Illinois Department of Transportation

Memorandum

To:	Fawad Aqueel	Attn:	Dan Wilgreen Farhan Tariq
From:	Stephen Jones	By:	Giancarlo Gierbolini
Subject:	Roadway Geotechnical Report*		
Date:	November 22, 2024		

*Route:	FAU 1321 (Illinois Route 19 – IL 19)
Location:	from Wise Road to Roselle Road
Section:	FAU 1321 22 RS
County:	Cook/DuPage
Contract:	62R58

Attached is the condensed Roadway Geotechnical Report prepared by the District One Geotechnical Section for the above referenced project. The report provides geotechnical soil information obtained during the field investigation, as well as recommendations for the proposed improvements.

Please note that this report contains information regarding the condition of the subgrade soil encountered below the proposed pavement as well as recommendations for the proposed aggregate subgrade treatment supporting the pavement.

If you have any questions regarding this report, please contact Robert Claussen, P.E. at (847)705-4735 or Giancarlo Gierbolini, P.E. at (847) 705-4003.

Cc: IDOT Soil Inspector

CONDENSED ROADWAY GEOTECHNICAL REPORT

Date: November 22, 2024
Route: FAU 1321 (Illinois Route 19 – IL 19)
Location: from Wise Road to Roselle Road
Section: FAU 1321 22 RS
County: Cook/DuPage
Contract: 62R58

LOCATION OF IMPROVEMENT

The proposed project will include roadway improvements on Illinois Route 19 (IL 19) between Wise Road and Roselle Road. The project is located in the Villages of Roselle and Schaumburg in Cook and DuPage Counties. A project location map has been attached at the end of this report for reference.

DESCRIPTION OF PROJECT

The proposed roadway improvements will begin just west of the crossing of IL 19 and Wise Road at Station 35+20 and end at the crossing of IL 19 and Roselle Road at Station 176+95, for an overall improvement length of 14,175 feet. The improvements will consist of resurfacing the existing roadway and reconstructing and widening the existing paved shoulders.

PAVEMENT DESIGN

Based on the design plans, the proposed improvements will consist of resurfacing the existing Hot Mix Asphalt (HMA) pavement and constructing new full depth shoulders. The proposed pavement areas will consist of the following sections:

Resurfacing pavement

- 1 ¾ inches of HMA surface course pavement
- 2 inches of HMA binder course pavement.

Paved shoulders

- 1 ¾ inches of HMA surface course pavement
- 6 ¼ inches of HMA Base Course
- 4 inches of Subbase Granular Material, Type B

SURROUNDING LAND USE

The existing land use within the vicinity of the project primarily consists of developed residential and commercial lots. It is our understanding that the proposed paved shoulder improvements will include only limited earthwork as needed to tie proposed edge of pavement grade to the existing grass embankment. The roadway pavement will be milled and resurfaced, and the profile elevations will remain essentially the same as the existing roadway. The existing and proposed storm water drainage within the project limits primarily consists of open ditch drainage and curb and gutter with inlets connected to piped storm sewer.

PEDOLOGICAL SETTING

According to the U.S. Department of Agriculture Soil Survey, Natural Resources Conservation Service (Web Soil Survey http://websoilsurvey.nrcs.usda.gov) for Cook and DuPage Counties, the native, near surface pedological soil types within the project limits primarily consist of those listed below. The Pedological Map included at the end of this report shows the various soil types in relation to the project limits. It should be noted that the near surface water depths indicated for each soil type to not represent the long term water table.

Elliot silt loam, 0 to 2 percent slopes (146A) – This somewhat poorly drained material is found in till plains and ground moraines at the footslope and summit. The parent material consists of a thin mantle of loess or other silty materials over silty clay loam till. The typical near surface soil profile consists of silt loam from 0 to 6 inches below existing ground. From 6 to 60 inches, the profile consists of layers of silty clay loam and silty clay. The near surface water may be encountered as high as 12 and 24 inches below the ground surface. Flooding and ponding do not typically occur, and all areas are prime farmland.

Elliot silt loam, 2 to 4 percent slopes (146B) – This somewhat poorly drained material is found in till plains and ground moraines at the summit and backslope. The parent material consists of a thin mantle of loess or other silty materials over silty clay loam till. The typical near surface soil profile consists of silt loam from 0 to 9 inches below existing ground. From 9 to 60 inches, the profile consists of layers of silty clay loam and silty clay. The near surface water may be

encountered as high as 12 and 24 inches below the ground surface. Flooding and ponding do not typically occur, and all areas are prime farmland.

Martinton silt loam, 0 to 2 percent slopes (189A) – This somewhat poorly drained material is found in till floored lake plains at the summit and footslope. The parent material consists of lacustrine deposits. The typical near surface soil profile consists of silt loam from 0 to 12 inches below existing ground. From 12 to 39 inches, the profile consists of silty clay loam. This is underlain by layers of sandy loam and silty clay to a depth of 60 inches. The near surface water may be encountered as high as 12 and 24 inches below the ground surface. Flooding and ponding do not typically occur, and all areas are prime farmland.

Varna silt loam, 2 to 4 percent slopes (223B) – This well drained material is found in ground moraines and end moraines at the summit and backslope. The parent material consists of loess over silty clay loam or clay loam till. The typical near surface soil profile consists of silt loam from 0 to 12 inches below existing ground. This is underlain by silty clay loam to a depth of 60 inches. The near surface water may be encountered as high as 24 and 42 inches below the ground surface. Flooding and ponding do not typically occur, and all areas are prime farmland.

Ashkum silty clay loam, 0 to 2 percent slopes (232A) – This poorly drained material is found in end moraines and ground moraines at the toe of slope. The parent material consists of a clayey colluvium over till. The typical near surface soil profile consists of silty clay loam from 0 to 12 inches below existing ground. From 12 to 29 inches, the material consists of silty clay. From 29 to 60 inches, the material consists of silty clay loam. The near surface water may be encountered as high as 0 and 12 inches below the ground surface. Ponding is frequent; however, flooding does not typically occur. All areas are prime farmland if they are drained.

Peotone silty clay loam, 0 to 2 percent slopes (330A) – This very poorly drained material is found in depressions at the toe of slope. The parent material consists of a silty and clayey colluvium. The typical near surface soil profile consists of layers of silty clay loam and silty clay from the ground surface to a depth of 60 inches below existing ground. The near surface water may be encountered as high as 0 and 12 inches below the ground surface. Ponding is frequent; however, flooding does not typically occur. All areas are prime farmland if they are drained.

Barrington silt loam, 2 to 4 percent slopes (443B) – This moderately well drained material is found in terraces, lake plaines, and outwash planes at the summit and backslope. The parent material consists of loess and other silty material, and underlying outwash. The typical near surface soil profile consists of layers of silty loam and silty clay loam from the ground surface to a depth of 42 inches below existing ground. This was underlain by stratified layers of fine sand and silt loam to a depth of 60 inches. The near surface water may be encountered as high as

24 and 42 inches below the ground surface. Ponding is frequent; however, flooding does not typically occur. All areas are prime farmland if they are drained.

Markham silt loam, 2 to 4 percent slopes (531B) – This somewhat moderately well drained material is found in ground moraines and end moraines at the backslope and summit. The parent material consists of a thin mantle of loess or other silty materials over till. The typical near surface soil profile consists of silt loam and silty clay loam from 0 to 60 inches below existing ground. The near surface water may be encountered as high as 24 to 42 inches below the ground surface. Flooding and ponding do not typically occur, and all areas are considered prime farmland.

Markham silt loam, 4 to 6 percent slopes (531C2) – This moderately well drained material is found in ground moraines and end moraines at the backslope and shoulder. The parent material consists of loess over silty clay loam till. The typical near surface soil profile consists of silt loam and silty clay loam from 0 to 60 inches below existing ground. The near surface water may be encountered as high as 24 to 42 inches below the ground surface. Flooding and ponding do not typically occur, and all areas are considered prime farmland.

Orthents clayey, undulating (805B) – This moderately well drained material is found in lake plains and ground moraines at the backslope and summit. The parent material consists of earthy fill. The typical near surface soil profile consists silty clay from 0 to 60 inches below existing ground. The near surface water may be encountered as high as 24 to 42 inches below the ground surface. Flooding and ponding do not typically occur and this land is not considered prime farmland.

Markham-Ashkum-Beecher complex, 1 to 6 percent slopes (854B) – This material consists of a combination of soil types. The material is poorly drained to moderately well drained, found on end moraines and ground moraines, typically located at the backslope, footslopes, summit, and toe of slope. The parent material consists of thin mantles of loess or other silty material, underlying till, and colluvium. The typical soil profile consists of layers of silt loam and silty clay loam to a depth of 60 inches below the ground surface. Neither flooding nor ponding typically occur, with the exception of Ashkum, which experiences frequent ponding. This soil area is not considered to be prime farmland.

Muskego and Houghton mucks, 0 to 2 percent slopes (903A) – This very poorly drained material is found in depressions, ground moraines, and outwash plains at the toe of slope. The parent material consists of organic material. The typical soil profile consists of layers of muck from the ground surface down to 36 inches. This material is underlain by silt loam to a depth of 60 inches below the ground surface. The near surface water may be encountered as high as 0 to

12 inches below the ground surface. Ponding is frequent; however, flooding does not typically occur, and this soil area is considered prime farmland.

Sawmill silty clay loam, heavy till plain, 0 to 2 percent slopes (3107A) – This poorly drained material is found in flood plains. The parent material consists of alluvium. The typical near surface soil profile consists of layers of silty clay loam and silt loam from the ground surface to a depth of 60 inches below existing ground. The near surface water may be encountered as high as 0 and 12 inches below the ground surface. Ponding and flooding are frequent. All areas are prime farmland if they are drained and protected from flooding or are not frequently flooded during the growing season.

GEOLOGICAL SETTING

According to the map titled SURFICIAL GEOLOGY OF THE CHICAGO REGION by H.B. Willman and Jerry A. Lineback (1970), the project area is located geographically within the Wadsworth Member of the Wedron Formation in the Valparaiso Morainic System as part of the Roselle Moraine. The near surface geology for this area consists of mostly gray clayey and silty clayey till, with some pebbles, cobbles, and boulders. The soils encountered in the borings completed in the field at the project site and described in the boring logs included in this report, are in general agreement with this description. Soil descriptions specific to this site can be found in the Subsurface Conditions section of this report.

STORMWATER POLLUTION PREVENTION PLAN SITE DESCRIPTION

We understand that this project may be subject to statewide general NPDES storm water permit for the construction site activities and that a Storm Water Pollution Prevention Plan (SWPPP) would be required. In order to complete the SWPPP (Form BDE 2342) a description of the project site must be provided, including the existing soil types and their erosion potential in addition to identifying the locations of any highly erodible soils. The erosion properties for the soil type present within the vicinity of the project limits are presented in Table 1 below. The erosion factors (K factors) are used to evaluate the erosion potential of the soils, with the soils being more susceptible to sheet and rill erosion as values increase. The K factor for the soils within the project limit ranged from **0.20 to 0.37**. The Erosion Hazard Rating of each soil type is based on soil erosion factor (K), slope of the ground surface, and content of rock fragments, and represents the potential for surface erosion. The soils within the project limits have soil erosion rating of **Slight to Moderate**. The NRCS Soil Erosion Factor (K) Map included at the end of this report shows the soil areas and the applicable K factor in relation to the project limits.

Table 1: Soil Erosion Properties

Soil Name	Slope (%)	K Factor	Erosion Hazard Rating	Hydric Rating
Elliot silt loam (146A)	0 to 2	0.32	Slight	No
Elliot silt loam (146B)	2 to 4	0.32	Moderate	No
Martinton silt loam (189A)	0 to 2	0.32	Slight	No
Varna silt loam (223B)	2 to 4	0.32	Moderate	No
Ashkum silty clay loam (232A)	0 to 2	0.20	Slight	Yes
Peotone silty clay loam (330A)	0 to 2	0.24	Slight	Yes
Barrington silt loam (443B)	2 to 4	0.28	Moderate	No
Markham silt loam (531B)	2 to 4	0.37	Moderate	No
Markham silt loam (531C2)	4 to 6	0.37	Moderate	No
Orthents clayey (805B)	undulating	0.32	Moderate	No
Markham-Ashkum-Beecher complex (854B)	1 to 6	0.37	Moderate	No

Soil Name	Slope (%)	K Factor	Erosion Hazard Rating	Hydric Rating
Muskego and Houghton mucks (903A)	0 to 2	NA	NA	Yes
Sawmill silty clay loam, heavy till plain (3107A)	0 to 2	0.28	Slight	Yes

PAVEMENT CONDITION SURVEY

It is our understanding that the proposed improvements will include resurfacing the existing roadway through lanes and new full depth HMA shoulders. The proposed shoulders will have a overall width of 5 feet. The width of the existing shoulders varies, as does the condition of the existing shoulders. In areas were the existing pavement edge is in poor condition, the pavement will be sawcut at the edge of the acceptable pavement and the bad pavement will be removed. The new full depth shoulders will begin at the sawcut and extend to the overall 5 foot width.

CLIMATOLOGICAL DATA

The field investigation for this project was completed in November 2024. The monthly temperature and precipitation data for the three months prior to the investigation are provided in the table below. The months prior to the investigation as well as the partial month during which the investigation was completed, experienced precipitation that was lower than average. This may result in the moisture levels of the near surface soils being lower than normal and the depth of the water encountered in the soil borings being deeper than normal.

Table 2: Climate Conditions

Month	Precipitation (in.)		Temperature °F	
	Total	Departure from Normal	Average Temp.	Departure from Normal
August 2024	**5.9**	**2.2**	**75.0**	**-0.4**
September 2024	**2.6**	**-1.7**	**74.8**	**1.0**
October 2024	**1.3**	**-1.9**	**70.6**	**4.3**

The recording station for climatological data is located at O'Hare International Airport, which is approximately 9 miles east of the project site.

DRILLING AND SAMPLING

The subsurface exploration was completed in November 2024 and consisted of 6 soil borings and 6 Dynamic Cone Penetrometer (DCP) test location. The soil borings were completed using a truck mounted, Mobil B-57 drill rig with 3 ¼ inch I.D. hollow stem augers, and extended to a maximum depth of approximately 11.5 feet below the existing ground surface. The DCP tests were extended to approximately 6 feet below the existing ground surface.

Soils were collected in the borings with the use of a split barrel sampler, in accordance with AASHTO 206-09 (2013) "Penetration Test and Split-Barrel Sampling of Soils." In the split barrel sampling procedure, a split spoon sampler having a 2-inch outside diameter, an inside diameter of 1 $^{3}/_{8}$ inches, and a. length of 1.5 feet is driven into the soil. This sampler is advanced by driving it with a 140-pound weight, falling freely from a height of 30 inches with the Standard Penetration Resistance being recorded as a number of blows required to advance the sampling spoon a depth of 12 inches after an initial driving of 6 inches used to seat the sampler.

Soil samples were collected at 2.5 foot intervals to the boring termination depth. The soils encountered were inspected, visually classified and logged. The unconfined compressive strength of cohesive soil samples was tested in the field using a RIMAC compression tester and were verified using a calibrated hand penetrometer. Representative soil samples were collected from each sample interval and returned to the laboratory for further testing. The locations of the soil borings in relation to the existing and proposed conditions are shown in the Soil Boring Location Plan at the end of this report.

The DCP testing was used to evaluate the strength of the near surface soils in areas that are inaccessible for the drill rig, due to either existing conditions such as ditch grading, soft surface soils, or trees, or due to utility conflicts such as overhead power lines. The DCP apparatus is a hand operated piece of equipment consisting of a steel rod with a cone shaped head with precision dimensions attached at the lower end and a 17.6 lb. donut hammer with a drop of 22.6 inches at the other end. The test involves driving the cone into the soil by using repeated drops of the hammer. The number of blows required to drive the cone for each interval of 6 inches is recorded. The number of blows can then be correlated to the immediate bearing value (IBV) and unconfined compressive strength (Qu) of the soils encountered during the test. The in-situ samples are not collected in this test procedure.

SUBSURFACE CONDITIONS

The soil borings and DCP tests for the proposed roadway and shoulder improvements were drilled on the existing shoulders or in the grass area adjacent to the existing roadway. The near surface materials consisted of 12 inches of HMA pavement or 8 to 15 inches of crushed aggregate fill. The soil profile below the near surface materials predominantly consisted of stiff to hard silty clay for the full depth of the soil borings.

The Roadway Analysis and Recommendations section below provides information regarding the evaluation of the subgrade soils and determining if undercuts are warranted. Care should be taken when evaluating the exposed subgrade soils to determine the suitability of the soils present at this depth. The soil boring logs have been included at the end of this report and can be referenced for information at specific locations.

Water was not encountered in any of the soil borings during or after they were drilled. Long term observations in cased borings or piezometers would be necessary to more accurately evaluate groundwater conditions. In general, it should be noted that the groundwater level may fluctuate based on seasonal precipitation, evaporation, surface run-off and other factors.

ROADWAY GEOTECHNICAL ANALYSIS AND RECOMMENDATIONS

Subgrade Support Rating and Illinois Bearing Ratio

Mechanistic pavement design procedures require that the subgrade soils be assigned a Subgrade Support Rating (SSR) based on the particle size distribution as depicted on the SSR chart. The subgrade soils encountered during the field exploration were primarily cohesive and have an SSR of rating Fair to Poor. Based on this, we recommend that an **SSR of poor** be used for the design of the proposed pavement section when using mechanistic design procedures. AASHTO design procedures require that the subgrade soils be assigned an Illinois Bearing Ratio (IBR). This value can be determined by means of physical testing or by using an assumed value based on the soil type. Based on the soils encountered, we recommend using an assumed **IBR value of 3** for the design of the proposed pavement when using AASHTO design procedures.

Roadway Subgrade

The proposed pavement section should be supported on 12 inches of improved subgrade consisting of AGGREGATE SUBGRADE IMPROVEMENT (SQ YD) in accordance with the Bureau of Design and Environment (BDE) Aggregate Subgrade Improvement Special Provision (April 1, 2022). The combination of the soils encountered at the proposed subgrade elevation

and the 12 inch aggregate subgrade layer should provide suitable support for the proposed pavement structure.

Based on the soils encountered in the borings, no undercuts of the subgrade soils below the 12 inch aggregate layer are recommended at this time. The actual need for any undercuts should be determined in the field at the time of construction by the geotechnical engineer or soils inspector. We recommend including a plan quantity of AGGREGATE SUBGRADE IMPROVEMENT (CU YD) equal 25% of the planned full depth pavement area, assuming a thickness of 12 inches. All potentially unstable soils should be tested with a cone penetrometer and treated in accordance with Article 301.04 of the Standard Specifications for Road and Bridge Construction (SSRBC) adopted January 1, 2022 and the undercut guidelines in the IDOT Subgrade Stability Manual. If unsuitable soils are encountered in the field during construction, it is recommended that the soil be removed and replaced with material meeting the BDE Aggregate Subgrade Improvement Special Provision. Any Aggregate Subgrade Improvement material not needed for undercut replacement at the time of construction should be deleted from the contract with no extra compensation to the contractor.

Based on the above recommendation, there will be a need for two separate Aggregate Subgrade Improvement line items in the Schedule of Quantities (SOQ) included in the design plans:

- AGGREGATE SUBGRADE IMPROVEMENT 12” (SQ YD) – This will be used for the 12 inch aggregate subgrade improvement below new pavement sections and widening pavement sections.

- AGGREGATE SUBGRADE IMPROVEMENT (CU YD) – This will be used in locations where there are undercuts (below the 12 inch improved subgrade layer) where poor soils were removed.

Both of these line items reference back to the Bureau of Design and Environment (BDE) Aggregate Subgrade Improvement Special Provision (April 1, 2022).

We also recommend placing geotextile fabric at the base of all undercut areas where low strength subgrade soils are encountered. We recommend including a plan quantity of GEOTECHNICAL FABRIC FOR GROUND STABILIZATION (SQ YD) equal to 25% of the proposed full depth pavement area. The 12 inches of improved subgrade is not considered an undercut, and we do not recommend using geotextile fabric at the base of the proposed 12 inch improved subgrade layer unless it is determined to be necessary to achieve stability by the Geotechnical Engineer or soils inspector at the time of construction. Geotextile Fabric should meet the requirements of Article 210, Fabric for Ground Stabilization, of the SSRBC. Any

material not needed at time of construction should be deleted from the contract with no extra compensation to the contractor.

Settlement Potential

Based on the proposed plans, it appears that the proposed grades will be close to the existing grades. Based on the limited grade change and the material encountered in the soil borings, settlement of the soils underlying is estimated to be less than one inch.

CONSTRUCTION CONSIDERATIONS

This section provides the recommendations pertaining to the construction of the proposed improvements. It is recommended that work meet the requirements set forth in the IDOT Standard Specifications for Road and Bridge Construction (SSRBC) adopted January 1, 2022.

Site Preparation and Earthwork

All topsoil and any vegetation shall be removed from areas of proposed widening. In areas where topsoil will be removed to facilitate construction, we recommend using a topsoil stripping depth of 6 inches to determine contract quantities. Topsoil that is stripped should be stockpiled and reused once all roadway construction is completed. The pay item for this is TOPSOIL EXCAVATION AND PLACEMENT (CU YD). All earthwork shall be in accordance with Sections 204 and 205 of the IDOT SSRBC (Adopted January 1, 2022). District One currently uses a shrinkage factor of 15 percent.

Excavation Adjacent to Existing Embankment

All of the excavation and trenching operations should meet the requirements of IDOT and OSHA. The need for trench boxes, temporary earth retention, or bracing needed to install the proposed utility improvements should be evaluated prior to commencing earth work should be coordinated with the resident engineer.

Groundwater Management

Water was not encountered in any of the borings during the field exploration. Based on plans provided by the design team, it is not anticipated that groundwater related issues will be encountered during construction of the near surface roadway improvements; however, the contractor should anticipate that the water may be perched (trapped) in fill materials and any granular deposits encountered. Water should not be permitted to collect in excavations during or after construction and any water encountered should be removed to maintain dry, stable excavations. Water that is permitted to collect in excavations can soften the subgrade and bearing soils, which may result in the need to over excavate.

If you have any questions regarding this report, please contact either Robert J. Claussen, P.E. at (847) 705-4735 or Giancarlo Gierbolini, P.E. at (847) 705-4003.

Prepared by:
Robert J. Claussen, P.E.
Geotechnical Engineer

Attachments:

- Project Location Map
- NRCS Pedology Map
- NRCS Soil Erosion Factor (K) Map
- Soil Boring Location Plan
- Soil Boring Logs
- Dynamic Cone Penetrometer Logs

PROJECT LOCATION MAP

Route: IL 19 (Irving Park Rd.)
Limits: East of Wise Rd. to Roselle Rd.
Municipalities: Villages of Roselle and Schaumburg
Contract: 62R58
Job No: D-91-164-22
Section: FAU 1321 22 RS
County: Cook and DuPage

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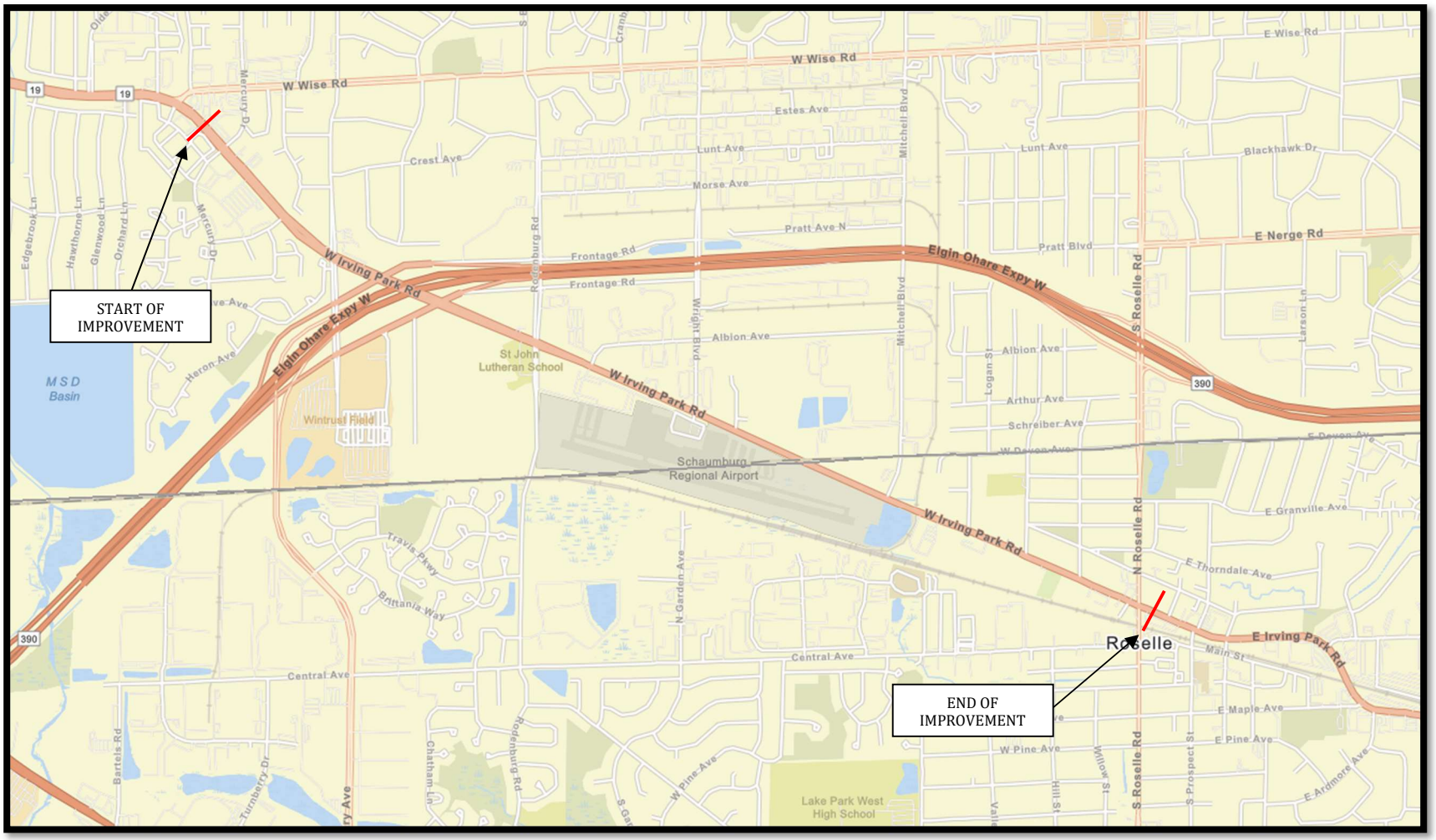
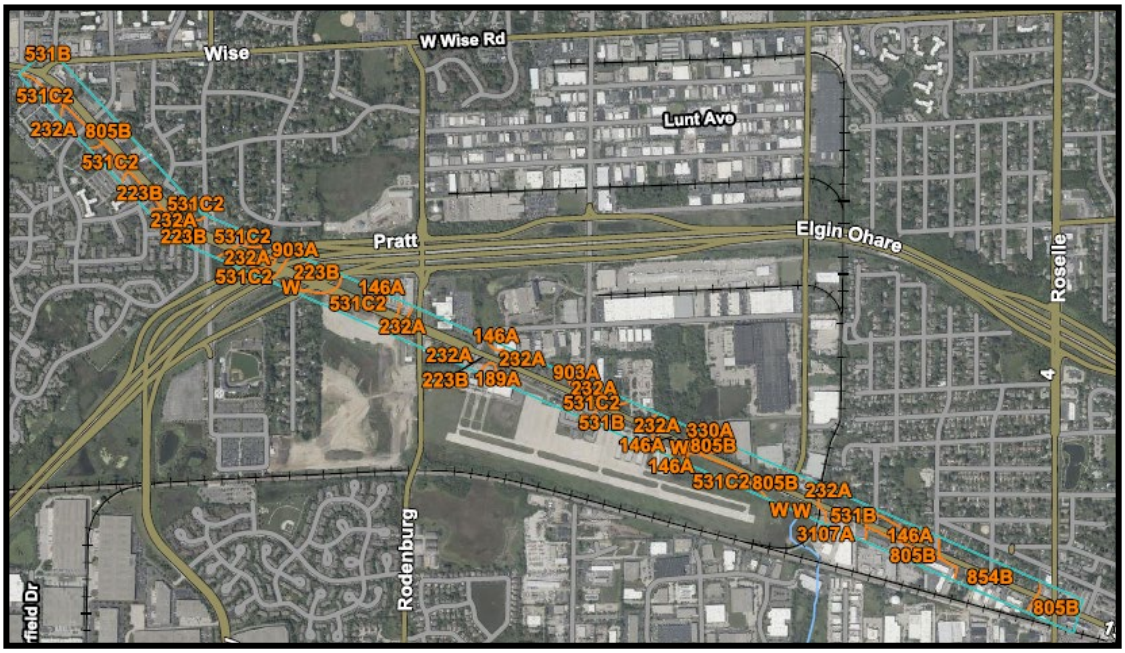
LOCATION MAP



NRCS PEDOLOGY MAP



Cook County

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
146A	Elliott silt loam, 0 to 2 percent slopes	3.8	2.5%
146B	Elliott silt loam, 2 to 4 percent slopes	0.5	0.3%
189A	Martinton silt loam, 0 to 2 percent slopes	1.0	0.7%
223B	Varna silt loam, 2 to 4 percent slopes	30.9	20.2%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	12.0	7.9%
330A	Peotone silty clay loam, 0 to 2 percent slopes	0.6	0.4%
443B	Barrington silt loam, 2 to 4 percent slopes	3.5	2.3%
531B	Markham silt loam, 2 to 4 percent slopes	6.7	4.4%
531C2	Markham silt loam, 4 to 6 percent slopes, eroded	20.7	13.5%
805B	Orthents, clayey, undulating	21.1	13.8%
903A	Muskego and Houghton mucks, 0 to 2 percent slopes	1.5	1.0%
W	Water	0.3	0.2%
Subtotals for Soil Survey Area		**102.7**	**67.1%**
Totals for Area of Interest		**153.1**	**100.0%**

Exhibit 2 – NRCS Pedology Map
Route: FAU 1321 (Illinois Route 19 – IL 19)
Location: from Wise Road to Roselle Road
Section: FAU 1321 22 RS
County: Cook/DuPage
Contract: 62R58

DuPage County

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
146A	Elliott silt loam, 0 to 2 percent slopes	4.4	2.9%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	0.1	0.1%
330A	Peotone silty clay loam, 0 to 2 percent slopes	0.1	0.1%
531B	Markham silt loam, 2 to 4 percent slopes	7.2	4.7%
531C2	Markham silt loam, 4 to 6 percent slopes, eroded	3.6	2.4%
805B	Orthents, clayey, undulating	22.3	14.6%
854B	Markham-Ashkum-Beecher complex, 1 to 6 percent slopes	12.0	7.8%
3107A	Sawmill silty clay loam, heavy till plain, 0 to 2 percent slopes, frequently flooded	0.0	0.0%
W	Water	0.4	0.3%
Subtotals for Soil Survey Area		**50.2**	**32.8%**
Totals for Area of Interest		**153.1**	**100.0%**

Exhibit 2 – NRCS Pedology Map
Route: FAU 1321 (Illinois Route 19 – IL 19)
Location: from Wise Road to Roselle Road
Section: FAU 1321 22 RS
County: Cook/DuPage
Contract: 62R58

NRCS SOIL EROSION FACTOR (K) MAP

Cook County

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
146A	Elliott silt loam, 0 to 2 percent slopes	.32	3.8	2.5%
146B	Elliott silt loam, 2 to 4 percent slopes	.32	0.5	0.3%
189A	Martinton silt loam, 0 to 2 percent slopes	.32	1.0	0.7%
223B	Varna silt loam, 2 to 4 percent slopes	.32	30.9	20.2%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	.20	12.0	7.9%
330A	Peotone silty clay loam, 0 to 2 percent slopes	.24	0.6	0.4%
443B	Barrington silt loam, 2 to 4 percent slopes	.28	3.5	2.3%
531B	Markham silt loam, 2 to 4 percent slopes	.37	6.7	4.4%
531C2	Markham silt loam, 4 to 6 percent slopes, eroded	.37	20.7	13.5%
805B	Orthents, clayey, undulating	.32	21.1	13.8%
903A	Muskego and Houghton mucks, 0 to 2 percent slopes		1.5	1.0%
W	Water		0.3	0.2%
Subtotals for Soil Survey Area			**102.7**	**67.1%**
Totals for Area of Interest			**153.1**	**100.0%**

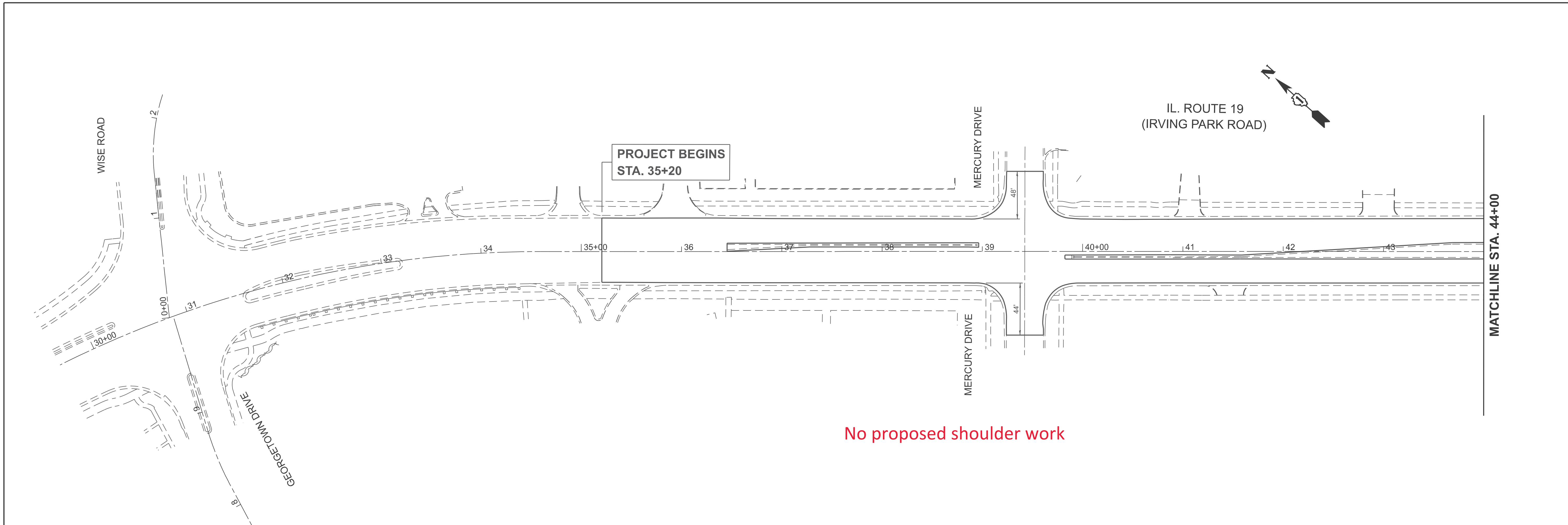
Exhibit 3 – NRCS Soil Erosion Factor (K) Map
Route: FAU 1321 (Illinois Route 19 – IL 19)
Location: from Wise Road to Roselle Road
Section: FAU 1321 22 RS
County: Cook/DuPage
Contract: 62R58

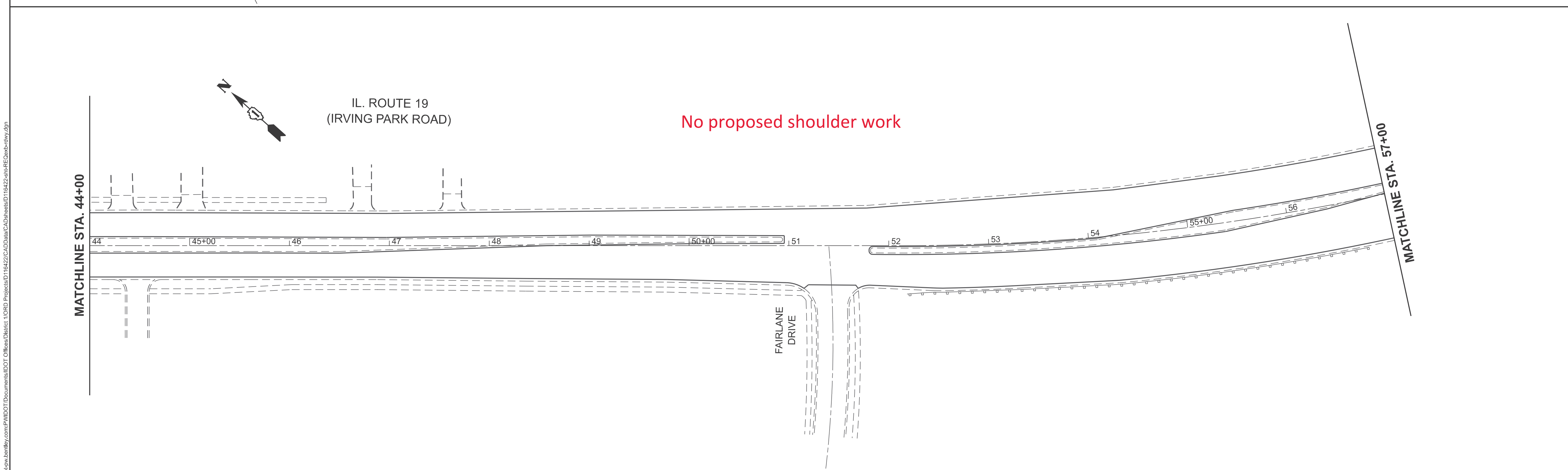
DuPage County

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
146A	Elliott silt loam, 0 to 2 percent slopes	.32	4.4	2.9%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	.20	0.1	0.1%
330A	Peotone silty clay loam, 0 to 2 percent slopes	.24	0.1	0.1%
531B	Markham silt loam, 2 to 4 percent slopes	.37	7.2	4.7%
531C2	Markham silt loam, 4 to 6 percent slopes, eroded	.37	3.6	2.4%
805B	Orthents, clayey, undulating	.32	22.3	14.6%
854B	Markham-Ashkum-Beecher complex, 1 to 6 percent slopes	.37	12.0	7.8%
3107A	Sawmill silty clay loam, heavy till plain, 0 to 2 percent slopes, frequently flooded	.28	0.0	0.0%
W	Water		0.4	0.3%
Subtotals for Soil Survey Area			**50.2**	**32.8%**
Totals for Area of Interest			**153.1**	**100.0%**

Exhibit 3 – NRCS Soil Erosion Factor (K) Map
Route: FAU 1321 (Illinois Route 19 – IL 19)
Location: from Wise Road to Roselle Road
Section: FAU 1321 22 RS
County: Cook/DuPage
Contract: 62R58

SOIL BORING LOCATION PLAN





USER NAME = Farhan.Tariq	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	ROADWAY PLAN IL 19 (EAST OF WISE RD. TO ROSELLE RD.)	
	DRAWN -	REVISED -			
PLOT SCALE = $SCALE$	CHECKED -	REVISED -			
PLOT DATE = 9/9/2024	DATE -	REVISED -		SCALE: 1" = 100' SHEET OF SHEETS STA. TO STA.	

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1321	FAU 1321 22 RS	DUPAGE	6	1
		CONTRACT NO. 62R58		
	ILLINOIS	FED. AID PROJECT		

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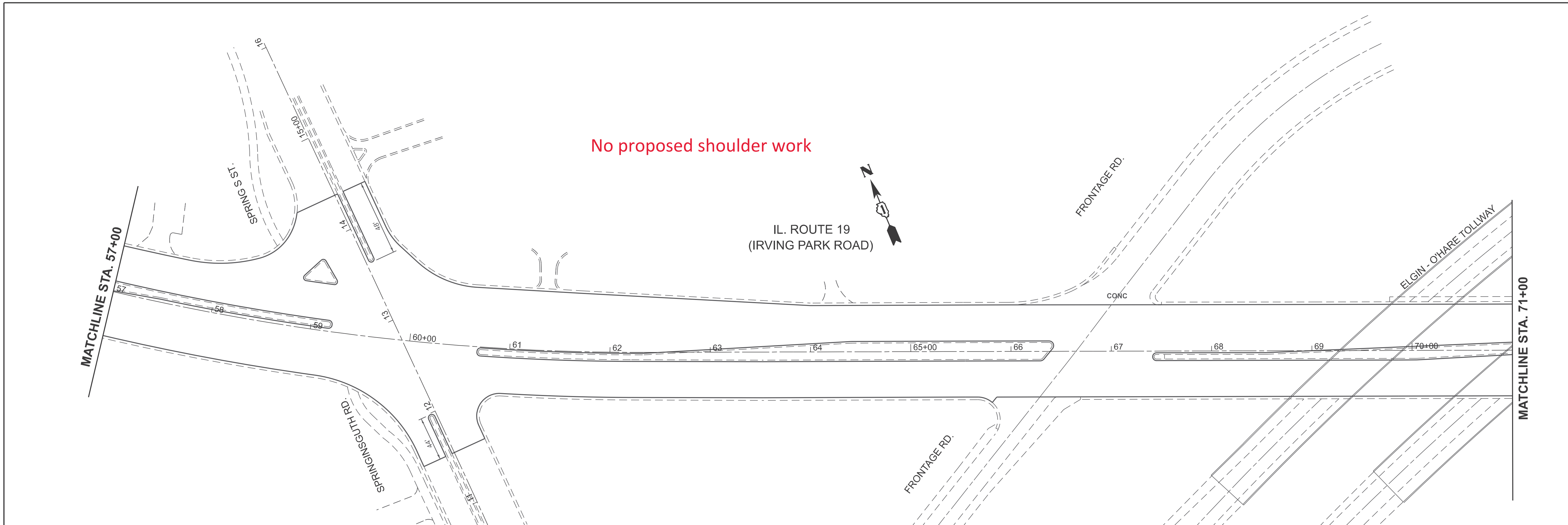

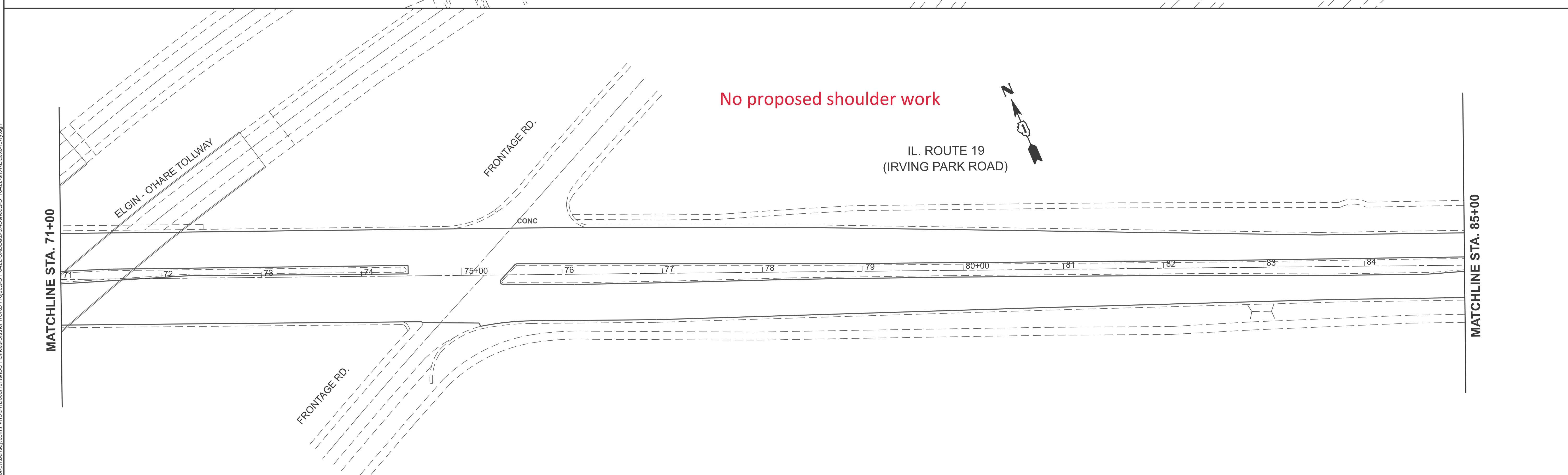

USER NAME = Farhan.Tariq	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = 9/9/2024	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROADWAY PLAN
IL 19 (EAST OF WISE RD. TO ROSELLE RD.)

SCALE: 1" = 100' | SHEET | OF | SHEETS | STA. | TO STA.

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1321	FAU 1321 22 RS	DUPAGE	6	2
		CONTRACT NO. 62R58		
		ILLINOIS	FED. AID PROJECT	

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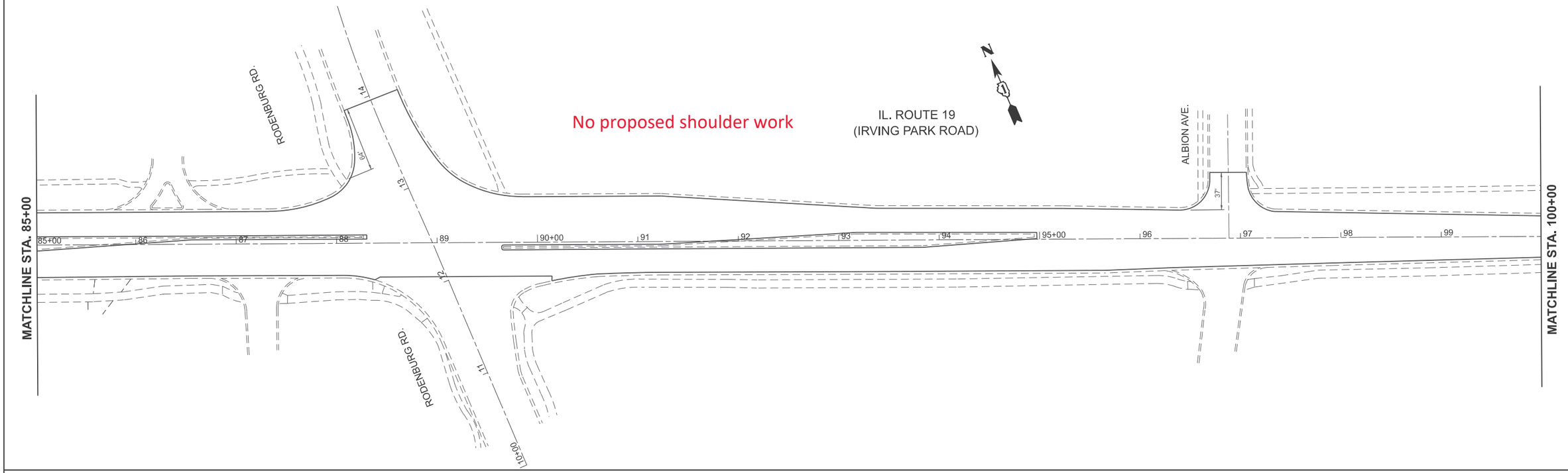

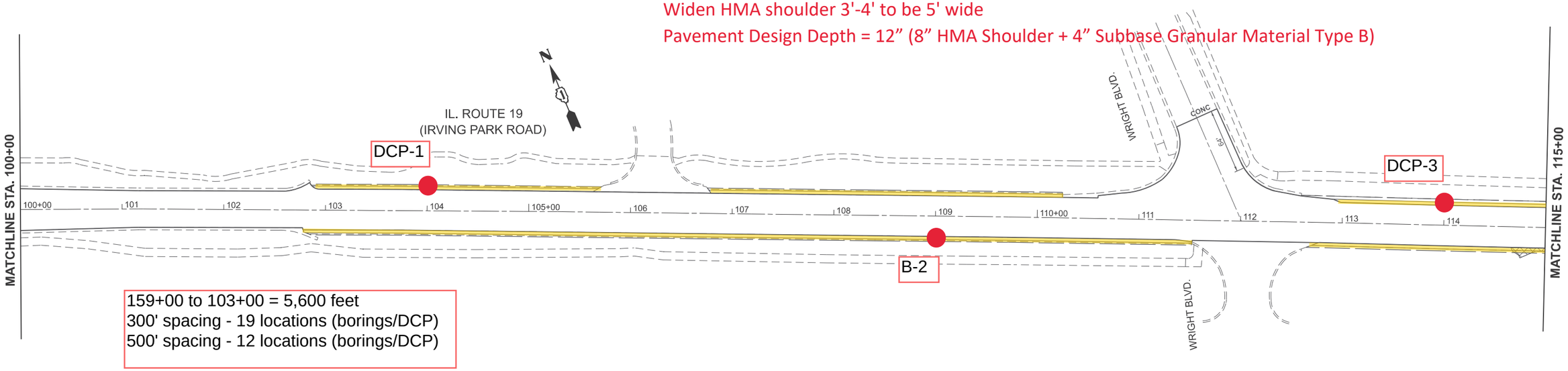

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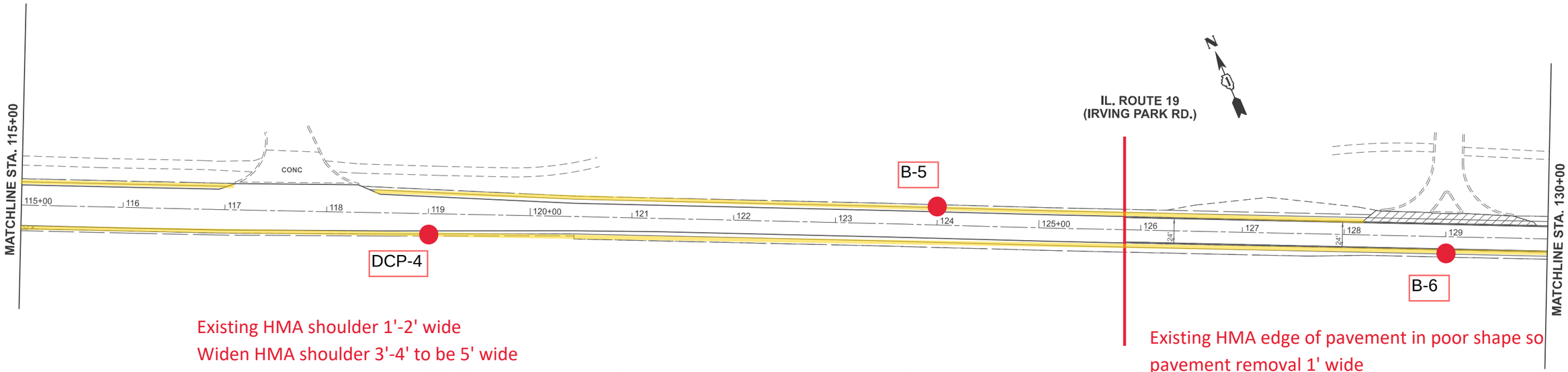
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = 9/9/2024	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROADWAY PLAN
IL 19 (EAST OF WISE RD. TO ROSELLE RD.)

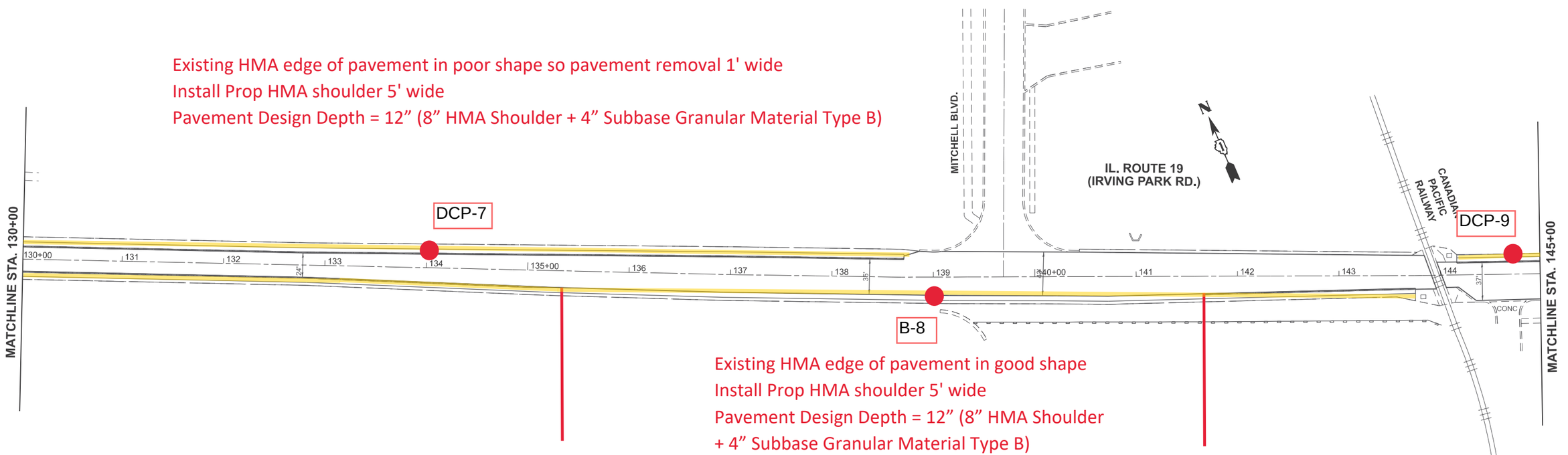
SCALE: 1" = 100' | SHEET OF SHEETS | STA. TO STA.

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1321	FAU 1321 22 RS	DUPAGE	6	3
		CONTRACT NO. 62R58		
		ILLINOIS	FED. AID PROJECT	



Existing HMA shoulder 1'-2' wide
Widen HMA shoulder 3'-4' to be 5' wide
Pavement Design Depth = 12” (8” HMA Shoulder + 4” Subbase Granular Material Type B)

Existing HMA edge of pavement in poor shape so pavement removal 1' wide
Install Prop HMA shoulder 5' wide
Pavement Design Depth = 12” (8” HMA Shoulder + 4” Subbase Granular Material Type B)



Existing HMA edge of pavement in poor shape so pavement removal 1' wide
Install Prop HMA shoulder 5' wide
Pavement Design Depth = 12” (8” HMA Shoulder + 4” Subbase Granular Material Type B)

Existing HMA edge of pavement in good shape
Install Prop HMA shoulder 5' wide
Pavement Design Depth = 12” (8” HMA Shoulder + 4” Subbase Granular Material Type B)

MODEL: Default
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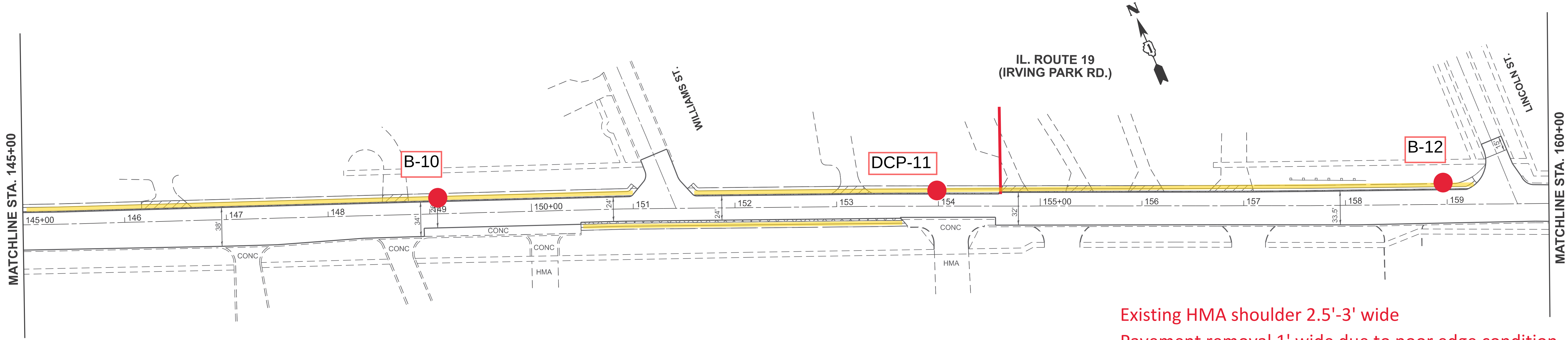
USER NAME = Farhan.Tariq	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = 9/9/2024	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROADWAY PLAN
IL 19 (EAST OF WISE RD. TO ROSELLE RD.)

SCALE: 1" = 100' | SHEET OF SHEETS | STA. | TO STA.

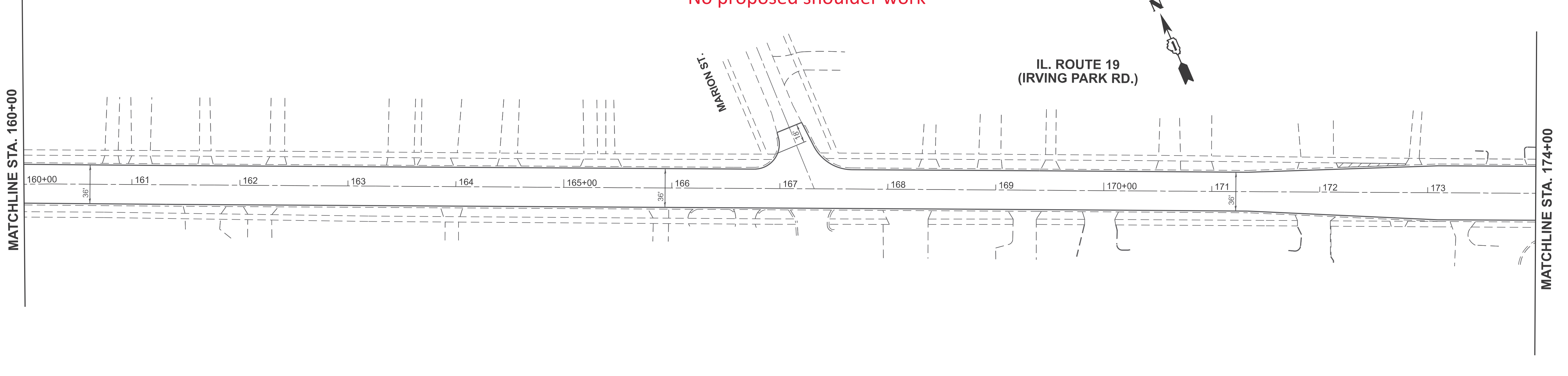
F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1321	FAU 1321 22 RS	DUPAGE	6	4
		CONTRACT NO. 62R58		
		ILLINOIS	FED. AID PROJECT	



Existing HMA edge of pavement in poor shape so pavement removal 1'-2' wide
Install Prop HMA shoulder 5' wide
Pavement Design Depth = 12” (8” HMA Shoulder + 4” Subbase Granular Material Type B)

Existing HMA shoulder 2.5'-3' wide
Pavement removal 1' wide due to poor edge condition
Widen HMA shoulder 3'-3.5' to be 5' wide
Pavement Design Depth = 12” (8” HMA Shoulder +
4” Subbase Granular Material Type B)

No proposed shoulder work



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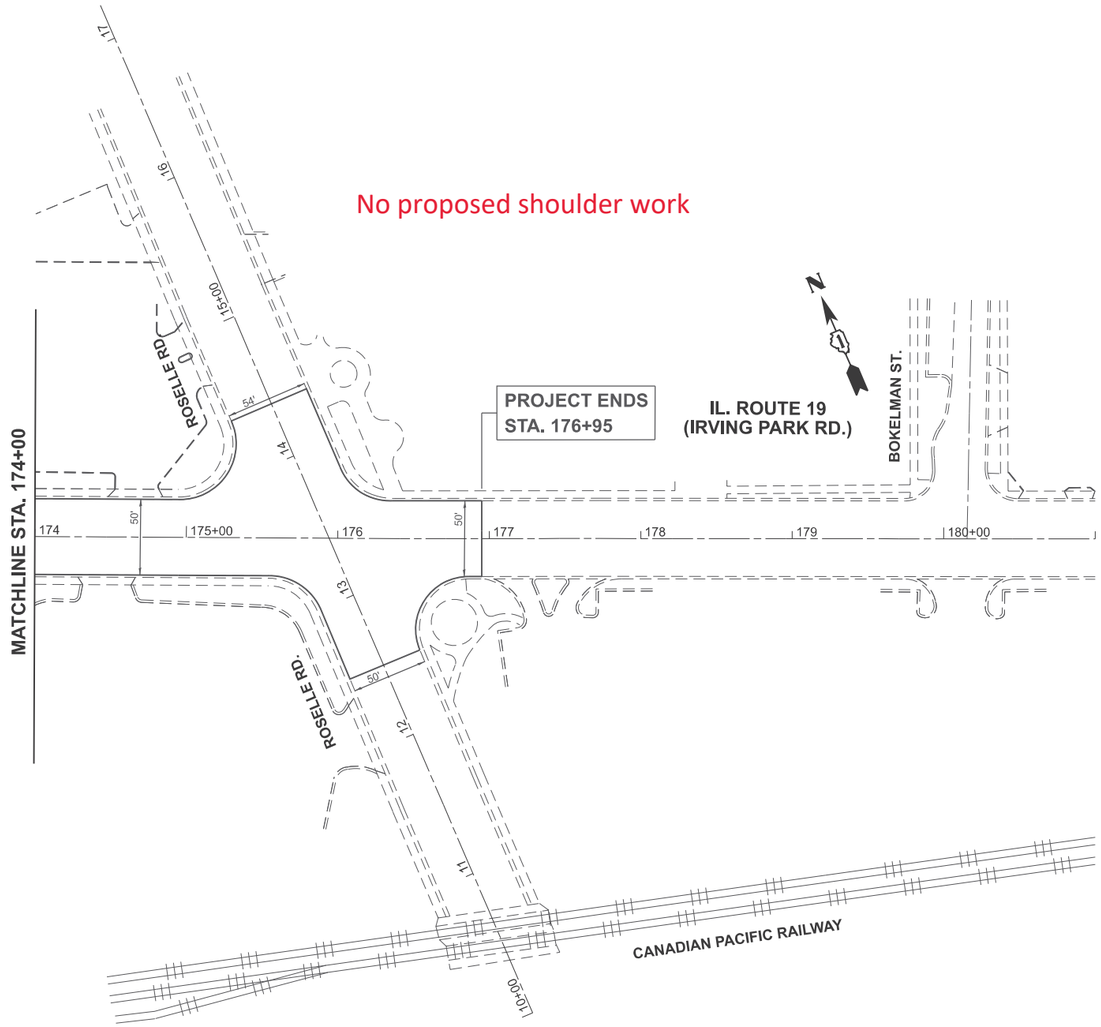
USER NAME = Farhan.Tariq	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = 9/9/2024	DATE -	REVISED -	

ROADWAY PLAN
IL 19 (EAST OF WISE RD. TO ROSELLE RD.)

SCALE: 1" = 100' | SHEET | OF | SHEETS | STA. | TO STA.

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1321	FAU 1321 22 RS	DUPAGE	6	5
		CONTRACT NO. 62R58		

ILLINOIS | FED. AID PROJECT



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USER NAME = Farhan.Tariq	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = 9/9/2024	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROADWAY PLAN
IL 19 (EAST OF WISE RD. TO ROSELLE RD.)

SCALE: 1" = 100' | SHEET OF SHEETS | STA. | TO STA.

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1321	FAU 1321 22 RS	DUPAGE	6	6
		CONTRACT NO. 62R58		
		ILLINOIS	FED. AID PROJECT	

SOIL BORING LOGS

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation District

SOIL BORING LOG

Date 11/15/24

ROUTE FAU 1321 **DESCRIPTION** IL 19 from Wise Rd. to Roselle Rd. **LOGGED BY** ME

SECTION FAU 1321 22 RS **LOCATION** NE corner of, **SEC.** 4, **TWP.** 40N, **RNG.** 10E, 3rd **PM**,
Latitude 41°59'25.4652", **Longitude** -88°5'50.7192"

COUNTY Cook/DuPage **DRILLING METHOD** HSA **HAMMER TYPE** Auto

STRUCT. NO. - **Station** -

BORING NO. SB-2
Station 109+00
Offset 22.0 ft RT
Ground Surface Elev. 100.00 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft

Groundwater Elev.:
First Encounter none ft
Upon Completion none ft
After - **Hrs.** - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
12 inch AGGREGATE SHOULDER 99.00				
12 inch Gray, GRAVEL 98.00				
Stiff, Black trace Gray, moist, SILTY CLAY		0		
		3 3	1.6 B	33
	-5			
94.50		2		
Stiff, Brown and Gray mottled, moist, SILTY CLAY, some gravel		2 3	1.4 S at 15%	30
92.50		4		
Hard, Brown, moist, SILTY CLAY		7 11	6.1 B	19
	-10			
		2		
		5 7	5.3 B	18
88.50				
Note: Elevation 100 represents the surface grade at the soil boring location, directly adjacent to the existing edge of pavement. End of Boring				
	-15			
	-20			

SOIL BORING IL 19 FROM WISE TO ROSELLE.GPJ IL_DOT.GDT 11/22/24

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation District

SOIL BORING LOG

Date 11/15/24

ROUTE FAU 1321 **DESCRIPTION** IL 19 from Wise Rd. to Roselle Rd. **LOGGED BY** ME

SECTION FAU 1321 22 RS **LOCATION** NE corner of, **SEC.** 4, **TWP.** 40N, **RNG.** 10E, 3rd **PM**,
Latitude 41°59'25.4652", **Longitude** -88°5'50.7192"

COUNTY Cook/DuPage **DRILLING METHOD** HSA **HAMMER TYPE** Auto

STRUCT. NO. -
Station -

BORING NO. SB-5
Station 124+00
Offset 22.0 ft LT
Ground Surface Elev. 100.00 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft

Groundwater Elev.:
First Encounter none ft
Upon Completion none ft
After - **Hrs.** - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
8 inch AGGREGATE SHOULDER 99.33				
Brown and Gray mottled, moist, SILTY CLAY 98.00				
Hard, Brown, moist, SILTY CLAY		3 6 7	4.6 B	18
	-5	3 6 8	5.7 B	15
93.00				
Very Stiff, Gray, moist, SILTY CLAY		3 6 4	3.6 B	11
89.50	-10	3		
Loose, Gray, Moist, SAND 88.50		4 5		15
Note: Elevation 100 represents the surface grade at the soil boring location, directly adjacent to the existing edge of pavement. End of Boring	-15			
	-20			

SOIL BORING IL 19 FROM WISE TO ROSELLE.GPJ IL_DOT.GDT 11/22/24

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation District

SOIL BORING LOG

Date 11/15/24

ROUTE FAU 1321 **DESCRIPTION** IL 19 from Wise Rd. to Roselle Rd. **LOGGED BY** ME

SECTION FAU 1321 22 RS **LOCATION** NE corner of, **SEC.** 4, **TWP.** 40N, **RNG.** 10E, 3rd **PM**,
Latitude 41°59'25.4652", **Longitude** -88°5'50.7192"

COUNTY Cook/DuPage **DRILLING METHOD** HSA **HAMMER TYPE** Auto

STRUCT. NO. - **Station** -

BORING NO. SB-6
Station 129+00
Offset 22.0 ft RT
Ground Surface Elev. 100.00 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft

Groundwater Elev.:
First Encounter none ft
Upon Completion none ft
After - **Hrs.** - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
12 inch AGGREGATE SHOULDER 99.00				
Stiff to Very Stiff, Brown, moist, SILTY CLAY		3		
		4 5	1.7 S at 6%	23
	-5	2		
		4 4	2.8 S at 11%	27
		3		
		3 6	3.6 B	20
	-10			
grades to Brown with Gray		3		
88.50		5 7	3.8 B	17
Note: Elevation 100 represents the surface grade at the soil boring location, directly adjacent to the existing edge of pavement. End of Boring				
	-15			
	-20			

SOIL BORING IL 19 FROM WISE TO ROSELLE.GPJ IL_DOT.GDT 11/22/24

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation District

SOIL BORING LOG

Date 11/15/24

ROUTE FAU 1321 **DESCRIPTION** IL 19 from Wise Rd. to Roselle Rd. **LOGGED BY** ME

SECTION FAU 1321 22 RS **LOCATION** NE corner of, **SEC.** 4, **TWP.** 40N, **RNG.** 10E, 3rd **PM**,
Latitude 41°59'25.4652", **Longitude** -88°5'50.7192"

COUNTY Cook/DuPage **DRILLING METHOD** HSA **HAMMER TYPE** Auto

STRUCT. NO. -
Station -

BORING NO. SB-8
Station 139+00
Offset 22.0 ft RT
Ground Surface Elev. 100.00 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft

Groundwater Elev.:
First Encounter none ft
Upon Completion none ft
After - **Hrs.** - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
12 inch AGGREGATE SHOULDER 99.00				
Black and Brown, moist, SILTY CLAY 98.00				
Stiff to Hard, Brown, moist, SILTY CLAY		2		
		2 3	1.9 B	28
	-5			
		3		
		6 6	8.6 B	18
		3		
		8 11	6.9 B	18
	-10			
		2		
		2 6	6.9 B	19
88.50				
Note: Elevation 100 represents the surface grade at the soil boring location, directly adjacent to the existing edge of pavement. End of Boring				
	-15			
	-20			

SOIL BORING IL 19 FROM WISE TO ROSELLE.GPJ IL_DOT.GDT 11/22/24

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

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation District

SOIL BORING LOG

Date 11/15/24

ROUTE FAU 1321 **DESCRIPTION** IL 19 from Wise Rd. to Roselle Rd. **LOGGED BY** ME

SECTION FAU 1321 22 RS **LOCATION** NE corner of, **SEC.** 4, **TWP.** 40N, **RNG.** 10E, 3rd **PM**,
Latitude 41°59'25.4652", **Longitude** -88°5'50.7192"

COUNTY Cook/DuPage **DRILLING METHOD** HSA **HAMMER TYPE** Auto

STRUCT. NO. -
Station -

BORING NO. SB-10
Station 149+00
Offset 22.0 ft LT
Ground Surface Elev. 100.00 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft

Groundwater Elev.:
First Encounter none ft
Upon Completion none ft
After - **Hrs.** - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	
15 inch AGGREGATE SHOULDER				
98.75				
Brown and Gray mottled, moist, SILTY CLAY				
97.00	3			
Hard, Brown, moist, SILTY CLAY	5 7	5.6 B	18	
-5	4			
	7 9	6.7 B	19	
	5			
	9 10	5.5 B	15	
-10	3			
grades to Brown with Gray	6 8	4.5 B	17	
88.50				
Note: Elevation 100 represents the surface grade at the soil boring location, directly adjacent to the existing edge of pavement. End of Boring				
-15				
-20				

SOIL BORING IL 19 FROM WISE TO ROSELLE.GPJ IL_DOT.GDT 11/22/24

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

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation District

SOIL BORING LOG

Date 11/15/24

ROUTE FAU 1321 **DESCRIPTION** IL 19 from Wise Rd. to Roselle Rd. **LOGGED BY** ME

SECTION FAU 1321 22 RS **LOCATION** NE corner of, **SEC.** 4, **TWP.** 40N, **RNG.** 10E, 3rd **PM**,
Latitude 41°59'25.4652", **Longitude** -88°5'50.7192"

COUNTY Cook/DuPage **DRILLING METHOD** HSA **HAMMER TYPE** Auto

STRUCT. NO. -
Station -

BORING NO. SB-12
Station 159+00
Offset 22.0 ft LT
Ground Surface Elev. 100.00 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft

Groundwater Elev.:
First Encounter none ft
Upon Completion none ft
After - **Hrs.** - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
12 inch HOT MIX ASPHALT (HMA) SHOULDER 99.00				
Stiff, Black, moist, SILTY CLAY		2		
		3 3	1.8 P	28
95.50	-5			
Very Stiff, Black and Gray mottled, moist, SILTY CLAY		2		
		3 5	2.2 B	23
93.00				
Very Stiff, Brown and Gray mottled, moist, SILTY CLAY		2		
		3 3	2.2 B	16
	-10			
		2		
		4 5	2.0 B	18
88.50				
Note: Elevation 100 represents the surface grade at the soil boring location, directly adjacent to the existing edge of pavement. End of Boring	-15			
	-20			

SOIL BORING IL 19 FROM WISE TO ROSELLE.GPJ IL_DOT.GDT 11/22/24

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

DCP LOGS

Illinois Department of Transportation

Dynamic Cone Penetration Test

Date: 11/06/24
Weather:
Inspector:
Company (Consultants):
Design No.:
Sheet No.:
Contractor:

County: Cook/DuPage
Section: FAU 1321-22-RS
Route: IL-19
District: 1
Contract No.: 62R58
Job No.:
Project: Wise Rd to Roselle Rd

☐ Subgrade ☐ Foundation

Test Location [a] and Remarks [b]	Initial Depth							
DCP-1	0.0	Depth [c]	0-6	6-12	12-18	18-24	24-30	30-36
		Blows	17	29				
		Rate [d]	0.4	0.2				
		IBV	25.7	50.4				
		Q_u	8.2	16.1				
DCP-1 (Cont)		Depth	36-42	42-48	48-54	54-60	60-66	66-72
		Blows						
		Rate						
		IBV						
		Q_u						
DCP-3	0.0	Depth	0-6	6-12	12-18	18-24	24-30	30-36
		Blows	7	7	29	6	5	4
		Rate	0.86	0.86	0.21	1	1.2	1.5
		IBV	8.4	8.4	50.4	6.9	5.5	4.2
		Q_u	2.7	2.7	16.1	2.2	1.8	1.3
DCP-3 (Cont)		Depth	36-42	42-48	48-54	54-60	60-66	66-72
		Blows	10	14	17	20	22	40
		Rate	0.6	0.43	0.35	0.3	0.27	0.15
		IBV	13.2	20.1	25.7	31.5	35.6	75.5
		Q_u	4.2	6.4	8.2	10.1	11.4	24.2
		Depth						
		Blows						
		Rate						
		IBV						
		Q_u						

[a] Indicate station and offset.
[b] Include soil type, moisture, rutting, or cut/fill information as applicable.
[c] Depth is cumulative in inches.
[d] Rate is inches of penetration per blow.

Comments:

Rate	IBV	Q_u*	Rate	IBV	Q_u*
0.5	17	5.4	1.3	5	1.6
0.6	13	4.2	1.5	4	1.3
0.7	11	3.5	2.0	3	1.0
0.8	9	2.9	2.6	2	0.6
0.9	8	2.6	3.0	1.7	0.5
1.0	7	2.2	3.3	1.5	0.5
1.1	6	1.9	4.6	1	0.3
1.2	5.5	1.8	>4.6	<1	<0.3

*Q_u value calculated from IBV whole number.

$IBV = 10^{0.84 - 1.26 \times LOG(Rate)}$ $Q_u\,(tsf) = 0.32 \times IBV$

Illinois Department of Transportation

Dynamic Cone Penetration Test

Date: 11/06/24
Weather:
Inspector:
Company (Consultants):
Design No.:
Sheet No.:
Contractor:

County: Cook/DuPage
Section: FAU 1321-22-RS
Route: IL-19
District: 1
Contract No.: 62R58
Job No.:
Project: Wise Rd to Roselle Rd

☐ Subgrade ☐ Foundation

Test Location [a] and Remarks [b]	Initial Depth							
DCP-4	0.0	Depth [c]	0-6	6-12	12-18	18-24	24-30	30-36
		Blows	1	2	4	3	4	10
		Rate [d]	6	3	1.5	2	1.5	0.6
		IBV	0.7	1.7	4.2	2.9	4.2	13.2
		Q_u	0.2	0.6	1.3	1.0	1.3	4.2
DCP-4 (Cont)		Depth	36-42	42-48	48-54	54-60	60-66	66-72
		Blows	16	21	24	28	39	39
		Rate	0.38	0.29	0.25	0.21	0.15	0.15
		IBV	23.8	33.5	39.7	48.2	73.2	73.2
		Q_u	7.6	10.7	12.7	15.4	23.4	23.4
DCP-7	0.0	Depth	0-6	6-12	12-18	18-24	24-30	30-36
		Blows	17	34	17	10	4	2
		Rate	0.35	0.18	0.35	0.6	1.5	3
		IBV	25.7	61.6	25.7	13.2	4.2	1.7
		Q_u	8.2	19.7	8.2	4.2	1.3	0.6
DCP-7 (Cont)		Depth	36-42	42-48	48-54	54-60	60-66	66-72
		Blows	4	3	3	16	13	14
		Rate	1.5	2	2	0.38	0.46	0.43
		IBV	4.2	2.9	2.9	23.8	18.3	20.1
		Q_u	1.3	1	1	7.6	5.9	6.4
		Depth						
		Blows						
		Rate						
		IBV						
		Q_u						

[a] Indicate station and offset.
[b] Include soil type, moisture, rutting, or cut/fill information as applicable.
[c] Depth is cumulative in inches.
[d] Rate is inches of penetration per blow.

Comments:

Rate	IBV	Q_u*	Rate	IBV	Q_u*
0.5	17	5.4	1.3	5	1.6
0.6	13	4.2	1.5	4	1.3
0.7	11	3.5	2.0	3	1.0
0.8	9	2.9	2.6	2	0.6
0.9	8	2.6	3.0	1.7	0.5
1.0	7	2.2	3.3	1.5	0.5
1.1	6	1.9	4.6	1	0.3
1.2	5.5	1.8	>4.6	<1	<0.3

*Q_u value calculated from IBV whole number.

$IBV = 10^{0.84 - 1.26 \times LOG(Rate)}$ Q_u (tsf) = 0.32 x IBV

Illinois Department of Transportation

Dynamic Cone Penetration Test

Date: 11/06/24
Weather:
Inspector:
Company (Consultants):
Design No.:
Sheet No.:
Contractor:

County: Cook/DuPage
Section: FAU 1321-22-RS
Route: IL-19
District: 1
Contract No.: 62R58
Job No.:
Project: Wise Rd to Roselle Rd

☐ Subgrade ☐ Foundation

Test Location [a] and Remarks [b]	Initial Depth							
DCP-9	0.0	Depth [c]	0-6	6-12	12-18	18-24	24-30	30-36
		Blows	15	31	16	3	7	6
		Rate [d]	0.4	0.19	0.38	2	0.86	1
		IBV	21.9	54.8	23.8	2.9	8.4	6.9
		Q_u	7.0	17.5	7.6	1.0	2.7	2.2
DCP-9 (Cont)		Depth	36-42	42-48	48-54	54-60	60-66	66-72
		Blows	11	3	9	12	20	33
		Rate	0.55	2	0.67	0.5	0.3	0.18
		IBV	14.8	2.9	11.5	16.6	31.5	59.3
		Q_u	4.6	1	3.7	5.3	10.1	19.0
DCP-11	0.0	Depth	0-6	6-12	12-18	18-24	24-30	30-36
		Blows	28	9	6	4	2	4
		Rate	0.21	0.67	1	1.5	3	1.5
		IBV	48.2	11.5	6.9	4.2	1.7	4.2
		Q_u	15.4	3.7	2.2	1.3	0.6	1.3
DCP-11 (Cont)		Depth	36-42	42-48	48-54	54-60	60-66	66-72
		Blows	8	16	19	20	22	26
		Rate	0.75	0.38	0.32	0.3	0.27	0.23
		IBV	9.9	23.8	29.6	31.5	35.6	43.9
		Q_u	3.2	7.5	9.5	10.1	11.4	14.0
		Depth						
		Blows						
		Rate						
		IBV						
		Q_u						

[a] Indicate station and offset.
[b] Include soil type, moisture, rutting, or cut/fill information as applicable.
[c] Depth is cumulative in inches.
[d] Rate is inches of penetration per blow.

Comments:

Rate	IBV	Q_u*	Rate	IBV	Q_u*
0.5	17	5.4	1.3	5	1.6
0.6	13	4.2	1.5	4	1.3
0.7	11	3.5	2.0	3	1.0
0.8	9	2.9	2.6	2	0.6
0.9	8	2.6	3.0	1.7	0.5
1.0	7	2.2	3.3	1.5	0.5
1.1	6	1.9	4.6	1	0.3
1.2	5.5	1.8	>4.6	<1	<0.3

*Q_u value calculated from IBV whole number.

$IBV = 10^{0.84 - 1.26 \times LOG(Rate)}$ $Q_u\,(tsf) = 0.32 \times IBV$