HALE STREET REHABILITATION

PLANO, ILLINOIS

F.A.U. RTE 6474
SECTION: 22-00049-00-PV
CONTRACT NO. 87873

STATION 102+26 TO STATION 126+56

RUBINO PROJECT NO. G23.171

Roadway Geotechnical Report

Drilling
Laboratory Testing
Geotechnical Analysis

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PREPARED FOR:

HR GREEN, INC.

2363 SEQUOIA DRIVE

SUITE 101

AURORA, ILLINOIS

NOVEMBER 4, 2024

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PROJECT DESCRIPTION, LOCATION AND SCOPE

Rubino Engineering, Inc. (Rubino) understands that the Hale Street Rehabilitation project includes approximately 2,000 feet of Hale Street between US 34 and E Larson Street (see Appendix A – Site Vicinity Map). The project consists of roadway reconstruction, resurfacing and sidewalk/shared-use path installation. Roadway reconstruction is planned from station 107+25.00 to station 123+97.00. Roadway resurfacing is planned on the south and north ends of the project from station 102+26 to station 107+25.00 and station 123+97.00 to station 126+56.00. The proposed sidewalk/shared-use path will be installed on the west side of Hale Street.

The proposed pavement for the reconstruction areas consists of 8 inches of HMA and 12 inches of aggregate subgrade improvement. Based on the proposed profile, the final pavement grades appear to be within approximately ½-foot of existing grades.

This report presents the results of the roadway geotechnical field and laboratory investigations, along with engineering analyses, and recommendations performed by Rubino. The geotechnical recommendations presented in this report are based on the available project information and the subsurface materials described in this report.

GEOLOGY AND PEDOLOGY

The ground elevation in the area of exploration ranges from 646 feet to 648 feet along S. Hale Street as you travel north to south. This change in elevation throughout the project site is most likely attributed to flooding events as well as water-based erosion along tributaries such as Big Rock Creek to the Fox River. See Appendix D – Geology and Pedology Maps.

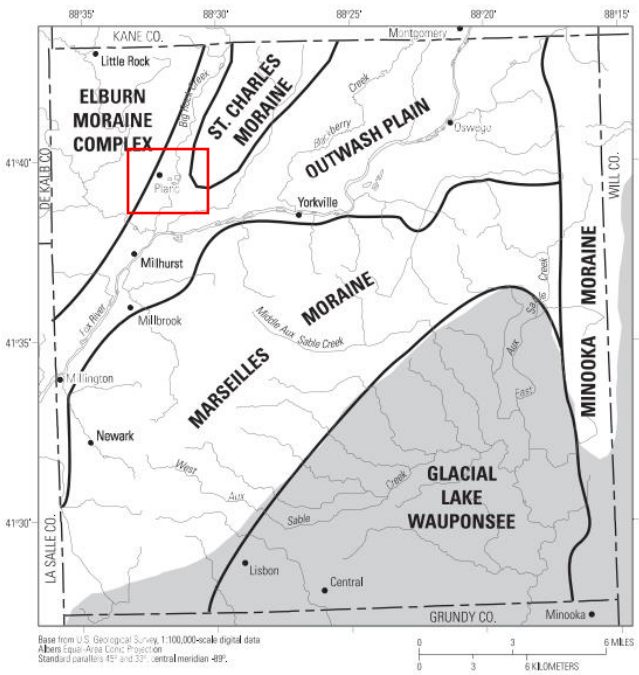


Figure 1. Moraines of Kendall County, Illinois. Modified from Kay et al., 2005.

The geomorphology of Kendall County resulted primarily from the advance of continental glaciers during the last glaciation (Wisconsin Episode; 30,000 – 14,600 years B.P.). The westward advance of these glaciers was controlled by preexisting bedrock highs or preexisting moraines from older glacial episodes (Illinois Episode; 200,000 - 130,000 years B.P.). The glacial ice sheets that covered Kendall County deposited various end moraines and their associated ground moraines. Moraines present within Kendall County include the Elburn Morainic Complex, St. Charles Moraine, Marseilles Moraine, and

Minooka Moraine (*Figure 1*). As these ice sheets dammed streams and rivers, glacial and post-glacial lakes such as Glacial Lake Wauponsee (*Figure 1*) formed across most of Kendall County.

A review of the Surface-Water and Ground-Water Resources of Kendall County, Illinois (Kay et al., 2005) reveals that the area of exploration is dominated by three major glacial units: The fine-grained tills of the Lemont Formation of the Wedron Group and the outwash sands and gravels and lacustrine deposits of the Equality and Henry Formations of the Mason Group (*Figure 2; See Appendix*). The Elburn Morainic Complex is composed primarily of the Lemont Formation consisting of gray silty clay to sandy loam with lenses of sand and gravel. The St. Charles, Marseilles, and Minooka Moraines are composed primarily of the Yorkville Member of the Lemont Formation consisting of gray silty clay with local lenses of silt and small gravel. Glacial Lake Wauponsee is composed primarily of the Equality Formation containing silt, clay, and organic debris with local lenses of gravel, sand, and diamicton. Coarse-grained outwash sands and gravels of the Henry Formation interfinger with the finer-grained deposits of the Wedron Group throughout the county (*Figure 1*).

Other formations present within the area of exploration include alluvial deposits of the Cahokia Formation which flank most of the Fox River, Blackberry Creek, and Big Rock Creek (*Figure 2; See Appendix*). Loess deposits of the Peoria Silt overlie most of the glacial deposits and are the basis of modern-day soils. Bedrock in Kendall County consists of Silurian dolomite and Ordovician shale and argillaceous dolomite.

FIELD EXPLORATION

Drilling, Field, and Laboratory Tests

In consultation with the client, Rubino selected the number of borings and the boring depths. Rubino located the borings in the field by measuring distances from known fixed site features. Rubino mobilized to site on December 7, 2023. The borings were advanced by Rubino using a Geoprobe 7822DT with 2 ¼ inch inside-diameter, hollow stem auger drilling methods and soil samples were routinely obtained during the drilling process. Rubino is preparing this RGR based on the following soil borings:

Table 1: Drilling Scope

BORING NO.	DATE	STATION	OFFSET	SURFACE ELEVATION (FEET)	DRILLING DEPTH (FEET BEG*)
B-01	12/7/23	124+04.16	9.88	676.97	15
B-02	12/7/23	116+80.91	-11.12	647.00	15
B-03	12/7/23	107+81.68	-15.58	647.95	15

*BEG = Below existing grade

Selected soil samples were tested in the laboratory to determine material properties for this report. Drilling, sampling, and laboratory tests were accomplished in general accordance with AASHTO procedures. The following items are further described in the Appendix of this report.

- *Standard Penetration Tests and Split-Barrel Sampling of Soils (AASHTO T 206)*
- *Field Water Level Measurements*
- *Laboratory Determination of Water (Moisture) Content of Soil by Mass (AASHTO T 265-15)*
- *Laboratory Determination of Atterberg Limits (AASHTO 89-13 and T 90-15)*
- *Laboratory Organic Content by Loss on Ignition (AASHTO T 267-86)*

The results of these tests can be found on the accompanying boring logs located in Appendix F and Laboratory Test Results in Appendix G.

Surface Conditions

Cores were taken within the existing pavement of Hale Street. The surface conditions are as follows:

Table 2: Existing Pavement Section Summary

Core No.	Station	Total Observed Pavement Thickness	Total Observed Base Stone Thickness
B-01	124+04.16	8 ¼ inches of Asphalt	6 inches of Subbase Stone
B-02	116+80.91	7 inches of Asphalt	7 inches of Subbase Stone
B-03	107+81.68	4 ½ inches of Asphalt	8 ½ inches of Subbase Stone

Please note that the above referenced thicknesses are considered approximate and based on visual observations and hand measurements. Pavement and sub-base type and thickness may vary between core locations.

Subsurface Conditions

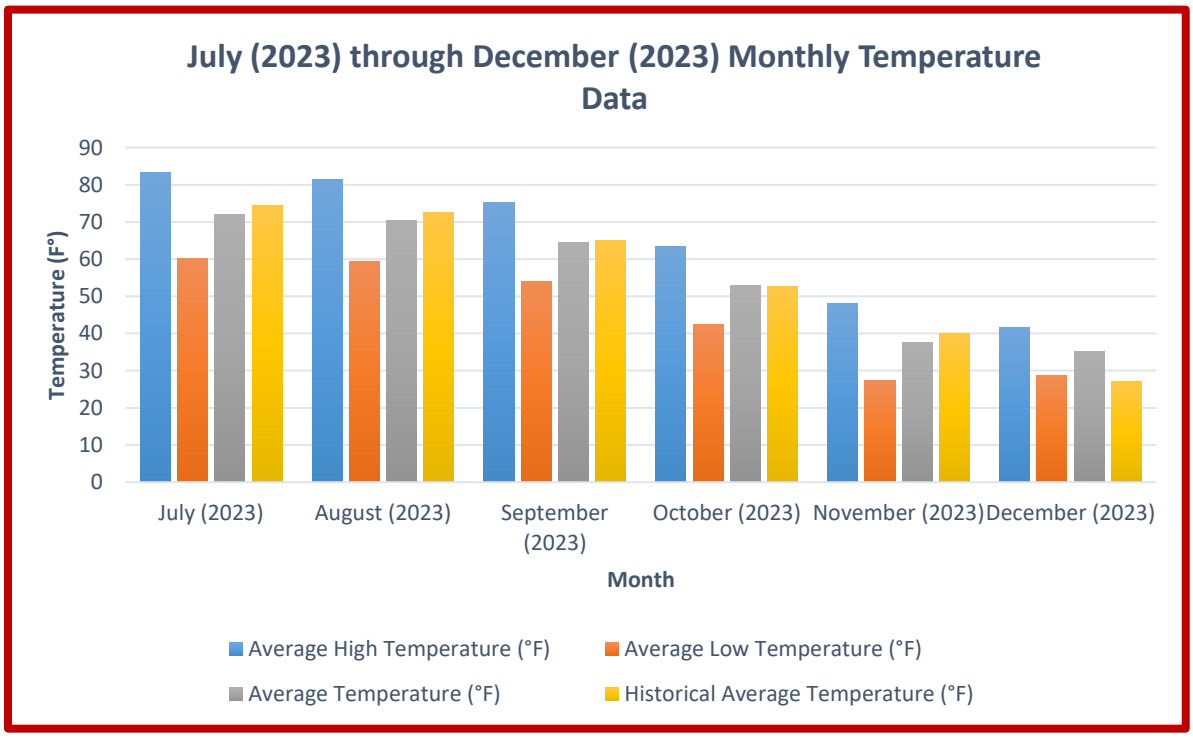
Soils generally consisted of possible fill (cohesive), brown high plasticity silty clay, brown and/or gray silty clay to silty clay loam, brown silt, and brown sand. Detailed descriptions of the soils encountered are presented in the attached Boring Logs in Appendix F.

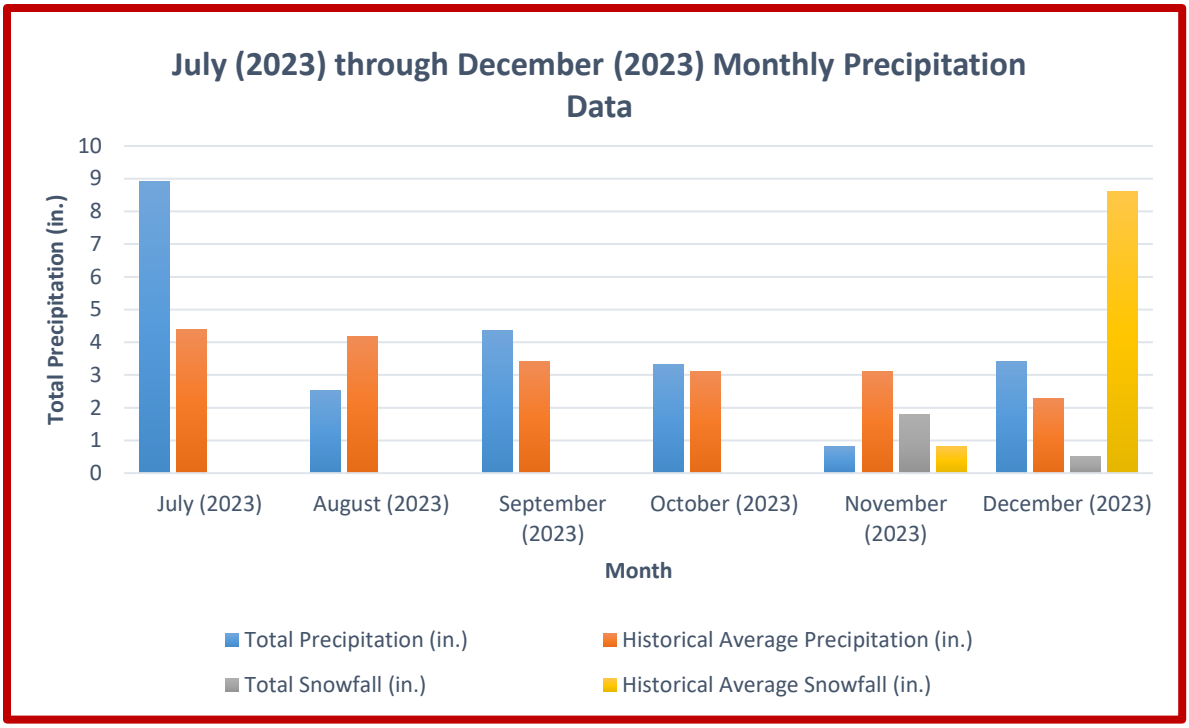
Groundwater and Climatic Conditions

Groundwater was not encountered in the borings along Hale Street during drilling operations. However, it should be noted that fluctuations in the groundwater level should be anticipated throughout the year depending on variations in climatological conditions and other factors not apparent at the time the borings were performed. Groundwater may not have been observed in some areas due to the low permeability of soils. Additionally, discontinuous zones of perched water may exist within the soils. The possibility of groundwater level fluctuation should be considered when developing the design and construction plans for the project.

The subsurface investigation for the proposed Hale Street Rehabilitation in Plano, Illinois were performed during the month of December 2023. To assess the possible effects of temperature and precipitation on groundwater level and soil moisture during the investigation, the climatic conditions from July 2023 through December 2023 are summarized graphically, below.

The precipitation and temperature data for the investigation period are compared against thirty-year monthly data (1981 to 2010) to illustrate deviations from “normal” climate conditions during the current investigation. Local climatologic data were obtained from the NOAA Morton Arboretum Station in Lisle, Illinois, the NOAA Plano Station in Plano, Illinois, and the NOAA Aurora Station in Aurora, Illinois.





Higher than average precipitations were recorded for the months of July, September, October, and December 2024.

No significant effects on moisture content and water table data are considered likely. However, groundwater may be affected by seasonal water table fluctuations.

ANALYSIS AND RECOMMENDATIONS

Embankment Fill Materials

Based on the proposed profile, significant fills will not be required to achieve final grades. In the event fills are required, see the District 3 Borrow and Furnish Special for material requirements. If design changes, please notify Rubino and additional recommendations can be provided upon request.

Expansive Soils Discussion

Soils with expansive properties (LL>50) were observed in boring B-03 during drilling operations. Table 3 summarizes the expansive (LL>50) encountered along the project site.

Table 3: Expansive Soils by Location

BORING	STATION	SOIL CLASSIFICATION	ELEVATION RANGE (FEET)	PLASTICITY INDEX (PI)	SILT AND FINE SAND CONTENT (%)	LIQUID LIMIT (LL)	EXPANSIVE OR FROST SUSCEPTIBLE
B-03	107+81.68	Brown HIGH PLASTICITY SILTY CLAY	646.95 – 640.95	***33***	*N/A*	***59***	***Expansive***

Subgrade Support Rating (SSR)

Subgrade Support Rating (SSR) testing was outside the original scope for the project. However, for design purposes, a Subgrade Support Rating (SSR) of poor is recommended for existing subgrade soils.

Subsurface Drainage

Proper surface grading should be incorporated into design and construction of subgrade and pavement to remove water accumulations and prevent ponding of water. Rubino recommends that longitudinal underdrains be incorporated into the design to provide the dissipation of water that accumulates in the aggregate subgrade improvement. Additionally, transverse underdrains are recommended in areas of low elevation and high plasticity silty clay (B-03) along the proposed roadway alignment. Where undercuts are performed and replaced with aggregate, the underdrains should be lowered such that water is accepted at the lowest point of the undercut and removed accordingly. These recommendations are made in accordance with the IDOT Geotechnical Manual (2020).

The underdrains should tie into the storm water drainage system and should be installed per Article 601 in the IDOT Standard Specifications for Road and Bridge Construction (Adopted January 1, 2022) and consist of Type 3 underdrains.

Subgrade Improvement Recommendations

The recommendations located in this report are based on the data obtained at each particular soil boring location. Soil subgrade stability may vary in the field between the borings and could be affected by the weather at the time of construction.

- See IDOT IBV Based Remedial Action chart from the IDOT Subgrade Stability Manual for reference.
- IDOT requires the use of subgrade improvement below proposed pavement.
  - The proposed plans state the entire length of the improvements will contain 12 inches of aggregate subgrade improvement (SY).
  - Accordingly, subgrade with an IBV value of less than 3 is a candidate for remediation when incorporating aggregate subgrade improvement.
- Subgrade with a moisture content exceeding 25% may result in a lower IBV which may be a candidate for remedial action.
- If unsuitable soils are encountered in the field during construction, it is recommended that the soil be removed and replaced with material meeting the IDOT Aggregate Subgrade Improvement Special Provision.
- Geotextile fabric should be placed at the base of undercut areas where low strength subgrade soils are encountered. Fabric should meet the requirements of Section 210, Fabric For Ground Stabilization, per the SSRBC (January 1, 2022).
- Expansive soils have the potential to heave during freeze-thaw cycles and require remediation. Please see the *Expansive Soils Discussion* section for further details

Unstable soil should be treated in accordance with Article 301.04 of the standard specifications and undercut guidelines in the IDOT Subgrade Stability Manual 2005:

Table 4: Undercut Recommendations

STATIONS FROM	STATIONS TO	PAVEMENT TREATMENT WIDTH	AGGREGATE THICKNESS	REMEDIATION METHOD	REFERENCE BORING SUBGRADE CONCERNS (BORING NUMBER)
107+25	112+50	Full Width	18 - 24 inches	Remove and replace with Agg. Subgrade Improvement underlain by Fabric	(B-03): Expansive soils to approximately 6 feet below existing grade

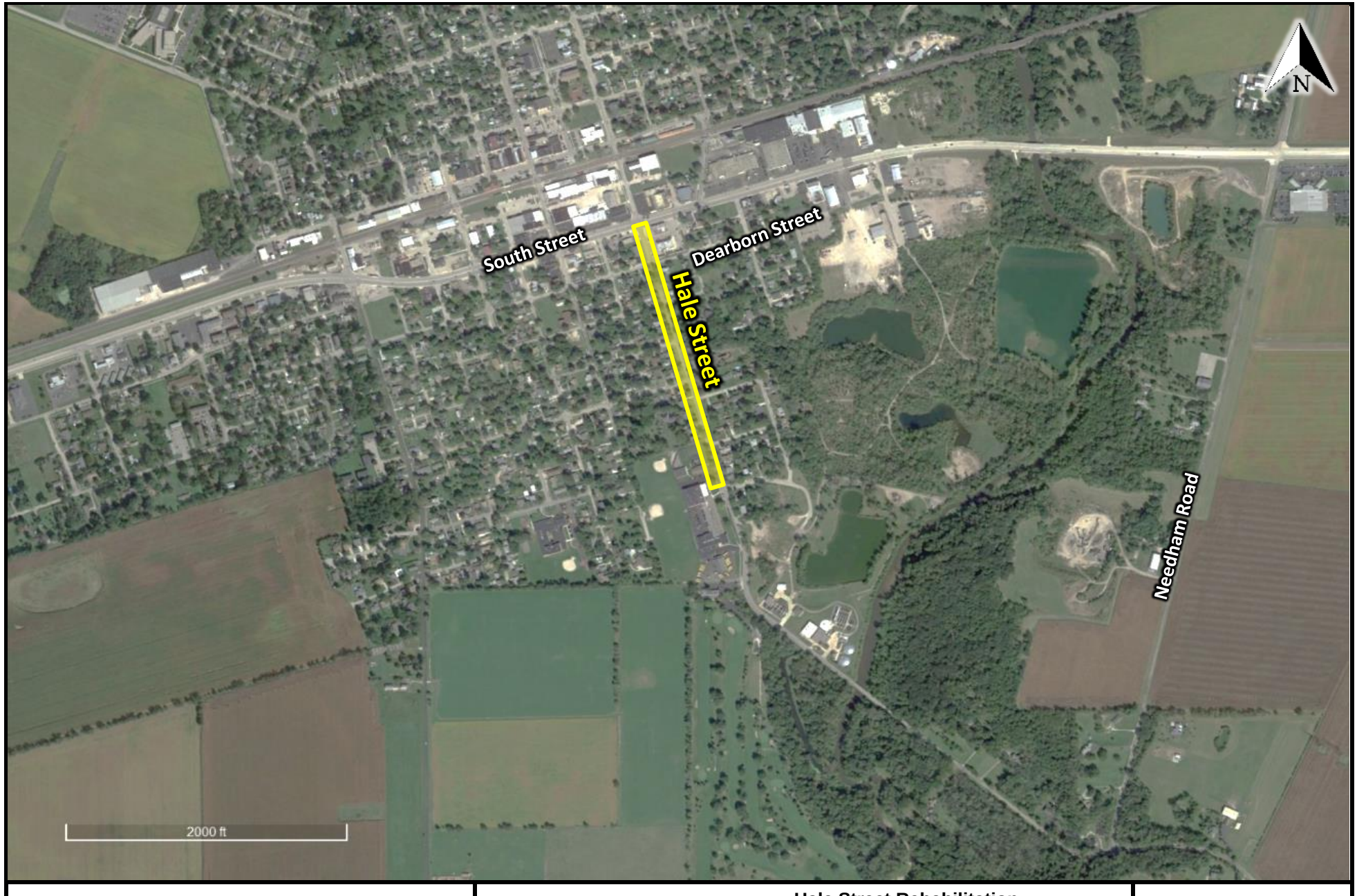
The aggregate thickness depth range detailed in *Table 4* is measured from the bottom of the proposed pavement and includes the 12-inch Aggregate Subgrade Improvement (SY) detailed in the project plans. The actual need for removal and replacement with Aggregate Subgrade Improvement should be determined in the field at the time of construction by the Geotechnical Engineer or Soils Inspector.

CLOSING

The recommendations submitted are based on the available subsurface information and design details furnished by HR Green, Inc. for the proposed project. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, Rubino should be notified immediately to determine if changes in our recommendations are required.

This report has been prepared for the exclusive use of HR Green, Inc. and their consultants for the specific application to the Hale Street Rehabilitation Project in Plano, Illinois.

Appendix A – Site Vicinity Map



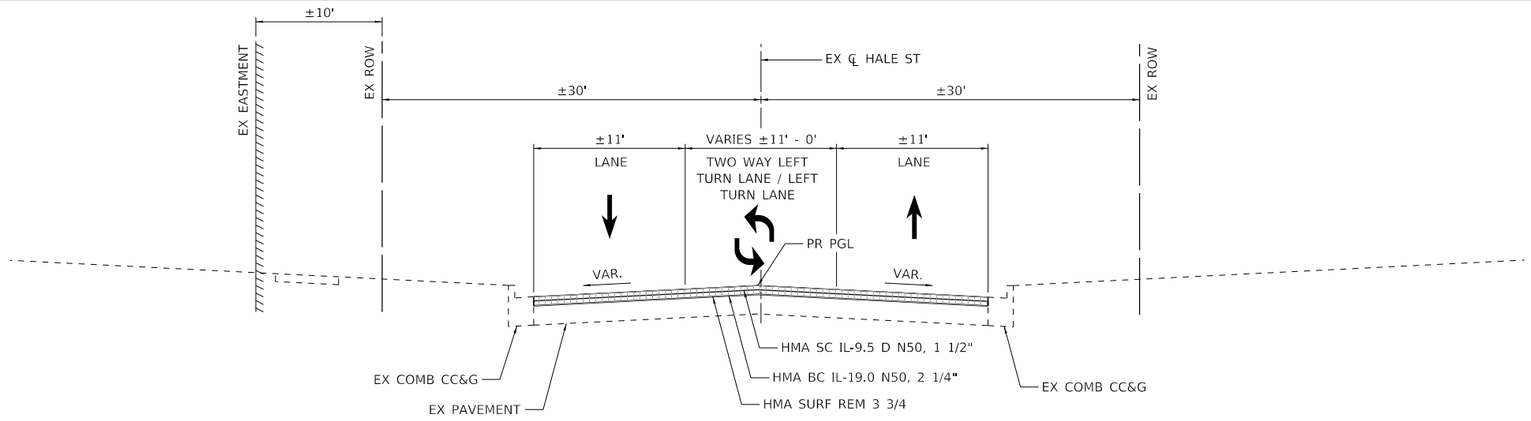
rubino ENGINEERING INC.

425 Shepard Drive
Elgin, Illinois 60123

Project Name:	**Hale Street Rehabilitation**
Project Location:	From US 34 to E Larson Street Plano, Illinois
Client:	**HR Green, Inc.**
Rubino Project # :	G23.171

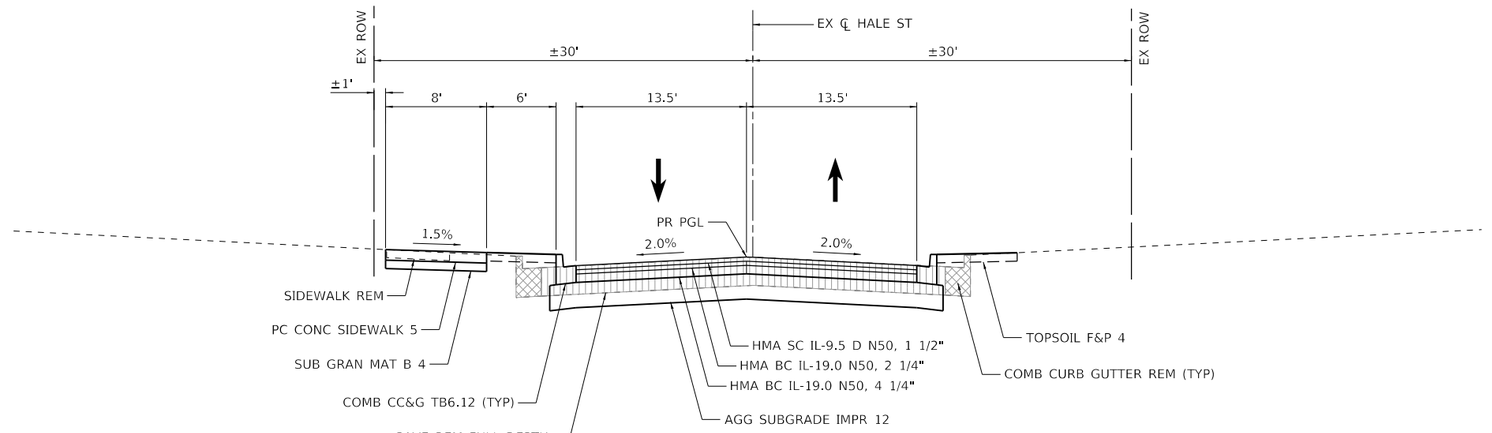
Site Vicinity Map

Appendix B – Proposed Typical Sections



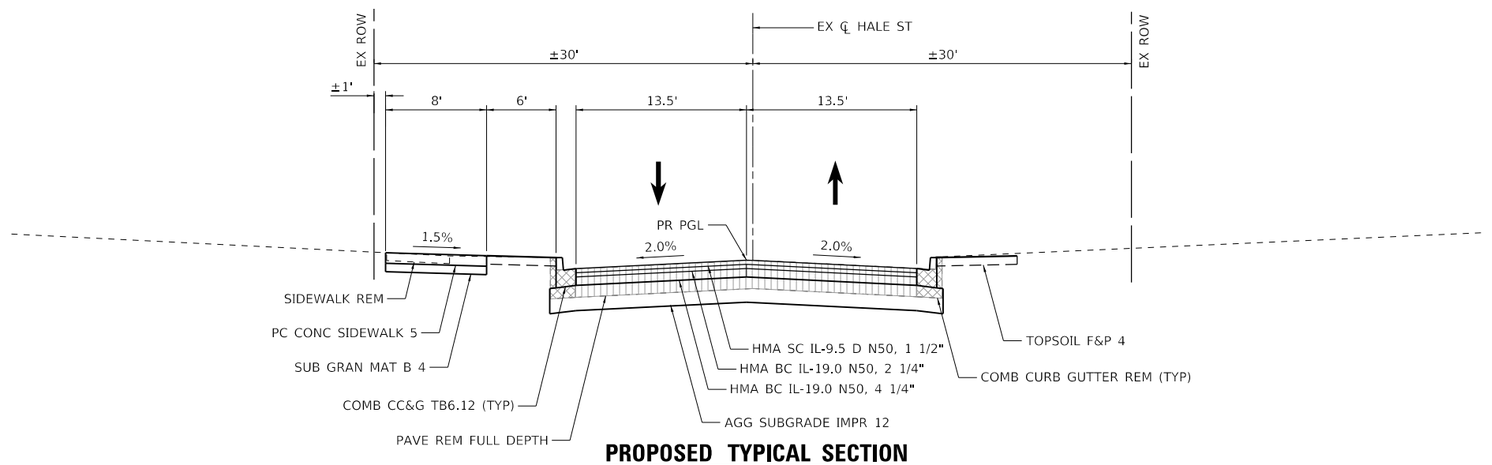
PROPOSED TYPICAL SECTION

STA 100+00 TO STA 107+25
STA 123+50 TO STA 126+97 (LEFT TURN LANE)



PROPOSED TYPICAL SECTION

STA 107+25 TO STA 111+50



PROPOSED TYPICAL SECTION

STA 111+50 TO STA 123+97

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DEPARTMENT OF TRANSPORTATION

PROPOSED TYPICAL SECTIONS
HALE STREET

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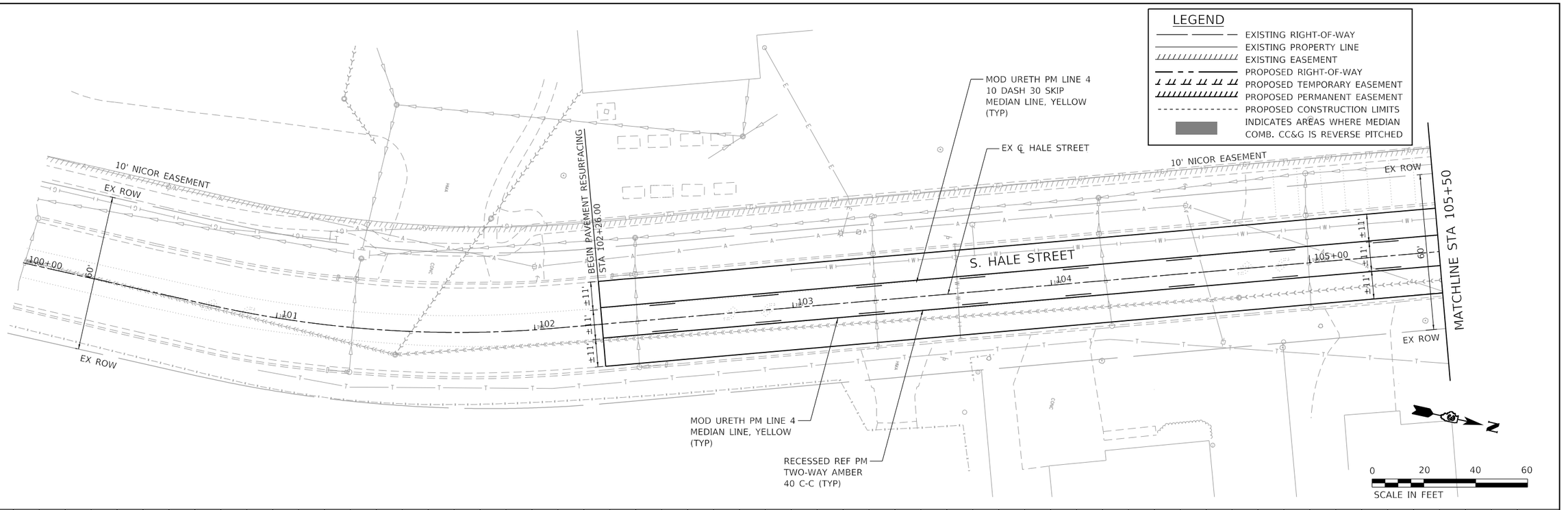
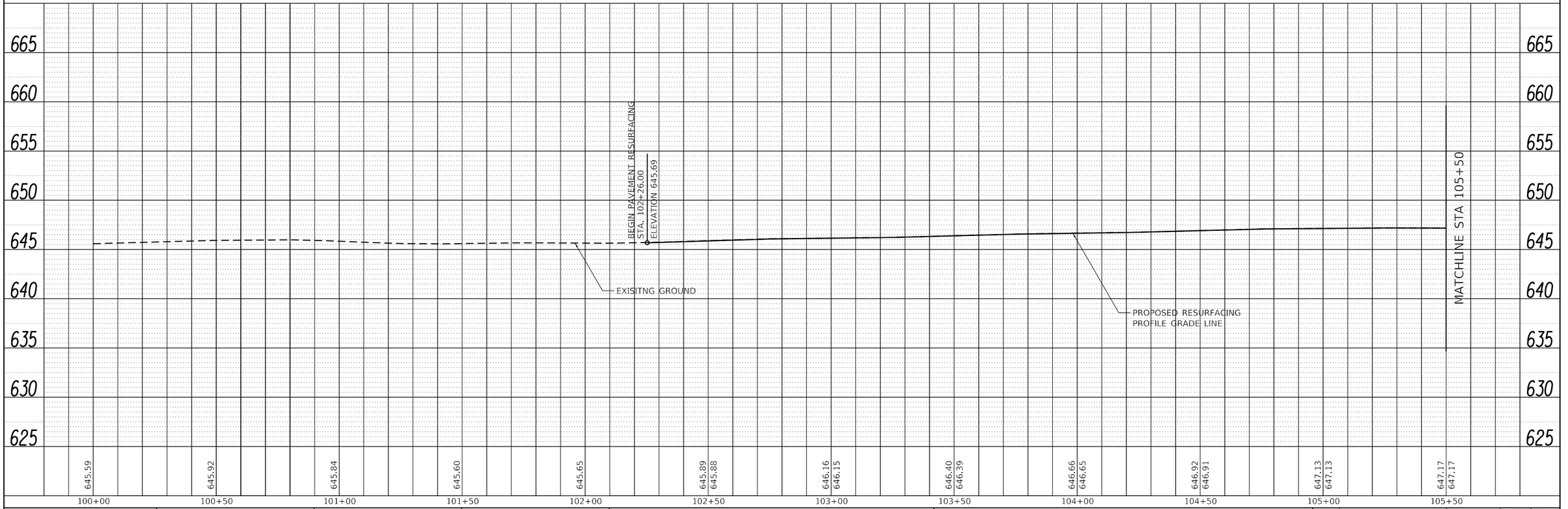
		CONTRACT NO. 87873		
	ILLINOIS FED. AID PROJECT			

Appendix C – Preliminary Plans and Profiles





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DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE
HALE STREET

SCALE: 1" = 20' | SHEET 1 OF 5 SHEETS | STA. 100+00 TO STA. 105+50

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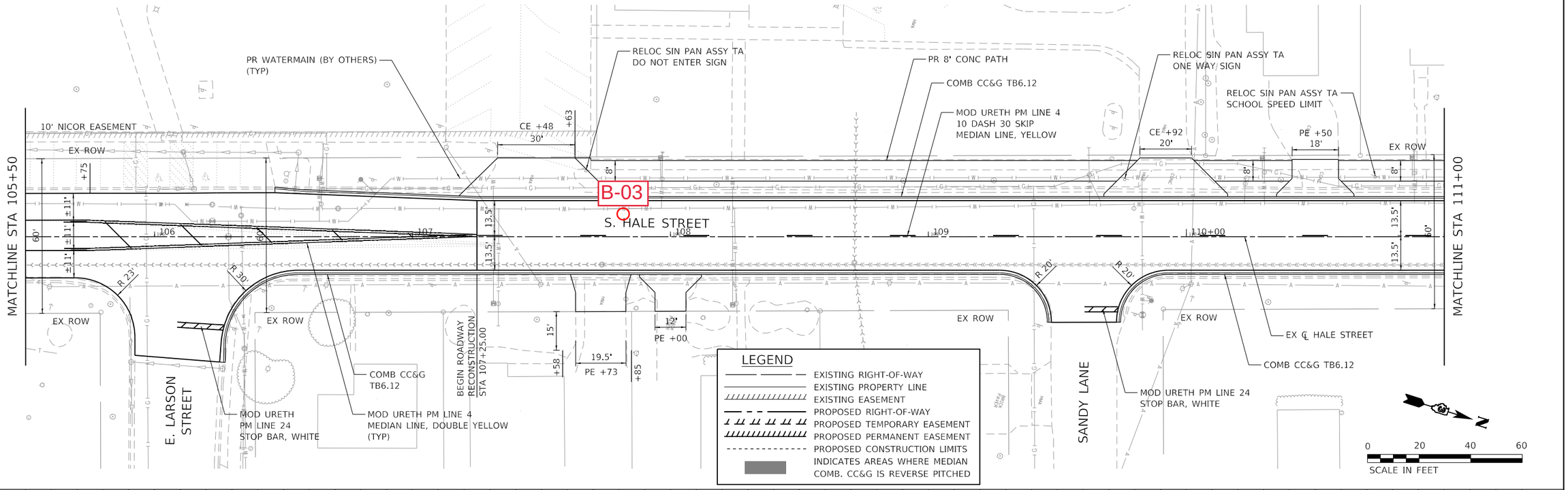

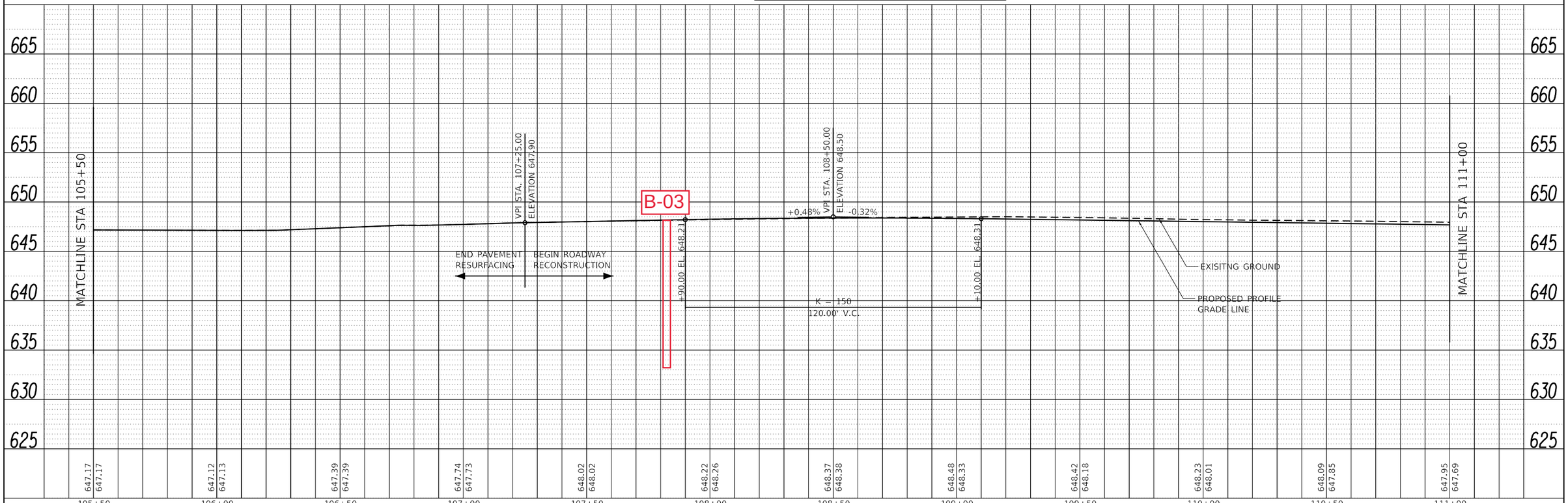

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PLAN AND PROFILE
HALE STREET

SCALE: 1" = 20' | SHEET 2 OF 5 SHEETS | STA. 105+50 TO STA. 111+00

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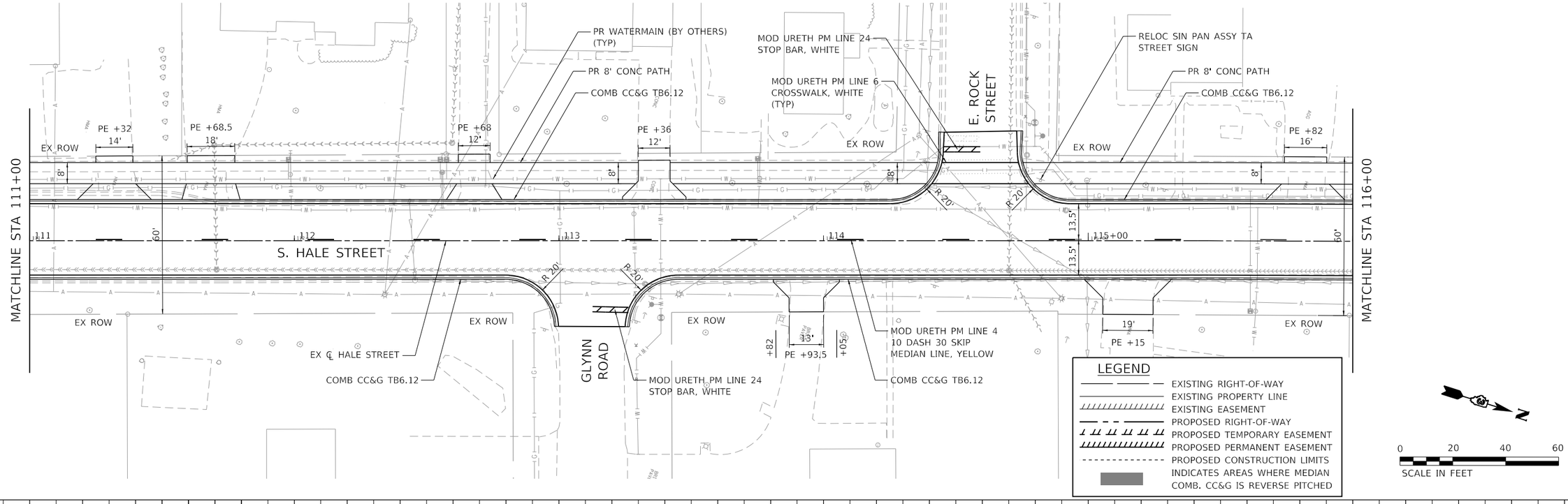

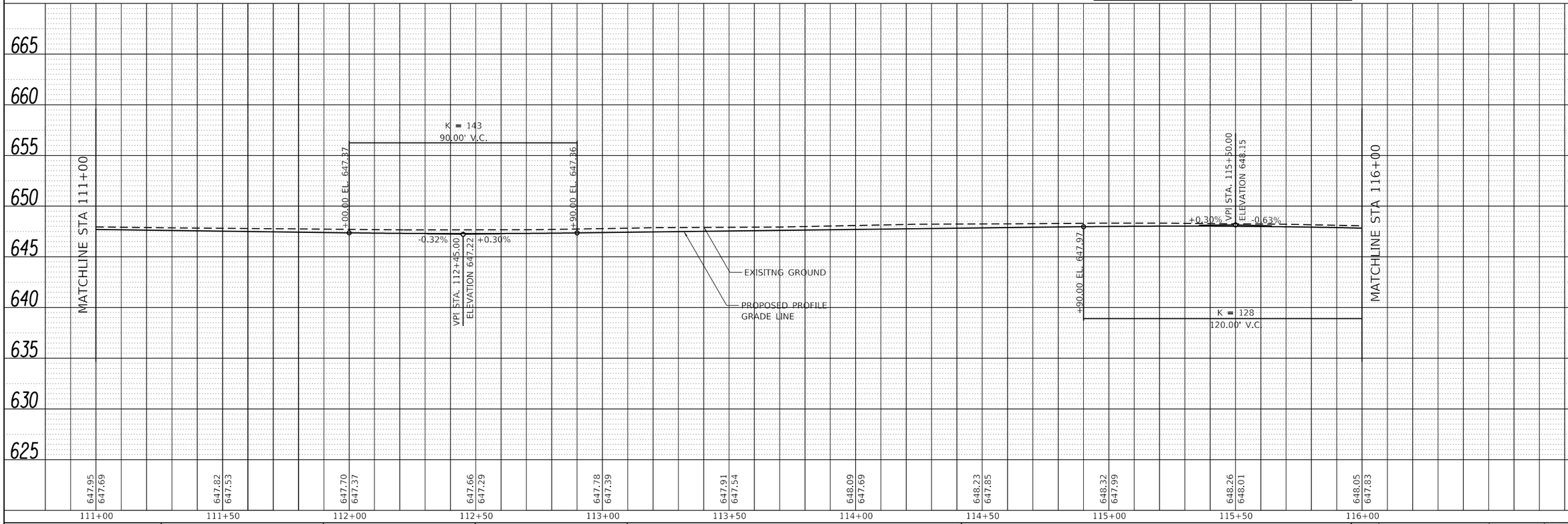

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE
HALE STREET

SCALE: 1" = 20' | SHEET 3 OF 5 SHEETS | STA. 111+00 TO STA. 116+00

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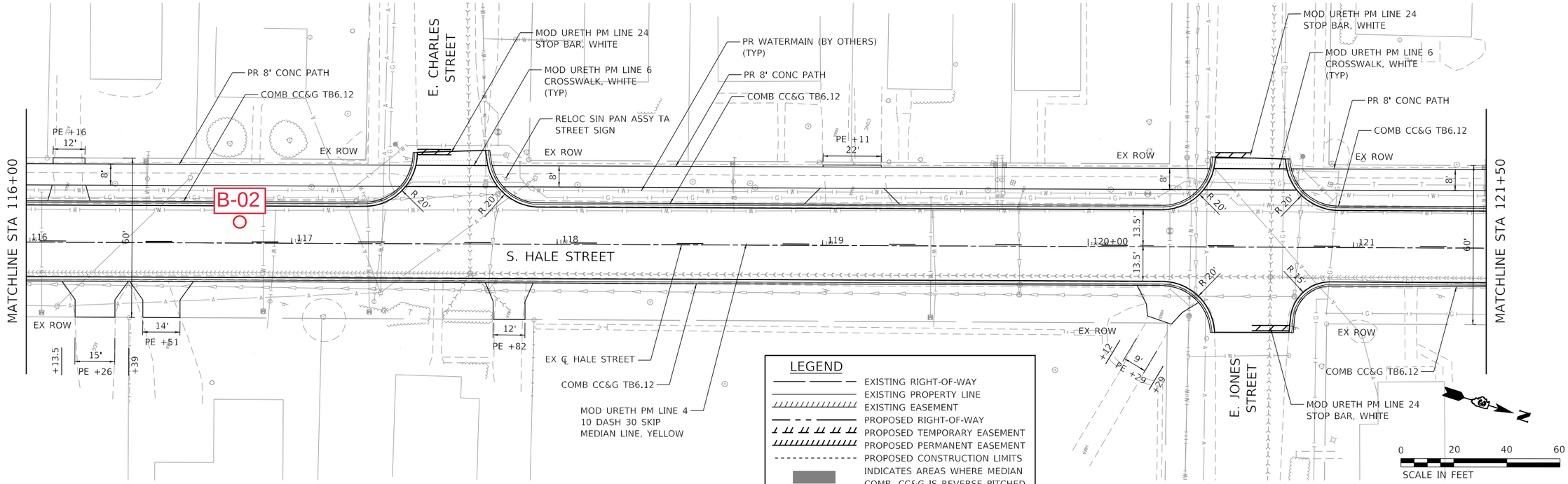

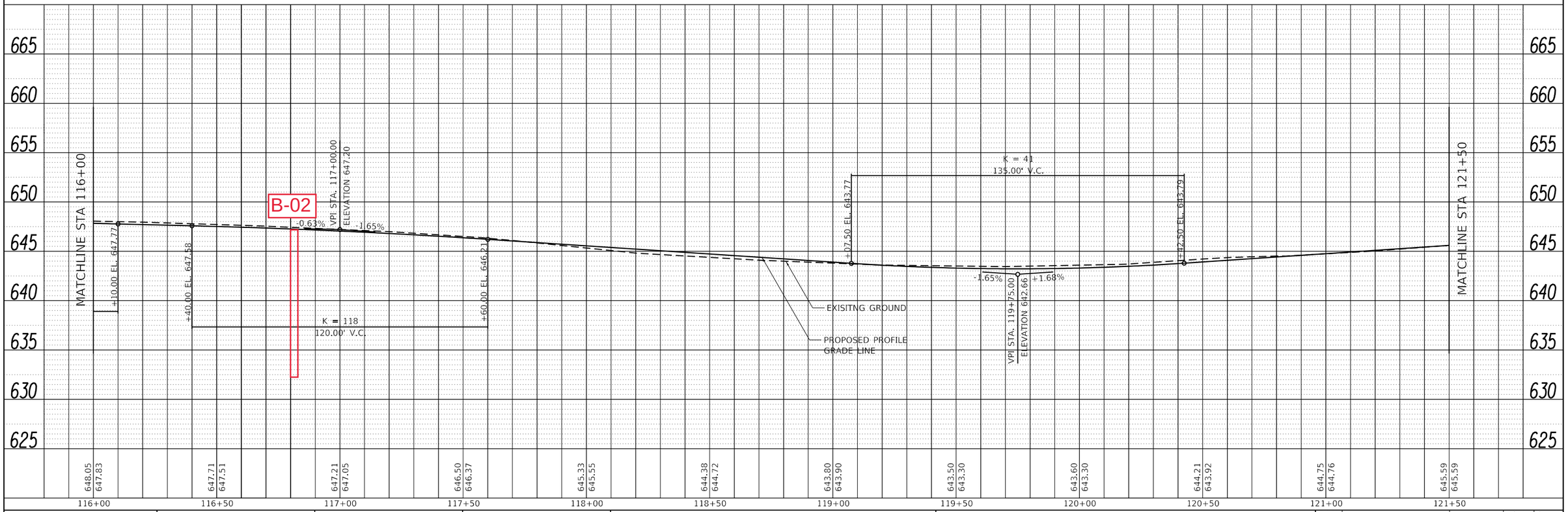

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE
HALE STREET

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F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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		CONTRACT NO. 87873		
	ILLINOIS	FED. AID PROJECT		

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NO.
BY
DATE

MATCHLINE STA 121+50

EX ROW

8'

PE +31
29'

MOD URETH PM LINE 24
STOP BAR, WHITE

MOD URETH PM LINE 6
CROSSWALK, WHITE
(TYP)

PR WATERMAIN (BY OTHERS)
(TYP)

PR 8' CONC PATH

COMB CC&G TB6.12

EX ROW

8'

R 30'

R 21'

END ROADWAY RECONSTRUCTION
STA 123+97.00

EX ROW

MOD URETH PM LINE 4
MEDIAN LINE, DOUBLE YELLOW

EX ROW

END PAVEMENT
RESURFACING
STA 126+56.00

60'

122

S. HALE STREET

123

13.5'

13.5'

B-01

125+00

11' ± 11' ± 10.5'

60'

126

127

E. SOUTH STREET
(U.S. ROUTE 34)

R 30'

R 24'

EX ROW

20'

PE +93

EX ROW

EX ROW

EX ℄ HALE STREET

COMB CC&G TB6.12

MOD URETH PM LINE 24
STOP BAR, WHITE

E. DEARBORN STREET

EX ROW

MOD URETH PM LINE 8
LANE LINE, WHITE

EX ROW

MOD URETH PM LINE 24
STOP BAR, WHITE

MOD URETH PM LINE 6
CROSSWALK, WHITE
(TYP)

LEGEND

- EXISTING RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED RIGHT-OF-WAY
- PROPOSED TEMPORARY EASEMENT
- PROPOSED PERMANENT EASEMENT
- PROPOSED CONSTRUCTION LIMITS
- INDICATES AREAS WHERE MEDIAN COMB. CC&G IS REVERSE PITCHED

N

0 20 40 60
SCALE IN FEET

PROFILE
SURVEYED
PLOTTED
ALIGNMENT CHECKED
R/W, NOTED
STRUCTURE NO(S)
NOTE BOOK
NO.
BY
DATE

665 660 655 650 645 640 635 630 625

MATCHLINE STA 121+50

+1.68%

VPI STA. 122+25.00
ELEVATION 646.85

+1.10%

+70.00 EL. 647.35

EXISITNG GROUND

PROPOSED PROFILE
GRADE LINE

K = 48
120.00' V.C.

+1.10%

VPI STA. 123+30.00
ELEVATION 648.01

-1.40%

+90.00 EL. 647.17

A. 123+97.00
HON 647.07

B-01

END ROADWAY
RECONSTRUCTION

BEGIN PAVEMENT
RESURFACING

PROPOSED RESURFACING
PROFILE GRADE LINE

END PAVEMENT RESURFACING
STA. 126+55.00
ELEVATION 646.08

121+50	122+00	122+50	123+00	123+50	124+00	124+50	125+00	125+50	126+00	126+50
645.59	646.55	647.23	647.56	647.80	647.03	646.21	645.61	645.44	645.67	646.09
645.59	646.43	647.13	647.58	647.56	647.03	646.19	645.61	645.44	645.66	646.08

HRG PROJECT NO.: 18938
HRG PROJ. CONTACT:
FILE NAME: 18938_sht-prof05.dgn
PLOT DRIVER: &_pdf_bw_pltcfg
PEN TABLE: plotlabel.tbl

HRGreen
HRGreen.com
Illinois Professional Design Firm
184-001322

USER NAME = jroitbu	DESIGNED - JMR	REVISED -
	DRAWN - AJM	REVISED -
PLOT SCALE = 40.0000 ' / in.	CHECKED -	REVISED -
PLOT DATE = 9/18/2024	DATE - 9/17/2024	REVISED -

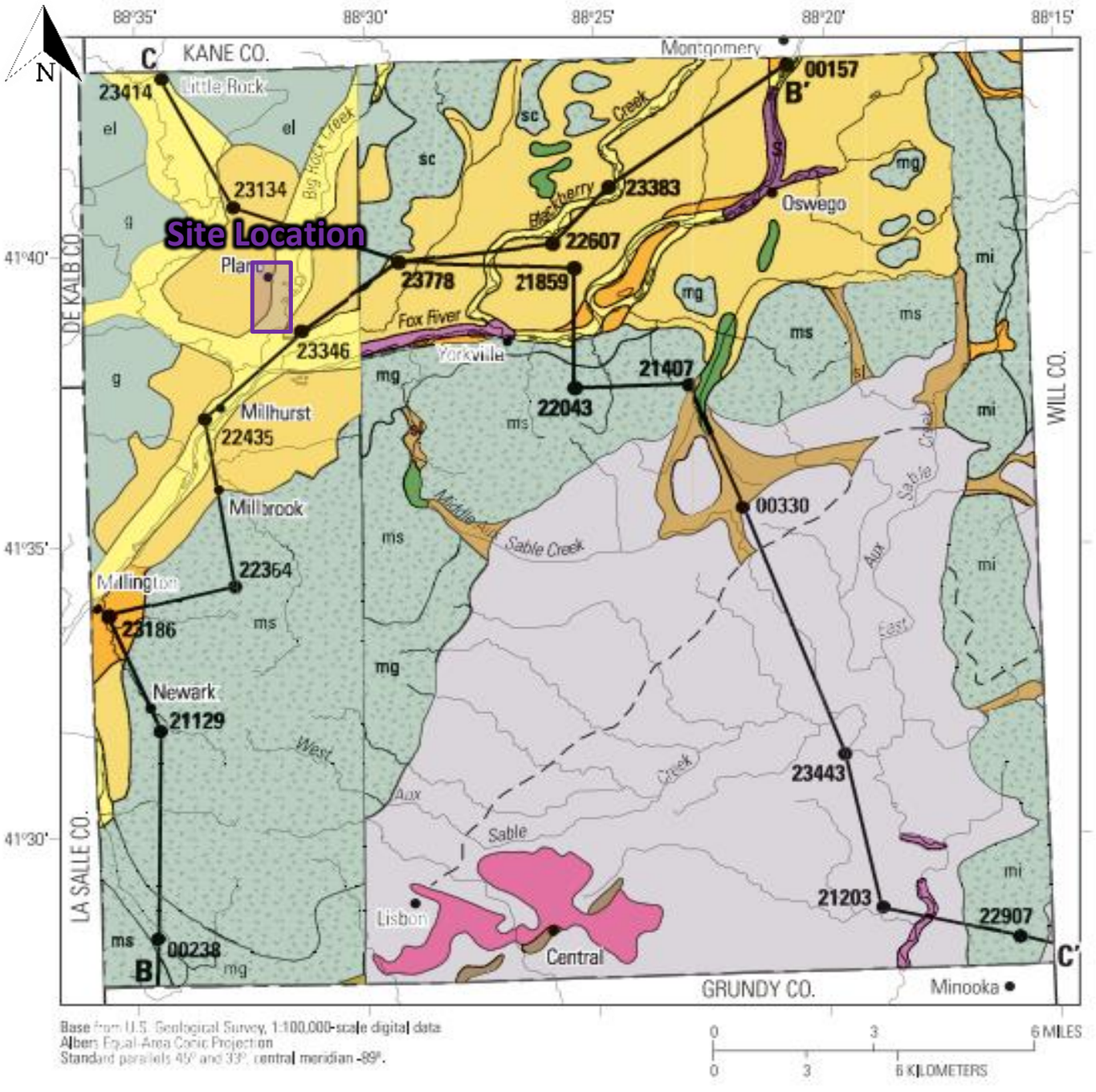
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

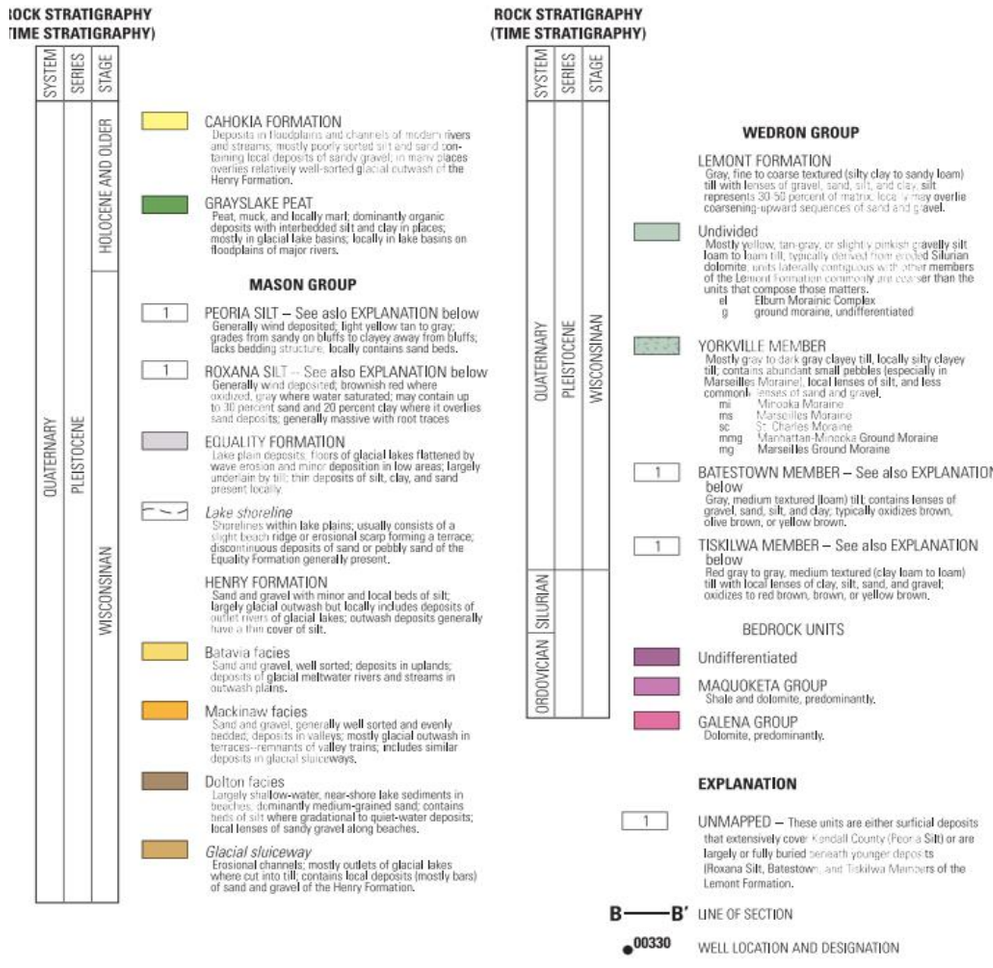
PLAN AND PROFILE
HALE STREET

SCALE: 1" = 20' | SHEET 5 OF 5 SHEETS | STA. 121+50 TO STA. 127+00

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
6474	22-00049-00-PV	KENDALL	53	19
		CONTRACT NO. 87873		
	ILLINOIS FED. AID PROJECT			

Appendix D – Geology and Pedology Maps





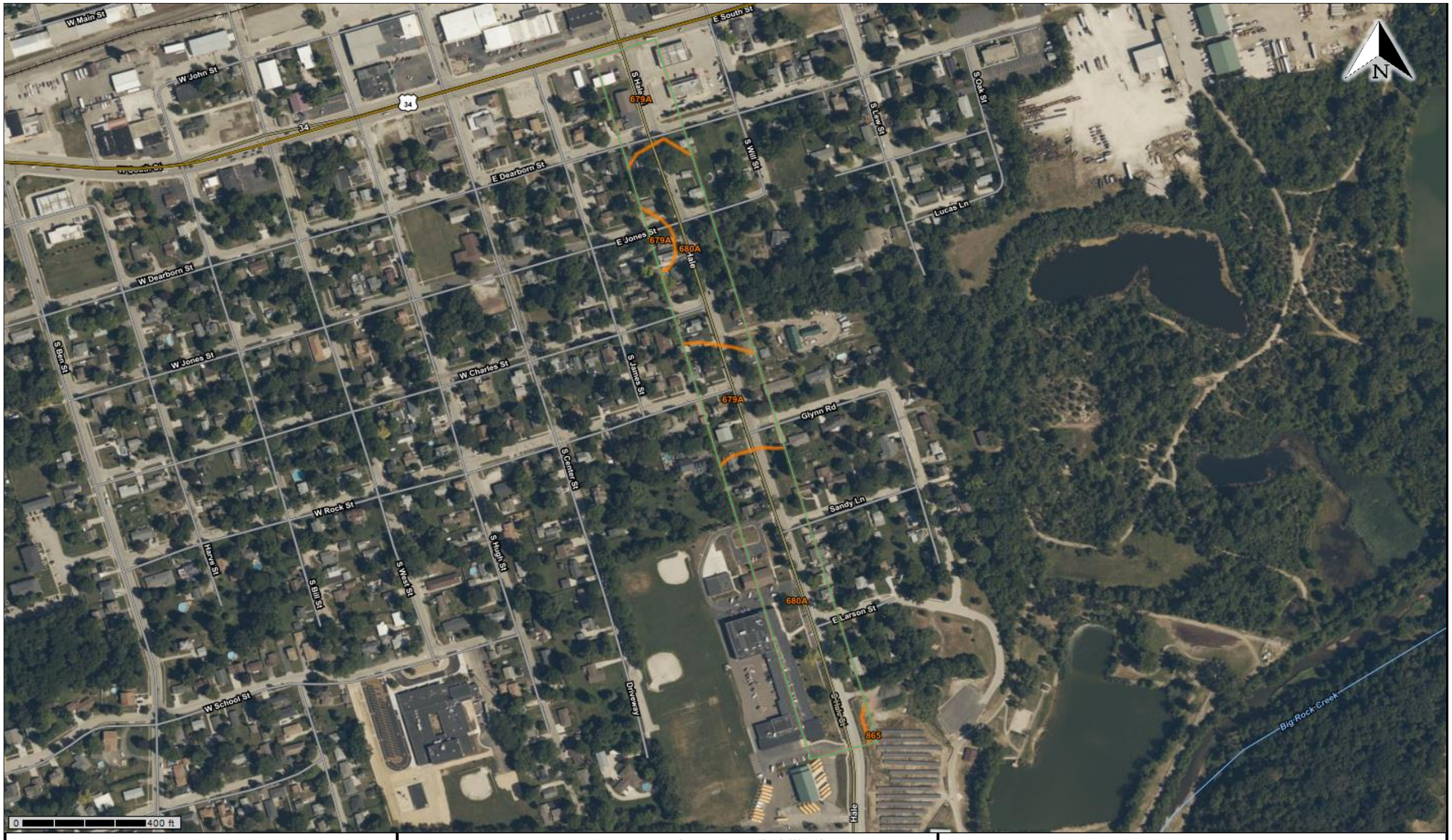
Surficial Geology of Kendall County, Illinois. Modified from Kay et al. 2005.

rubino ENGINEERING INC.

425 Shepard Drive
Elgin, Illinois 60123

Project Name:	**Hale Street Rehabilitation**
Project Location:	From US 34 to E Larson Street Plano, Illinois
Client:	**HR Green, Inc.**
Rubino Project # :	G23.171

Surficial Geology Map



rubino ENGINEERING INC. **425 Shepard Drive** **Elgin, Illinois 60123**	**Project Name:** **Project Location:** **Client:** **Rubino Project # :**	**Hale Street Rehabilitation** From US 34 to E Larson Street Plano, Illinois **HR Green, Inc.** G23.171	**USDA / NRCS** **Soil Survey** **Map**

rubino ENGINEERING INC.

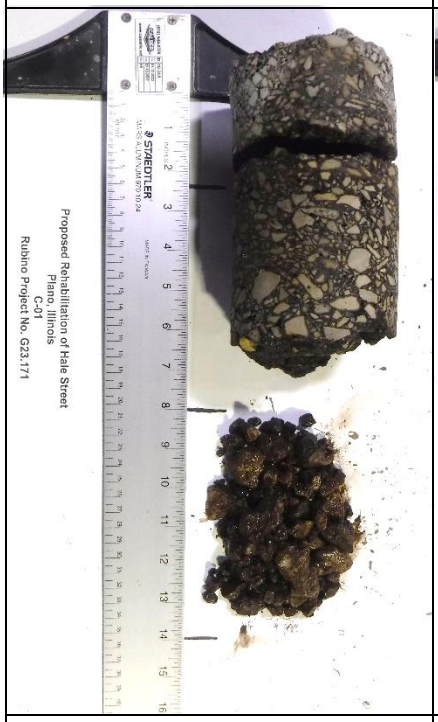
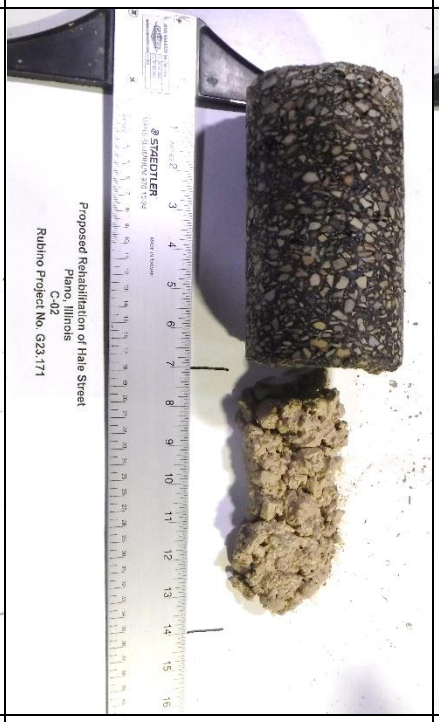
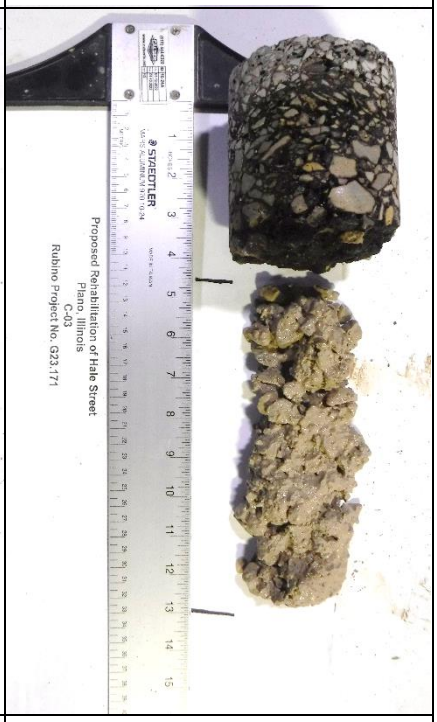
NRCS Soil Survey Legend

G23.171 Hale Street Rehabilitation

Map symbol and soil name	Depth	USDA texture	Classification		Pct Fragments		Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
			AASHTO		>10 inches	3-10 inches									Kw	Kf	T		
	In				*L-R-H*	*L-R-H*	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
679A—Blackberry silt loam, 0 to 2 percent slopes																			
Blackberry	0-11	Silt loam	CL-ML, CL	A-4, A-6	0- 0- 0	0- 0- 0	0- 5- 10	63-73- 82	18-22- 27	1.10-1.30	4.23-14.11	0.22-0.24	0.0-2.9	3.0-5.0	0.32	0.32	5	6	48
	11-47	Silty clay loam, silt loam	CL	A-4, A-6, A-7-6	0- 0- 0		0- 5- 10	55-65- 75	25-30- 35	1.20-1.40	4.23-14.11	0.18-0.20	3.0-5.9	0.2-1.0	0.43	0.43			
	47-62	Stratified loam to silt loam	CL-ML, CL, ML	A-4	0- 0- 0	0- 0- 0	20-38- 50	35-42- 55	15-20- 25	1.40-1.60	4.23-14.11	0.11-0.22	0.0-2.9	0.1-0.5	0.43	0.43			
	62-70	Stratified silt loam to loam to sandy loam	CL-ML, SC-SM, CL, ML, SC, SM	A-4	0- 0- 0	0- 0- 0	30-40- 60	20-44- 55	5-16-20	1.50-1.70	4.23-14.11	0.13-0.17	0.0-2.9	0.1-0.5	0.43	0.43			
680A—Campton silt loam, 0 to 2 percent slopes																			
Campton	0-6	Silt loam	CL-ML, CL	A-4, A-6	0- 0- 0	0- 0- 0	0- 9- 10	63-67- 80	20-24- 27	1.15-1.30	4.23-14.11	0.22-0.24	0.0-2.9	1.0-3.0	0.43	0.43	5	6	48
	6-50	Silty clay loam, silt loam	CL	A-6	0- 0- 0	0- 0- 0	0- 7- 10	55-63- 75	25-30- 35	1.30-1.50	4.23-14.11	0.18-0.20	3.0-5.9	0.0-1.0	0.43	0.43			
	50-61	Sandy loam, silt loam, clay loam, loam	CL, SC	A-2-4, A-2-6, A-4, A-6	0- 0- 0	0- 0- 0	20-43- 65	5-35- 65	15-23- 30	1.30-1.50	4.23-14.11	0.11-0.16	3.0-5.9	0.0-0.5	0.49	0.49			
	61-73	Stratified loamy sand to gravelly loam	CL-ML, SC-SM, CL, SC	A-2-6, A-4, A-6	0- 0- 0	0- 3- 4	25-53- 80	10-33- 50	2/15/2025	1.55-1.75	4.23-42.34	0.11-0.16	0.0-2.9	0.0-0.5	0.55	0.55			

Appendix E – Pavement Core Summary Table

Cores were taken in the pavement of Hale Street in Plano, Illinois. The table below summarizes the thicknesses observed in the field and laboratory.

C-01 (Hale Street)	C-02 (Hale Street)	C-03 (Hale Street)
		
Picture Taken Facing North/Northwest	Picture Taken Facing South/Southeast	Picture Taken Facing South/Southeast
		
Total Thickness = 8 ¼ inches **HMA Surface$_1$ = 2 ½ in.** **Surface$_1$ to Binder$_1$ Weathering & Deterioration** **HMA Surface$_2$ = ¾ in.** **HMA Binder$_1$ = 5 in.** **Binder$_1$ NOT FULLY RECOVERED due to Weathering & Deterioration** **Subbase Stone = 6 inches**	**Total Thickness = 7 inches** **HMA Surface$_1$ = 2 in.** **HMA Surface$_2$ = 2 in.** **HMA Surface$_3$ = 3 in.** **Subbase Stone = 7 inches**	**Total Thickness = 4 ½ inches** **HMA Surface$_1$ = 1 ½ in.** **HMA Binder$_1$ = 3 in.** **Subbase Stone = 8 ½ inches**

The referenced thicknesses are considered approximate. Commentary provided by Rubino is based on our observation in the laboratory; **Crack** = vertical through cross section; **Weathering** = rounded edges & degradation of asphalt and **Deterioration** = horizontal crack. Pavement and subbase type and thickness may vary between core locations. Any comments on the condition of the material are considered our opinion and should be verified by the design engineer.

Appendix F – Boring Logs and Subsurface Profile

rubino ENGINEERING INC.
Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING B-01

Rubino Job No.:	G23.171	Drilling Method:	2 ¼ Hollow Stem Auger	WATER LEVELS***	
Project:	Hale Street Rehabilitation	Sampling Method:	Split Spoon	While Drilling	N/A
Location:	From US 34 to E Larson Street	Hammer Type:	Automatic	Upon Completion	N/A
City, State:	Plano, Illinois	Boring Location:	NB lane of Hale Street	Delay	N/A
Client:	HR Green, Inc.		2 feet W from edge of pavement		

Station: 124+04.16
Offset: 9.8821

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	Classification	SPT Blows per 6-inch	Moisture, %	Additional Remarks
				Surface Elev.: 646.97 ft				
	0			Approximately 8¼ inches of ASPHALT				
				Approximately 6 inches of SUBBASE STONE				
645		1	8	Very stiff, dark gray and gray SILTY CLAY, with roots, trace sand and gravel *Possible Fill* *Large tree roots observed in 1 ft & 3 ½ ft spoon samples*		3-2-5 N=7	29	Qp=3.5 tsf 3% Organic Content
		2	2		CL	3-2-4 N=6	28	4% Organic Content
	5							
640		3	10	Medium stiff to stiff, brown SILTY CLAY LOAM, trace gravel		3-3-3 N=6	13	Qp=0.8 tsf
		4	16		CL	1-2-3 N=5	12	Qp=1.3 tsf
	10							
635		5	15	Medium dense, brown SAND, trace gravel		4-6-7 N=13	4	
		6	16		SP	8-11-15 N=26	8	
	15			End of boring at approximately 15 feet below existing grade.				

STANDARD PENETRATION TEST DATA
Moisture ◎ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu (Rimac) ✳Qp/Qr
0 2.0 4.0

Completion Depth:	15.0 ft
Date Boring Started:	12/7/23
Date Boring Completed:	12/7/23
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Pressuremeter
Shelby Tube
Grab Sample
No Recovery

Latitude: 41.6607858
Longitude: -88.5341500
Drill Rig: Geoprobe 7822DT
Remarks: Hole collapse at ~11 feet BEG after Log Entry: J. Ignarski
Checked By: J. Ignarski

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING B-02

Rubino Job No.: G23.171
Project: Hale Street Rehabilitation
Location: From US 34 to E Larson Street
City, State: Plano, Illinois
Client: HR Green, Inc.

Drilling Method: 2 ¼ Hollow Stem Auger
Sampling Method: Split Spoon
Hammer Type: Automatic
Boring Location: SB lane of Hale Street
5 feet E from edge of pavement

WATER LEVELS***

While Drilling	N/A
Upon Completion	N/A
Delay	N/A

Station: 116+80.91
Offset: -11.1208

Surface Elev.: 647.00 ft

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	Classification	SPT Blows per 6-inch	Moisture, %	Additional Remarks
	0			Approximately 7 inches of ASPHALT				
				Approximately 7 inches of SUBBASE STONE				
645		1	8	Very stiff to hard, brown SILTY CLAY, trace sand and gravel	CL	3-4-5 N=9	26	Qp=3.5 tsf 3% Organic Content
		2	10			2-5-6 N=11	23	Qp=4.0 tsf
	5							
640		3	14	Very stiff to hard, brown SILTY CLAY LOAM, trace gravel	CL	5-11-12 N=23	12	Qp=3.3 tsf
		4	13			3-6-7 N=13	12	Qp=4.5 tsf
	10							
635		5	17	Hard, brown SILT, trace sand and gravel	ML	7-9-14 N=23	17	Qp=4.5 tsf
		6	18	Hard, brown SILTY CLAY, trace sand and gravel	CL	11-13-15 N=28	11	Qp=4.5 tsf
	15			End of boring at approximately 15 feet below existing grade.				

STANDARD PENETRATION TEST DATA
Moisture, PL, LL
0 25 50
STRENGTH, tsf
Qu (Rimac) Qp/Qr
0 2.0 4.0

Completion Depth: 15.0 ft
Date Boring Started: 12/7/23
Date Boring Completed: 12/7/23
Logged By: P.P.
Drilling Contractor: Rubino Engineering, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Pressuremeter
Shelby Tube
Grab Sample
No Recovery

Latitude: 41.6588734
Longitude: -88.5334372
Drill Rig: Geoprobe 7822DT
Remarks: Hole collapse at ~14 feet BEG after
Log Entry: J. Ignarski
Checked By: J. Ignarski

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING B-03

Rubino Job No.:	G23.171
Project:	Hale Street Rehabilitation
Location:	From US 34 to E Larson Street
City, State:	Plano, Illinois
Client:	HR Green, Inc.
Drilling Method:	2 ¼ Hollow Stem Auger
Sampling Method:	Split Spoon
Hammer Type:	Automatic
Boring Location:	SB lane of Hale Street 5 feet E from edge of pavement

WATER LEVELS***

While Drilling	N/A
Upon Completion	N/A
Delay	N/A

Station: 107+81.68
Offset: -15.5781

Surface Elev.: 647.95 ft

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	Classification	SPT Blows per 6-inch	Moisture, %	Additional Remarks
	0			Approximately 4½ inches of ASPHALT				
				Approximately 8½ inches of SUBBASE STONE				
		1	12	Brown HIGH PLASTICITY SILTY CLAY, trace sand and gravel	CH	0-2-2 N=4	26	Qp=2.8 tsf LL = 59 PL = 26 3% Organic Content
645		2	6			0-1-1 N=2	22	Qp=1.3 tsf
	5							
		3	1	Stiff, brown SILTY CLAY, trace sand and gravel *Low Recovery. Soils classified from auger cuttings.*	CL	3-3-5 N=8	17	
640		4	10	Medium dense, brown SAND, some gravel *Possible cobbles/boulders encountered*	SW	11-12-11 N=23	8	
	10							
		5	16	Dense, brown SAND, trace gravel	SP	11-21-22 N=43	3	
635		6	14			13-14-33 N=47	3	
	15			End of boring at approximately 15 feet below existing grade.				

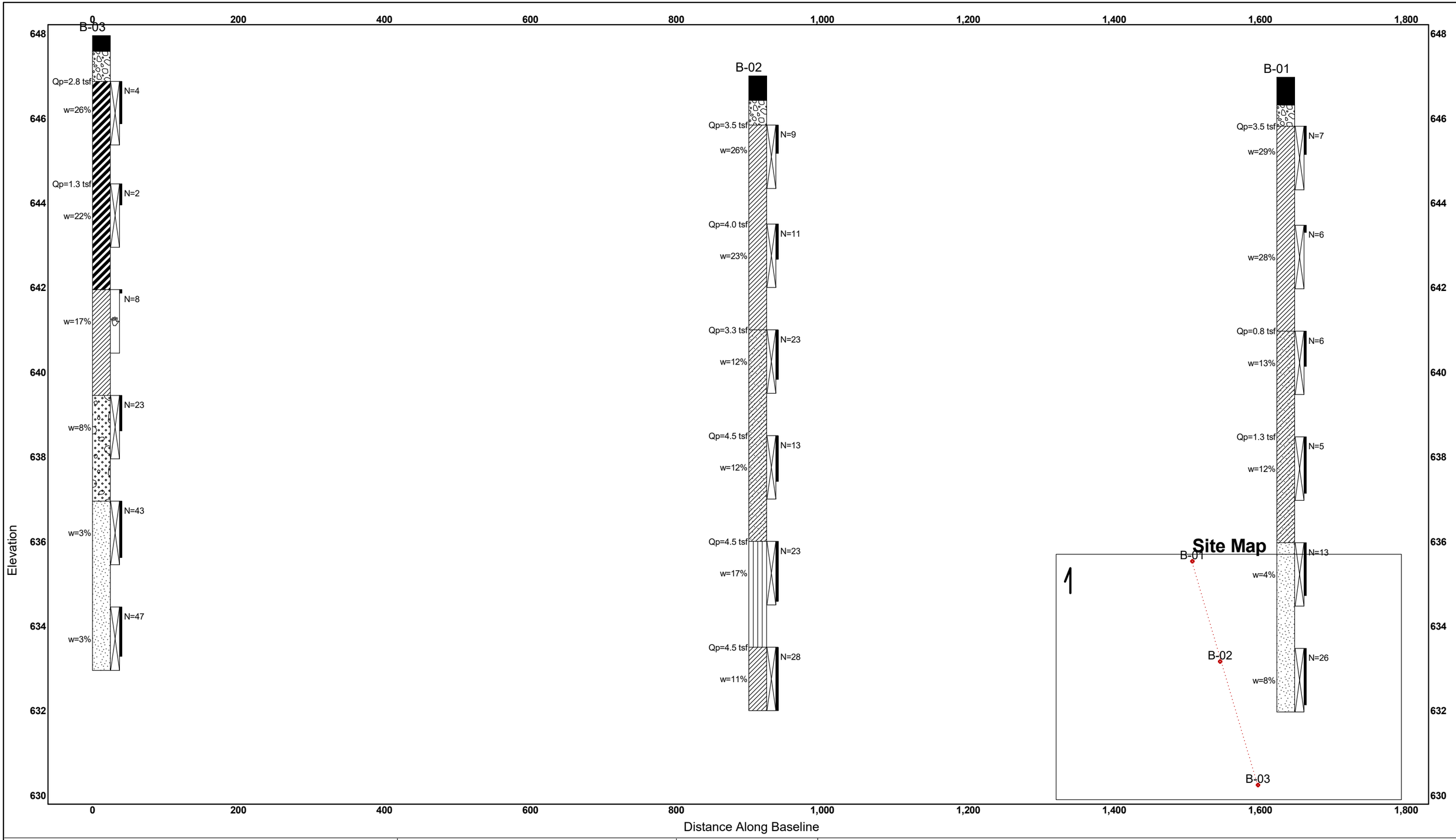
STANDARD PENETRATION TEST DATA
Moisture, PL, LL (0, 25, 50)
STRENGTH, tsf: Qu (Rimac), Qp/Qr (0, 2.0, 4.0)

Completion Depth:	15.0 ft
Date Boring Started:	12/7/23
Date Boring Completed:	12/7/23
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Pressuremeter
Shelby Tube
Grab Sample
No Recovery

Latitude: 41.6565157
Longitude: -88.5324645
Drill Rig: Geoprobe 7822DT
Remarks: Hole collapse at ~12 feet BEG after
Log Entry: J. Ignarski
Checked By: J. Ignarski

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.



rubino ENGINEERING INC.

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

Soil Profile

Sample Types:

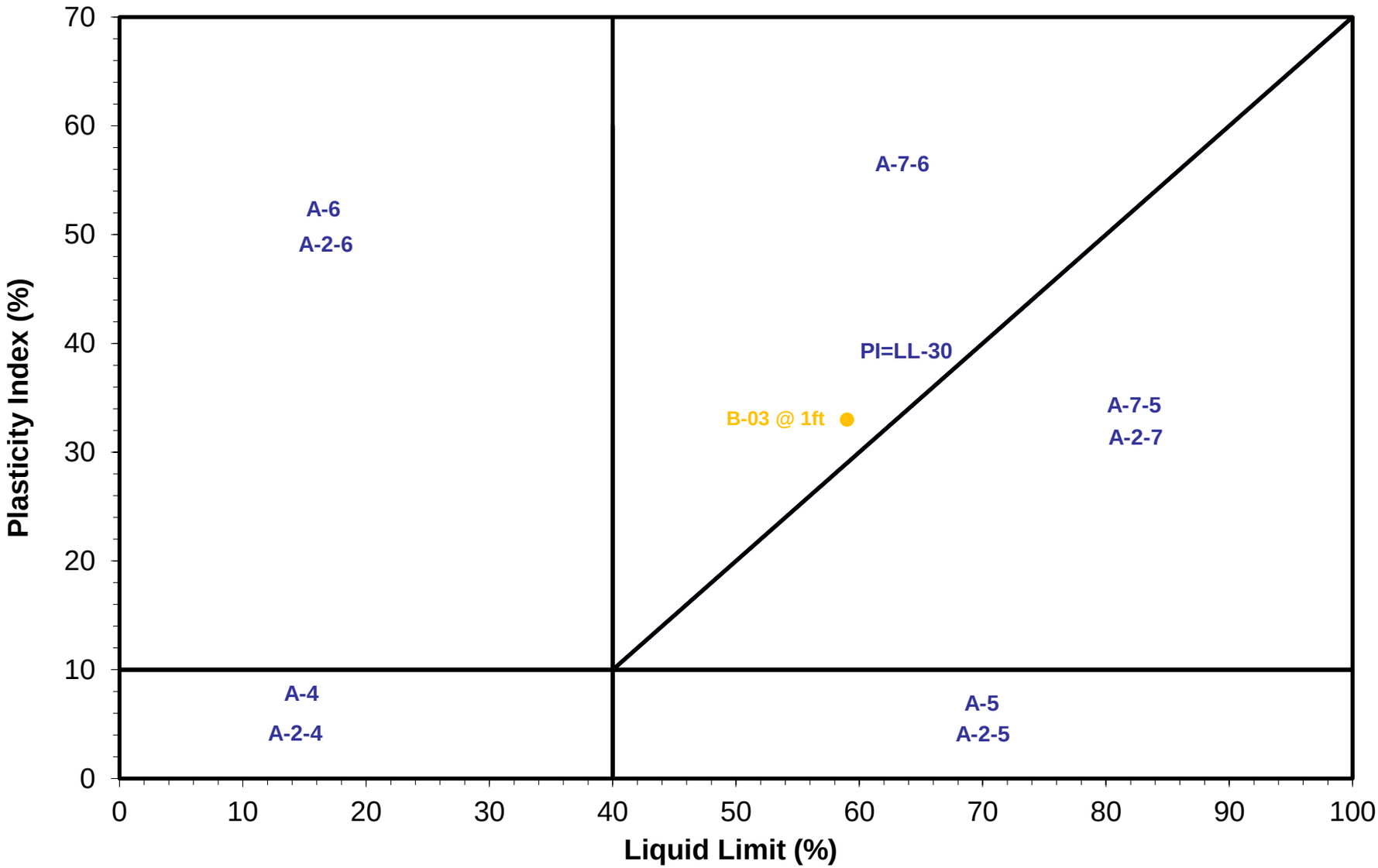
- Auger Cuttings
- Split Spoon
- Shelby Tube
- P Pressuremeter

Rubino Job No.: G23.171
Project: Hale Street Rehabilitation
Location: From US 34 to E Larson Street
City, State: Plano, Illinois
Client: HR Green, Inc.

Appendix G – Laboratory Test Results

rubino ENGINEERING INC.

Report of Atterberg Limits Test (ASTM D4318 / AASHTO T89 / AASHTO T90)



Boring #	B-03 @ 1ft					
LL	59					
PL	26					
PI	33					

Project: Hale Street Rehabilitation
Location: Plano, Illinois
Client: HR Green, Inc.
Project #: G23.171

Appendix H – Report Limitations

Subsurface Conditions:

The subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the appendix should be reviewed for specific information at individual boring locations. These records include soil descriptions, stratifications, penetration resistances, locations of the samples and laboratory test data as well as water level information. The stratifications shown on the boring logs represent the conditions only at the actual boring locations. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition between layers may be gradual.

Geotechnical Risk:

The concept of risk is an important aspect of the geotechnical evaluation. The primary reason for this is that the analytical methods used to develop geotechnical recommendations do not comprise an exact science. The analytical tools that geotechnical engineers use are generally empirical and must be used in conjunction with engineering judgment and experience. Therefore, the solutions and recommendations presented in the geotechnical evaluation should not be considered risk-free, and more importantly, are not a guarantee that the interaction between the soils and the proposed structure will perform as planned. The engineering recommendations, presented in the preceding section, constitute Rubino's professional estimate of the necessary measures for the proposed structure to perform according to the proposed design based on the information generated and reference during this evaluation, and Rubino's experience in working with these conditions.

Warranty:

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

Federal Excavation Regulations:

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document was issued to better ensure the safety of workmen entering trenches or excavations. This federal regulation mandates that all excavations, whether they be utility trenches, basement excavation or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person," as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. Rubino is providing this information solely as a service to our client. Rubino is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.