



REMPE-SHARPE

& Associates, Inc.

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Wolverine Dr. Townhouse Development Traffic Study Aurora, IL

To: Tim Kellogg
PT Land, LLC

From: Steve Grabowski
Rempe-Sharpe & Assoc.

Date: February 4, 2022

Rempe-Sharpe & Associates has prepared a traffic evaluation for the proposed Wolverine Dr. townhouse development in Aurora, IL. The site is located on the south side of Liberty St. approximately .75 mi. west of Eola Rd. and has a total area of approximately 15.6 acres. The concept plan indicates that the development is accessed from existing Wolverine Dr. and will contain 97 townhouses.

The report presents the existing roadway conditions, existing peak hour traffic volumes at the site access intersection and a description of the proposed development. A directional distribution of the proposed development generated traffic and vehicle trip generation for the proposed development were estimated. Future traffic conditions were developed to prepare traffic analyses for the morning and evening peak hours. Based on the projected traffic volumes and development generated traffic, analyses were conducted to determine the impact the development would have on the site intersection.

Background Information

Site Location

The site is generally located on the south side of Liberty St. west of Eola Rd. in Aurora, Illinois. North and adjacent to the site are two commercial entities and a townhouse development north of Liberty St. East of the site is residential and south of the site are townhouses. West of the site is a sports complex and townhouses. See Exhibit 1 for the site location map.

Roadway Network

The existing roadway characteristics near the site are describe below and shown graphically in Exhibit 2. The site is accessed via Liberty St. utilizing existing Wolverine Dr.

Liberty St. is an east west major collector located on the north side of the site and runs from downtown Naperville west to the Fox River. Currently, adjacent to the site, it is a four lane roadway with a posted speed limit of 35 mph. To the west of the site on Liberty St. the inner westbound thru lane is dropped to develop a separate left turn lane at County Line Rd. East of the site the eastbound inner thru lane is dropped to develop a separate left turn lane at Asbury Dr.

Wolverine Dr. is a two lane local roadway that provides access to the 657 Wolverine Dr. building. Currently, Wolverine Dr. tees into Liberty St. from the south and dead ends approximately 500' south of Liberty St. At its intersection with Liberty St., Wolverine Dr. provides one inbound and one outbound lane.

Existing Traffic

Manual peak hour turning movement counts were conducted on Thursday January 27th for the morning and evening peak periods.

The results of the traffic counts showed that the weekday morning peak hour occurred from 7:45 AM to 8:45 AM and the weekday evening peak hour occurred from 5:00 PM to 6:00 PM. Existing traffic volumes are shown in Exhibit 3.

Development Characteristics

Proposed Site and Development Plan

The conceptual development plan indicates that the total site area is approximately 15.6 acres with 97 townhouses. The site will be accessed from a single access point which will be the extension of Wolverine Dr. to the south.

Directional Distribution

The directions from which development traffic will approach and depart the site were estimated based on the distribution of the existing traffic patterns on Liberty St. The estimated directional distribution of site generated traffic is shown in Exhibit 4.

Estimated Site Traffic Generation

The estimates of the traffic to be generated by the development are based on the proposed land use type and size and the volume of traffic generated by the development was estimated using ITE rates. Exhibit 5 tabulates the traffic generation calculations for the proposed development using the ITE rates for Multifamily Low Rise (LUC220).

Year 2031 Baseline Traffic

The analysis of the site access drives will be based on future traffic conditions at buildout (3 years) plus 6 years, which is a 9 year time frame. The Chicago Metropolitan Agency for Planning (CMAP) was contacted to determine a growth rate for Liberty St. Based on the ADT projections from CMAP, 2031 background traffic projections were estimated. A copy of the CMAP 2050 projections letter is included in the Appendix. The CMAP projections indicate that the increase in traffic on Liberty St. is approximately 1.4% per year.

Projected Traffic Conditions

Site Traffic Assignment

The site traffic assignment is based on the estimated directional distribution in Exhibit 4 and the estimated site trip generations in Exhibit 5. Using this information, the proposed development traffic was assigned to the Liberty St./Wolverine Dr. intersection and is shown in Exhibit 6.

Total Traffic Assignment

The site generated traffic was added to the existing traffic volumes, factored for growth, to determine the 2031 total projected traffic volumes. These volumes can be seen in Exhibit 7.

Evaluation

The following provides an evaluation for the weekday morning and evening peak hours. The analyses included conducting capacity analyses at the Liberty St./Wolverine Dr. intersection to determine the level of service and identify if there is a need for any off site roadway improvements.

Intersection Capacity Analyses

The traffic analyses were conducted using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM) 2010* and prepared using the HCS7 Version 7.9.5 software. The analyses were conducted at the Liberty St./Wolverine Dr. intersection for existing traffic conditions and 2031 future traffic conditions for both the morning and evening peak hours.

Discussion and Recommendations

Summaries of the traffic analysis results showing the level of service and delay for the existing and future traffic conditions at the Liberty St./Wolverine Dr. intersection can be seen in Exhibits 8 (Existing Conditions) and 9 (Total Traffic Conditions). Full capacity worksheets can be seen in the Appendix. A discussion for the intersection follows.

- Liberty St./Wolverine Dr. (Existing Conditions)

The results of the capacity analyses indicate that all approaches in the morning peak hour will operate at a Level of Service (LOS) A. The westbound left turn operates at a LOS A and there were no outbound vehicles from Wolverine Dr. during the morning peak hour. During the evening peak hour all approaches operate at a Level of Service B or better. The westbound left operates at a LOS A and the northbound approach operates at a LOS B.

- Liberty St./Wolverine Dr. (Total Traffic Conditions)

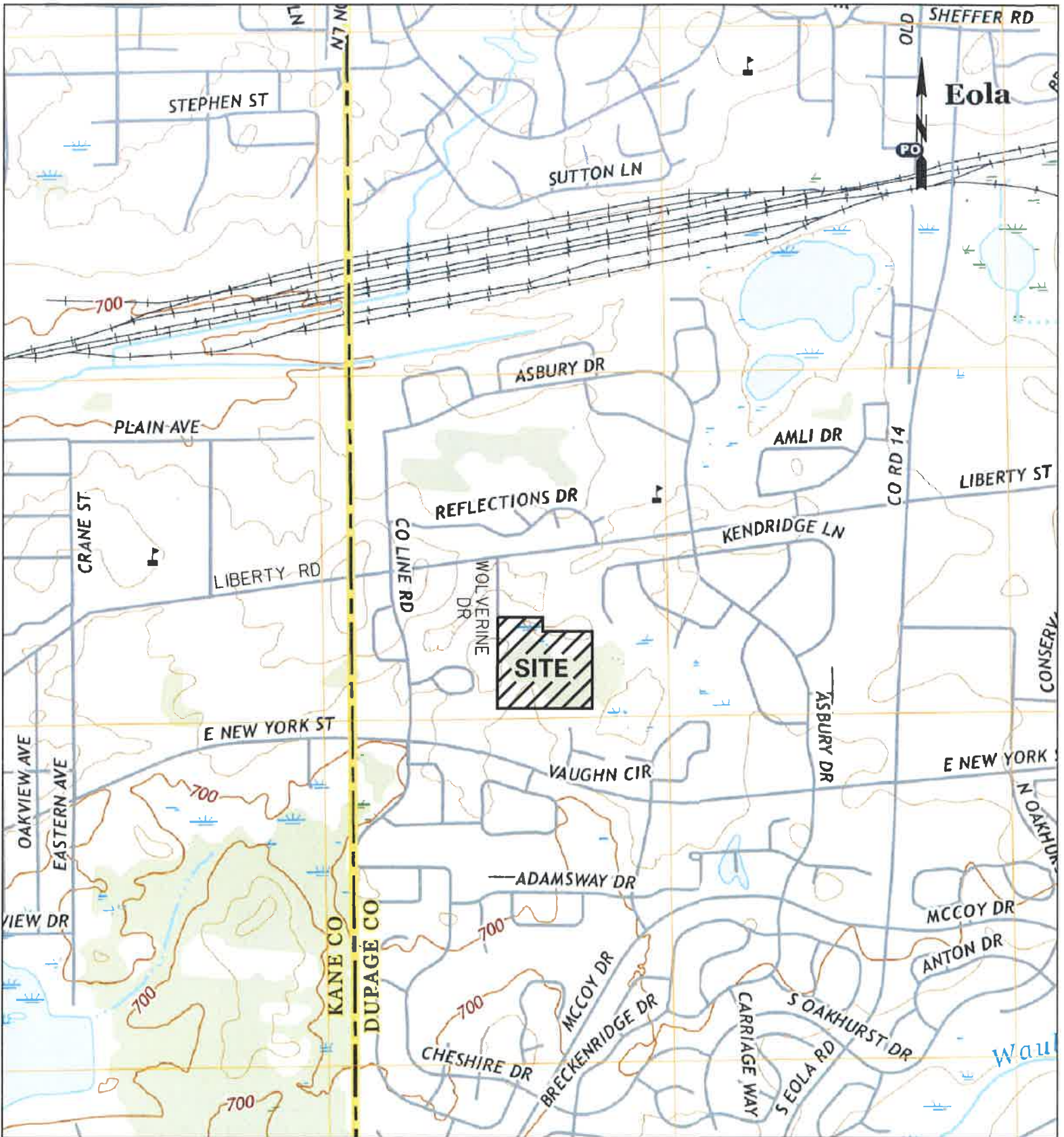
The westbound left turn movement from Liberty St. onto Wolverine Dr. operates at a LOS A in both the AM and PM peak hours. The outbound movements from Wolverine Dr. onto Liberty St. operate at a LOS A in the morning peak hour and a LOS B in the evening peak hour.

With the increase in traffic based on the CMAP projections and the addition of development traffic to the Liberty St./Wolverine Dr. intersection, all movements operate at an acceptable LOS and are the same LOS as currently exist. Left turns can be made from the inside thru lane and maintain a LOS A for the morning and evening peak periods. Roadway improvements on Wolverine Dr. or the site access are not needed to accommodate the additional residential development traffic.

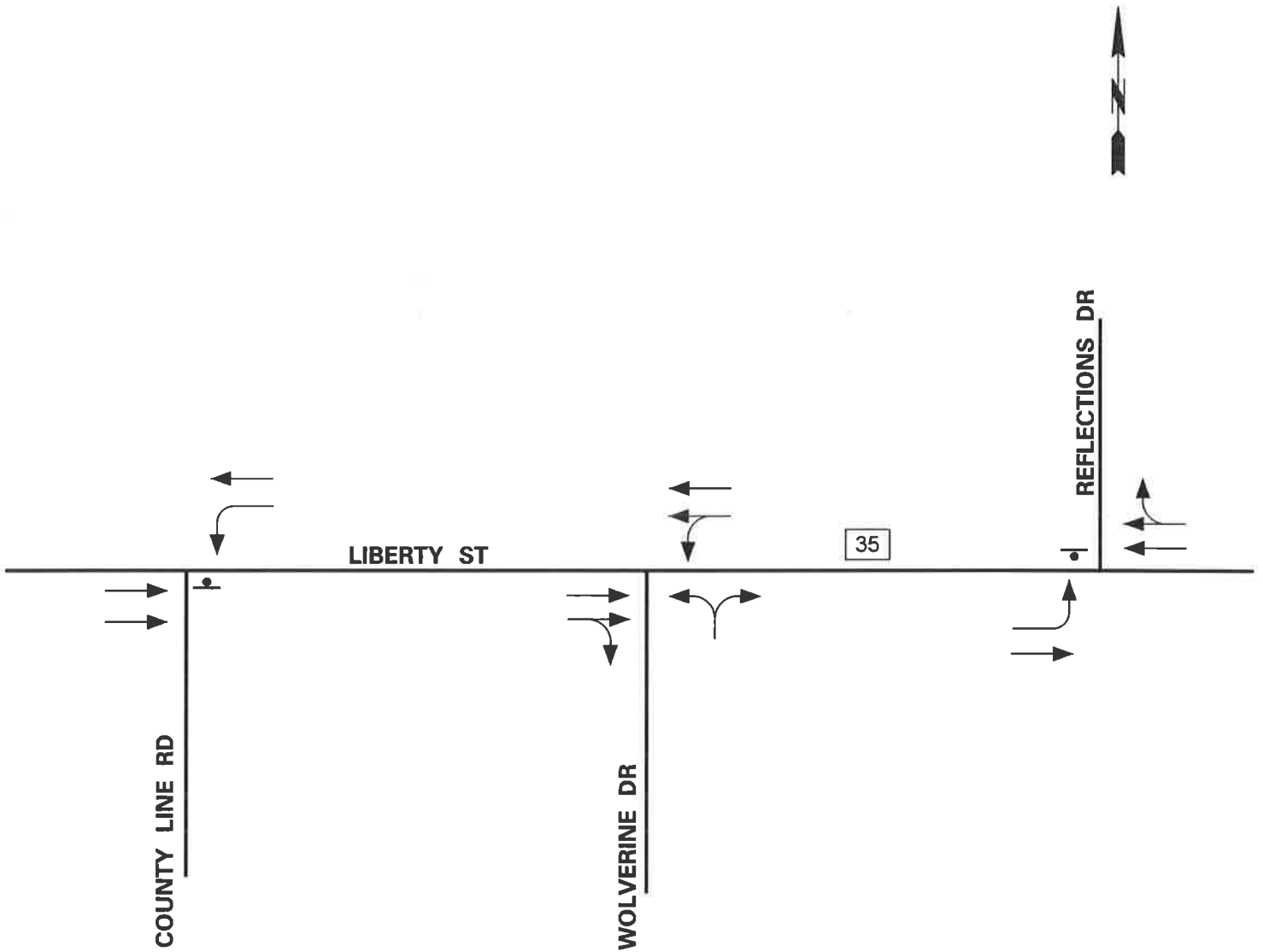
Summary

The existing traffic volumes were increased, based on CMAP 2050 projections, to the year 2031 representing a 3 year buildout plus 6 years. Traffic due to the development was generated using ITE trip generation rates and assigned to the street system. Capacity analyses were conducted for existing and future conditions for the study area intersection for both peak hours. The results of the analyses indicate that the Liberty St./Wolverine Dr. intersection will operate at an acceptable level of service in the morning and evening peak hours. The traffic from the Wolverine Dr. development can be accommodated by the existing area roadway system and off site roadway improvements are not needed to maintain acceptable operations.

Exhibits



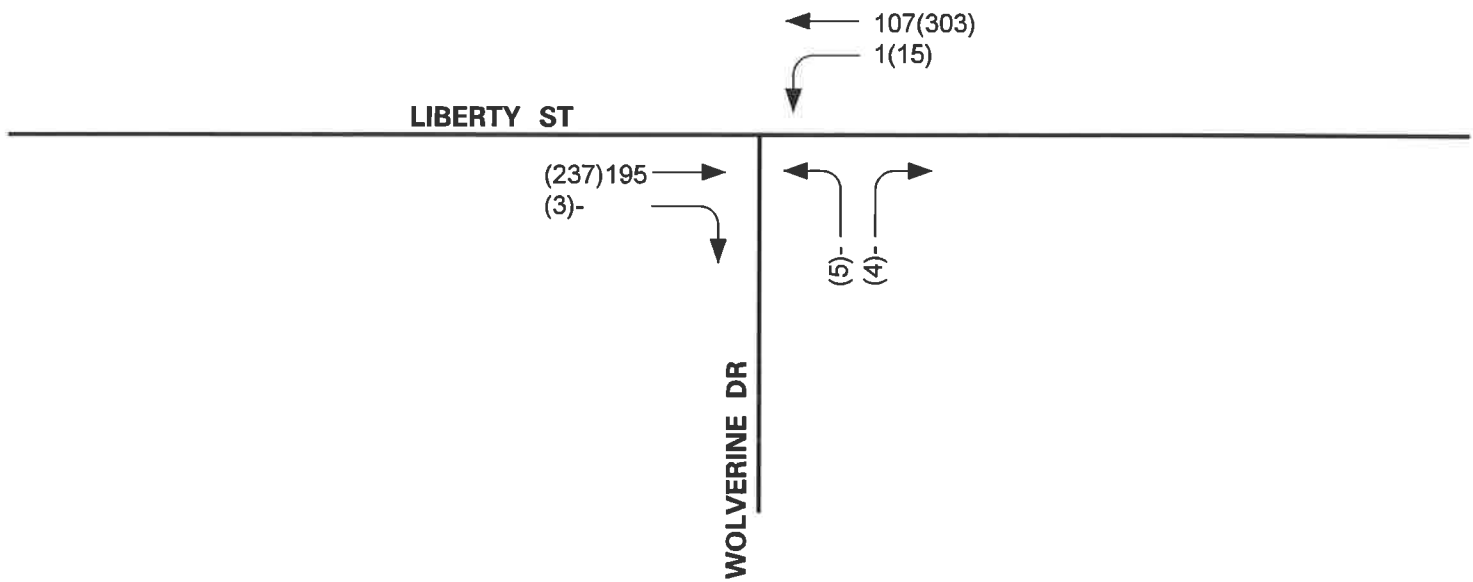
**EXHIBIT 1
SITE LOCATION**



LEGEND

- ▶ - TRAVEL LANE
- - STOP SIGN
- XX - SPEED LIMIT

**EXHIBIT 2
EXISTING ROADWAY CHARACTERISTICS**



LEGEND

XX - AM PEAK HOUR
(XX) - PM PEAK HOUR

**EXHIBIT 3
EXISTING TRAFFIC VOLUMES**



44%

LIBERTY ST

56%

WOLVERINE DR

LEGEND

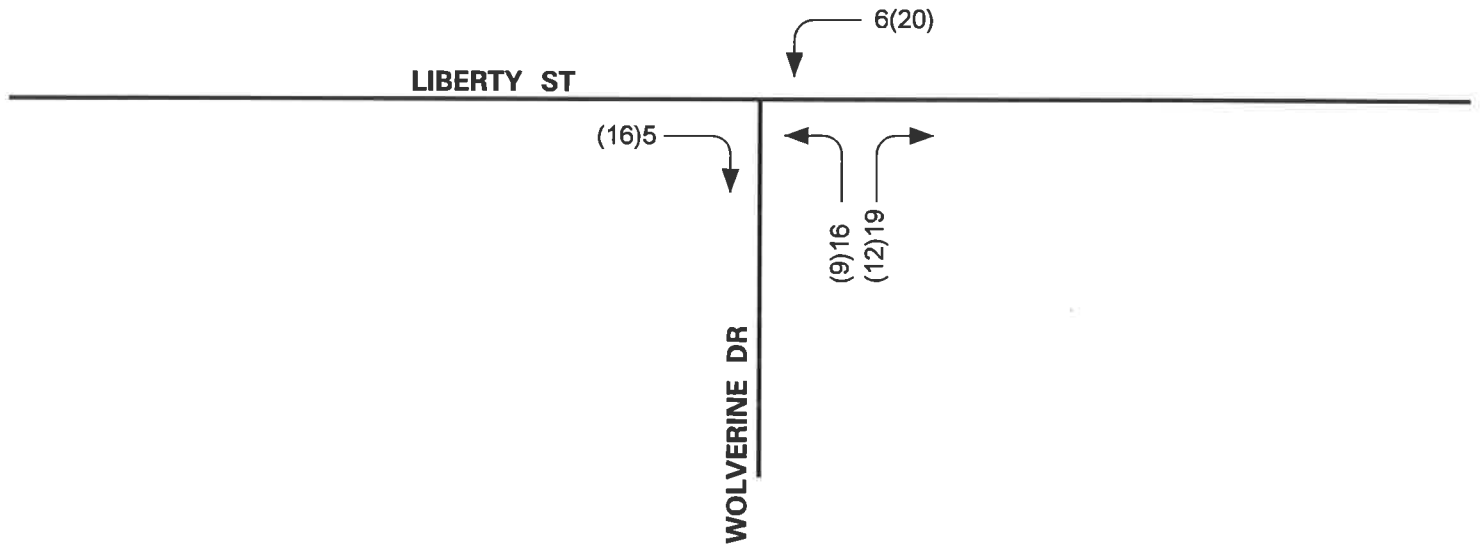
XX% - PERCENT DISTRIBUTION

**EXHIBIT 4
DIRECTIONAL DISTRIBUTION**

EXHIBIT 5

PROJECT DEVELOPMENT CHARACTERISTICS WOLVERINE DR. TOWNHOUSE DEVELOPMENT

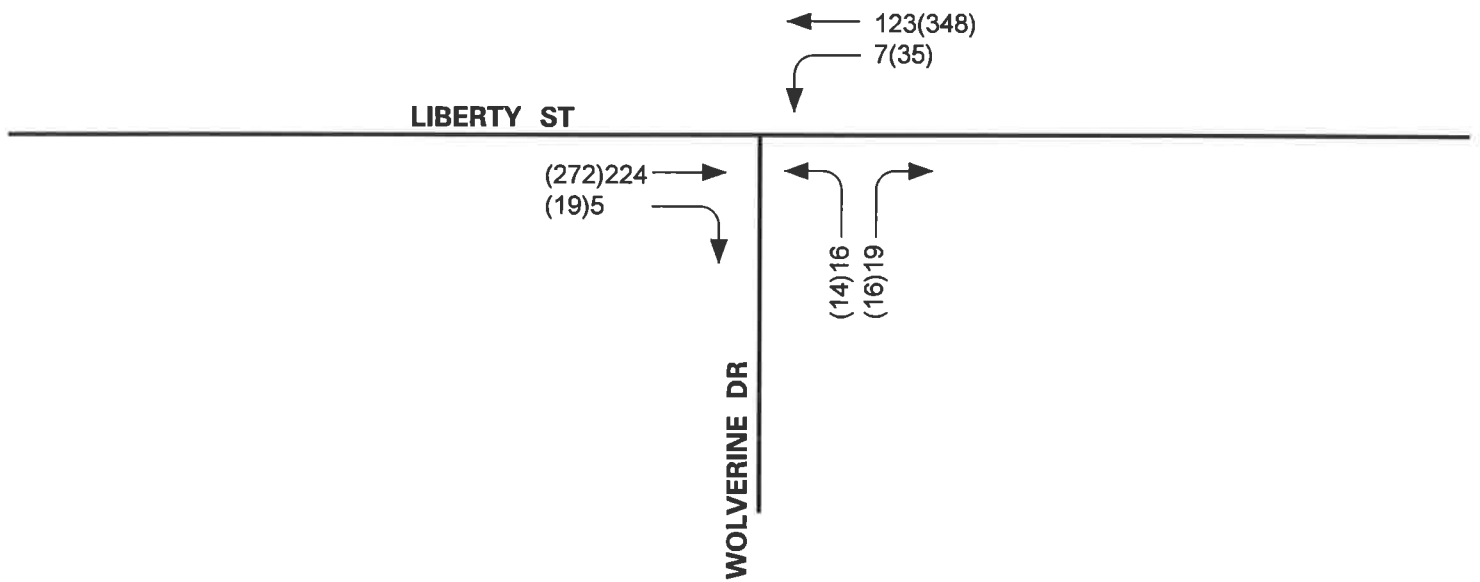
	Size	WEEKDAY PEAK HOURS					
		MORNING			EVENING		
		IN	OUT	SUM	IN	OUT	SUM
ITE Multifamily Low Rise LUC 220	97 DU'S	11	35	46	36	21	57



LEGEND

XX - AM PEAK HOUR
(XX) - PM PEAK HOUR

EXHIBIT 6
SITE TRAFFIC ASSIGNMENT



LEGEND

XX - AM PEAK HOUR
(XX) - PM PEAK HOUR

**EXHIBIT 7
TOTAL TRAFFIC VOLUMES**

EXHIBIT 8
Intersection Level of Service
Existing Conditions

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
2-Way Stop Control				
Liberty St. @ Wolverine St.				
• Westbound Left	A	7.7	A	7.8
• Northbound Approach	No Vehicles		B	10.6

EXHIBIT 9
Intersection Level of Service
2031 Total Traffic

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
2-Way Stop Control				
Liberty St. @ Wolverine Dr.				
• Westbound – Left	A	7.8	A	8.0
• Northbound Approach	A	10.0	B	11.1

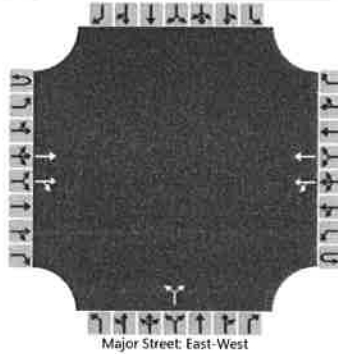
Appendix

Highway Capacity Analyses

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	SG			Intersection	Liberty at Wolverine		
Agency/Co.				Jurisdiction			
Date Performed	2/3/2022			East/West Street	Liberty		
Analysis Year	2022			North/South Street	Wolverine		
Time Analyzed	AM Exist			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description							

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	2	0	0	0	2	0	0	1	0		0	0	0	0
Configuration			T	TR		LT	T				LR					
Volume (veh/h)			195	0	1	107			0		0					
Percent Heavy Vehicles (%)					7				0		0					
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)					4.1				7.5		6.9					
Critical Headway (sec)					4.24				6.80		6.90					
Base Follow-Up Headway (sec)					2.2				3.5		3.3					
Follow-Up Headway (sec)					2.27				3.50		3.30					

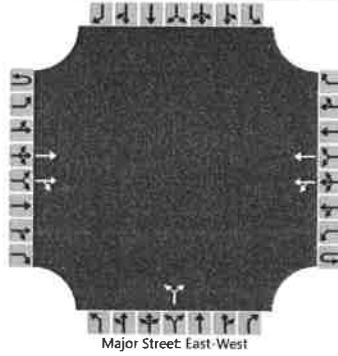
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					1				0							
Capacity, c (veh/h)					1320											
v/c Ratio					0.00											
95% Queue Length, Q ₉₅ (veh)					0.0											
Control Delay (s/veh)					7.7											
Level of Service (LOS)					A											
Approach Delay (s/veh)					0.1											
Approach LOS																

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	SG	Intersection	Liberty at Wolverine
Agency/Co.		Jurisdiction	
Date Performed	2/3/2022	East/West Street	Liberty
Analysis Year	2022	North/South Street	Wolverine
Time Analyzed	PM Exist	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	0	0
Configuration			T	TR		LT	T				LR					
Volume (veh/h)			237	3	15	303			5		4					
Percent Heavy Vehicles (%)					1				0		0					
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)					4.1				7.5		6.9					
Critical Headway (sec)					4.12				6.80		6.90					
Base Follow-Up Headway (sec)					2.2				3.5		3.3					
Follow-Up Headway (sec)					2.21				3.50		3.30					

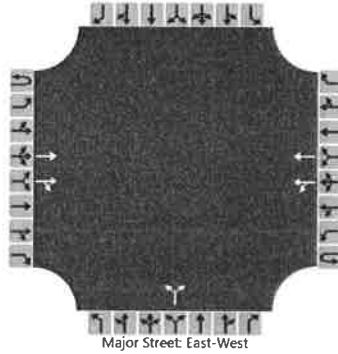
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					16				10							
Capacity, c (veh/h)					1308				648							
v/c Ratio					0.01				0.02							
95% Queue Length, Q ₉₅ (veh)					0.0				0.0							
Control Delay (s/veh)					7.8				10.6							
Level of Service (LOS)					A				B							
Approach Delay (s/veh)					0.4				10.6							
Approach LOS									B							

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	SG	Intersection	Liberty at Wolverine
Agency/Co.		Jurisdiction	
Date Performed	2/3/2022	East/West Street	Liberty
Analysis Year	2022	North/South Street	Wolverine
Time Analyzed	AM Total	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	2	0	0	0	2	0		0	1	0		0	0	0
Configuration			T	TR		LT	T				LR					
Volume (veh/h)			224	5		7	123			16		19				
Percent Heavy Vehicles (%)						8				0		0				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.26				6.80		6.90				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.28				3.50		3.30				

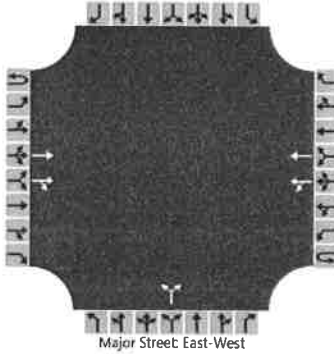
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						8				38						
Capacity, c (veh/h)						1271				764						
v/c Ratio						0.01				0.05						
95% Queue Length, Q ₉₅ (veh)						0.0				0.2						
Control Delay (s/veh)						7.8				10.0						
Level of Service (LOS)						A				A						
Approach Delay (s/veh)					0.4				10.0							
Approach LOS					A				A							

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	SG	Intersection	Liberty at Wolverine				
Agency/Co.		Jurisdiction					
Date Performed	2/3/2022	East/West Street	Liberty				
Analysis Year	2022	North/South Street	Wolverine				
Time Analyzed	PM Total	Peak Hour Factor	0.92				
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25				
Project Description							

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	2	0	0	0	2	0	0	1	0		0	0	0	
Configuration			T	TR		LT	T				LR					
Volume (veh/h)			272	19		35	248			14		16				
Percent Heavy Vehicles (%)						1				0		0				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.12				6.80		6.90				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.21				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						38					33					
Capacity, c (veh/h)						1248					626					
v/c Ratio						0.03					0.05					
95% Queue Length, Q ₉₅ (veh)						0.1					0.2					
Control Delay (s/veh)						8.0					11.1					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)					1.1				11.1							
Approach LOS									B							

Existing Traffic Counts

Aurora, IL Weather: Cold and Dry
 Liberty St and Wolverine Rd
 Thursday January 27, 2022 Passenger Vehicles Only

01/28/22
 10:04:01

URNS/TEAPAC[Ver 3.61.12] - 60-Minute Volumes: by Movement

Intersection # 5 liberty/wolverine/cars

Begin Time	N-Approach			E-Approach			S-Approach			W-Approach			Int Total
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	
700	0	0	0	0	81	3	0	0	0	1	156	0	241
715	0	0	0	0	93	2	0	0	0	1	174	0	270
730	0	0	0	0	92	2	0	0	0	1	184	0	279
745	0	0	0	0	98	1	0	0	0	0	181	0	280
800	0	0	0	0	92	1	0	0	0	0	162	0	255
815	0	0	0	0	63	1	0	0	0	0	113	0	177*
830	0	0	0	0	46	1	0	0	0	0	68	0	115*
845	0	0	0	0	20	0	0	0	0	0	35	0	55*

1600	0	0	0	0	298	4	6	0	1	5	215	0	529
1615	0	0	0	0	290	5	6	0	2	6	220	0	529
1630	0	0	0	0	263	6	6	0	2	5	215	0	497
1645	0	0	0	0	286	7	6	0	2	4	206	0	511
1700	0	0	0	0	301	15	5	0	4	3	234	0	562
1715	0	0	0	0	229	14	3	0	3	2	186	0	437*
1730	0	0	0	0	162	12	2	0	3	2	141	0	322*
1745	0	0	0	0	75	9	1	0	2	1	87	0	175*

URNS/TEAPAC[Ver 3.61.12] - 60-Minute Volumes: Appr/Exit Totals

Intersection # 5 liberty/wolverine/cars

Begin Time	Approach Totals				Exit Totals				Int Total
	N	E	S	W	N	E	S	W	
700	0	84	0	157	0	156	4	81	241
715	0	95	0	175	0	174	3	93	270
730	0	94	0	185	0	184	3	92	279
745	0	99	0	181	0	181	1	98	280
800	0	93	0	162	0	162	1	92	255
815	0	64	0	113	0	113	1	63	177*
830	0	47	0	68	0	68	1	46	115*
845	0	20	0	35	0	35	0	20	55*

1600	0	302	7	220	0	221	9	299	529
1615	0	295	8	226	0	226	11	292	529
1630	0	269	8	220	0	221	11	265	497
1645	0	293	8	210	0	212	11	288	511
1700	0	316	9	237	0	239	18	305	562
1715	0	243	6	188	0	189	16	232	437*
1730	0	174	5	143	0	143	14	165	322*
1745	0	84	3	88	0	88	10	77	175*

CMAP Traffic Projections



Chicago Metropolitan Agency for Planning

433 West Van Buren Street
Suite 450
Chicago, IL 60607
312-454-0400
cmap.illinois.gov

February 4, 2022

Steve Grabowski
Rempe-Sharpe & Associates, Inc.
324 West State Street
Geneva, Illinois 6013

Subject: Liberty Street east of County Line Road
IDOT

Dear Mr. Grabowski:

In response to a request made on your behalf and dated February 3, 2022, we have developed year 2050 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current ADT	Year 2050 ADT
Liberty St east of County Line Road	6,350	9,000

Traffic projections are developed using existing ADT data provided in the request letter and the results from the December 2021 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2050 socioeconomic projections and assumes the implementation of the ON TO 2050 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments.

If you have any questions, please call me at (312) 386-8806.

Sincerely,

Jose Rodriguez, PTP, AICP
Senior Planner, Research & Analysis

cc: Rios (IDOT)
\\2022_ForecastTraffic\Aurora\du-08-22\du-08-22.docx