April 15, 2025

Mr. John Clark
Executive Vice-President
Peralte-Clark, LLC
44 South Vail Avenue
Suite 201
Arlington Heights, IL 60005

Re: Roadway Geotechnical Report
Route: IL72 (Higgins Road)
Location: At Huntington Blvd.
County: Cook
IDOT Job No.: D-91-147-23
PTB No.: PTB 211-002
GEOCON Project No. 24-G1260

Dear Mr. Clark:

Pursuant to our proposal for geotechnical engineering services, we have completed a Roadway Geotechnical Report (RGR) for the above referenced project. Enclosed please find the RGR that includes the results of our field exploration, laboratory tests and recommendations for design and construction of the roadway improvement project referenced above. Please contact our office if you require hard copies of the report.

GEOCON Professional Services, LLC. (GEOCON) appreciates the opportunity to be of service during this phase of the project. If there are any questions or comments you may have regarding the contents of this report, or if we may be of any further service, please contact us at your convenience.

Sincerely,

GEOCON Professional Services, LLC.

Brandon Filafusi, EIT
Project Engineer

Kenneth K. Rippy, PE
Senior Engineer

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ILLINOIS

ROADWAY GEOTECHNICAL REPORT

Route: IL72 (Higgins Road)
Location: At Huntington Blvd.
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Prepared For:
Mr. John Clark
Executive Vice-President
Peralte-Clark, LLC
44 South Vail Avenue
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Arlington Heights, IL 60005

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April 15, 2025

GEOCON Project No. 24-G1260

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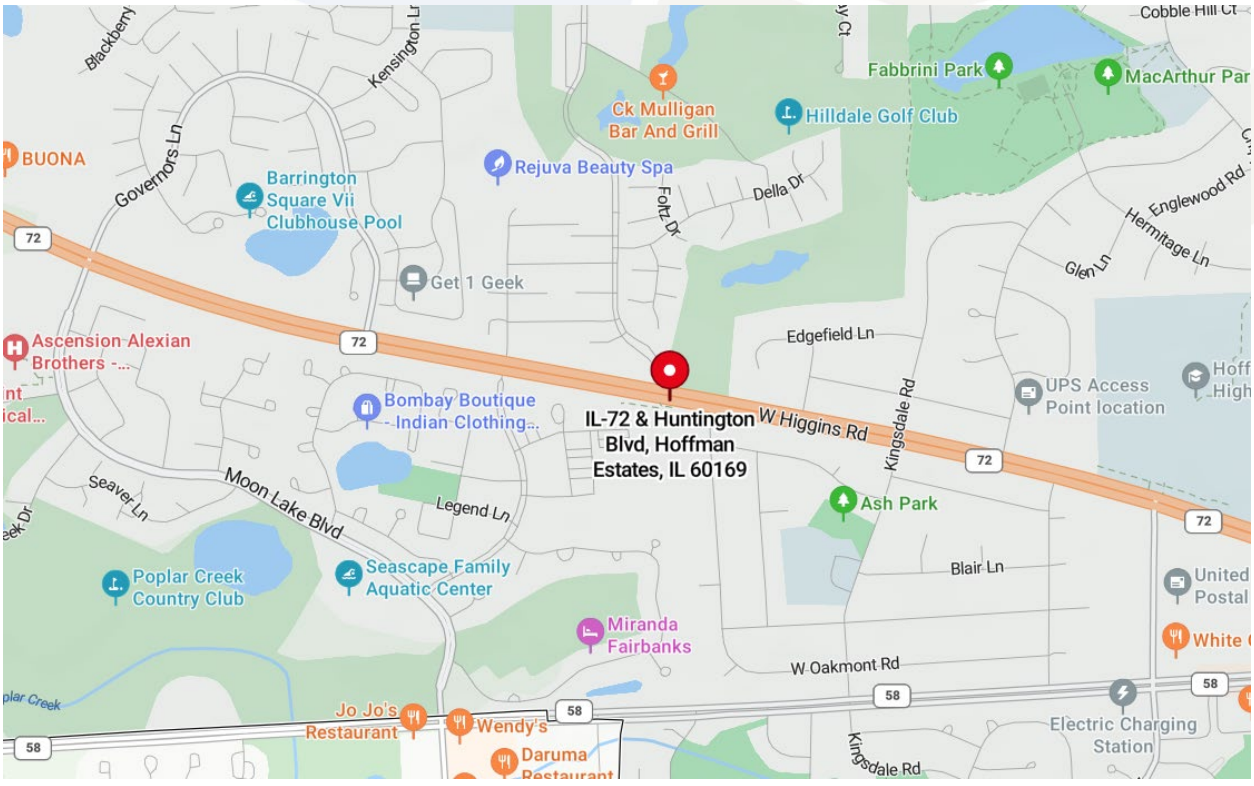
1.0 INTRODUCTION

This ROADWAY GEOTECHNICAL REPORT (RGR) presents the results of a subsurface exploration for the proposed IL72 (Higgins Road) at Huntington Boulevard intersection improvements, in Hoffman Estates, Cook County, Illinois. The purpose of this report is to determine the soil conditions encountered in the borings, to analyze and evaluate the soil test data obtained, and to provide geotechnical parameters necessary for the design and construction of the proposed roadway improvements.

2.0 PROJECT LOCATION, DESCRIPTION AND SCOPE

2.1 Project Location

IL 72 (Higgins Road) at Huntington Boulevard is located in the Village of Hoffman Estates (Village) in Cook County, approximately 0.4 miles north of IL 58 (Golf Road) and 0.9 miles south of I-90 (Jane Addams Memorial Tollway). See project location map below:



IL 72 is an east-west State route carrying ADTs of 21,300 - 24,600 (2023). IL 72 is functionally classified as an Other Principal Arterial under state jurisdiction and maintenance. IL 72 is a designated Class II truck route, is recognized on the National Highway System (NHS) and is a Strategic Regional Arterial (SRA) route. Huntington Boulevard is a north-south municipal road with an ADT of 4,250 (2022) and functionally classified as a Minor Collector. The south leg of the intersection is an entrance to the Hoffman Estates Park District and Scott R. Triphahn Community Center.

2.2 Existing Facilities

The typical section of IL 72 consists of four 12-foot lanes (two in each direction) and two 12-foot left turn lanes (one in each direction). The north leg of Huntington Boulevard is composed of one northbound 12-foot through lane, one southbound 12-foot left-turn lane, one shared 12-foot south bound through/right-turn lane, and two 5-foot bike lanes (one in each direction). The south leg of Huntington Boulevard is composed of three 12-foot lanes; one southbound through lane, one northbound left-turn lane, and one shared through/tight-turn lane.

IL 72 has 11-foot paved shoulders on both sides of the road. The centerline median on IL 72 has B-6.12 curb and gutter. There are also existing sidewalks along both sides of IL 72 and a pedestrian crossing on the west leg. Huntington Boulevard has sidewalks and B-6.12 curb and gutter along both sides of the road as well as a pedestrian crossing. The south leg has a sidewalk on the west side, B-6.12 curb and gutter on both sides, and a pedestrian crossing. The north side, south, and west legs are equipped with pedestrian pushbuttons, pedestrian countdown signals, and ADA curb ramps. The intersection has traffic signals.

2.3 Proposed Improvements

The general scope of work consists of full depth pavement reconstruction of a westbound right-turn lane, pavement extending left turn storages, resurfacing of the entire intersection, traffic signal modification, and 11-foot paved shoulders will be provided on both sides of IL 72. A new pedestrian crossing will be provided on the east leg along with pedestrian push buttons including in the median refuge island. ADA compliant curb ramps will be installed at all crossings within this improvement.

The proposed pavement section for the new turn lanes will consist of ¾ inches of IL-4.75, N50 HMA surface course underlain by 10 ½ inches of HMA base and 12 inches of Aggregate Subgrade Improvement.

3.0 GEOLOGY AND PEDOLOGY

In order to determine the general bedrock geology in the project area, GEOCON reviewed ISGS Illinois Map 14 entitled “Bedrock Geology of Illinois” compiled by Dennis R. Kolata (2005). The project area is mapped in an area consisting of the Silurian System, which includes Wilhelmi Formation, Elwood Dolomite, Kankakee Dolomite, Joliet Dolomite, Sugar Run Dolomite and Racine Dolomite in northeastern Illinois.

In order to determine the general surficial geology (to a depth of 15 meters) in the project area, GEOCON personnel reviewed Plate No. 1 contained in the publication "Potential for Contamination of Shallow Aquifers from Land Burial of Municipal Wastes" by Richard C. Berg and John P. Kempton (Illinois State Geological Survey [ISGS] Circular 532; 1984). The Berg & Kempton Map provides ratings of the capacities of earth materials to accept, transmit, restrict or remove contaminants from waste effluents. The project area is mapped as having "E" type soils. "E" type soils are described as uniform, relatively impermeable silty or clayey till at least 50 feet thick.

In order to obtain information regarding the soil types along the project area, GEOCON reviewed a soil map obtained from the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey website (http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm). The Soil Survey Map is provided in Appendix B of the Supporting Documents. According to the soil map, the soils in the project area are classified as Markham silt loam and Peotone silty clay loam.

4.0 FIELD EXPLORATION

4.1 Scope

The subsurface exploration was completed on November 5, 2024, and encompassed several items of work including coring through the existing pavement, completion of soil borings, and soil sampling for laboratory testing. Two (2) borings were performed at 2 of the 4 proposed traffic signal locations and these borings were extended to a depth of 30 feet each. Two (2) pavement cores and soil borings located in the existing Huntington Boulevard eastbound turn lane and two (2) cores/borings located in the proposed IL Route 72 (Higgins Road) northbound turn lane were extended to a predetermined termination depth of 10 feet below grade. The boring locations are shown on the Boring Location Map included in Appendix A and are also tabulated below:

TABLE 1: BORING INFORMATION

Boring	Location	Station	Offset (feet)/ Direction	Existing Ground Elevation (ft)
B-1	IL Route 72	50+70	70 RT	816
B-2	IL Route 72	48+95	60 LT	817.5
B-3	Huntington Blvd.	48+10	240 LT	818
B-4	Huntington Blvd.	49+10	140 LT	817.5
B-5	IL Route 72	51+20	60 LT	816
B-6	IL Route 72	52+85	60 LT	815

The spacing for the roadway borings was in general accordance with the IDOT Geotechnical Manual, dated December 15, 2015, Revised December 4, 2020.

The boring locations were staked in the field by GEOCON prior to drilling, and station numbers and ground surface elevations at the boring locations were estimated by GEOCON from the PLPR provided by the client. After completion of the borings, the holes were backfilled with soil cuttings and patched with like materials as encountered at the surface. This procedure was performed for safety purposes and precluded the recording of delayed water level readings.

4.2 Drilling and Sampling Procedures

The soil borings were performed with a truck-mounted drilling rig equipped with a rotary head. Conventional, continuous flight, hollow-stem augers were used to advance the borings. Representative samples were obtained in each boring employing split-barrel sampling techniques in accordance with AASHTO T 206. Soil samples were secured at 2.5-foot intervals.

The Standard Penetration Test (SPT) is defined as the number of blows required to advance a 2-inch O.D., split-barrel sampler a distance of one foot by a 140-pound hammer falling 30 inches, commonly described as the N-value. These sampler resistances provide a useful indication of the consistency or relative density of most soil deposits and are reported on the boring logs presented in Appendix C. Samples of cohesive soils obtained from the borings were tested with a calibrated hand penetrometer to aid in evaluating the soil strength characteristics. The results from this testing is tabulated on the boring logs. Representative samples of the cohesive soils encountered in the borings were tested with a calibrated RIMAC spring tester to determine the approximate unconfined compressive strength of the soil samples.

Water level observations were made during drilling operations. This data is presented in a subsequent Section of the report, as well as noted on the boring logs.

4.3 Laboratory Tests

Additional characteristics of the foundation materials were determined in the laboratory to provide data on which to classify and estimate the engineering properties of the subsurface soil deposits encountered in the borings. All samples were visually classified by the geotechnical engineer in accordance with the AASHTO M 145 method.

Additional laboratory tests were performed to classify the subgrade soil and provide additional information necessary for evaluation of subgrade stability and pavement design. These tests included Moisture Content Determination in accordance with AASHTO T 265, Particle Size Analyses in accordance with ASSHTO T 27/T 11, and Hydrometer analyses in accordance with AASHTO T 88, liquid limit and plastic limit test in accordance with AASHTO T 89 and T 90, respectively.

The laboratory testing program selected for this project is intended to assist with determination of soil classification as well as strength and deformation characteristics of the subsurface soil deposits that will provide foundation support for the proposed pavement structure. All laboratory testing was performed in general accordance with the respective AASHTO Methods, as applicable, and the results are included on the boring logs and laboratory test reports included in Appendices C and D.

5.0 CLIMATIC CONDITIONS

In general, this location experienced less than normal precipitation totals during the period extending from 5 months prior to drilling to the end of drilling in November 2024. The table below provides the precipitation amounts for June 2024 to October 2024, prior to when the drilling was performed.

TABLE 2: COMPARISON OF ACTUAL (OBSERVED) AND HISTORICAL (NORMAL) PRECIPITION

MONTH YEAR	OBSERVED PRECIPITATION[1], (in)	NORMAL PRECIPITATION[2], (in)	DEPARTURE FROM NORMAL (+/- in)
JUNE 2024	6.48	3.98	+2.5
JULY 2024	4.83	3.80	+1.03
AUGUST 2024	2.47	4.80	-2.33
SEPTEMBER 2024	2.03	3.37	-1.34
OCTOBER 2024	1.02	2.91	-1.89
TOTAL	16.83	18.86	-2.03

[1]Data for Elgin, Illinois from National Weather Service web site:
(https://www.weather.gov/whn/climate?wfo=lot)
[2]Data for Elgin, Illinois from US Climate Data web site:
(https://www.usclimatedata/climate/elgin/illinois/united-states/usil0360)

6.0 GENERAL SUBGRADE CONDITIONS

6.1 Pavement Structure

The HMA pavement was cored at borings B-3 to B-6 to determine the existing pavement structure that will be undergoing full depth reconstruction. The pavement section consisted of 4 to 11 inches of HMA pavement. The HMA at borings B-3, B-4, and B-5 was underlain by 0 to 6 inches of aggregate base. The HMA at boring B-6 was underlain by 7 inches of concrete pavement underlain by 2 inches of aggregate base material. Table 3 provides a summary of the data.

TABLE 3: PAVEMENT STRUCTURE SUMMARY TABLE

Core No.	Station	Offset	HMA Pavement Thickness (in.)	PCC Pavement Thickness (in.)	Aggregate Base Thickness (in.)	Immediate Bearing Value	Subgrade Type	Subgrade Moisture (%)
B-3	48+10	240 LT	11	0	6	13.2+	CL	15.5
B-4	49+10	140 LT	10	0	6	13.2+	LM	15.9
B-5	51+20	60 LT	9	0	0	3.5	CL	18.7
B-6	52+85	60 LT	4	7	2	3.5	CL	17.4

CF= Clay Fill, CL= Native Clay, LM=Clay Loam

The existing pavement surface was in good condition and did not show signs of significant distress, and the cores indicate that the HMA and underlying concrete, where present, was in relatively good condition. The concrete base was recovered in boring B-6 and is included in the Core Photo Logs. Please refer to the Core Photo Log in Appendix C.

Dynamic Cone Penetrometer (DCP) testing was performed on the subgrade directly below the aggregate base material. Results from the DCP testing were converted to IBV values and are reported in the table above as well as on the soil boring logs in Appendix C.

6.2 Subgrade Materials

The types of subgrade materials encountered at the test boring locations are described on the Soil Boring Logs. The lines delineating the changes in strata on the logs represent an approximate boundary between the various soil classifications. It must be recognized that the soil descriptions are considered representative for the specific test bore location, but the variations may occur between the sampling intervals and boring locations. A summary of the major soil profile components is described in the following paragraphs. A more detailed description and supporting data for each boring location can be found on the individual boring logs.

Soil samples were classified in accordance with the Illinois Division of Highways textural classification chart. AASHTO designations with group indices for the engineering classification were determined and are included in the attached soil test summary sheets and on the soil boring logs.

6.2(a) Traffic Signal Borings (B-1 and B-2). The surface at B-1 and B-2 was underlain by about 10 inches of topsoil followed by clay fill extending to a depth of 6 feet below grade. The clay fill was described as hard with unconfined compressive strengths ranging from 4.7 to 6.4 tsf and moisture contents ranging from 17.7 to 24.9 percent. The clay fill was underlain by native clay soils interbedded with layers of clay loam or sandy loam. The native clay soils were described as stiff to hard with unconfined compressive strengths ranging from 1.9 to 6.3 tsf, with most

values in excess of 2 tsf, and moisture contents ranging from 9.8 to 26.8 percent, with most values less than 20 percent.

At B-1 sandy loam was encountered from 13.5 to 16 feet. The sandy loam layer was described as medium dense with an N-value of 16 blows per foot and the sample was saturated with groundwater. Clay loam was encountered at B-1 from 21 to 26 feet below grade and B-2 from 8.5 to 11 feet below grade. The clay loam layers were described as stiff to very stiff with unconfined compressive strengths ranging from 1.0 to 3.5 tsf and the samples were saturated with groundwater.

6.2(b) Huntington Boulevard Subgrade Borings (B-3 and B-4). The pavement section at the Huntington Boulevard borings consisted of 10 to 11 inches of HMA underlain by 6 inches of aggregate base. The subgrade below the pavement section consisted of clay at B-3 and clay loam underlain by clay at B-4. The clay and clay loam subgrade soils were described as very stiff to hard with unconfined compressive strengths ranging from 3.25 to 8.3 tsf and moisture contents ranging from 15.1 to 22.5 percent.

The upper subgrade samples had IBVs greater than 13.2 and moisture contents less than 16 percent. Based on grain size analyses and Atterberg limits testing conducted on similar samples, the native Clay soils had AASHTO classifications of A-6, and the clay loam had lower liquid limits and plasticity indices indicating A-4 AASHTO classification.

6.2(c) IL Route 72 Subgrade Borings (B-5 and B-6). The pavement section at the IL Route 72 borings consisted of 9 inches of HMA at B-5 and 4 inches of HMA underlain by 7 inches of PCC pavement at B-6. The subgrade below the pavement section consisted of Clay with an AASHTO Classification of A-6. The Clay subgrade soils were described as very stiff to hard with unconfined compressive strengths ranging from 2.3 to 5.7 tsf and moisture contents ranging from 14.9 to 25.0 percent.

The upper subgrade samples at B-5 and B-6 had IBVs of 3.2 however the sample collected from 1 to 2.5 feet below the subgrade had unconfined compressive strengths greater than 3 tsf and moisture contents less than 19 percent. Note the IBV is indicative of the immediate subgrade and the higher strength soils were encountered about 2 feet below the existing subgrade elevation.

6.3 Borehole Groundwater

Groundwater was encountered during drilling the traffic signal borings (B-1 and B-2), within the clay loam and sandy loam layers, at depths ranging from 9.5 to 14.5 feet below grade. Groundwater was not encountered at any of the pavement subgrade borings (B-3 to B-6) at the time of drilling.

The presence of shallow perched groundwater is common in this geologic setting, especially where fill is encountered, indicating groundwater may be encountered in shallow excavations

at this site regardless of whether borehole groundwater was encountered at the time of drilling. In addition, groundwater levels fluctuate over time and are influenced by seasonal precipitation and varying permeability characteristics of the subsurface soils.

7.0 GEOTECHNICAL ANALYSIS AND RECOMMENDATIONS

7.1 Slope Stability Analysis and Results

Most of the soil samples taken from the pavement subgrade had moisture contents less than 20 percent and high unconfined compressive strength (Qu) values ranging from 2.3 to 4.5+ tons per square foot (tsf). Based on the proposed profile, it is estimated that up to about one foot of fill material will be added to the minor embankment widening near the edge of pavement with 4:1 or flatter side slopes. Existing conditions indicate no significant settlement is anticipated at the pavement widening embankments.

7.2 Settlement Analysis and Results

IDOT requires that slope stability analysis be performed in areas where the cut or fill heights will exceed 15 feet in height. A slope stability analyses was not performed due to the shallowness of the proposed embankment as well as the flat fore slopes and back slopes associated with this project.

7.3 Minor Structure Foundation Recommendations

Design plans indicate that new traffic signal structures will be installed at each quadrant of the intersection of IL Route 72 and Huntington Boulevard. The details of the traffic signal structures and the respective foundations for the traffic signal structures where borings were performed are shown in the table below. In this table, the traffic signal structure is described by the intersection/corner it resides at, the approximate station/offset, the planned mast arm length, the planned foundation diameter, the planned depth of foundation, and whether a custom foundation design is required or not. A custom foundation design is only applicable when the soil conditions do not meet the requirements of Standard 878001-10.

TABLE 4. TRAFFIC SIGNAL STRUCTURE GENERAL INFORMATION

Intersection	Boring No.	Corner (NE, SE, SW, NW)	Approx. Station & Offset	Mast Arm Length(s) (ft)	Foundation Diameter (in)	Foundation Depth (ft)	Custom Design Required/ Not Required
IL-72 and Huntington Blvd	B-1	SE	50+70, 70 RT	44	36	13	Not Required
IL-72 and Huntington Blvd	B-2	NW	48+90, 60 RT	42	36	13	Not Required

The foundations for the traffic signal structures planned at the intersection of IL Route 72 and Huntington Boulevard do not require a custom designed foundation because they meet the requirements for soil of Standard 878001-10. These requirements state that the soils along the foundation shaft must be cohesive in nature, with an unconfined compressive strength of at least 1 ton per square foot. Low strength cohesive soils and granular deposits do not meet the requirements to use the design tables. The soils encountered in the vicinity of the proposed traffic signals were primarily cohesive, with unconfined compressive strengths greater than 1.0 tsf. These soils found at the intersection of IL Route 72 and Huntington Boulevard meet the requirements of the standard details and the foundations for the proposed traffic signal structures can be designed using the standard details.

Groundwater was encountered in the mast arm borings at depths ranging from 9.5 to 14.5 feet below grade. The groundwater was encountered in Loam soils that contain higher sand contents than the predominant Clay bearing soils. To prevent groundwater and adjacent Loam soils from sloughing/caving into the drilled boreholes during construction, we recommend that a temporary steel casing be utilized during construction. The temporary casing should be extended to at least 2 feet into the underlying Clay soils of the drilled shafts to provide a seal. Another option to control groundwater intrusion and reduce the risk of adjacent Loam soils from sloughing/caving into the drilled boreholes during construction is to use the slurry method as outlined in Section 516.07.

7.4 Special Conditions

Research of the project area indicates there are no records of the presence of mines, local sinkholes, solution cavities, caverns, or seismic activity within the project area.

In order to identify non-coal mineral resources in the project area, GEOCON reviewed, "Directory of Illinois Mineral Producers, and Maps of Extraction Sites 1997" (Masters, et. al.) published by the ISGS. According to the ISGS publication, there are no stone quarries, sand and gravel pits or cement, clay, peat, tripoli or industrial sand operations in the project area.

In order to identify coal mines within the project area, GEOCON reviewed the online ISGS database, "Coal Mines in Illinois Viewer" (https://isgs.illinois.edu/illinois-coal-mines-ilmines). According to the ISGS database, there are no coal mines in the project area.

7.5 Pavement Design Soil Parameters (SSR and IBR)

Based on the particle size analysis of the representative soil samples, a Subgrade Support Rating (SSR) of "fair" is recommended. All the samples collected from the subgrade and minor structure borings fall within the "fair" category of the SSR Chart as shown in Appendix D.

The approximate Illinois Bearing Ratio (IBR) for a project soil may be estimated from Table 6.3.1-1 from the IDOT Geotechnical Manual. For the initial pavement design using Modified AASHTO procedure, an IBR value of 3 is recommended in correlation to the dominant A-6 soil classification encountered in the subgrade along IL Route 72 and Huntington Boulevard.

7.6 Topsoil

Two (2) borings were performed for the proposed traffic signals outside the edge of the existing pavement. The borings indicate a topsoil thickness of about 10 inches, but isolated areas of deeper topsoil should be anticipated especially in the bottom of the ditches.

7.7 Undercut Areas

DCP tests taken through pavement indicated 3.5 in the borings performed for the IL Route 72 reconstructed pavement area and 13.2+ along Huntington Boulevard. See the boring logs provided in the Supporting Documents, Appendix C.

IDOT policy requires providing a minimum of 12 inches of improved subgrade beneath the pavement section to ensure a stable construction platform. Based on the existing site conditions, including low borehole DCP test results recorded in borings performed along IL Route 72, additional undercuts may be necessary along sections of the proposed improvements. The recommended undercuts and locations are summarized in Table 5. The depth, location, and extent of the proposed undercuts should be field verified during construction. All potentially unstable soils should be tested with a DCP and treated in accordance with Article 301.04 of the IDOT Standard Specifications and the undercut guidelines in the IDOT Subgrade Stability Manual.

TABLE 5. RECOMMENDED UNDERCUTS and/or MITIGATION

Location	Station Range	Lateral Limits	Recommended Undercuts*	Nearest Boring	Comments
IL Route 72	50+00 to 55+00	Entire Turn Lane Width	12 inches	B-5 and B-6	DCP=3.2

Note that it is important that the finished subgrade does not exhibit more than 0.5 inches of rutting upon inspection. Field moisture should be controlled to provide proper compaction and achieve adequate short-term and long-term subgrade stability. Refer to the excavation requirements shown in Section 204 of the IDOT Standard Specifications. This section should be able to address or minimize potential subgrade stability problems during construction.

7.8 Aggregate Subgrade Improvement

The project proposes a 12-inch aggregate subgrade improvement. A copy of the IDOT Aggregate Subgrade Improvement Special Provision, dated April 1, 2012, and revised April 1, 2022, is included in Appendix E. During construction, Dynamic Cone Penetrometer (DCP) tests and subgrade proof roll should be conducted to determine whether or not additional depth of improved subgrade is warranted. The District Geotechnical Engineer should be contacted to inspect the subgrade and review the DCP test results for verification.

7.9 Embankment

The fill material for the embankment is not known at this time, however in accordance with IDOT guidance, the following requirements should be met:

1. Standard Dry Density (SSD) shall not be less than 90 lb/cu ft (1450 kg/cu m) according to Illinois Modified AASHTO T 99 (Method C).

2. Organic Content shall not exceed 10 percent according to AASHTO T 194.

3. A grain size distribution with less than 35 percent passing the #200 sieve. Percent of silt and fine sand shall not exceed 65 percent according to AASHTO T 88.

4. Plasticity Index (PI) shall be 12 percent or more according to AASHTO T 90.

5. Liquid Limit (LL) shall be 50 percent or less according to AASHTO T 89.

6. Reclaimed asphalt shall not be used within the ground water table or as fill if groundwater is present.

7. The RAP used shall be according to the current Bureau of Materials and Physical Research Policy Memorandum. “Reclaimed Asphalt Pavement (RAP) for Aggregate Applications. Gradation deleterious count shall not exceed 10% of total RAP and 5% of other by total weight.

Imported clay borrow material should have a maximum moisture content of 110% of optimum moisture when being placed as embankment. Similarly, imported clay loam borrow soils shall have a maximum of 105 percent of optimum moisture when being placed as embankment.

7.10 Frost Susceptible Materials

In accordance with IDOT guidance, or a soil to be considered frost susceptible, the soil must have:

a. Plasticity Index less than 12 percent.

b. Contain more than 65 percent silt and fine sand.

c. High moisture typically through capillary rise.

Based on the soil boring logs, the water table elevation is deep enough that no capillary rise is anticipated within the depth of frost penetration (48 in.) below the proposed pavement. The particle size distributions of upper subgrade samples indicate that the soil samples contain less than 65 percent silt and fine sand, and the plasticity index (PI) for all the samples is equal to or greater than 12. Therefore, none of existing subgrade soils are frost susceptible based on the Department's criteria to determine frost susceptibility.

7.11 Drainage

The drainage characteristics of the site were evaluated per the IDOT Geotechnical Manual, Section 6.3.4, based on the subgrade soil type and moisture condition, depth of water table, project topography, the anticipated profile grade line, and depth and grade of drainage ditch along the roadways. Based on the proposed profile, a majority of the roadway improvements will be supported on subgrade soils consisting of native Clay (A-6) soils.

Based on the preliminary plans and existing conditions, we understand that the proposed drainage will consist of shallow ditches with slopes greater than 0.5%. In accordance with Table 6.3.4.1-1, Drainage Classification in the IDOT Geotechnical Manual, the drainage class should be taken as Poor due to the moist Clay soils present in the upper subgrade layers.

Soil erosion factors (K factors), erosion ratings and slope percentages can be found in Appendix B of this report. These values were taken from the NRCS website.

Underdrains are required on State routes to properly drain the 12-inch aggregate subgrade, and at low areas in the profiles. Longitudinal underdrains are recommended to be installed below the edge of the new pavement. The drains should be a perforated pipe, without fabric, installed in a fabric lined trench backfilled with coarse aggregate (Type II Pipe Underdrain). The underdrains should be tied into the storm water drainage system and installed in accordance with section 601.04 Pipe Underdrain Installation from the IDOT Standard Specifications.

8.0 GENERAL CONSTRUCTION CONSIDERATIONS

8.1 Site Preparation

Any topsoil present within the improvement limits should be stripped and stockpiled as per Section 211.03 of the Standard Specifications. The topsoil should be separated from other materials being stockpiled onsite for reuse or haul off. Base coarse aggregate, if any, encountered at the site should be evaluated to determine suitability for reuse as general fill. The contractor should not mix

the existing base course materials with existing subgrade soils during the stripping and stockpiling activities.

8.2 Pavement Subgrade

The stability of the subgrade should be evaluated immediately after excavation and prior to placement of base aggregate in the field in accordance with the IDOT Subgrade Stability Manual (2005) to determine if additional treatment is required. The subgrade soils inspection should include visual inspection and performing a proof roll using heavy equipment or heavily loaded tandem axle dump truck with a minimum gross weight of 25 tons to check for deflection or rutting. Areas with excessive rutting and deflection shall be evaluated using a dynamic cone penetrometer (DCP) to determine the depth of required treatment in accordance with the IDOT Subgrade Stability Manual (2005) and IDOT Standard Specifications (2022), Section 301.

Treatment for unstable and unsuitable soils encountered during proof rolling and subgrade evaluation may include the use of a geotextile fabric, removal and replacement with approved structural fill for small areas. Subgrade improvements should be based on field evaluation of the materials during construction. Field evaluation of the subgrade soils should be conducted in accordance with the procedures outlined in the IDOT Geotechnical Manual and Subgrade Stability Manual.

8.3 Site Excavation

All excavations should be conducted in accordance with applicable federal, state, and local safety regulations, including, but not limited to the Occupational Safety and Health Administration (OSHA) excavation safety standards. Excavation stability and soil pressures on temporary shoring are dependent on soil conditions, depth of excavations, installation procedures, and the magnitude of any surcharge loads on the ground surface adjacent to the excavation. Excavation near existing structures and underground utilities should be performed with extreme care to avoid undermining existing structures. Excavations should not extend below the level of adjacent existing foundations or utilities unless underpinning or other support is installed. It is the responsibility of the contractor for field determinations of applicable conditions and providing adequate shoring for all excavation activities.

8.4 Borrow Material and Compaction Requirements

If borrow material is to be used for onsite construction, it should conform to Section 204 of the IDOT Standard Specifications. Imported fill materials should be evaluated using Table 8.4-1 of the IDOT Geotechnical Manual and Section 204 of the IDOT Standard Specifications.

The fill material should be free of organic matter and debris and should be placed and compacted in accordance with Section 205 of the IDOT Standard Specifications, Embankment. Earth-moving operations should be avoided during excessively cold or wet weather to avoid freezing of softening subgrade soils. Fill should be placed in lifts and compacted according to Section 205, Embankment. Backfill materials for undercut areas should be placed in 9 inches loose lifts and should be compacted to 95% of the maximum dry density as determined by AASTHO T 99, Standard Proctor Method.

It is recommended that an IDOT prequalified firm be retained to perform QC testing during construction, including but not limited to: inspect the exposed subgrade, monitor and test earthwork operations and provide material inspection services during the construction phase of this project.

9.0 GENERAL COMMENTS

An adequate subsurface investigation was performed in accordance with the current IDOT Geotechnical Manual, dated December 15, 2015, Revised December 4, 2020. A testing regime was completed determining the AASHTO soil classification of the soils encountered throughout the project. A soil profile was created from the soil borings and laboratory testing to visually illustrate the location, depths, strengths, and moisture contents of the soils encountered.

Drainage is very important to the life span of a pavement structure. Since aggregate subgrade improvement is planned for the entire length of the improvement, underdrains are recommended. Where ditches are not available to outlet the underdrains, they should drain into the storm sewer system. Care should be taken to maintain the underdrains for the life of the pavement.

If there are any revisions to the plans or if deviations from the subsurface conditions noted in this report are encountered during construction, GEOCON should be notified immediately to determine if revisions should be made to the recommendations. All recommendations have been made in accordance with generally accepted professional geotechnical engineering practices in this area. No other warranties are implied or expressed.

Review of the final set of plans would provide us with an opportunity to make sure the recommendations have been properly incorporated into the design documents. This document should be forwarded to the contractor at the discretion of the Engineer and is not intended to provide a complete description of potential constructability issues related to subgrade preparation and earthwork operations that may be encountered during construction.

SUPPORTING DOCUMENTS

GEOCON
PROFESSIONAL SERVICES

APPENDIX A

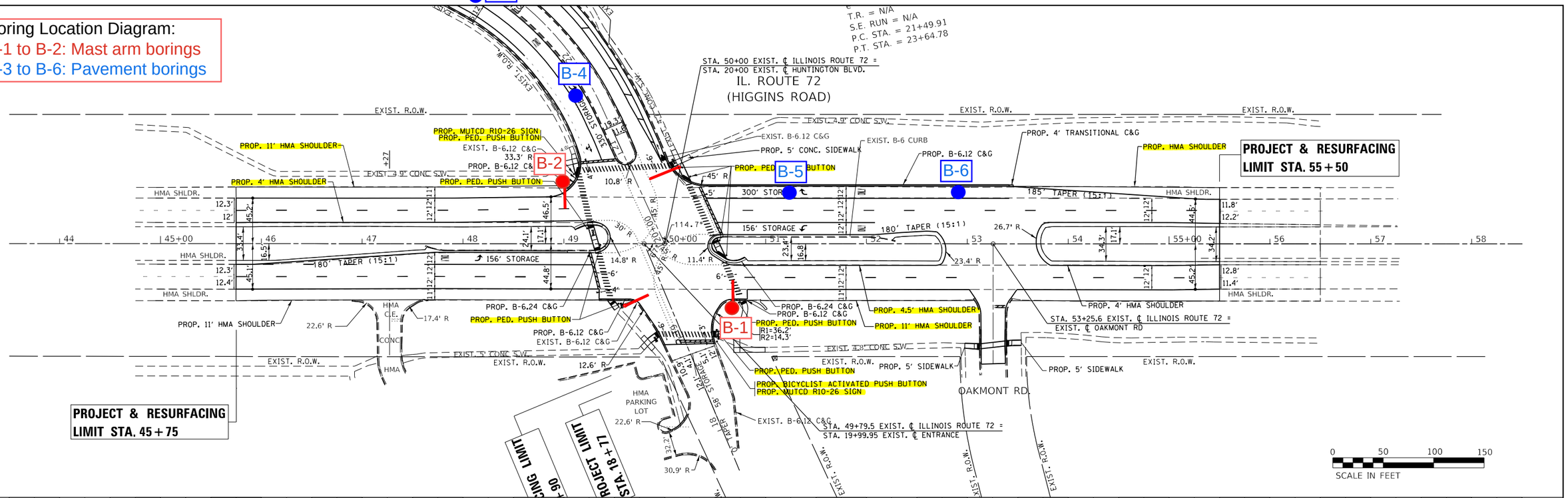
GEOCON PROFESSIONAL SERVICES
22774 Citation Road, Unit A
Frankfort, IL 60423
P.815.806.9986 F. 815.464.8691

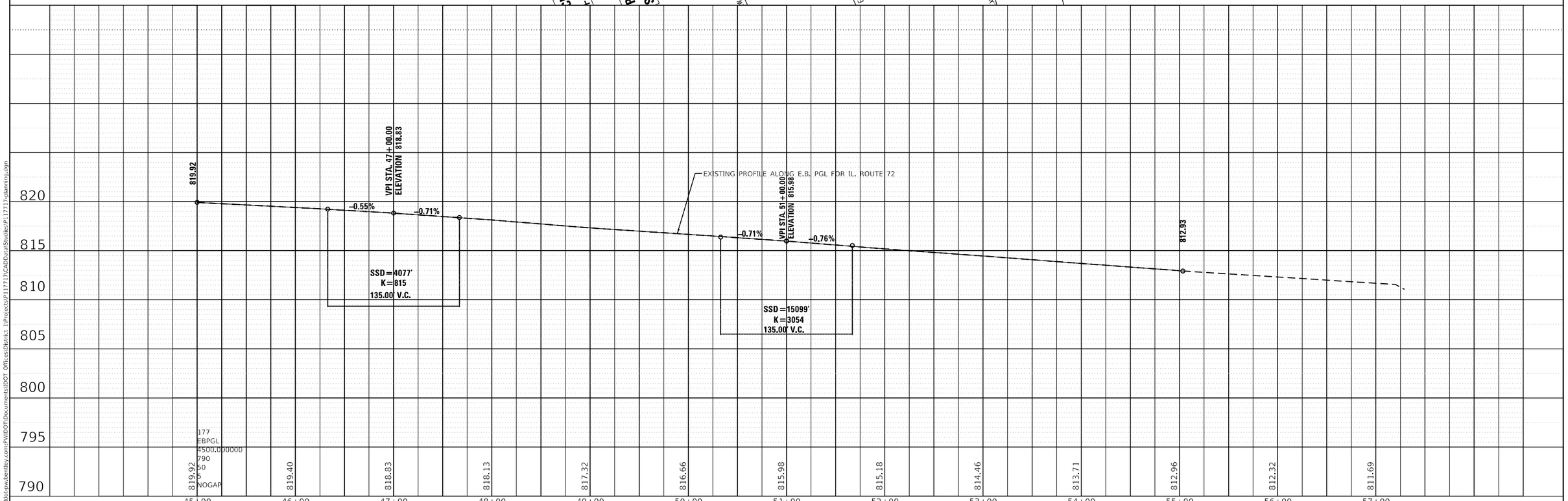
LOCATION MAP
IL72 (Higgins Road)
At Huntington Blvd
Hoffman Estates, Illinois

PROJECT NUMBER:
24-G1260

DATE: January 2025

Boring Location Diagram:
B-1 to B-2: Mast arm borings
B-3 to B-6: Pavement borings





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PROFILE: SURVEYED, PLOTTED, CHECKED, NOTE BOOK, NO.; DATE, BY

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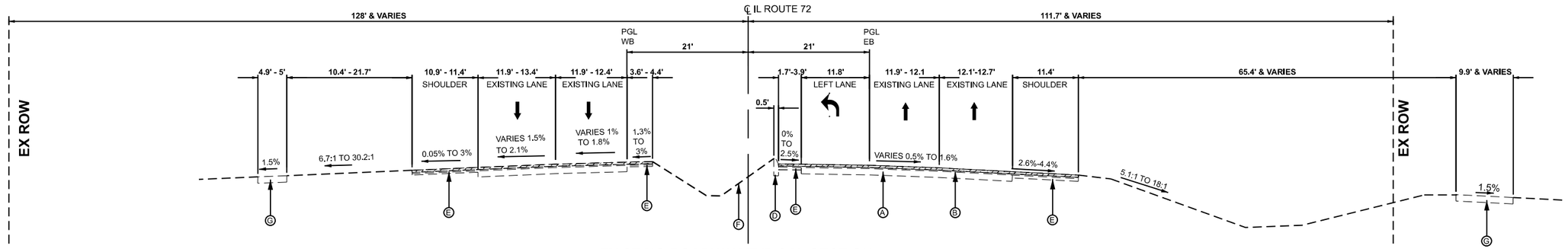
ROADWAY PLAN & PROFILE
IL ROUTE 72 (HIGGINS RD.) AT HUNTINGTON BLVD.

SCALE: | SHEET OF SHEETS | STA. | TO STA.

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
341		COOK	6	3
		CONTRACT NO.		
		ILLINOIS	FED. AID PROJECT	



EXISTING ROADWAY TYPICAL SECTION

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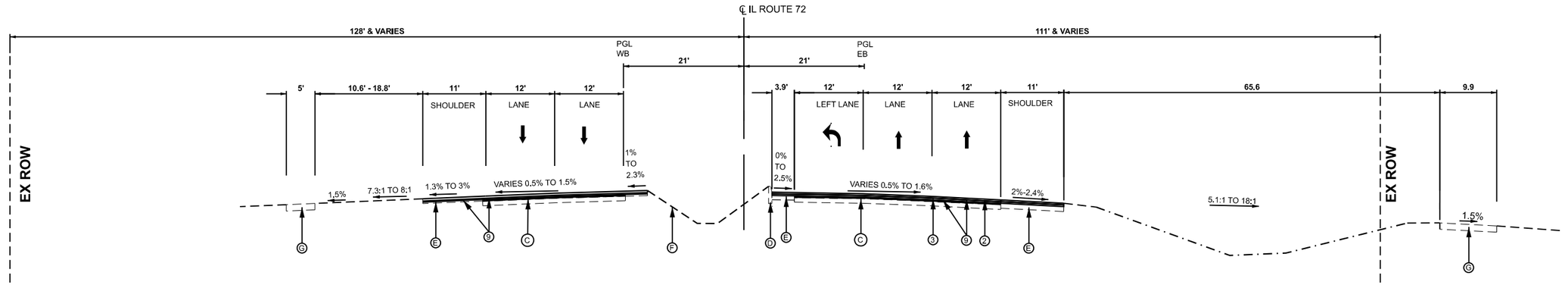

PROPOSED ROADWAY TYPICAL SECTION

STA 45+75.00 TO STA 50+00.00

EXISTING LEGEND

- Ⓐ EXISTING P.C.C. BASE 10"
- Ⓑ EXISTING BITUMINOUS SURFACE 3 1/2"
- Ⓒ EXISTING BITUMINOUS SURFACE (REMAINING)1"
- Ⓓ EXISTING CURB & GUTTER
- Ⓔ EXISTING HMA SHOULDER
- Ⓕ EXISTING GRASS MEDIAN
- Ⓖ EXISTING P.C.C. SIDEWALK
- Ⓗ EXISTING P.C.C. SIDEWALK REMOVAL

PROPOSED LEGEND

- ① PROPOSED HMA SURFACE REMOVAL - 2 1/2"
- ② PROPOSED POLYMERIZED HMA SURFACE COURSE, STONE MATRIX ASPHALT, 9.5, MIX "F", N80, 1 3/4"
- ③ PROPOSED POLYMERIZED HMA BINDER COURSE, 3/4" IL-4.75, N50
- ④ PROPOSED HMA BASE COURSE, 10 1/2" AND HMA BASE COURSE WIDENING, 10 1/2"
- ⑤ PROPOSED AGGREGATE SUBGRADE IMPROVEMENT 12"
- ⑥ PROPOSED COMB C&G TYPE B.6-12
- ⑦ PROPOSED P.C.C. SIDEWALK 5 INCH
- ⑧ PROPOSED TOPSOIL AND EXCAVATION, SEEDING, CLASS 2 OR SEEDING, CLASS 2A
- ⑨ PROPOSED TACK COAT
- ⑩ PROPOSED PRIME COAT

MIXTURE TABLE NOTES

1. THE UNIT WEIGHT USED TO CALCULATE ALL HOT-MIX ASPHALT SURFACE MIXTURE QUANTITIES IS 112 LBS/SQ YD/IN.
2. THE "AC TYPE" FOR POLYMERIZED HMA MIXES SHALL BE "SBS/SBR PG 76-22" AND FOR NON-POLYMERIZED HMA THE "AC TYPE" SHALL BE "PG 64-22" UNLESS MODIFIED BY RECLAIMED MATERIALS SPECIFICATIONS.

MIXTURE REQUIREMENT CHART

HOT-MIX ASPHALT MIXTURE REQUIREMENTS

MIXTURE TYPE	AIR VOIDS @Ndesign	QMP
MAINLINE PAVEMENT (RESURFACING) 2 1/2" MINIMUM		
1 3/4" POLYMERIZED HMA SURFACE COURSE, SMA, 9.5 MIX "F", N80	4% @70 Gyr.	QC/QA
3/4" POLYMERIZED HMA BINDER COURSE, IL-4.75, N50	4% @70 Gyr.	QC/QA
TEMPORARY PAVEMENT (SEE NOTE BELOW)		
	4% @70 Gyr.	QC/QA
	4% @70 Gyr.	QC/QA
MAINLINE PAVEMENT (WIDENING)		
1 3/4" POLYMERIZED HMA SURFACE COURSE, SMA, 9.5 MIX "F", N80	4% @70 Gyr.	QC/QA
3/4" POLYMERIZED HMA BINDER COURSE, IL-4.75, N50	4% @70 Gyr.	QC/QA
10 1/2" HMA BASE COURSE, IL-19.0, N70	4% @70 Gyr.	QC/QA
12" AGGREGATE SUBGRADE IMPROVEMENT	4% @70 Gyr.	QC/QA

QMP DESIGNATIONS : QUALITY CONTROL/QUALITY ASSSURANCE (QC/QA): QUALITY CONTROL FOR PERFORMANCE (QCP): PAY FOR PERFORMANCE (PFP).
NOTE:
1. THE CONTRACT HAS THE OPTION TO CONSTRUCT THE TEMPORARY PAVEMENT WITH 8" TEMPORARY PCC PAVEMENT ON 4" SUBBASE GRANULAR MATERIAL, TYPE B.
2. IF PC TEMPORARY PAVEMENT IS USED AS AN OPTION THEN PC CONCRETE TEMPORARY PAVEMENT SHALL CONSIST OF CLASS PV CONCERETE MEETING THE REQUIREMENTS OF ART. 1020 OF THE STANDARD SPECIFICATIONS. TEMPORARY PCC PAVEMENT DOES NOT REQUIRE DOWEL BARS.

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

IL ROUTE 72 (HIGGINS RD) AT HUNTINGTON BLVD
TYPICAL SECTION - I

SCALE: 1"=10' | SHEET 1 OF 3 SHEETS | STA. | TO STA.

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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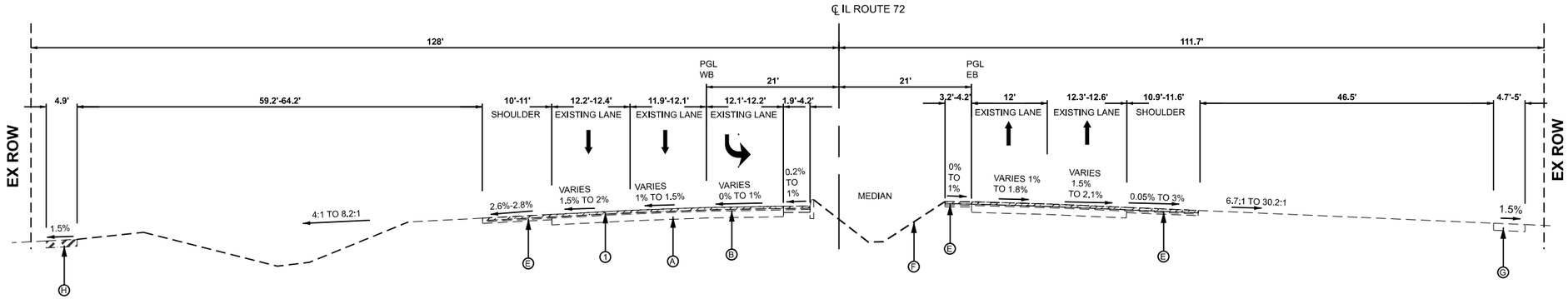
		CONTRACT NO. 62V09		
	ILLINOIS	FED. AID PROJECT		



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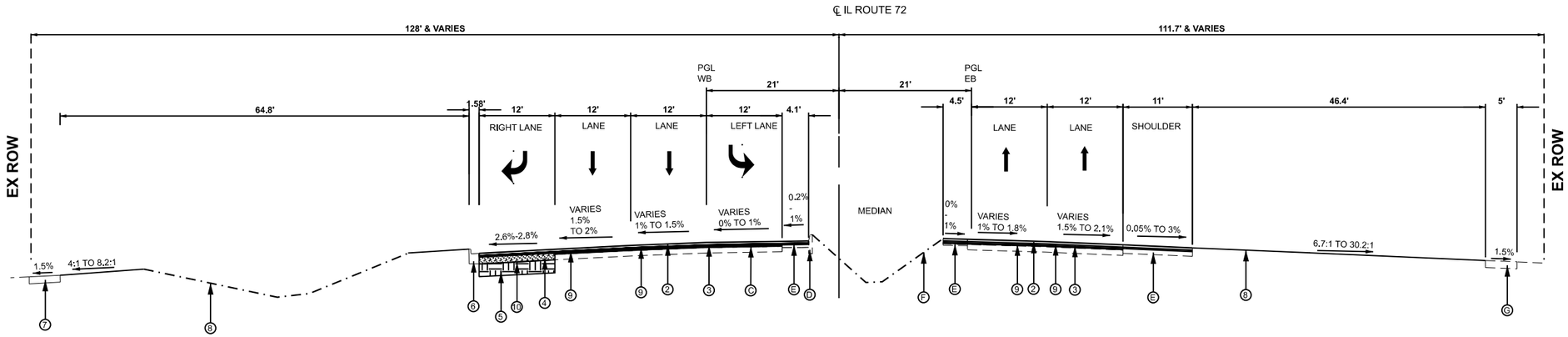

PROPOSED ROADWAY TYPICAL SECTION

STA 50+00.00 TO STA 55+50.00

EXISTING LEGEND

- (A) EXISTING P.C.C. BASE 10"
- (B) EXISTING BITUMINOUS SURFACE 3 1/2"
- (C) EXISTING BITUMINOUS SURFACE (REMAINING)1"
- (D) EXISTING CURB & GUTTER
- (E) EXISTING HMA SHOULDER
- (F) EXISTING GRASS MEDIAN
- (G) EXISTING P.C.C. SIDEWALK
- (H) EXISTING P.C.C. SIDEWALK REMOVAL

PROPOSED LEGEND

- (1) PROPOSED HMA SURFACE REMOVAL - 2 1/2"
- (2) PROPOSED POLYMERIZED HMA SURFACE COURSE, STONE MATRIX ASPHALT, 9.5, MIX "F", N80, 1 3/4"
- (3) PROPOSED POLYMERIZED HMA BINDER COURSE, 3/4" IL-4.75, N50
- (4) PROPOSED HMA BASE COURSE, 10 1/2" AND HMA BASE COURSE WIDENING, 10 1/2"
- (5) PROPOSED AGGREGATE SUBGRADE IMPROVEMENT 12"
- (6) PROPOSED COMB C&G TYPE B.6-12
- (7) PROPOSED P.C.C. SIDEWALK 5 INCH
- (8) PROPOSED TOPSOIL AND EXCAVATION, SEEDING, CLASS 2 OR SEEDING, CLASS 2A
- (9) PROPOSED TACK COAT
- (10) PROPOSED PRIME COAT

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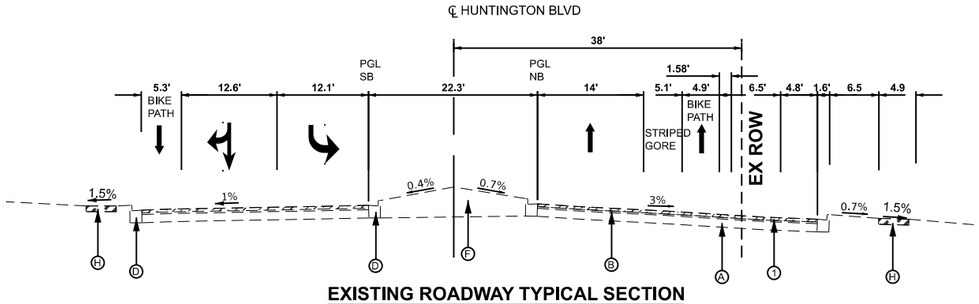
		CONTRACT NO. 62V09		
	ILLINOIS	FED. AID PROJECT		



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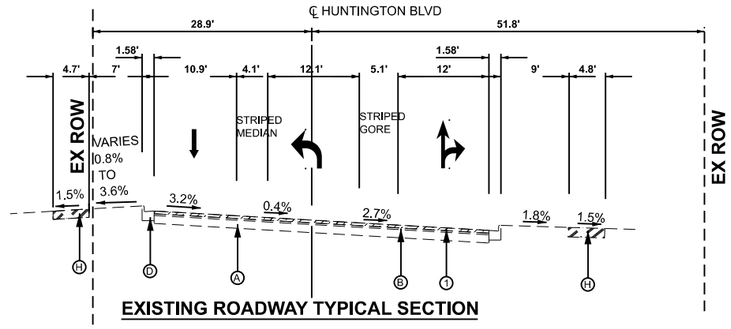

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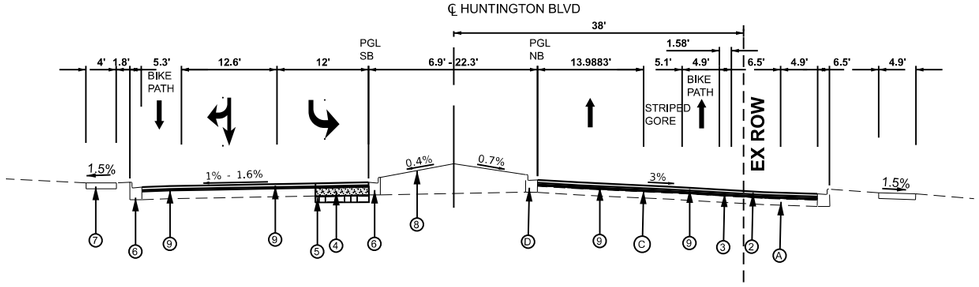

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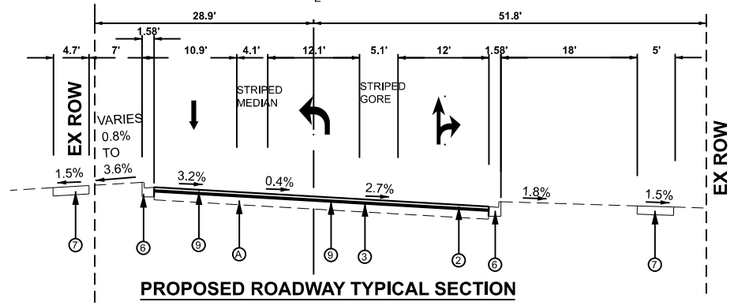

PROPOSED ROADWAY TYPICAL SECTION

STA 18+90.00 TO STA 19+00.00

EXISTING LEGEND

- (A) EXISTING P.C.C. BASE 10"
- (B) EXISTING BITUMINOUS SURFACE 3 1/2"
- (C) EXISTING BITUMINOUS SURFACE (REMAINING)1"
- (D) EXISTING CURB AND GUTTER
- (E) EXISTING HMA SHOULDER
- (F) EXISTING GRASS MEDIAN
- (G) EXISTING P.C.C. SIDEWALK
- (H) EXISTING P.C.C. SIDEWALK REMOVAL

PROPOSED LEGEND

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- (3) PROPOSED POLYMERIZED HMA BINDER COURSE, 3/4" IL-4.75, N50
- (4) PROPOSED HMA BASE COURSE, 10 1/2" AND HMA BASE COURSE WIDENING, 10 1/2"
- (5) PROPOSED AGGREGATE SUBGRADE IMPROVEMENT 12"
- (6) PROPOSED COMB C&G TYPE B.6-12
- (7) PROPOSED P.C.C. SIDEWALK 5 INCH
- (8) PROPOSED TOPSOIL AND EXCAVATION, SEEDING, CLASS 2 OR SEEDING, CLASS 2A
- (9) PROPOSED TACK COAT
- (10) PROPOSED PRIME COAT

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

IL ROUTE 72 (HIGGINS RD) AT HUNTINGTON BLVD
TYPICAL SECTION - III

SCALE: | SHEET 1 OF 3 SHEETS | STA. | TO STA.

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
341	FAP 341 23 IM	COOK	83	14
		CONTRACT NO. 62V09		
		ILLINOIS	FED. AID PROJECT	

Illinois Department of Transportation

Summary Report on Pavement, Base and Subbase Design

State Job Number: 62U09 Project: IL72 at Huntington Blvd Route: 341

Section: FAP 341 23/M City or County: Cook Date: 4/11/25

ADT: 31400 Year: 2040 Design Period: Class Highway: Class II

Passenger Cars Per Day: Trucks S.U. Per Day: 2.2% Trucks M.U. Per Day: 2.2%

Pavement Structure: HMA

Type Surface Course: IL 9.5, Mix F N80 Thickness: 1.75"

Type Base Course: IL-19.0, N-90 Thickness: 10.5"

Type Subbase Material: Aggregate Subgrade Improvement Thickness: 12"

Sta. to Sta.	50+00 to 55+50	+ to +	+ to +	+ to +
*Sta. of Test	51+20			
*Drainage Class	POOR			
*Ave. Frost Penetration				
Illinois Textural Classification	A-6			
Classification and Group Index (AASHTO M 145)	11			
*Percent Silt (AASHTO T 88)	52.4			
*Illinois Bearing Ratio (%)	*Note 1	*Note 1	*Note 1	*Note 1
Std. Dry Density (IL Mod. AASHTO T 99)	*Note 2	*Note 2	*Note 2	*Note 2
Optimum Moisture (IL Mod AASHTO T 99)	*Note 2	*Note 2	*Note 2	*Note 2

* Indicates worst condition within the above station limits.

Remarks: *Note 1: IBR tests were not performed because the mechanistic pavement design method was used.

*Note 2: Proctor test was not performed.

Illinois Department of Transportation

Summary Report on Pavement, Base and Subbase Design

State Job Number: 62U09 Project: IL72 at Huntington Blvd Route: 341

Section: FAP 341 23/M City or County: Cook Date: 4/11/25

ADT: 4250 Year: 2018 Design Period: Class Highway: Class II

Passenger Cars Per Day: Trucks S.U. Per Day: 2.2% Trucks M.U. Per Day: 2.2%

Pavement Structure: HMA

Type Surface Course: IL 9.5, Mix F N80 Thickness: 1.75"

Type Base Course: IL-19.0, N-90 Thickness: 10.5"

Type Subbase Material: Aggregate Subgrade Improvement Thickness: 12"

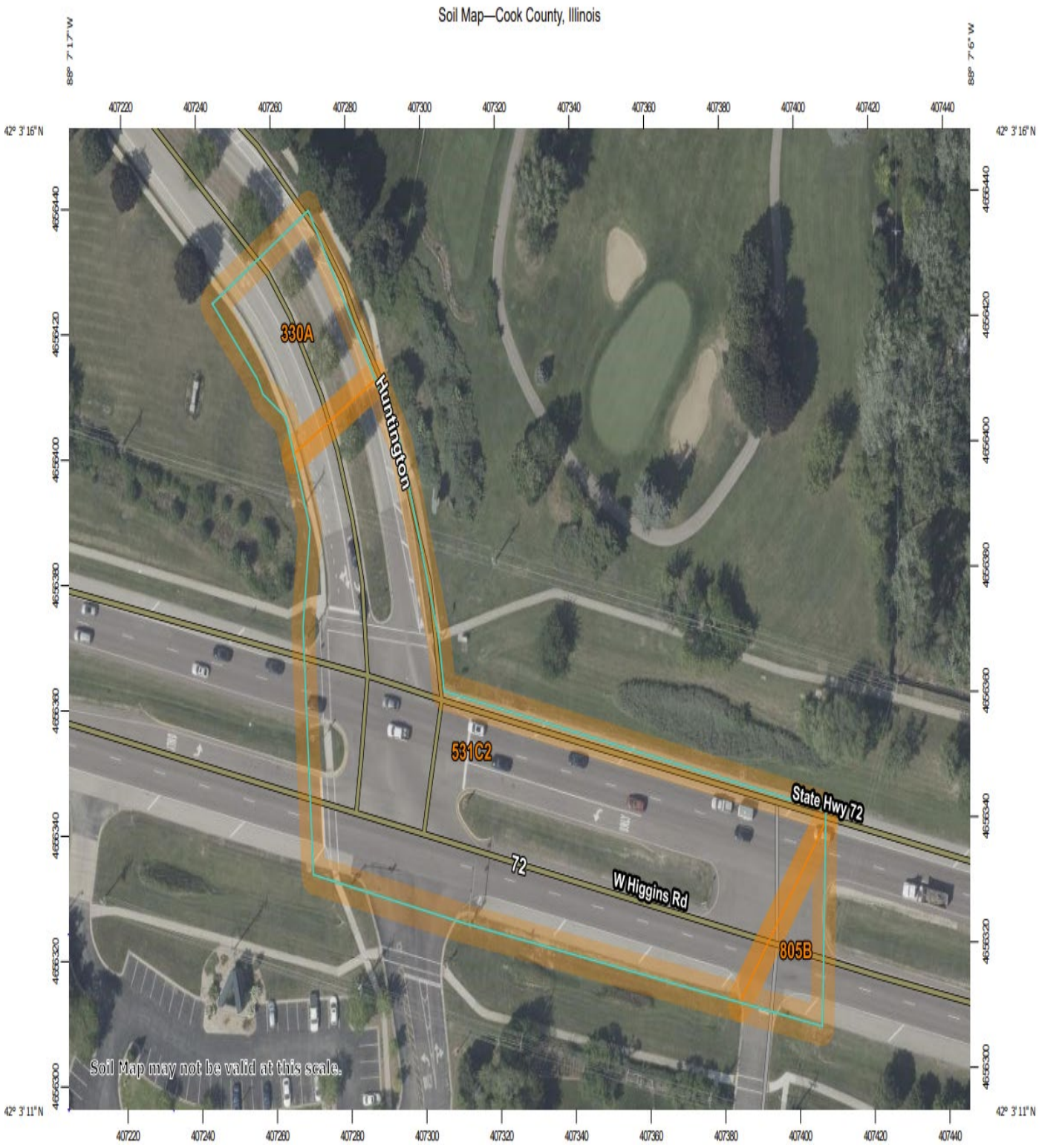
Sta. to Sta.	20+87 to 25+36	+ to +	+ to +	+ to +
*Sta. of Test	48+10			
*Drainage Class	POOR			
*Ave. Frost Penetration				
Illinois Textural Classification	A-6			
Classification and Group Index (AASHTO M 145)	13			
*Percent Silt (AASHTO T 88)	22.5			
*Illinois Bearing Ratio (%)	*Note 1	*Note 1	*Note 1	*Note 1
Std. Dry Density (IL Mod. AASHTO T 99)	*Note 2	*Note 2	*Note 2	*Note 2
Optimum Moisture (IL Mod AASHTO T 99)	*Note 2	*Note 2	*Note 2	*Note 2

* Indicates worst condition within the above station limits.

Remarks: *Note 1: IBR tests were not performed because the mechanistic pavement design method was used.

*Note 2: Proctor test was not performed.

APPENDIX B



Area of Interest

GEOCON PROFESSIONAL SERVICES
22774 Citation Road, Unit A
Frankfort, IL 60423
P.815.806.9986 F. 815.464.8691

SOIL SURVEY MAP
IL72 (Higgins Road)
At Huntington Blvd
Hoffman Estates, Illinois

PROJECT NUMBER: 24-G1260

DATE: January 2025

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
330A	Peotone silty clay loam, 0 to 2 percent slopes	0.2	12.1%
531C2	Markham silt loam, 4 to 6 percent slopes, eroded	1.4	82.8%
805B	Orthents, clayey, undulating	0.1	5.2%
Totals for Area of Interest		**1.7**	**100.0%**

Map Unit Legend

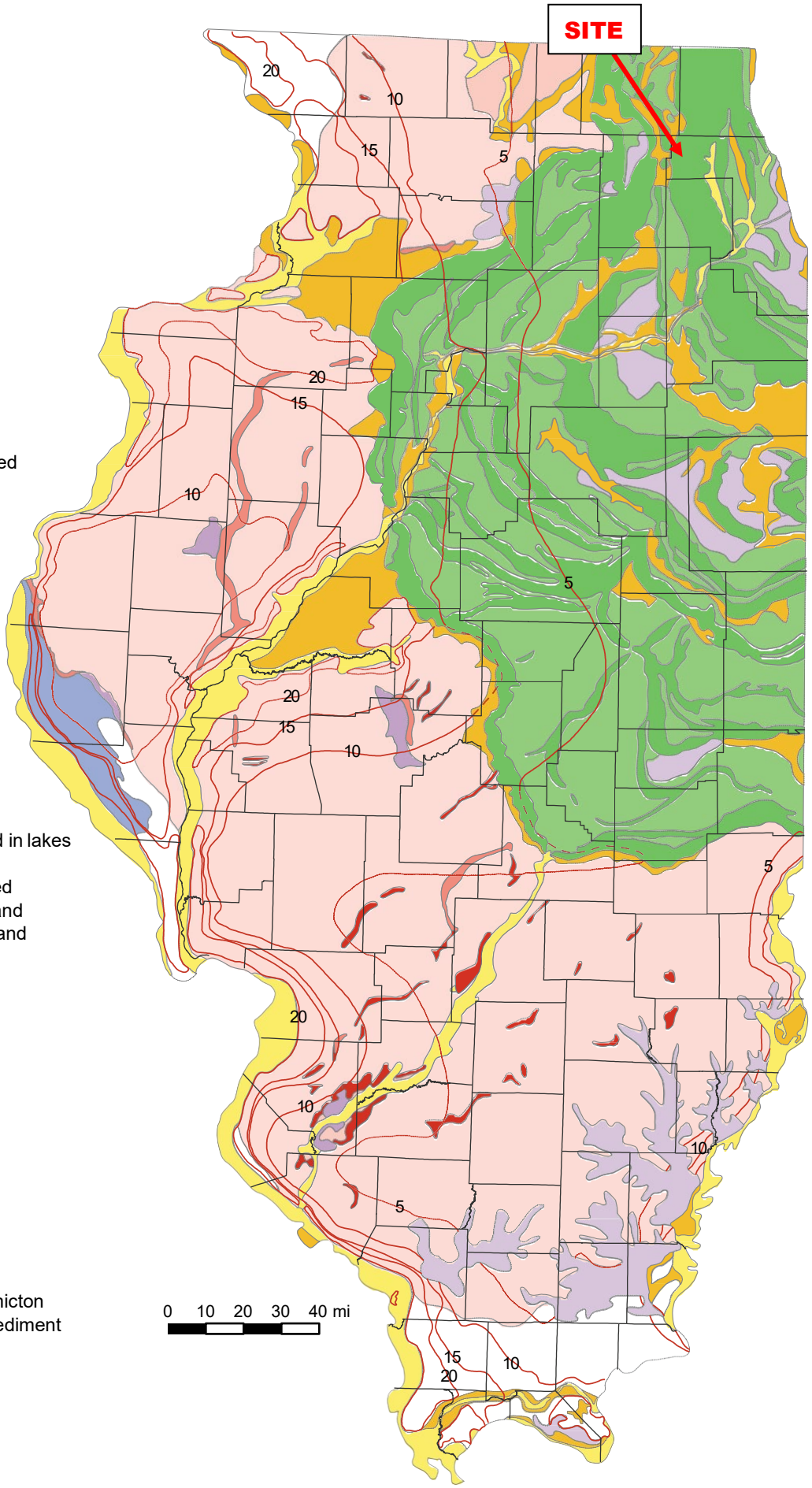
GEOCON PROFESSIONAL SERVICES
22774 Citation Road, Unit A
Frankfort, IL 60423
P.815.806.9986 F. 815.464.8691

SOIL SURVEY MAP
West Street Reconstruction
Corning Avenue to Wilmington-Peotone Road
Peotone, Illinois

PROJECT NUMBER: 24-G1260

DATE: January 2025

Quaternary Deposits



HUDSON EPISODE

Cahokia Fm; river sand, gravel, and silt

WISCONSIN EPISODE

Mason Group

Thickness of Peoria and Roxanna Silts; silt deposited as loess (5-ft contour interval)

Equality Fm; silt and clay deposited in lakes

Henry Fm; sand and gravel deposited in glacial rivers, outwash fans, beaches, and dunes

Wedron Group (Tiskilwa, Lemont, and Wadsworth Fms) and Trafalgar Fm; diamicton deposited as till and ice-marginal sediment

End moraine

Till plain

ILLINOIS EPISODE

Teneriffe Silt; silt and clay deposited in lakes

Pearl Fm; sand and gravel deposited in glacial rivers and outwash fans, and Hagarstown Mbr; ice-contact sand and gravel deposited in ridges

Winnebago Fm; diamicton deposited as till and ice-marginal sediment

Till plain

Glasford Fm; diamicton deposited as till and ice-marginal sediment

End moraine

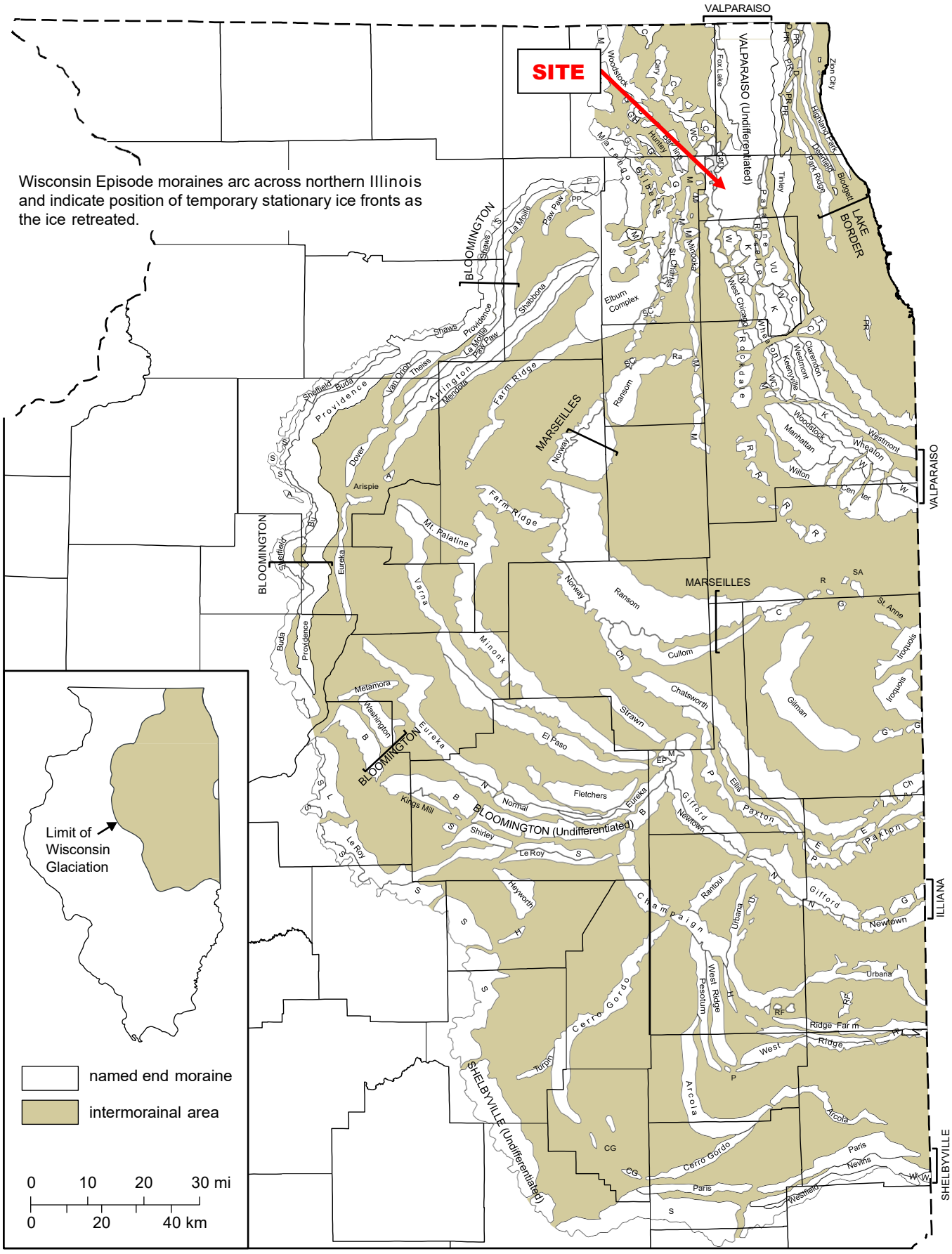
Till plain

PRE-ILLINOIS EPISODE

Wolf Creek Fm; predominantly diamicton deposited as till and ice-marginal sediment

Unglaciated

End Moraines of The Wisconsin Glacial Episode



ISGS 8.5x11 map series

APPENDIX C

GEOCON PROFESSIONAL SERVICES

BORING NO. B-1

CLIENT Peralte Clark **PROJECT NAME** Huntington Blvd & Higgins Rd Improvements

PROJECT NUMBER 24-G1260 **PROJECT LOCATION** Hoffman Estates, IL

DATE COMPLETED 11/5/24 **LOGGED BY** NC/MW **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	IBV VALUE	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX
0	815.2		10" TOPSOIL												
			black and brown CLAY FILL A-7-6 (21) trace gravel hard	SS 1	83	5-6-6 (12)		4.5+	6.4	21.4					
5				SS 2	89	3-4-5 (9)		4.5+	6.2	24.9			41	19	22
	810.0		brown and gray CLAY A-6 very stiff to hard	SS 3	94	3-4-6 (10)		4.5+	4.6	16.4					
10				SS 4	89	3-4-6 (10)		3.75	3.7	17.0					
				SS 5	83	4-4-6 (10)		4.5+	4.7	17.0					
	802.5		gray SANDY LOAM A-2 medium dense, wet	SS 6	56	3-7-9 (16)				13.3					
15	800.0		gray CLAY A-6 very stiff, wet	SS 7	83	5-6-8 (14)		2.25	2.2	11.4					
				SS 8	89	4-7-10 (17)		3.75	3.8	15.4					
20	795.0		gray CLAY LOAM A-4 (0) stiff to very stiff, wet	SS 9	67	5-10-10 (20)		1.0	1.0	9.9			18	12	6
				SS 10	78	6-9-11 (20)		3.5		9.8					
25	790.0		gray CLAY A-6 very stiff to hard, wet	SS 11	89	5-5-8 (13)		3.25	3.2	15.6					
				SS 12	94	6-7-9 (16)		4.25	4.3	18.0					
30	786.0		Bottom of borehole at 30.0 feet.												

COMPLETION DEPTH 30 ft **GROUND ELEVATION** 816 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

▽ **AT TIME OF DRILLING** 14.50 ft / Elev 801.50 ft

▼ **AT END OF DRILLING** 14.50 ft / Elev 801.50 ft

AFTER DRILLING ---

NOTES

STA 50+70 Offset 70' RT

Groundwater conditions were observed at the time of drilling and may not be representative during the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

22774 Citation Road, Unit A Frankfort, IL 60423 Phone 815-806-9986

GEOCON PROFESSIONAL SERVICES

BORING NO. B-2

CLIENT Peralte Clark **PROJECT NAME** Huntington Blvd & Higgins Rd Improvements

PROJECT NUMBER 24-G1260 **PROJECT LOCATION** Hoffman Estates, IL

DATE COMPLETED 11/5/24 **LOGGED BY** NC/MW **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	IBV VALUE	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX
0	816.7		10" TOPSOIL												
			black and brown CLAY FILL A-7-6 trace gravel hard	SS 1	78	6-9-10 (19)		4.5+	4.7	17.9					
				SS 2	78	4-3-5 (8)		4.5+	5.4	17.7					
5	811.5														
			brown and gray CLAY A-6 stiff	SS 3	72	2-2-4 (6)		2.0	1.9	26.8					
	809.0														
			▼ brown and gray CLAY LOAM A-4 stiff, wet	SS 4	72	2-2-2 (4)		1.0		19.7					
10	806.5														
			brown and gray CLAY A-6 (13) very stiff, wet	SS 5	89	3-3-5 (8)		2.5	2.5	18.8			31	15	16
				SS 6	83	5-5-6 (11)		3.5	3.6	17.8					
15	801.5														
			gray CLAY A-6 very stiff to hard, wet	SS 7	89	5-6-6 (12)		4.5+	6.3	15.3					
				SS 8	100	6-7-6 (13)		4.5+	5.2	13.9					
20															
				SS 9	89	5-6-11 (17)		4.5+		14.2					
				SS 10	94	7-7-11 (18)		4.5+	4.6	15.6					
25															
				SS 11	72	6-7-9 (16)		3.5	3.6	18.7					
				SS 12	94	5-8-8 (16)		3.75	3.8	18.9					
30	787.5														

Bottom of borehole at 30.0 feet.

COMPLETION DEPTH 30 ft **GROUND ELEVATION** 817.5 ft

CAVE DEPTH 15 ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

▽ **AT TIME OF DRILLING** 9.50 ft / Elev 808.00 ft

▼ **AT END OF DRILLING** 9.50 ft / Elev 808.00 ft

AFTER DRILLING ---

NOTES

STA 48+95 Offset 60' LT

Groundwater conditions were observed at the time of drilling and may not be representative during the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

22774 Citation Road, Unit A Frankfort, IL 60423 Phone 815-806-9986

BORING NO. B-3

GEOCON PROFESSIONAL SERVICES

CLIENT Peralte Clark **PROJECT NAME** Huntington Blvd & Higgins Rd Improvements

PROJECT NUMBER 24-G1260 **PROJECT LOCATION** Hoffman Estates, IL

DATE COMPLETED 11/5/24 **LOGGED BY** NC/MW **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	IBV VALUE	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX
0.0	817.1		11" ASPHALT												
	816.6		6" AGGREGATE BASE												
			brown and gray CLAY A-6 (13) very stiff to hard	SS 1	89	6-2-9 (11)	13.2	4.5+	8.3	15.5					
2.5															
				SS 2	83	5-5-8 (13)		4.5+	5.4	17.6			35	17	18
5.0															
				SS 3	89	6-5-7 (12)		3.25	3.3	20.4					
7.5															
				SS 4	83	3-5-6 (11)		4.5+	4.7	21.3					
10.0	808.0														

Bottom of borehole at 10.0 feet.

COMPLETION DEPTH 10 ft **GROUND ELEVATION** 818 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

AT TIME OF DRILLING --- None

AT END OF DRILLING --- Dry upon completion

AFTER DRILLING ---

NOTES

STA 48+10 Offset 240' LT

Groundwater conditions were observed at the time of drilling and may not be representative during the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

22774 Citation Road, Unit A Frankfort, IL 60423 Phone 815-806-9986

BORING NO. B-4

GEOCON PROFESSIONAL SERVICES

CLIENT Peralte Clark **PROJECT NAME** Huntington Blvd & Higgins Rd Improvements

PROJECT NUMBER 24-G1260 **PROJECT LOCATION** Hoffman Estates, IL

DATE COMPLETED 11/5/24 **LOGGED BY** NC/MW **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	IBV VALUE	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX
0.0	816.7		10" ASPHALT												
	816.2		6" AGGREGATE BASE												
			brown and gray CLAY LOAM A-4 very stiff	SS 1	67	8-6-6 (12)	13.2	3.25		15.9					
2.5	814.0		brown and gray CLAY A-6 hard	SS 2	89	5-5-5 (10)		4.5+	7.9	15.1					
5.0				SS 3	83	2-6-8 (14)		4.0	4.0	22.5					
7.5				SS 4	89	5-5-7 (12)		4.5+	7.4	16.5					
10.0	807.5		Bottom of borehole at 10.0 feet.												

COMPLETION DEPTH 10 ft **GROUND ELEVATION** 817.5 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

AT TIME OF DRILLING --- None

AT END OF DRILLING --- Dry upon completion

AFTER DRILLING ---

NOTES

STA 49+10 Offset 140' LT

Groundwater conditions were observed at the time of drilling and may not be representative during the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

22774 Citation Road, Unit A Frankfort, IL 60423 Phone 815-806-9986

BORING NO. B-5

GEOCON PROFESSIONAL SERVICES

CLIENT Peralte Clark **PROJECT NAME** Huntington Blvd & Higgins Rd Improvements

PROJECT NUMBER 24-G1260 **PROJECT LOCATION** Hoffman Estates, IL

DATE COMPLETED 11/5/24 **LOGGED BY** NC/MW **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	IBV VALUE	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX
0.0	815.3		9" ASPHALT												
			brown CLAY A-6 (11) very stiff	SS 1	89	3-5-6 (11)	3.5	3.25	3.2	18.7					
2.5															
				SS 2	100	3-3-4 (7)		2.25	2.3	25.0			30	18	12
5.0	810.0														
			brown and gray CLAY A-6 hard	SS 3	89	5-5-8 (13)		4.5+	5.7	20.0					
7.5	807.5														
			gray CLAY A-6 hard	SS 4	67	3-4-9 (13)		4.0	4.0	18.4					
10.0	806.0														

Bottom of borehole at 10.0 feet.

COMPLETION DEPTH 10 ft **GROUND ELEVATION** 816 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

AT TIME OF DRILLING --- None

AT END OF DRILLING --- Dry upon completion

AFTER DRILLING ---

NOTES

STA 51+20 Offset 60' LT

Groundwater conditions were observed at the time of drilling and may not be representative during the time of construction.

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22774 Citation Road, Unit A Frankfort, IL 60423 Phone 815-806-9986

GEOCON PROFESSIONAL SERVICES

BORING NO. B-6

CLIENT Peralte Clark **PROJECT NAME** Huntington Blvd & Higgins Rd Improvements

PROJECT NUMBER 24-G1260 **PROJECT LOCATION** Hoffman Estates, IL

DATE COMPLETED 11/5/24 **LOGGED BY** NC/MW **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	IBV VALUE	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX
0.0	814.7		4" ASPHALT												
	814.1		7" CONCRETE												
	813.9		2" AGGREGATE BASE												
			brown and gray CLAY A-6 hard	SS 1	78	4-4-7 (11)	3.5	4.5+	5.0	17.4					
2.5															
	811.0		gray CLAY A-6 very stiff to hard	SS 2	89	3-7-7 (14)		4.5+	5.0	14.9					
5.0															
				SS 3	94	4-4-7 (11)		3.25	3.3	17.1					
7.5															
				SS 4	89	3-3-7 (10)		3.75	3.6	20.2					
10.0	805.0														

Bottom of borehole at 10.0 feet.

COMPLETION DEPTH 10 ft **GROUND ELEVATION** 815 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

AT TIME OF DRILLING --- None

AT END OF DRILLING --- Dry upon completion

AFTER DRILLING ---

NOTES

STA 52+85 Offset 60' LT

Groundwater conditions were observed at the time of drilling and may not be representative during the time of construction.

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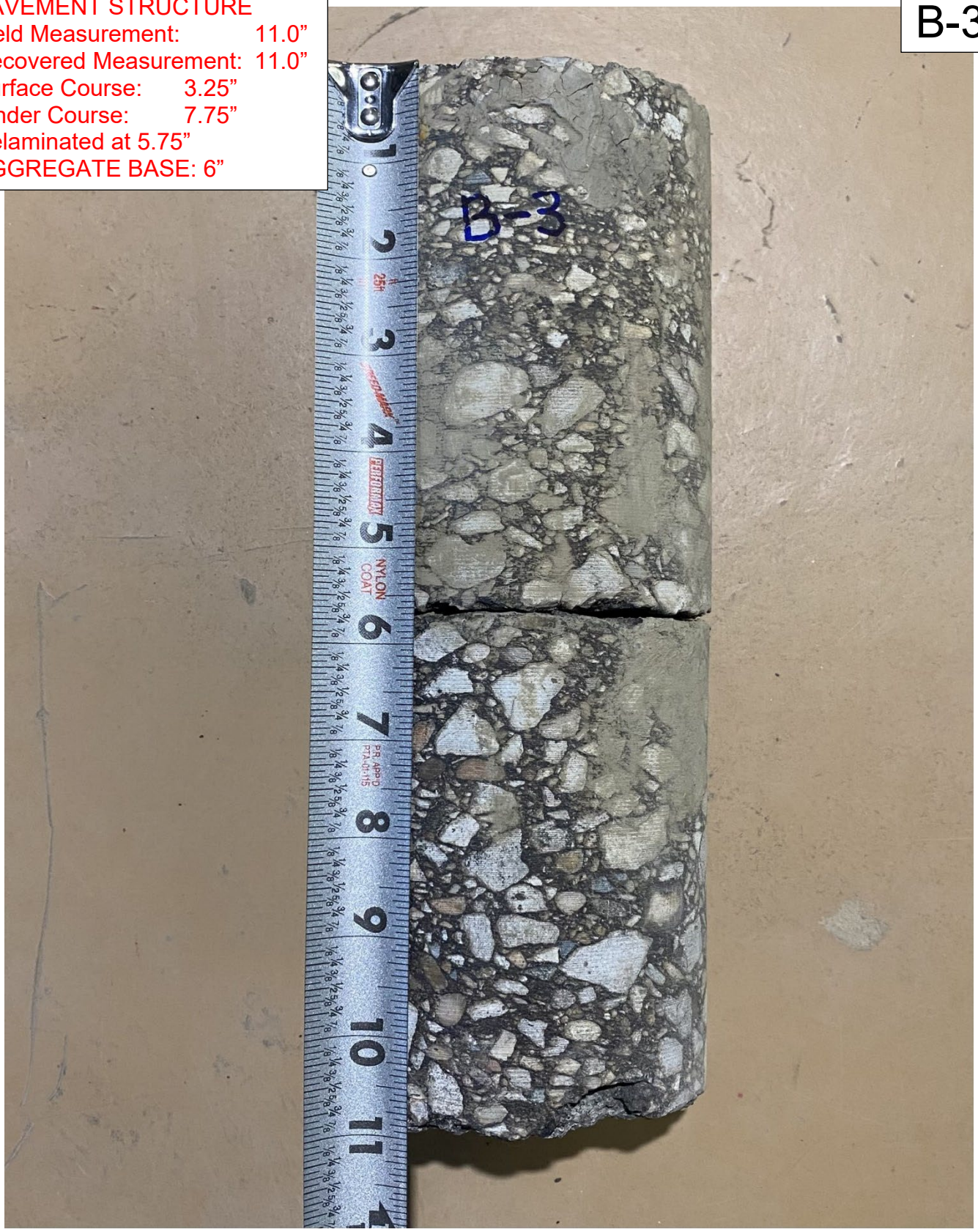
PAVEMENT STRUCTURE
Field Measurement: 11.0”
Recovered Measurement: 11.0”
Surface Course: 3.25”
Binder Course: 7.75”
Delaminated at 5.75”
AGGREGATE BASE: 6”

B-3



GEOCON PROFESSIONAL SERVICES
22774 Citation Road, Unit A
Frankfort, IL 60423
P.815.806.9986 F. 815.464.8691

PAVEMENT CORE LOGS
IL 72 (Higgins Road)
At Huntington Blvd
Hoffman Estates, IL

PROJECT NUMBER:
24-G1260

DATE: January 2025

PAVEMENT STRUCTURE
Field Measurement: 10.0”
Recovered Measurement: 10.0”
Surface Course: 3.0”
Binder Course: 7.0”
AGGREGATE BASE: 6”

B-4

GEOCON PROFESSIONAL SERVICES
22774 Citation Road, Unit A
Frankfort, IL 60423
P.815.806.9986 F. 815.464.8691

PAVEMENT CORE LOGS
IL 72 (Higgins Road)
At Huntington Blvd
Hoffman Estates, IL

PROJECT NUMBER:
24-G1260

DATE: January 2025

PAVEMENT STRUCTURE
Field Measurement: 9.0”
Recovered Measurement: 8.75”
Surface Course: 2.0”
Binder Course: 6.75”
Delaminated at 2.0”
AGGREGATE BASE: N/A

B-5

GEOCON PROFESSIONAL SERVICES
22774 Citation Road, Unit A
Frankfort, IL 60423
P.815.806.9986 F. 815.464.8691

PAVEMENT CORE LOGS
IL 72 (Higgins Road)
At Huntington Blvd
Hoffman Estates, IL

PROJECT NUMBER: 24-G1260

DATE: January 2025

PAVEMENT STRUCTURE
Field Measurement: 4.0”
Recovered Measurement: 4.0”
Surface Course: 1.5”
Binder Course: 2.5”
CONCRETE BASE: 7”
AGGREGATE BASE: 2”

B-6

GEOCON PROFESSIONAL SERVICES
22774 Citation Road, Unit A
Frankfort, IL 60423
P.815.806.9986 F. 815.464.8691

PAVEMENT CORE LOGS
IL 72 (Higgins Road)
At Huntington Blvd
Hoffman Estates, IL

PROJECT NUMBER:
24-G1260

DATE: January 2025

GEOCON PROFESSIONAL SERVICES

GENERAL NOTES

CLIENT Peralte Clark **PROJECT NAME** Huntington Blvd. & Higgins Rd. Intersection Improvements

PROJECT NUMBER 24-G1260 **PROJECT LOCATION** Hoffman Estates, IL

SAMPLE IDENTIFICATION

Visual soil classifications are made in general accordance with the United Soil Classification System (USCS) on the basis of textural and particle size categorization, and various soil behavior characteristics. Visual classifications should be substantiated by appropriate laboratory testing when a more exact soil identification is required to satisfy specific project applications criteria.

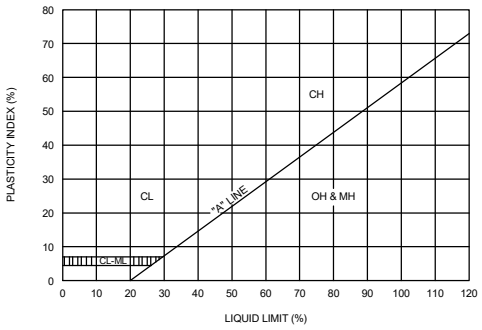
UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487-98)

MATERIAL TYPES	CRITERIA FOR ASSIGNING SOIL GROUP NAMES			GROUP SYMBOL	SOIL GROUP NAMES & LEGEND
COARSE-GRAINED SOILS >50% RETAINED ON NO. 200 SIEVE	GRAVELS >50% OF COARSE FRACTION RETAINED ON NO 4. SIEVE	CLEAN GRAVELS <5% FINES	$C_u \geq 4$ AND $1 \leq C_c \leq 3$	GW	WELL-GRADED GRAVEL
			$C_u \geq 4$ AND/OR $1 \geq C_c \geq 3$	GP	POORLY-GRADED GRAVEL
		GRAVELS WITH FINES >12% FINES	FINES CLASSIFY AS ML OR CL	GM	SILTY GRAVEL
			FINES CLASSIFY AS CL OR CH	GC	CLAYEY GRAVEL
	SANDS >50% OF COARSE FRACTION PASSES ON NO 4. SIEVE	CLEAN SANDS <5% FINES	$C_u \geq 6$ AND $1 \leq C_c \leq 3$	SW	WELL-GRADED SAND
			$C_u \geq 6$ AND/OR $1 \geq Cc \geq 3$	SP	POORLY-GRADED SAND
		SANDS AND FINES >12% FINES	FINES CLASSIFY AS ML OR MH	SM	SILTY SAND
			FINES CLASSIFY AS CL OR CH	SC	CLAYEY SAND
FINE-GRAINED SOILS >50% PASSES NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT<50	INORGANIC	PI>7 AND PLOTS>"A" LINE	CL	LEAN CLAY
			PI>4 AND PLOTS<"A" LINE	ML	SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OL	ORGANIC CLAY OR SILT
	SILTS AND CLAYS LIQUID LIMIT>50	INORGANIC	PI PLOTS >"A" LINE	CH	FAT CLAY
			PI PLOTS <"A" LINE	MH	ELASTIC SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OH	ORGANIC CLAY OR SILT
HIGHLY ORGANIC SOILS		PRIMARILY ORGANIC MATTER, DARK IN COLOR, AND ORGANIC ODOR		PT	PEAT

PROJECT LITHOLOGIC SYMBOLS (USCS)

- ASPHALT: Asphalt
- CLS: USCS Low Plasticity Sandy Clay
- GRAVEL FILL: Gravel Fill
- CL: USCS Low Plasticity Clay
- CONCRETE: Concrete
- SP: USCS Poorly-graded Sand
- CL-ML: USCS Low Plasticity Silty Clay
- FILL: Fill (made ground)
- TOPSOIL: Topsoil

PLASTICITY CHART



PROJECT SAMPLE TYPES

- Split Spoon (SS)

SOIL RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

NON-COHESIVE SOILS		COHESIVE SOILS		
RELATIVE DENSITY	N-VALUE*	CONSISTENCY	N-VALUE*	COMPRESSIVE STRENGTH (TSF)
VERY LOOSE	0 - 4	VERY SOFT	0 - 2	0 - 0.25
LOOSE	4 - 10	SOFT	2 - 5	0.25 - 0.50
MEDIUM DENSE	10 - 30	MEDIUM STIFF	5 - 10	0.50 - 1.0
DENSE	30 - 50	STIFF	10 - 14	1.0 - 2.0
VERY DENSE	OVER 38	VERY STIFF	14 - 32	2.0 - 4.0
		HARD	OVER 32	OVER 4.0

* N-VALUE: NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1-3/8 INCH I.D.) SPLIT-BARREL SAMPLER THE LAST 12 INCHES OF AN 18-INCH DRIVE (ASTM-1586 STANDARD PENETRATION TEST).

ABBREVIATIONS

SS	-	SPLIT-SPOON SAMPLE	LL	-	LIQUID LIMIT (%)
ST	-	SHELBY TUBE SAMPLE	PL	-	PLASTIC LIMT (%)
AU	-	AUGER SAMPLE	PI	-	PLASTIC INDEX (%)
MC	-	MOISTURE CONTENT (%)	NP	-	NON PLASTIC
-200	-	PERCENT PASSING NO. 200 SIEVE	DD	-	DRY DENSITY (PCF)
Qp	-	POCKET PENETROMETER (TSF)	DCP	-	DYNAMIC CONE PENETROMETER
Qu	-	UNCONFINED STRENGTH (TSF)	IBV	-	IMMEDIATE BEARING VALUE

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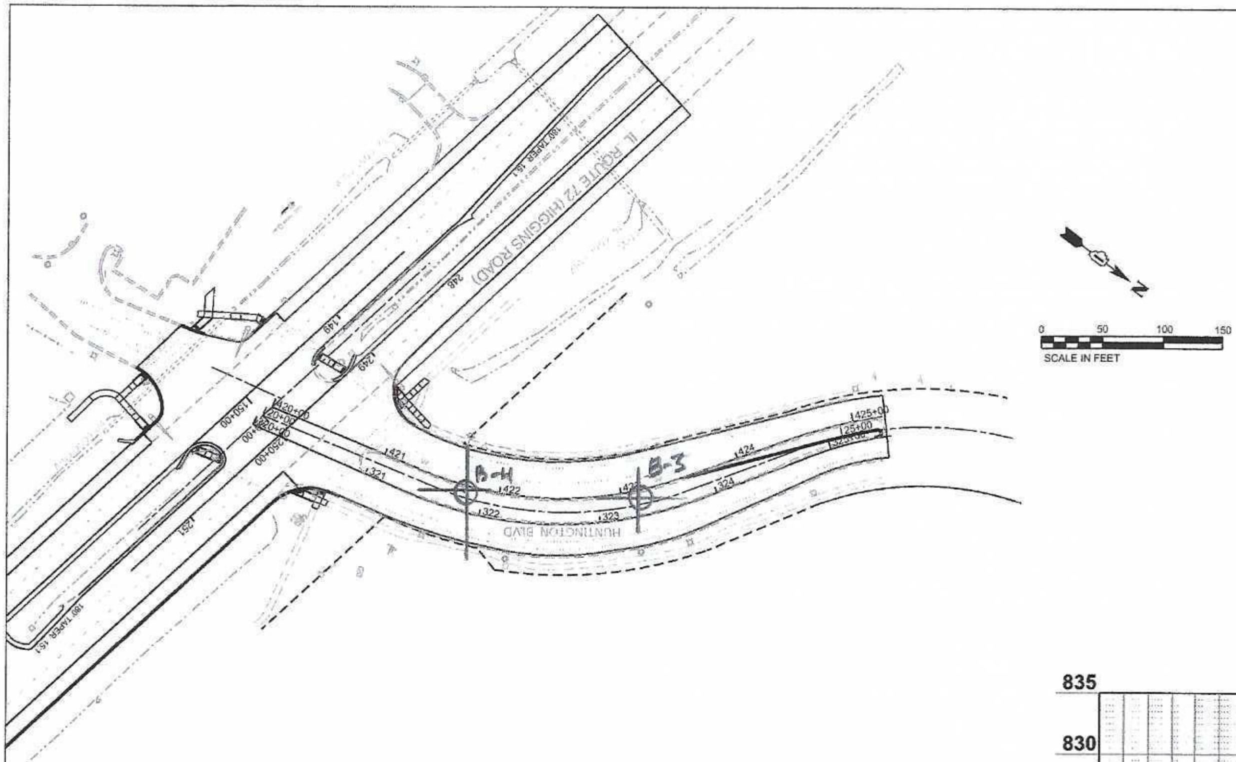

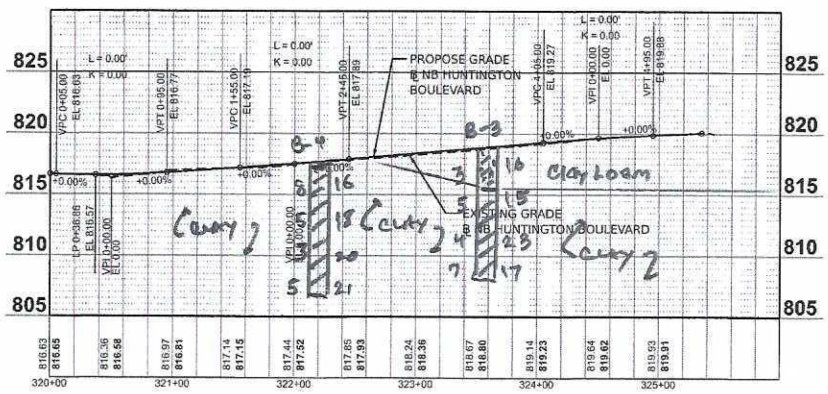

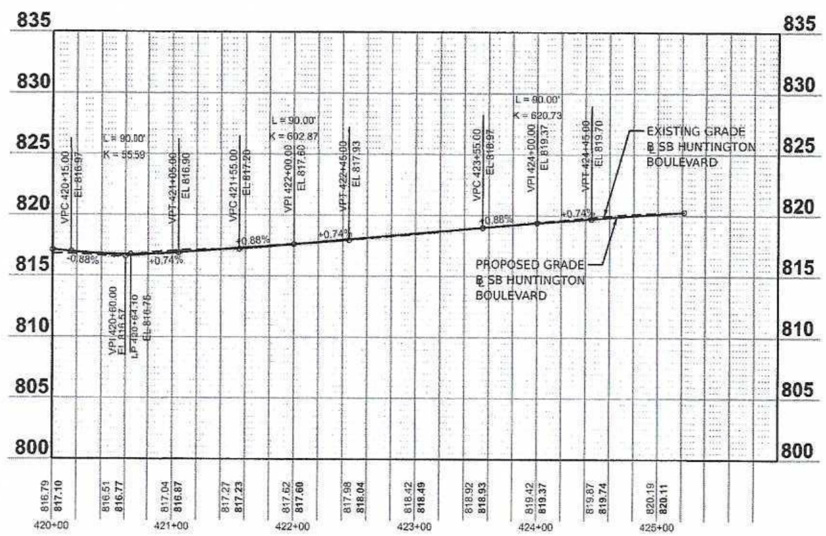

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ABNA
DESIGN FIRM REG. 184.002117

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	DRAWN - ABD	REVISED - ####	
PLOT SCALE = $SCALE$	CHECKED - TPP	REVISED - ####	
PLOT DATE = 2/3/2025	DATE - 01/10/2025	REVISED - ####	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

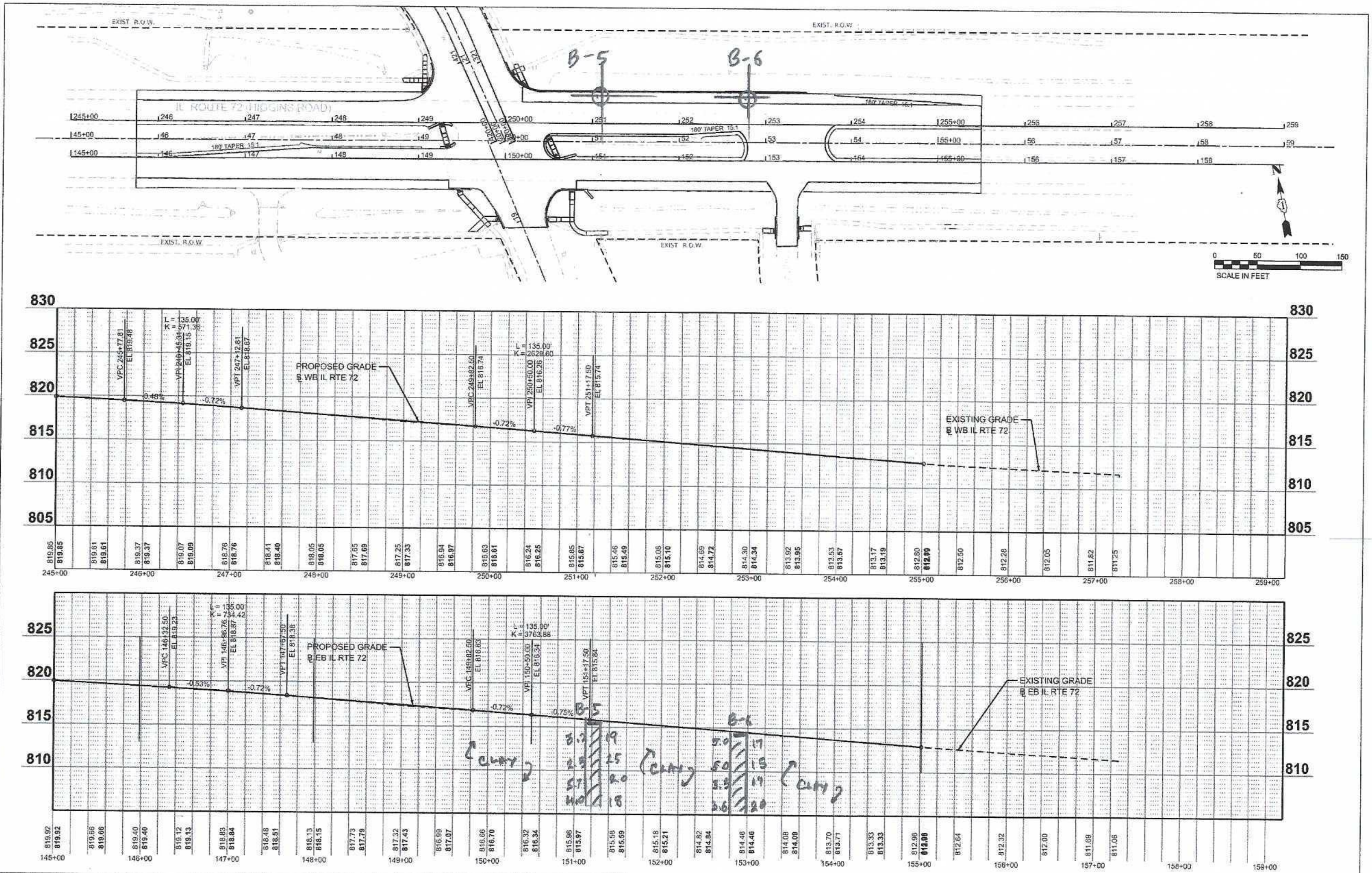
IL ROUTE 72 (HIGGINS RD) AT HUNTINGTON BLVD
ROADWAY PROFILE

SCALE: 1"=50' | SHEET 1 OF 2 SHEETS | STA. 20+00.00 TO STA. 26+00.00

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
341	FAP 341 23 IM	COOK	83	20

CONTRACT NO. 62V09

ILLINOIS FED. AID PROJECT



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ABNA
DESIGN FIRM REG. 184.002117

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	DRAWN -	ASD	REVISED -	####
PLOT SCALE = $SCALE$	CHECKED -	TPP	REVISED -	####
PLOT DATE = 2/3/2025	DATE -	01/10/2025	REVISED -	####

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

IL ROUTE 72 (HIGGINS RD) AT HUNTINGTON BLVD
ROADWAY PROFILE

SCALE: 1"=50' | SHEET 1 OF 2 SHEETS | STA. 45+00.00 TO STA. 59+20.00

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
341	FAP 341 23 IM	COOK	83	19

CONTRACT NO. 62V09
ILLINOIS | FED. AID PROJECT

APPENDIX D

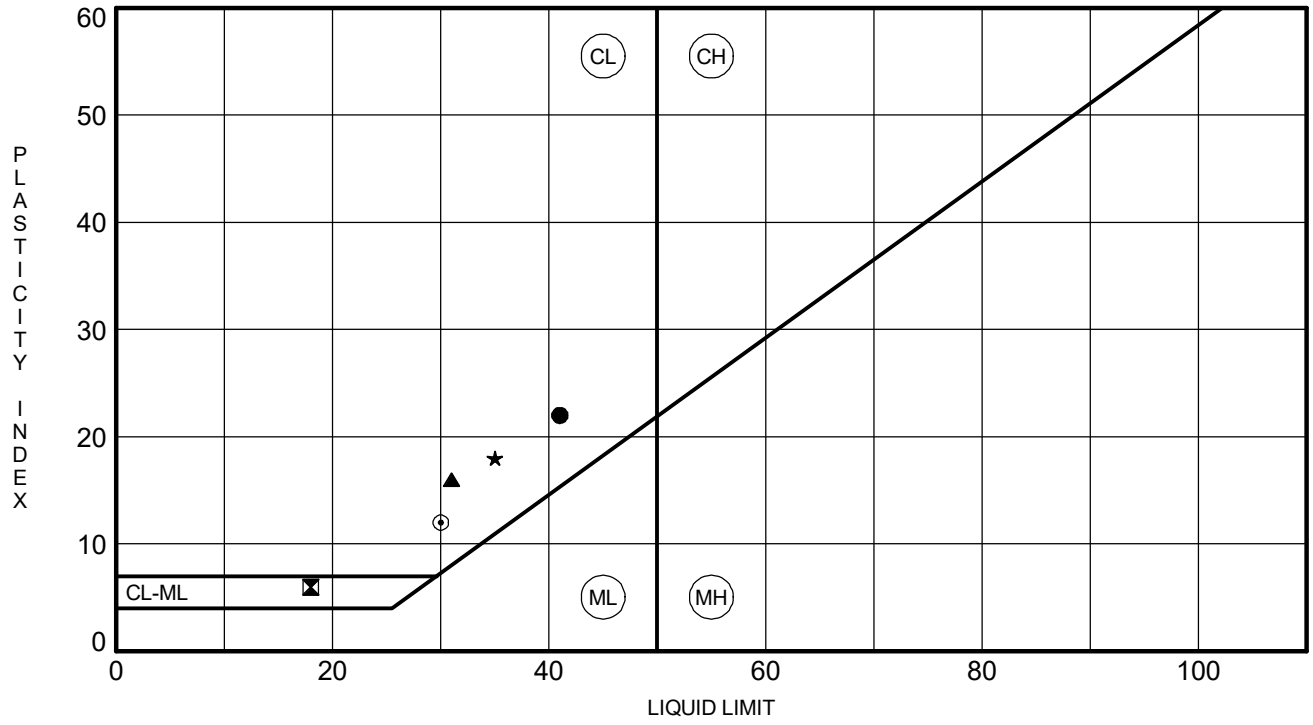
ATTERBERG LIMITS RESULTS

GEOCON PROFESSIONAL SERVICES

PRINT DATE 1/13/2025

CLIENT Peralte Clark **PROJECT NAME** Huntington Blvd & Higgins Rd Improvements

PROJECT NUMBER 24-G1260 **PROJECT LOCATION** Hoffman Estates, IL



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-1**	**3.5**	**41**	**19**	**22**	**91**	**CLAY (A-7-6) (GI = 21)**
⊠	**B-1**	**21.0**	**18**	**12**	**6**	**51**	**CLAY LOAM (A-4) (GI = 0)**
▲	**B-2**	**11.0**	**31**	**15**	**16**	**89**	**CLAY (A-6) (GI = 13)**
★	**B-3**	**3.5**	**35**	**17**	**18**	**80**	**CLAY (A-6) (GI = 13)**
⊙	**B-5**	**3.5**	**30**	**18**	**12**	**97**	**CLAY (A-6) (GI = 11)**

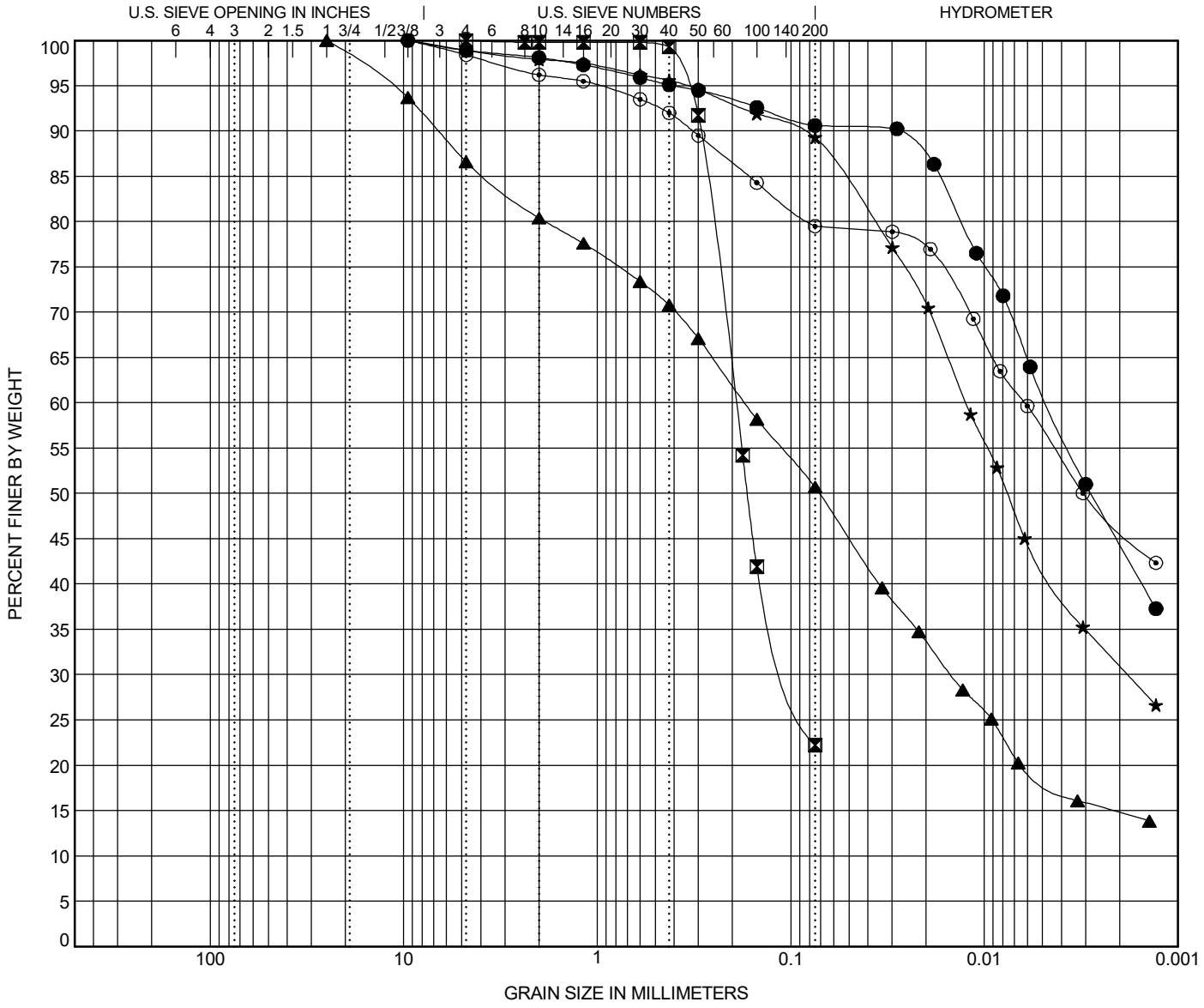
22774 Citation Road, Unit A Frankfort, IL 60423 Phone 815-806-9986

GRAIN SIZE DISTRIBUTION

PRINT DATE 1/13/2025

CLIENT Peralte Clark **PROJECT NAME** Huntington Blvd & Higgins Rd Improvements

PROJECT NUMBER 24-G1260 **PROJECT LOCATION** Hoffman Estates, IL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	B-1	3.5	CLAY (A-7-6) (GI = 21)	41	19	22		
⊠	B-1	13.5	SANDY LOAM (A-2)					
▲	B-1	21.0	CLAY LOAM (A-4) (GI = 0)	18	12	6		
★	B-2	11.0	CLAY (A-6) (GI = 13)	31	15	16		
⊙	B-3	3.5	CLAY (A-6) (GI = 13)	35	17	18		

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-1	3.5	9.5	0.005			1.1	8.3	29.6	61.0
⊠	B-1	13.5	4.75	0.192	0.099		0.0	77.8	22.2	
▲	B-1	21.0	25	0.173	0.015		13.4	35.9	32.2	18.5
★	B-2	11.0	9.5	0.012	0.002		1.1	9.6	47.3	42.0
⊙	B-3	3.5	9.5	0.006			1.6	18.9	22.5	57.0

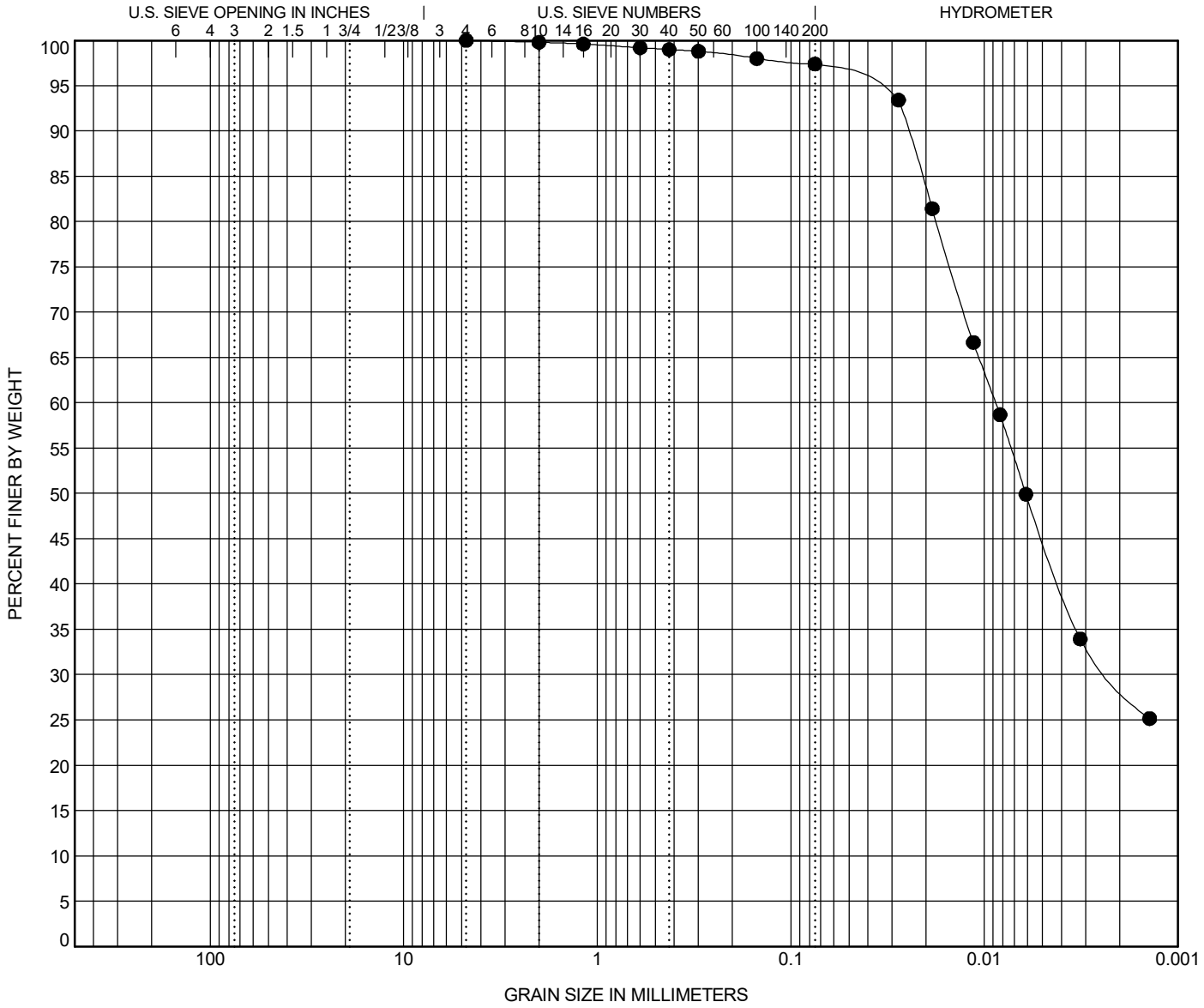
22774 Citation Road, Unit A Frankfort, IL 60423 Phone 815-806-9986

GRAIN SIZE DISTRIBUTION

PRINT DATE 1/13/2025

CLIENT Peralte Clark **PROJECT NAME** Huntington Blvd & Higgins Rd Improvements

PROJECT NUMBER 24-G1260 **PROJECT LOCATION** Hoffman Estates, IL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● **B-5**	**3.5**	**CLAY (A-6) (GI = 11)**	**30**	**18**	**12**		

BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **B-5**	**3.5**	**4.75**	**0.009**	**0.002**		**0.0**	**2.6**	**52.4**	**45.0**

22774 Citation Road, Unit A Frankfort, IL 60423 Phone 815-806-9986

Illinois Department of Transportation

Soil Test Data

Route
Section
County Cook
Location IL72 (Higgins Road)

Lab. No.	B-1	B-1	B-2	B-3
Station	50+70	50+70	48+95	48+10
Offset	70' RT	70' RT	60' LT	240' LT
Depth	3.5 ft	21.0 ft	11.0 ft	3.5 ft
AASHTO Classification	A-7-6 (21)	A-4 (0)	A-6 (13)	A-6 (13)
Illinois Textural Classification	CLAY	CLAY LOAM	CLAY	CLAY
Gradation Passing – 1”	100 %	100 %	100 %	100 %
¾”	100 %	98.0 %	100 %	100 %
½”	100 %	96.0 %	100 %	100 %
No. 4	98.9 %	86.6 %	98.9 %	98.4 %
No. 10	98.1 %	80.4 %	97.9 %	96.2 %
No. 40	95.1 %	70.8 %	95.6 %	92.0 %
No. 100	92.6 %	58.2 %	91.9 %	84.3 %
No. 200	90.6 %	50.7 %	89.3 %	79.5 %
Sand (AASHTO T-88)	8.4 %	41.5 %	9.7 %	19.2 %
Silt (AASHTO T-88)	29.9 %	37.2 %	47.8 %	22.9 %
Clay (AASHTO T-88)	61.7 %	21.4 %	42.5 %	57.9 %
Liquid Limit (AASHTO T-89)	41 %	18 %	31 %	35 %
Plasticity Index (AASHTO T-90)	22 %	6 %	16 %	18 %
Std. Dry Density pcf (AASHTO T-99)	N/A	N/A	N/A	N/A
Optimum Moisture (AASHTO T-99)	N/A %	N/A %	N/A %	N/A %
Subgrade Support Rating	FAIR	POOR	FAIR	FAIR
Insitu Moisture	24.9 %	9.9 %	18.8 %	17.6 %

Illinois Department of Transportation

Soil Test Data

Route _____

Section _____

County Cook

Location IL72 (Higgins Road)

Lab. No.	B-5			
Station	51+20			
Offset	60' LT			
Depth	3.5 ft	ft	ft	ft
AASHTO Classification	A-6 (11)			
Illinois Textural Classification	CLAY			
Gradation Passing – 1”	100 %	%	%	%
¾”	100 %	%	%	%
½”	100 %	%	%	%
No. 4	100 %	%	%	%
No. 10	99.8 %	%	%	%
No. 40	99.0 %	%	%	%
No. 100	98.0 %	%	%	%
No. 200	97.4 %	%	%	%
Sand (AASHTO T-88)	2.6 %	%	%	%
Silt (AASHTO T-88)	54.2 %	%	%	%
Clay (AASHTO T-88)	45.0 %	%	%	%
Liquid Limit (AASHTO T-89)	30 %	%	%	%
Plasticity Index (AASHTO T-90)	12 %	%	%	%
Std. Dry Density pcf (AASHTO T-99)	N/A			
Optimum Moisture (AASHTO T-99)	N/A %	%	%	%
Subgrade Support Rating	FAIR			
Insitu Moisture	25.0 %	%	%	%

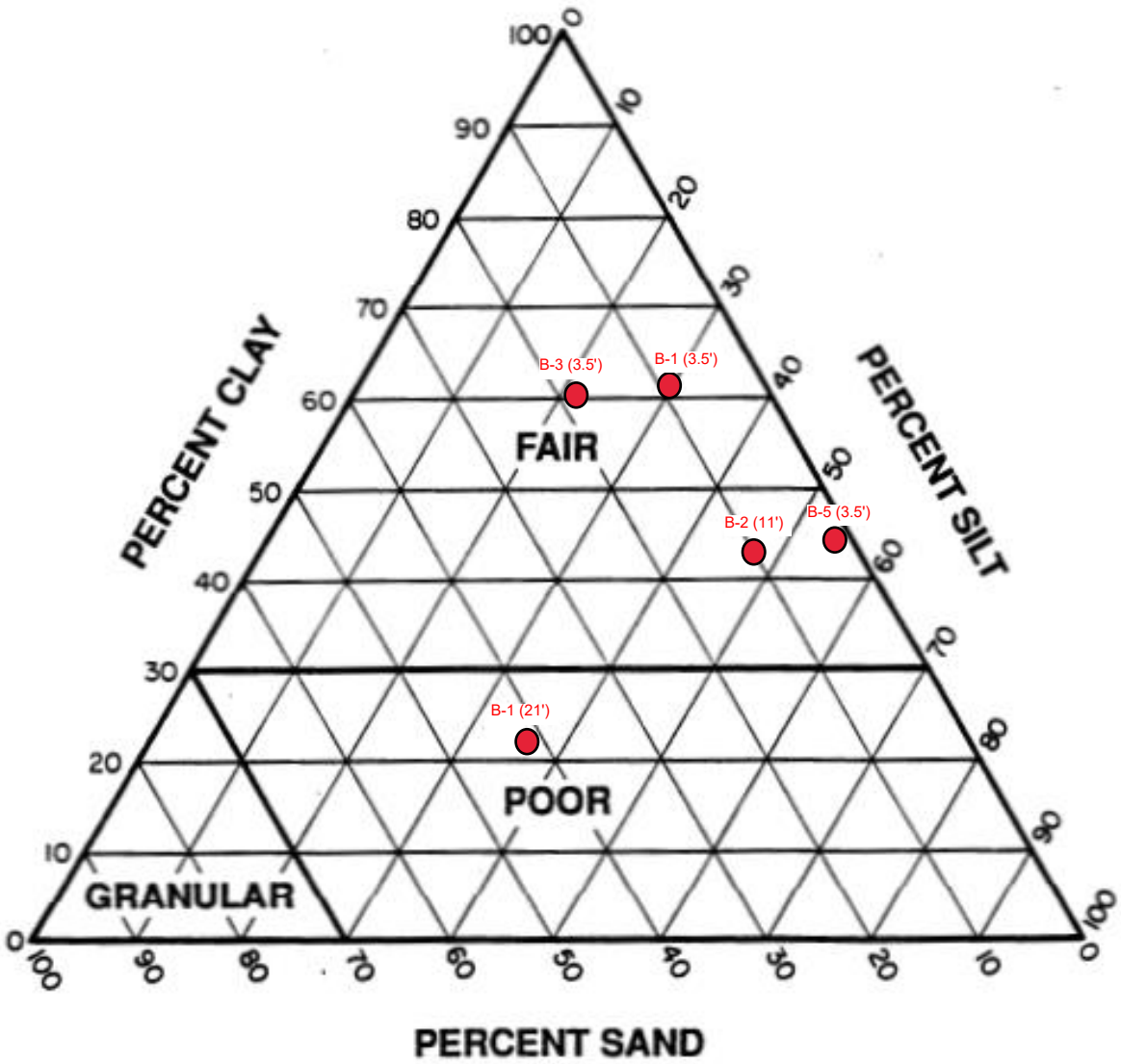
SSR Chart

Client: Peralte Clark
44 S. Vail Ave, Suite 201
Arlington Heights, IL 60005

Project: Huntington Blvd & Higgings Rd Improvements
Huntington Blvd to Higgings Rd
Hoffman Estates, Illinois

Date: January 2025

GEOCON Project No.: 24-G1260



APPENDIX E

EMBANKMENT I (D1)
Effective: March 1, 2011
Revised: November 1, 2013~~June 7, 2013~~

Description. This work shall be according to Section 205 of the Standard Specifications except for the following.

Material. All material shall be approved by the District Geotechnical Engineer. The proposed material must meet the following requirements.

a) The laboratory Standard Dry Density shall be a minimum of 90 lb/cu ft (1450 kg/cu m) when determined according to AASHTO T 99 (Method C).

b) The organic content shall be less than ten percent determined according to AASHTO T 194 (Wet Combustion).

c) Soils which demonstrate the following properties shall be restricted to the interior of the embankment and shall be covered on both the sides and top of the embankment by a minimum of 3 ft (900 mm) of soil not considered detrimental in terms of erosion potential or excess volume change.

    1) A grain size distribution with less than 35 percent passing the number 75 um (#200) sieve.

    2) A plasticity index (PI) of less than 12.

    3) A liquid limit (LL) in excess of 50.

d) Reclaimed asphalt shall not be used within the ground water table or as a fill if ground water is present.

e) The RAP used shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications". Gradation deleterious count shall not exceed 10% of total RAP and 5% of other by total weight.

CONSTRUCTION REQUIREMENTS

Samples. Embankment material shall be sampled, tested, and approved before use. The contractor shall identify embankment sources, and provide equipment as the Engineer requires, for the collection of samples from those sources. Samples will be furnished to the Geotechnical Engineer a minimum of three weeks prior to use in order that laboratory tests for approval and compaction can be performed. Embankment material placement cannot begin until tests are completed and approval given.

Placing Material. In addition to Article 202.03, broken concrete, reclaimed asphalt with no expansive aggregate, or uncontaminated dirt and sand generated from construction or demolition activities shall be placed in 6 inches (150 mm) lifts and disked with the underlying lift

until a uniform homogenous material is formed. This process also applies to the overlaying lifts. The disk must have a minimum blade diameter of 24 inches (600 mm).

When embankments are to be constructed on hillsides or existing slopes that are steeper than 3H:1V, steps shall be keyed into the existing slope by stepping and benching as shown in the plans or as directed by the engineer.

Compaction. Soils classification for moisture content control will be determined by the Soils Inspector using visual field examination techniques and the IDH Textural Classification Chart.

When tested for density in place each lift shall have a maximum moisture content as follows.

a) A maximum of 110 percent of the optimum moisture for all forms of clay soils.

b) A maximum of 105 percent of the optimum moisture for all forms of clay loam soils.

Stability. The requirement for embankment stability in Article 205.04 will be measured with a Dynamic Cone Penetrometer (DCP) according to the test method in the IDOT Geotechnical Manual. The penetration rate must be equal or less than 1.5 inches (38 mm) per blow.

Basis of Payment. This work will not be paid separately but will be considered as included in the various items of excavation.

Illinois Department of Transportation

Memorandum

To:	Regional Engineers
From:	Jack A. Elston
Subject:	Special Provision for Aggregate Subgrade Improvement
Date:	January 14, 2022

This special provision was developed by the Central Bureau of Materials to allow the use of coarse aggregate in fills ranging from 12 in. to over 24 in. in thickness. It has been revised to reduce the CA 2, CA 6, and CA 10 maximum lift thickness from 12 inches to 9 inches. In addition, it has been revised to fit with the 2022 Standard Specifications.

It should be included in contracts utilizing aggregate subgrade improvement.

The designer should check with the District Geotechnical Engineer to determine the appropriate thickness of the aggregate subgrade material.

The districts should include the BDE Check Sheet marked with the applicable special provisions for the April 29, 2022 and subsequent lettings. The Project Coordination and Implementation Section will include a copy in the contract.

80274m

AGGREGATE SUBGRADE IMPROVEMENT (BDE)

Effective: April 1, 2012
Revised: April 1, 2022

Add the following Section to the Standard Specifications:

"**SECTION 303. AGGREGATE SUBGRADE IMPROVEMENT**

303.01 Description. This work shall consist of constructing an aggregate subgrade improvement (ASI).

303.02 Materials. Materials shall be according to the following.

Item	Article/Section
(a) Coarse Aggregate	1004.07
(b) Reclaimed Asphalt Pavement (RAP)	1031.09

303.03 Equipment. The vibratory roller shall be according to Article 1101.01, or as approved by the Engineer. Vibratory machines, such as tampers, shall be used in areas where rollers do not fit.

303.04 Soil Preparation. The minimum immediate bearing value (IBV) of the soil below the improved subgrade shall be according to the Department's "Subgrade Stability Manual" for the aggregate thickness specified.

303.05 Placing and Compacting. The maximum nominal lift thickness of aggregate gradations CA 2, CA 6, and CA 10 when compacted shall be 9 in. (225 mm). The maximum nominal lift thickness of aggregate gradations CS 1, CS 2, and RR 1 when compacted shall be 24 in. (600 mm).

The top surface of the aggregate subgrade improvement shall consist of a layer of capping aggregate gradations CA 6 or CA 10 that is 3 in. (75 mm) thick after compaction. Capping aggregate will not be required when aggregate subgrade improvement is used as a cubic yard pay item for undercut applications.

Each lift of aggregate shall be compacted to the satisfaction of the Engineer. If the moisture content of the material is such that compaction cannot be obtained, sufficient water shall be added so that satisfactory compaction can be obtained.

303.06 Finishing and Maintenance. The aggregate subgrade improvement shall be finished to the lines, grades, and cross sections shown on the plans, or as directed by the Engineer. The aggregate subgrade improvement shall be maintained in a smooth and compacted condition.

303.07 Method of Measurement. This work will be measured for payment according to Article 311.08.

303.08 Basis of Payment. This work will be paid for at the contract unit price per cubic yard (cubic meter) or ton (metric ton) for AGGREGATE SUBGRADE IMPROVEMENT or at the contract unit price per square yard (square meter) for AGGREGATE SUBGRADE IMPROVEMENT, of the thickness specified."

Add the following to Section 1004 of the Standard Specifications:

"**1004.07 Coarse Aggregate for Aggregate Subgrade Improvement (ASI).** The aggregate shall be according to Article 1004.01 and the following.

(a) Description. The coarse aggregate shall be crushed gravel, crushed stone, or crushed concrete. In applications where greater than 24 in. (600 mm) of ASI material is required, gravel may be used below the top 12 in (300 mm) of ASI.

(b) Quality. The coarse aggregate shall consist of sound durable particles reasonably free of deleterious materials.

(c) Gradation.

(1) The coarse aggregate gradation for total ASI thickness less than or equal to 12 in. (300 mm) shall be CA 2, CA 6, CA 10, or CS 1.

The coarse aggregate gradation for total ASI thickness greater than 12 in. (300 mm) shall be CS 1 or CS 2 as shown below or RR 1 according to Article 1005.01(c).

	COARSE AGGREGATE SUBGRADE GRADATIONS				
Grad No.	Sieve Size and Percent Passing				
	8"	6"	4"	2"	#4
CS 1	100	97 ± 3	90 ± 10	45 ± 25	20 ± 20
CS 2		100	80 ± 10	25 ± 15	

	COARSE AGGREGATE SUBGRADE GRADATIONS (Metric)				
Grad No.	Sieve Size and Percent Passing				
	200 mm	150 mm	100 mm	50 mm	4.75 mm
CS 1	100	97 ± 3	90 ± 10	45 ± 25	20 ± 20
CS 2		100	80 ± 10	25 ± 15	

(2) Capping aggregate shall be gradation CA 6 or CA 10."

Add the following to Article 1031.09 of the Standard Specifications:

"(b) RAP in Aggregate Subgrade Improvement (ASI). RAP in ASI shall be according to Articles 1031.01(a), 1031.02(a), 1031.06(a)(1), and 1031.06(a)(2), and the following.

(1) The testing requirements of Article 1031.03 shall not apply.

(2) Crushed RAP used for the lower lift may be mechanically blended with aggregate gradations CS 1, CS 2, and RR 1 but it shall be no greater than 40 percent of the total product volume. RAP agglomerations shall be no greater than 4 in. (100 mm).

(3) For capping aggregate, well graded RAP having 100 percent passing the 1 1/2 in. (38 mm) sieve may be used when aggregate gradations CS 1, CS 2, CA 2, or RR 1 are used in the lower lift. FRAP will not be permitted as capping material.

Blending shall be through calibrated interlocked feeders or a calibrated blending plant such that the prescribed blending percentage is maintained throughout the blending process. The calibration shall have an accuracy of ± 2.0 percent of the actual quantity of material delivered."

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