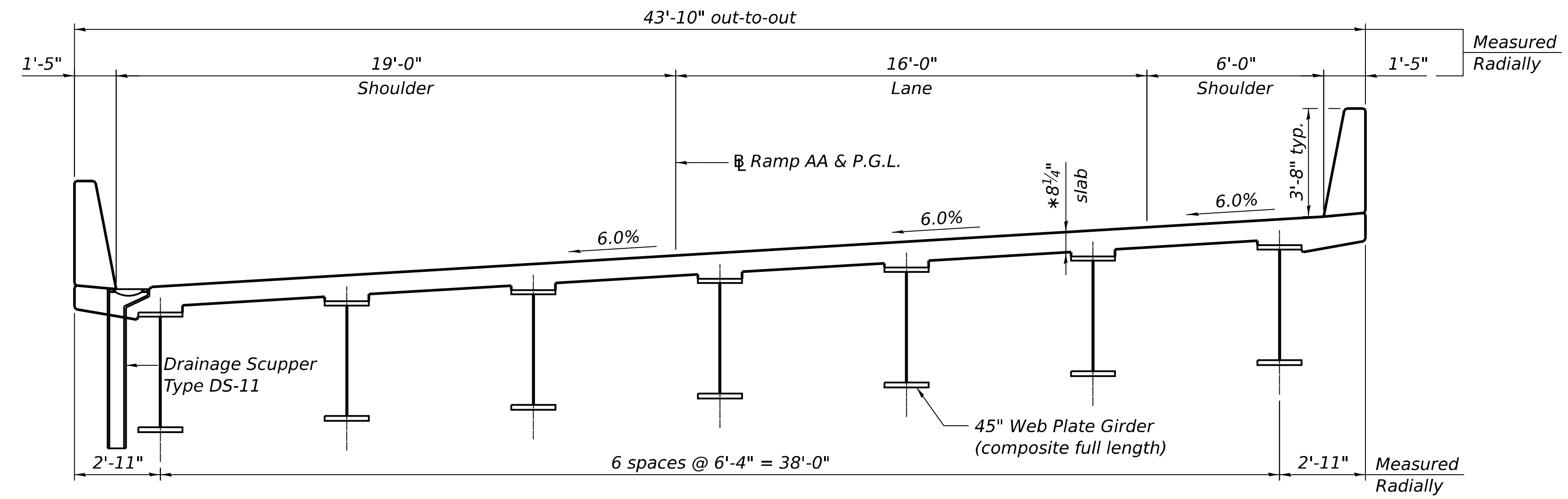


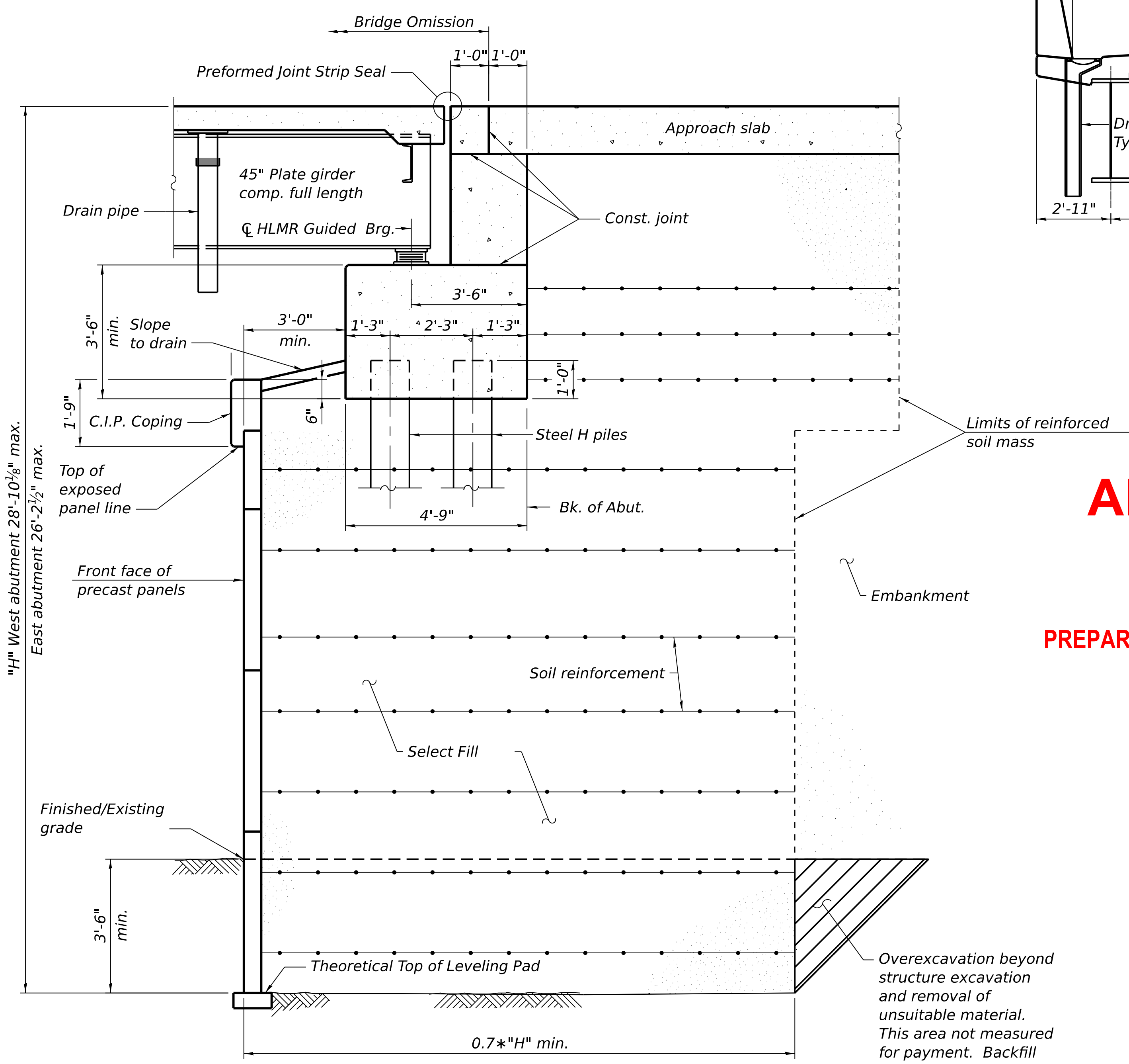
OFFSET SKETCH



CROSS SECTION

(Looking East)

∗Prior to grinding



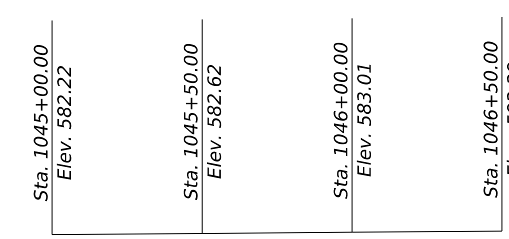
SECTION THRU PILE SUPPORTED
STUB ABUTMENT AT M.S.E. WALL

(Horiz. dim. @ Rt. ∠'s)

APPROVED

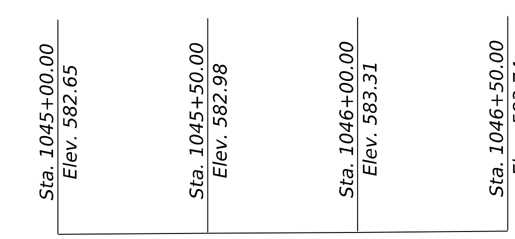
MAR 13, 2024

**AS A BASIS FOR
PREPARATION OF DETAILED PLANS**



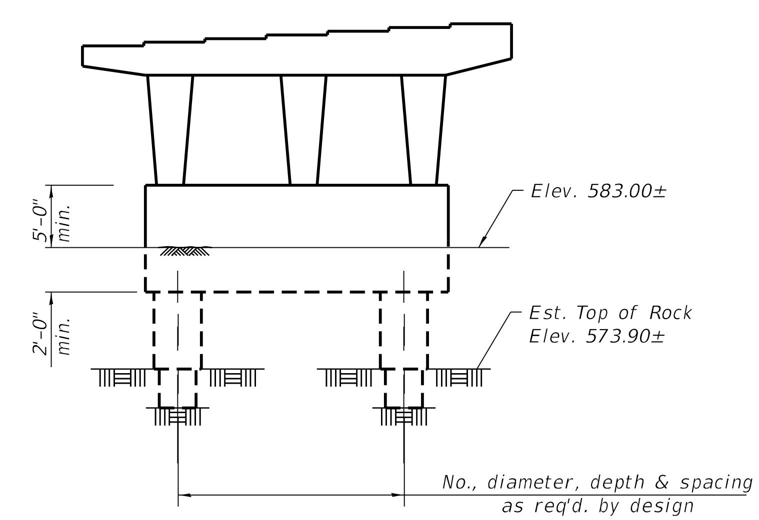
PROFILE GRADE

(Along Existing I-55 SB P.G.L.)



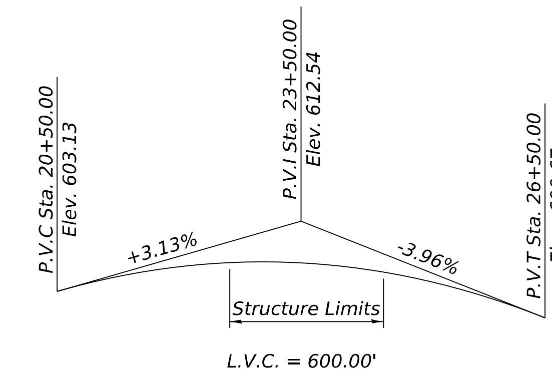
PROFILE GRADE

(Along Existing I-55 NB P.G.L.)



PIER SKETCH

(Looking East)



PROFILE GRADE

(Along ℗ Ramp AA)

(Profile grade shows the final elevation after grinding)

DETAILS

I-55 RAMP AA OVER I-55

F.A.I. ROUTE 80 - SEC. FAOI 80 21 Demo

WILL COUNTY

STA. 23+87.53

STRUCTURE NO. 099-8330

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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

SHEET OF SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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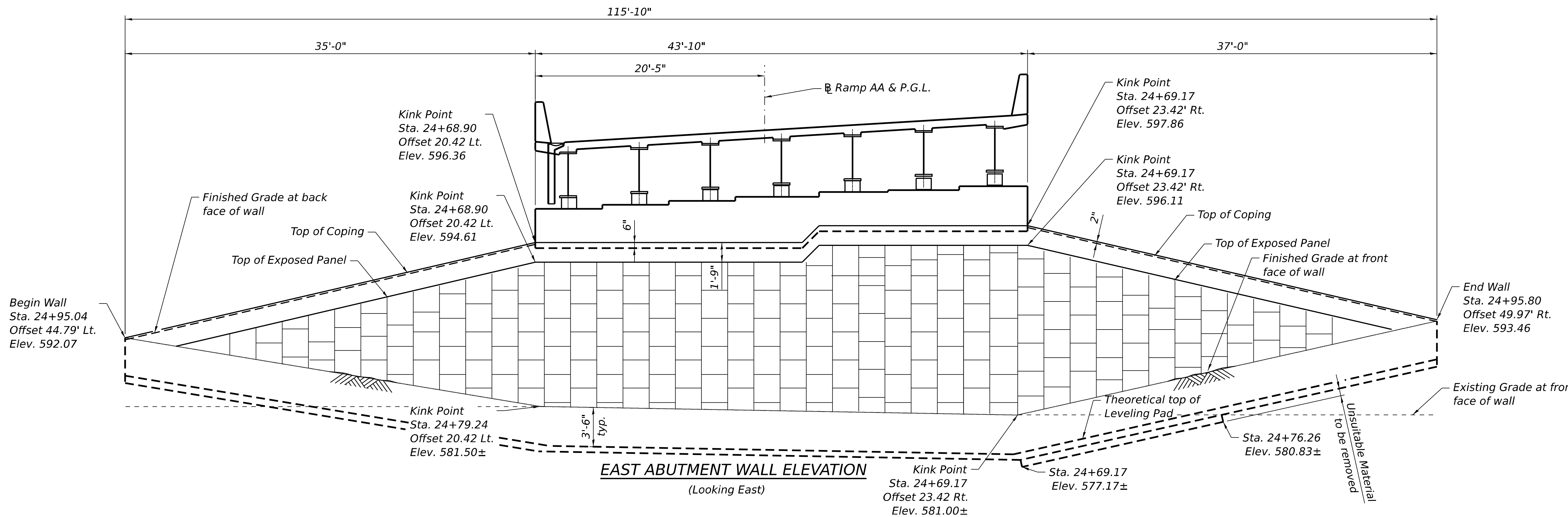
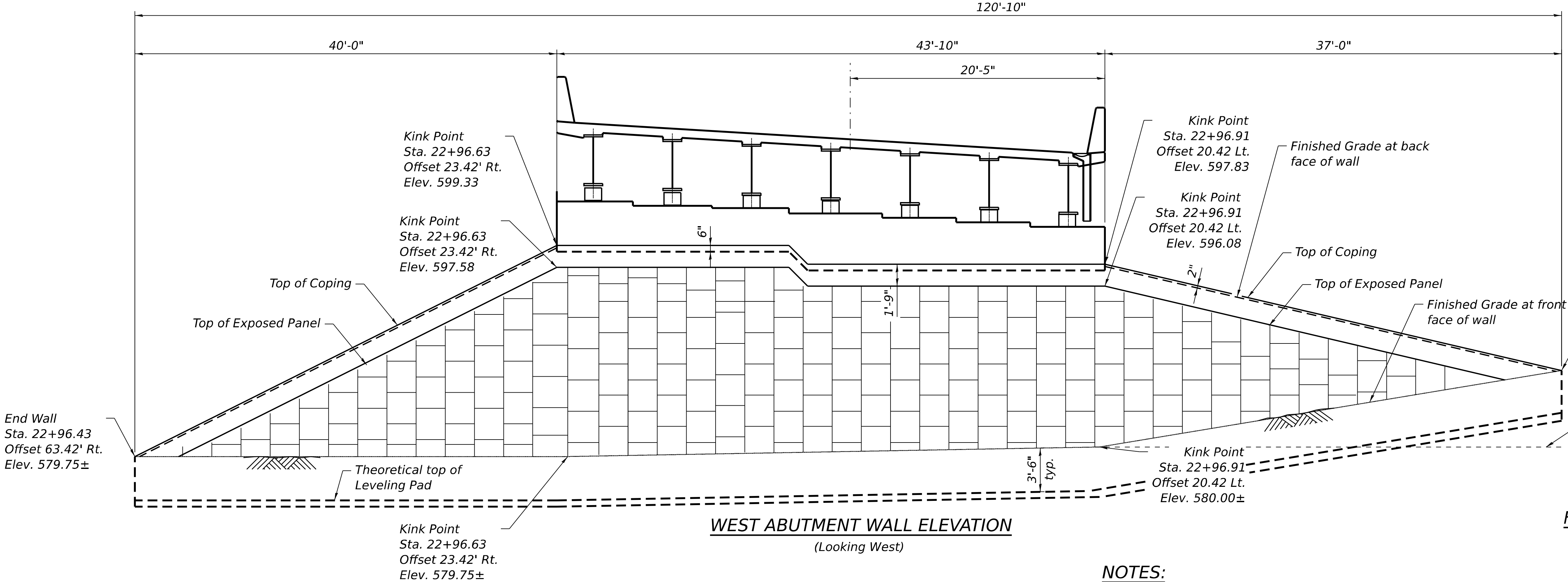
		CONTRACT NO. 62R26		
		ILLINOIS FED. AID PROJECT		

1/12/2024 9:59:46 PM



EAST ABUTMENT WALL ELEVATION

(Looking East)



WEST ABUTMENT WALL ELEVATION

(Looking West)

APPROVED

MAR 13, 2024

AS A BASIS FOR PREPARATION OF DETAILED PLANS

NOTES:

1. Wall offsets measured from ℄ Ramp AA & P.G.L. to front face of MSE wall.
2. Horizontal dimensions are measured along the F.F. of the wall.

MSE WALL DETAILS

I-55 RAMP AA OVER I-55

F.A.I. ROUTE 80 - SEC. FAOI 80 21 DEMO

WILL COUNTY

STA. 23+87.53

STRUCTURE NO. 099-8330

MODEL: Default
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Stantec

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SHEET OF SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
80	FAOI 80 21 STRUCTURE 5	WILL	3	3

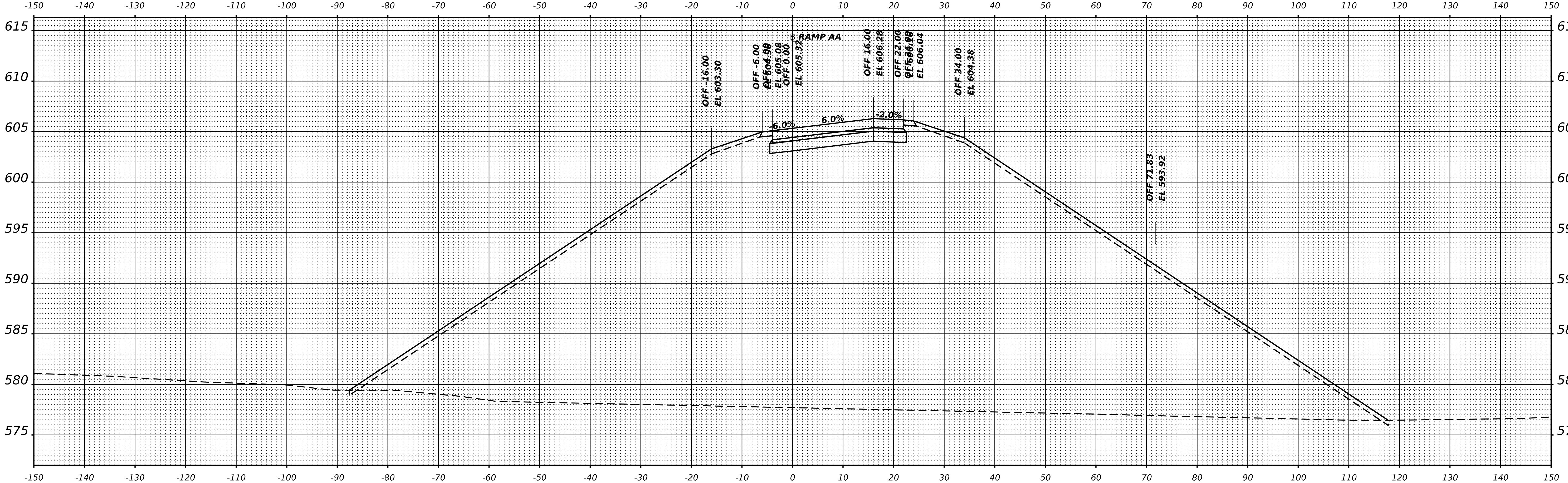
CONTRACT NO. 62R26

ILLINOIS FED. AID PROJECT

1/12/2024 10:01:18 PM

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

APPENDIX F



STA 22+00.00

FINAL SURVEY | NOTE BOOK | NO. | SURVEYED | PLOTTED | TEMPLATE | AREAS | AREAS CHECKED | BY | DATE

ORIGINAL SURVEY | NOTE BOOK | NO. | SURVEYED | PLOTTED | TEMPLATE | AREAS | AREAS CHECKED | BY | DATE

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PLOT DATE = 11/2/2023	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CROSS SECTIONS
RAMP AA

SCALE: SHEET OF SHEETS STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-80	FAOI 80 21 DEMO	WILL	237	172
		CONTRACT NO. 62R26		
		ILLINOIS	FED. AID PROJECT	

FINAL SURVEY		BY	DATE
NOTE BOOK	SURVEYED		
NO.	PLOTTED		
	TEMPLATE		
	AREAS		
	AREAS CHECKED		

ORIGINAL SURVEY		BY	DATE
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	AREAS		
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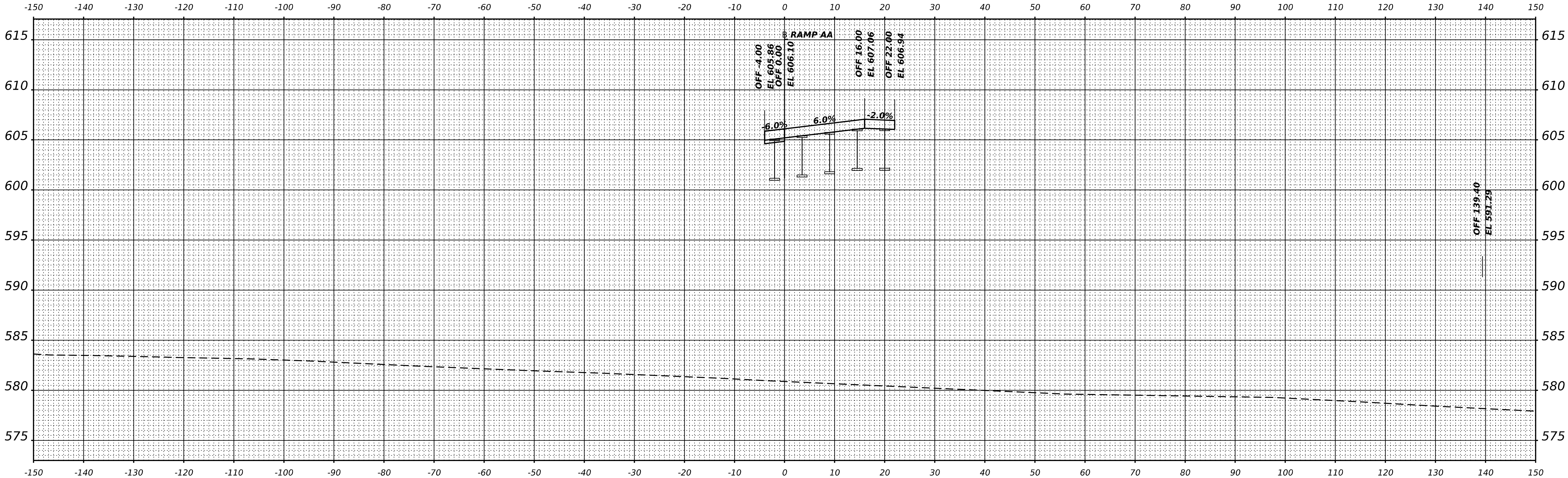

STA 23+00.00

Stantec	USER NAME = jstrouse	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	CROSS SECTIONS RAMP AA
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	PLOT DATE = 11/2/2023	DATE -	REVISED -		SCALE: SHEET OF SHEETS STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-80	FAOI 80 21 DEMO	WILL	237	173
		CONTRACT NO. 62R26		
		ILLINOIS	FED. AID PROJECT	

MODEL: PrBL-RampAA - 23+00.00
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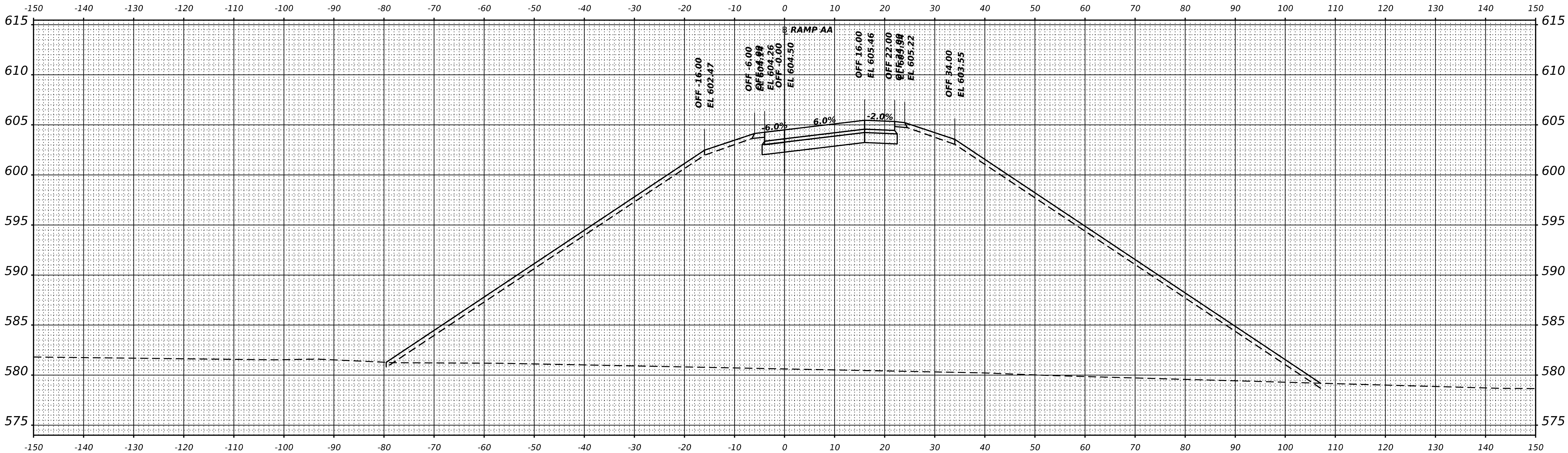
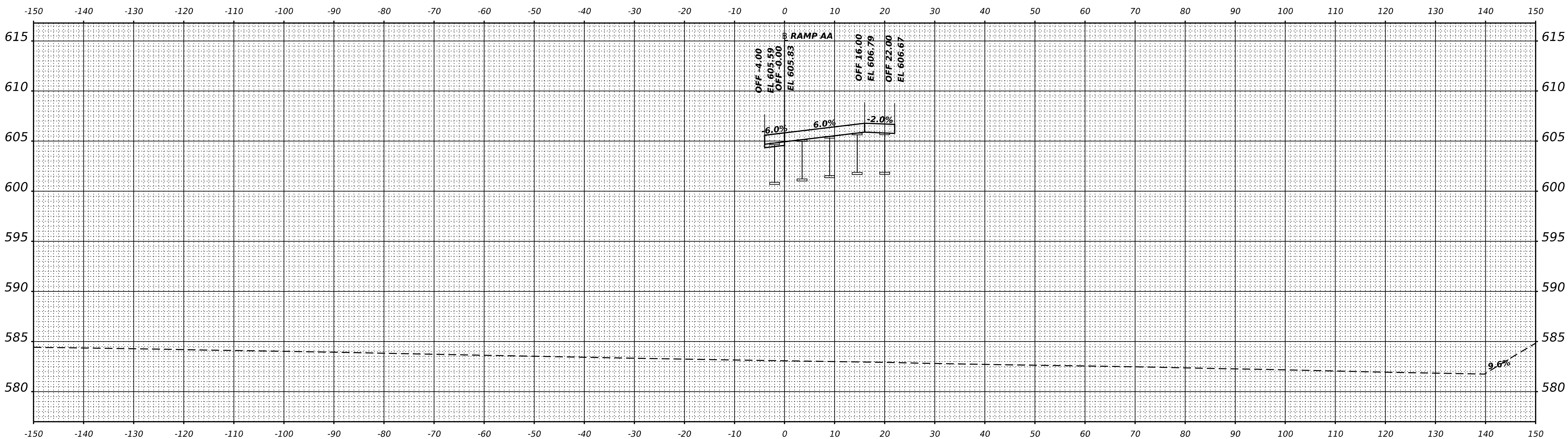


STA 25+00.00



STA 24+00.00

FINAL SURVEY	NOTE BOOK	NO.
SURVEYED	PLOTTED	TEMPLATE
AREAS	AREAS CHECKED	
BY	DATE	

ORIGINAL SURVEY	NOTE BOOK	NO.
SURVEYED	PLOTTED	TEMPLATE
AREAS	AREAS CHECKED	
BY	DATE	

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Stantec

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PLOT DATE = 11/2/2023	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CROSS SECTIONS
RAMP AA

SCALE: | SHEET OF SHEETS | STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-80	FAOI 80 21 DEMO	WILL	237	174
		CONTRACT NO. 62R26		
	ILLINOIS	FED. AID PROJECT		