



## SM ROCHA, LLC

TRAFFIC AND TRANSPORTATION CONSULTANTS

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August 16, 2024

Kendall Goodman  
RealArchitecture Ltd. / UnrealConstruction LLC  
2899 N Speer Boulevard, Suite 102  
Denver, Colorado 80211

**RE: Springhill Suites at Painted Prairie / Traffic Generation Analysis  
Aurora, Colorado**

Dear Kendall,

SM ROCHA, LLC is pleased to provide traffic generation information for the development entitled Springhill Suites at Painted Prairie. This development is located near the southwest corner of E 64<sup>th</sup> Avenue and N Lisbon Street in Aurora, Colorado.

This information has been revised to address City Staff review comments made to the June 18, 2024, version of this traffic letter regarding provision of referenced information and a distribution figure.

The intent of this analysis is to present traffic volumes likely generated by the proposed development, provide a traffic volume comparison to previous land use assumptions approved for the development site, and consider potential impacts to the adjacent roadway network.

The following is a summary of analysis results.

### Site Description and Access

Land for the development is currently vacant and surrounded by open space and a mix of residential, commercial, lodging, and institutional land uses. The proposed development is understood to entail the new construction of a hotel supporting 140 rooms.

Proposed access to the development is provided at the following locations: one full-movement access onto the future N Kirk Street on the east side of the property (referred to as Access A), and one full-movement access onto the future E 63<sup>rd</sup> Drive on the south side of the property (referred to as Access B).

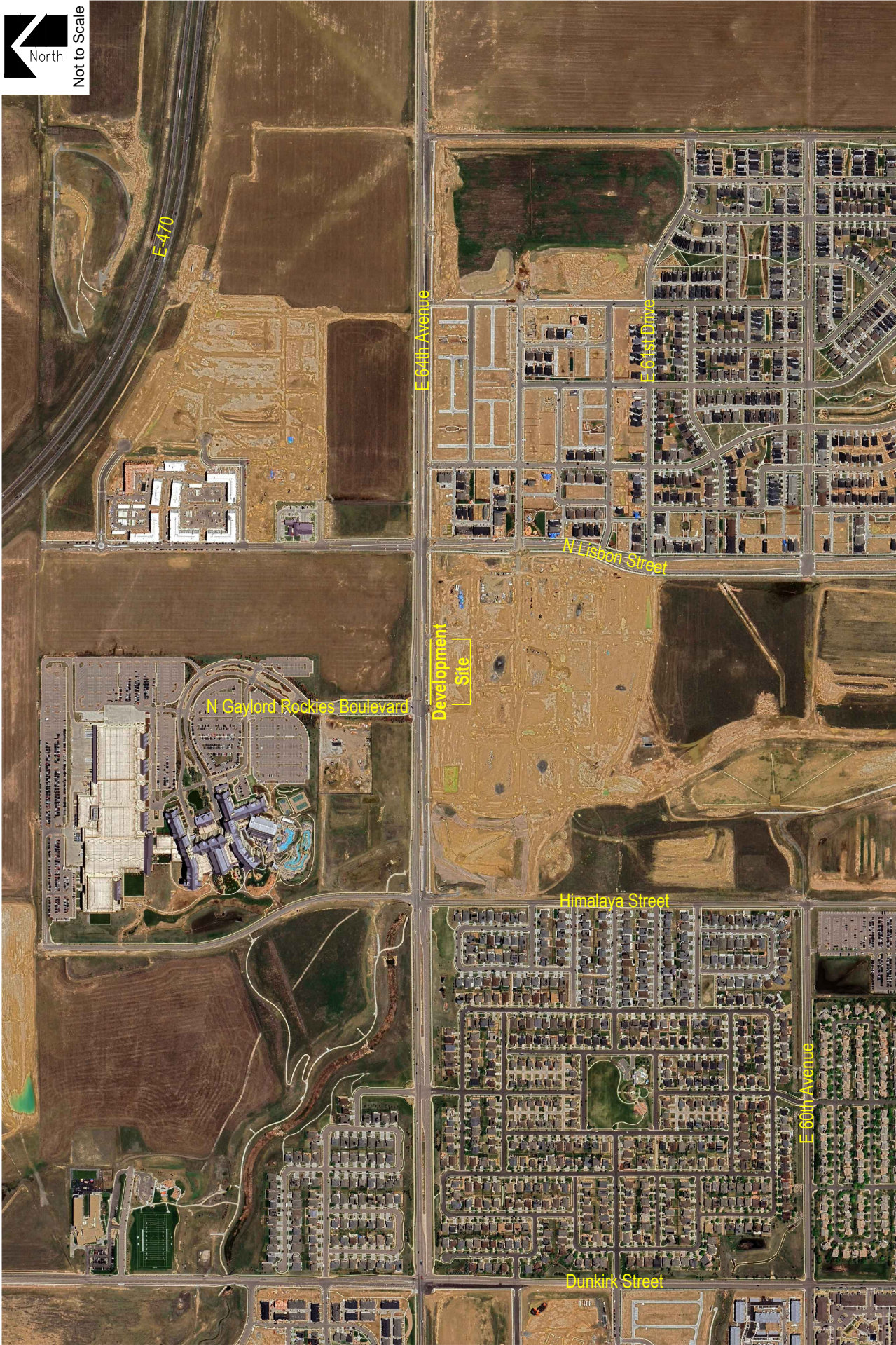
General site and access locations are shown on Figure 1. A site plan, as prepared by RealArchitecture Ltd., is shown on Figure 2. This plan is provided for illustrative purposes only.





North

Not to Scale



**SPRINGHILL SUITES AT PAINTED PRAIRIE**  
Traffic Generation Analysis

**Figure 1**  
**SITE LOCATION**

**SM ROCHA, LLC**

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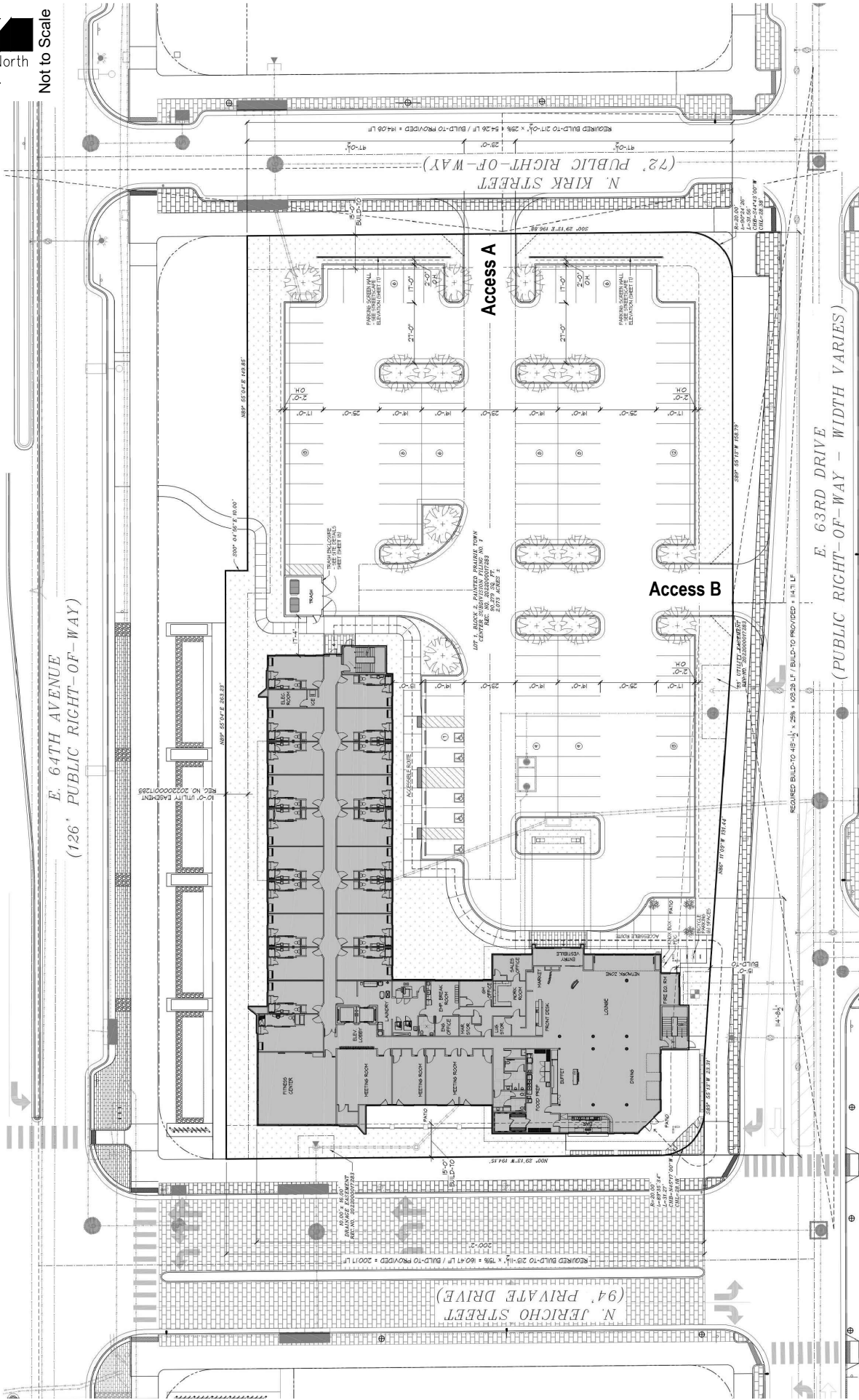
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Not to Scale



SPRINGHILL SUITES AT PAINTED PRAIRIE  
Traffic Generation Analysis

Figure 2  
SITE PLAN

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## Vehicle Trip Generation

Standard traffic generation characteristics compiled by the Institute of Transportation Engineers (ITE) in their report entitled Trip Generation Manual, 11<sup>th</sup> Edition, were applied to the proposed land use in order to estimate the average daily traffic (ADT) and peak hour vehicle trips. A vehicle trip is defined as a one-way vehicle movement from point of origin to point of destination.

The approved traffic study<sup>1</sup> for the overall Town Center at Painted Prairie, attached for reference in Attachment B, used trip generation rates from ITE's Trip Generation Manual, 10<sup>th</sup> Edition and included "Hotel" land use in the same development area as currently proposed with this project.

Table 1 presents average trip generation rates for the development area proposed. Use of average trip generation rates presents a conservative analysis. ITE land use code 310 (Hotel) was used for analysis because of its conservative rates and best fit to the proposed land use.

**Table 1 – Trip Generation Rates**

ITE CODE	LAND USE	UNIT	TRIP GENERATION RATES						
			24 HOUR	AM PEAK HOUR			PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
310	Hotel	RMS	7.99	0.26	0.20	0.46	0.30	0.29	0.59

Key: RMS = Rooms.

Note: All data and calculations above are subject to being rounded to nearest value.

Table 2 summarizes the projected ADT and peak hour traffic volumes likely generated by the land use area proposed and provides comparison to traffic volume estimates for the previously approved land use.

**Table 2 – Trip Generation Summary**

ITE CODELAND USESIZE			TOTAL TRIPS GENERATED						
			24 HOUR	AM PEAK HOUR			PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
<u>Site Development - Previously Approved *</u>									
310	Hotel	125 RMS	984	34	23	57	35	33	68
<i>Previously Approved Total:</i>			984	34	23	57	35	33	68
<u>Site Development - Proposed</u>									
310	Hotel	140 RMS	1,119	36	28	64	42	40	83
<i>Proposed Total:</i>			1,119	36	28	64	42	40	83
<b><i>Difference Total:</i></b>			<b>135</b>	<b>2</b>	<b>5</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>15</b>

Key: RMS = Rooms.

\* = Trip generation referenced from Town Center at Painted Prairie: Traffic Impact Analysis, Felsburg Holt & Ullevig, September 2020.

Note: All data and calculations above are subject to being rounded to nearest value.

<sup>1</sup> Town Center at Painted Prairie: Traffic Impact Analysis, Felsburg Holt & Ullevig, September 2020.



As Table 2 shows, the proposed development area has the potential to generate approximately 1,119 daily trips with 64 of those occurring during the morning peak hour and 83 during the afternoon peak hour. Compared to the previously approved land use, this represents a potential increase in site generation of approximately 135 daily trips with 7 of those occurring during the morning peak traffic hour and 15 during the afternoon peak traffic hour.

### **Adjustments to Trip Generation Rates**

A development of this type is not likely to attract trips from within area land uses nor pass-by or diverted link trips from the adjacent roadway system, therefore no trip reduction was taken in this analysis.

### **Trip Generation Distribution and Assignment**

Overall directional distribution of site-generated traffic was determined based on existing area land uses, the site location within the City, the available roadway network, approved distribution patterns illustrated within the Town Center at Painted Prairie traffic study, and in reference to historical traffic count data provided by the Colorado Department of Transportation's (CDOT) Traffic Count Database System (TCDS)<sup>2</sup>. Site-generated traffic is anticipated to be distributed through each proposed access. Distribution along E 64<sup>th</sup> Avenue is general and assumed to be 50 percent to/from the east and west.

Traffic assignment is how the site-generated and distributed trips are expected to be loaded on the roadway network. Applying assumed trip distribution patterns to site-generated traffic provides the peak hour trip volume assignments for the proposed accesses. These volumes are then divided further upon travel through adjacent roadways serving the overall development area. Table 3 below uses the difference in trip generation volumes from Table 2 and denotes projected traffic volumes at each proposed access and adjacent intersections.

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<sup>2</sup> Transportation Data Management System, MS2, 2022.

**Table 3 – Site Generated Trip Assignment**

DEVELOPMENT ACCESS TURNING MOVEMENTS	AM PEAK HOUR		PM PEAK HOUR	
	Inbound Volume	Outbound Volume	Inbound Volume	Outbound Volume
Access A / N Kirk Street Eastbound Left Northbound Left	- 0	3 -	- 1	3 -
Access B / E 63rd Drive Eastbound Left Eastbound Through Southbound Right	2 0 -	- - 2	6 1 -	- - 4
E 64th Avenue / N Kirk Street Westbound Through Northbound Right	1 -	- 3	4 -	- 3
E 64th Avenue / N Jericho Street Eastbound Right Westbound Left Northbound Left	1 1 -	- - 2	3 4 -	- - 4

### Development Impacts

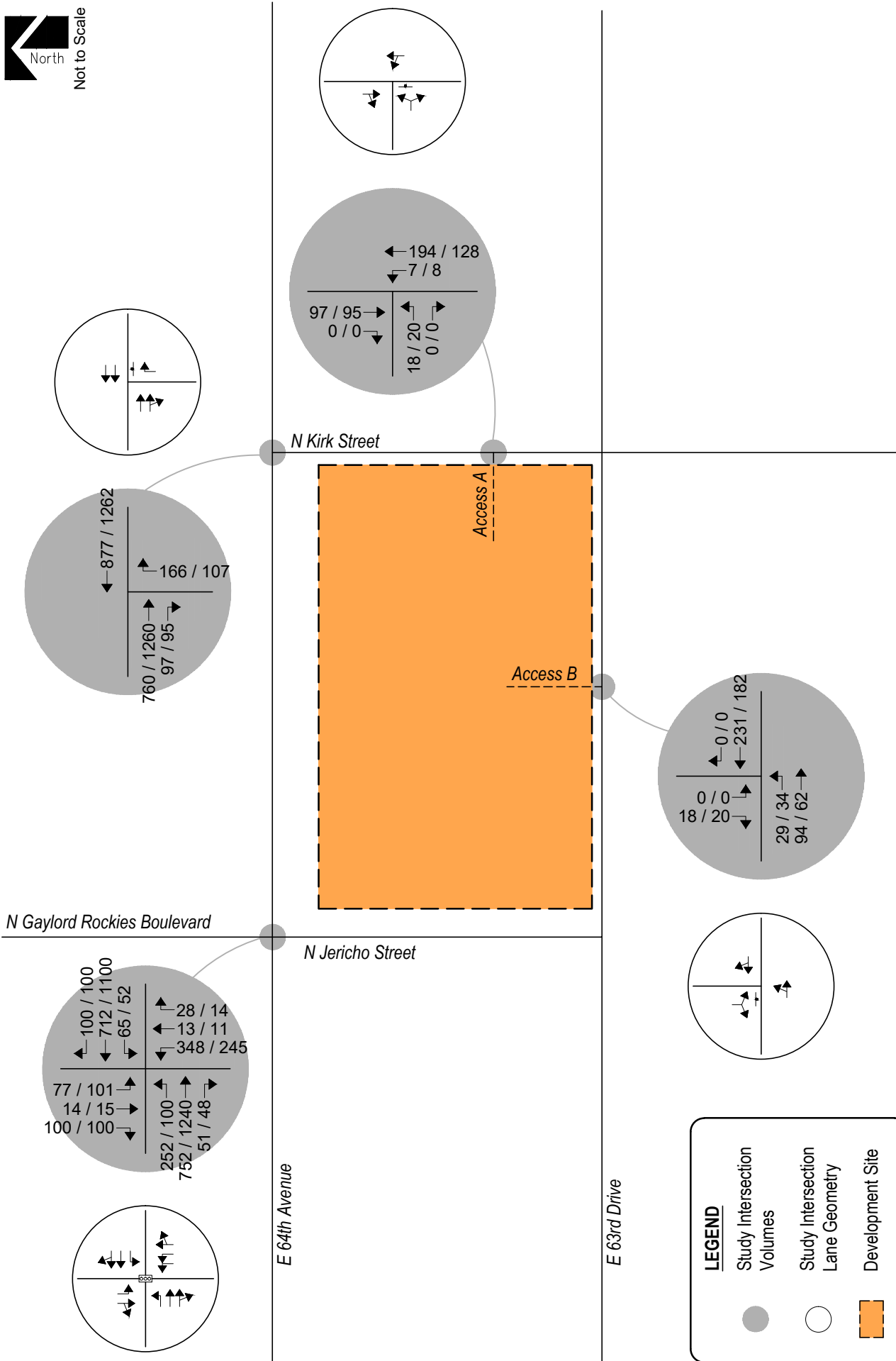
As Tables 2 and 3 show, there is an increase in peak hour traffic volumes anticipated for the proposed development. However, these volumes are considered minor and are not likely to negatively impact operations of adjacent roadways or intersections.

### Total Traffic Analysis Results Upon Development Build-Out

Total traffic is the traffic projected to be on area roadways with consideration of the proposed development. Total traffic includes total traffic projections for Year 2040 as established within Figure 8 of the Painted Prairie Town Center Traffic Study, with consideration of the updated site-generated traffic.

Figure 3 shows projected total traffic volumes and intersection geometry for Year 2040.





**LEGEND**

- Study Intersection Volumes
- Study Intersection Lane Geometry
- Development Site

**Figure 3**  
**TOTAL TRAFFIC - YEAR 2040**  
Volumes & Intersection Geometry  
AM / PM Peak Hour

**SPRINGHILL SUITES AT PAINTED PRAIRIE**  
Traffic Generation Analysis



**SM ROCHA, LLC**  
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## **Peak Hour Intersection Levels of Service – Total Traffic - Year 2040**

The previously approved Town Center at Painted Prairie Traffic Impact Analysis concluded the future signalized intersection of E 64<sup>th</sup> Avenue and N Jericho Street was to operate with overall level of service (LOS) B operations during the AM and PM peak hours of adjacent street traffic by Year 2040. The approved traffic study also anticipated maximum 95<sup>th</sup> percentile vehicle queue lengths of approximately 213 feet per lane for the dual northbound left turn lanes.

A re-analysis of the intersection was conducted to verify that proposed site-generated vehicle traffic does not adversely affect the intersection. The re-analyses and procedures described within were performed in accordance with the Highway Capacity Manual (HCM) 7<sup>th</sup> Edition and are based upon the conditions analyzed within the Town Center at Painted Prairie traffic study.

Upon re-analyses of long-term total traffic conditions, LOS results for the intersection of E 64<sup>th</sup> Avenue and N Jericho Street remain unaffected by the potential increase in traffic from the proposed Springhill Suites at Painted Prairie development. Similar to results provided within the Town Center at Painted Prairie traffic study, the study intersection is projected to have overall LOS C and B operations during the AM and PM peak hours of adjacent street traffic, respectively.

Intersection capacity worksheets developed for this analysis, referenced from the previously approved traffic study, are provided in Attachment A.

## **Queue Length Analysis – E 64<sup>th</sup> Avenue N Jericho Street**

Northbound left turn queue lengths for the E 64<sup>th</sup> Avenue and N Jericho Street intersection were re-analyzed by incorporating proposed site generated trips with Year 2040 total traffic conditions from the previously approved Town Center at Painted Prairie traffic study. The analysis yields estimate of 95<sup>th</sup> percentile queue lengths which only have a five percent probability of being exceeded during the analysis time period. Queue lengths were modeled and are included with the Synchro worksheets in Attachment A.

Re-analysis of 95<sup>th</sup> percentile queue lengths concludes that the study intersection is not impacted by the minor change in site-generated trip estimates. The dual northbound left turn approach lanes along N Jericho Street still have sufficient storage to accommodate projected 95<sup>th</sup> percentile queues, and analysis results provided within the approved Town Center at Painted Prairie traffic study remain valid.



## Conclusion

This analysis assessed traffic generation for the Springhill Suites at Painted Prairie development, provided a traffic volume comparison to previous land use assumptions approved for the development site, and considered potential impacts to the adjacent roadway network.

It is our professional opinion that the proposed site-generated traffic resulting from the development is expected to create no negative impact to traffic operations for the surrounding roadway network and proposed site accesses, nor at the E 64<sup>th</sup> Avenue intersections with the future N Jericho Street and N Kirk Street. Analysis of site-generated traffic concludes that proposed development traffic volumes are minor. All conclusions and recommendations presented in the Town Center at Painted Prairie traffic study remain valid.

We trust that our findings will assist in the planning and approval of the Springhill Suites at Painted Prairie development. Please contact us should further assistance be needed.

Sincerely,

**SM ROCHA, LLC**  
*Traffic and Transportation Consultants*



Zac Trotter, EIT  
Traffic Engineer



Fred Lantz, PE  
Traffic Engineer

**ATTACHMENT A**









**Capacity Worksheets**



## Queues

## 2: Street C/Gaylord East Driveway &amp; E 64th Ave

08/12/2024

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	274	872	71	883	378	44	84	124
v/c Ratio	0.55	0.45	0.21	0.68	0.58	0.14	0.39	0.59
Control Delay (s/veh)	19.8	19.4	11.4	27.9	39.5	20.1	40.2	25.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.8	19.4	11.4	27.9	39.5	20.1	40.2	25.0
Queue Length 50th (ft)	83	207	19	154	127	10	51	11
Queue Length 95th (ft)	#209	332	43	234	151	39	82	70
Internal Link Dist (ft)		572		389		189		520
Turn Bay Length (ft)	200		200		200		200	
Base Capacity (vph)	497	1905	333	1330	864	605	211	347
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.46	0.21	0.66	0.44	0.07	0.40	0.36

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

# Timing Report, Sorted By Phase

## 2: Street C/Gaylord East Driveway & E 64th Ave

08/12/2024











Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	None	None	None	C-Min
Maximum Split (s)	12	48	12	48	35	25	12	48
Maximum Split (%)	10.0%	40.0%	10.0%	40.0%	29.2%	20.8%	10.0%	40.0%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	4.5	16.5	64.5	76.5	4.5	39.5	64.5	76.5
End Time (s)	16.5	64.5	76.5	4.5	39.5	64.5	76.5	4.5
Yield/Force Off (s)	10.5	58.5	70.5	118.5	33.5	58.5	70.5	118.5
Yield/Force Off 170(s)	10.5	47.5	70.5	107.5	33.5	47.5	70.5	107.5
Local Start Time (s)	6	18	66	78	6	41	66	78
Local Yield (s)	12	60	72	0	35	60	72	0
Local Yield 170(s)	12	49	72	109	35	49	72	109

### Intersection Summary

Cycle Length 120  
Control Type Actuated-Coordinated  
Natural Cycle 75  
Offset: 118.5 (99%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow




















### Splits and Phases: 2: Street C/Gaylord East Driveway & E 64th Ave

 Ø1	 Ø2	 Ø3	 Ø4 (R)
12 s	48 s	12 s	48 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
35 s	25 s	12 s	48 s

# HCM 7th Signalized Intersection Capacity Analysis

## 2: Street C/Gaylord East Driveway & E 64th Ave

08/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	252	752	51	65	712	100	348	13	28	77	14	100
Future Volume (veh/h)	252	752	51	65	712	100	348	13	28	77	14	100
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	274	817	55	71	774	109	378	14	30	84	15	109
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	418	1846	124	383	1671	235	586	88	188	278	19	135
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.05	0.55	0.55	0.05	0.71	0.71	0.12	0.17	0.17	0.05	0.09	0.09
Unsig. Movement Delay												
Ln Grp Delay, s/veh	21.1	17.7	17.7	12.7	11.6	11.6	41.5	0.0	43.2	46.7	0.0	63.0
Ln Grp LOS	C	B	B	B	B	B	D		D	D		E
Approach Vol, veh/h	1146			954			422			208		
Approach Delay, s/veh	18.5			11.6			41.7			56.4		
Approach LOS	B			B			D			E		
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Case No	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0				
Phs Duration (G+Y+Rc), s	12.0	25.9	10.5	71.6	20.5	17.4	12.0	70.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green (Gmax), s	6.0	42.0	6.0	42.0	29.0	19.0	6.0	42.0				
Max Allow Headway (MAH), s	3.8	5.5	3.7	4.9	3.8	5.5	3.7	4.9				
Max Q Clear (g_c+I1), s	7.1	4.7	4.1	19.4	13.3	11.0	8.0	14.8				
Green Ext Time (g_e), s	0.0	0.2	0.0	5.1	1.2	0.3	0.0	5.5				
Prob of Phs Call (p_c)	0.94	1.00	0.91	1.00	1.00	1.00	1.00	1.00				
Prob of Max Out (p_x)	1.00	0.00	1.00	0.06	0.00	0.24	1.00	0.04				
Left-Turn Movement Data												
Assigned Mvmt	1		3		5		7					
Mvmt Sat Flow, veh/h	1781		1781		3456		1781					
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		530		3379		195		3128				
Right-Turn Movement Data												
Assigned Mvmt		12		14		16		18				
Mvmt Sat Flow, veh/h		1136		227		1420		440				
Left Lane Group Data												
Assigned Mvmt	1	0	3	0	5	0	7	0				

## HCM 7th Signalized Intersection Capacity Analysis

### 2: Street C/Gaylord East Driveway & E 64th Ave

08/12/2024

Lane Assignment	L (Pr/Pm)		L (Pr/Pm)		L (Pr/Pm)		L (Pr/Pm)	
Lanes in Grp	1	0	1	0	2	0	1	0
Grp Vol (v), veh/h	84	0	71	0	378	0	274	0
Grp Sat Flow (s), veh/h/ln	1781	0	1781	0	1728	0	1781	0
Q Serve Time (g_s), s	5.1	0.0	2.1	0.0	11.3	0.0	6.0	0.0
Cycle Q Clear Time (g_c), s	5.1	0.0	2.1	0.0	11.3	0.0	6.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	1362	0	635	0	1229	0	629	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	11.4	0.0	64.1	0.0	13.4	0.0	64.1	0.0
Perm LT Serve Time (g_u), s	11.4	0.0	48.2	0.0	2.3	0.0	51.3	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	2.0	0.0	2.0	0.0	22.9	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	278	0	383	0	586	0	418	0
V/C Ratio (X)	0.30	0.00	0.19	0.00	0.65	0.00	0.66	0.00
Avail Cap (c_a), veh/h	278	0	404	0	1003	0	418	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	46.1	0.0	12.5	0.0	40.3	0.0	17.4	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.2	0.0	1.2	0.0	3.7	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	46.7	0.0	12.7	0.0	41.5	0.0	21.1	0.0
1st-Term Q (Q1), veh/ln	2.3	0.0	0.8	0.0	4.8	0.0	2.3	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	1.80	0.00	1.74	0.00	1.80	0.00
%ile Back of Q (95%), veh/ln	4.1	0.0	1.4	0.0	8.5	0.0	4.9	0.0
%ile Storage Ratio (RQ%)	0.53	0.00	0.18	0.00	1.08	0.00	0.62	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Middle Lane Group Data</b>								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T			
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	430	0	0	0	440
Grp Sat Flow (s), veh/h/ln	0	0	0	1777	0	0	0	1777
Q Serve Time (g_s), s	0.0	0.0	0.0	17.4	0.0	0.0	0.0	12.8
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	17.4	0.0	0.0	0.0	12.8
Lane Grp Cap (c), veh/h	0	0	0	971	0	0	0	949
V/C Ratio (X)	0.00	0.00	0.00	0.44	0.00	0.00	0.00	0.46
Avail Cap (c_a), veh/h	0	0	0	971	0	0	0	949
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	16.3	0.0	0.0	0.0	9.9
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.5	0.0	0.0	0.0	1.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	17.7	0.0	0.0	0.0	11.6
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	6.6	0.0	0.0	0.0	3.9



## HCM 7th Signalized Intersection Capacity Analysis

### 2: Street C/Gaylord East Driveway & E 64th Ave

08/12/2024

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.4
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.62	0.00	1.00	0.00	1.79
%ile Back of Q (95%), veh/ln	0.0	0.0	0.0	11.3	0.0	0.0	0.0	7.7
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.49
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

#### Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	44	0	442	0	124	0	443
Grp Sat Flow (s), veh/h/ln	0	1666	0	1829	0	1615	0	1791
Q Serve Time (g_s), s	0.0	2.7	0.0	17.4	0.0	9.0	0.0	12.8
Cycle Q Clear Time (g_c), s	0.0	2.7	0.0	17.4	0.0	9.0	0.0	12.8
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.68	0.00	0.12	0.00	0.88	0.00	0.25
Lane Grp Cap (c), veh/h	0	276	0	1000	0	153	0	957
V/C Ratio (X)	0.00	0.16	0.00	0.44	0.00	0.81	0.00	0.46
Avail Cap (c_a), veh/h	0	583	0	1000	0	256	0	957
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	42.9	0.0	16.3	0.0	53.3	0.0	9.9
Incr Delay (d2), s/veh	0.0	0.3	0.0	1.4	0.0	9.7	0.0	1.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	43.2	0.0	17.7	0.0	63.0	0.0	11.6
1st-Term Q (Q1), veh/ln	0.0	1.1	0.0	6.7	0.0	3.7	0.0	3.9
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.4	0.0	0.4	0.0	0.4
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.80	0.00	1.61	0.00	1.80	0.00	1.79
%ile Back of Q (95%), veh/ln	0.0	2.1	0.0	11.5	0.0	7.3	0.0	7.7
%ile Storage Ratio (RQ%)	0.00	0.29	0.00	0.52	0.00	0.34	0.00	0.49
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

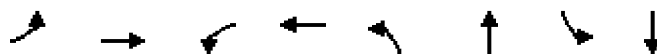
#### Intersection Summary

HCM 7th Control Delay, s/veh	22.6
HCM 7th LOS	C

## Queues

## 2: Street C/Gaylord East Driveway &amp; E 64th Ave

08/12/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	109	1400	57	1316	266	27	110	125
v/c Ratio	0.44	0.68	0.27	0.69	0.48	0.13	0.41	0.59
Control Delay (s/veh)	14.3	22.0	12.3	17.9	43.2	26.6	44.3	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	14.3	22.0	12.3	17.9	43.2	26.6	44.3	25.2
Queue Length 50th (ft)	26	382	12	186	90	9	71	12
Queue Length 95th (ft)	61	588	m31	323	115	33	110	71
Internal Link Dist (ft)		572		389		189		520
Turn Bay Length (ft)	200		200		200		200	
Base Capacity (vph)	243	2032	209	1891	655	466	266	348
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.69	0.27	0.70	0.41	0.06	0.41	0.36

## Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# Timing Report, Sorted By Phase

## 2: Street C/Gaylord East Driveway & E 64th Ave

08/12/2024











Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	None	None	None	C-Min
Maximum Split (s)	12	38	12	58	25	25	12	58
Maximum Split (%)	10.0%	31.7%	10.0%	48.3%	20.8%	20.8%	10.0%	48.3%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	4.5	16.5	54.5	66.5	4.5	29.5	54.5	66.5
End Time (s)	16.5	54.5	66.5	4.5	29.5	54.5	66.5	4.5
Yield/Force Off (s)	10.5	48.5	60.5	118.5	23.5	48.5	60.5	118.5
Yield/Force Off 170(s)	10.5	37.5	60.5	107.5	23.5	37.5	60.5	107.5
Local Start Time (s)	6	18	56	68	6	31	56	68
Local Yield (s)	12	50	62	0	25	50	62	0
Local Yield 170(s)	12	39	62	109	25	39	62	109

### Intersection Summary

Cycle Length 120  
Control Type Actuated-Coordinated  
Natural Cycle 90  
Offset: 118.5 (99%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow




















### Splits and Phases: 2: Street C/Gaylord East Driveway & E 64th Ave

 Ø1	 Ø2	 Ø3	 Ø4 (R)
12 s	38 s	12 s	58 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
25 s	25 s	12 s	58 s

# HCM 7th Signalized Intersection Capacity Analysis

## 2: Street C/Gaylord East Driveway & E 64th Ave

08/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1240	48	52	1110	100	245	11	14	101	15	100
Future Volume (veh/h)	100	1240	48	52	1110	100	245	11	14	101	15	100
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	109	1348	52	57	1207	109	266	12	15	110	16	109
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	373	2024	78	244	1894	171	476	102	127	281	20	134
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.04	0.58	0.58	0.07	1.00	1.00	0.09	0.13	0.13	0.05	0.10	0.10
Unsig. Movement Delay												
Ln Grp Delay, s/veh	9.9	20.6	20.6	14.1	3.0	3.0	44.1	0.0	45.9	47.6	0.0	62.9
Ln Grp LOS	A	C	C	B	A	A	D		D	D		E
Approach Vol, veh/h	1509			1373			293			235		
Approach Delay, s/veh	19.8			3.5			44.3			55.8		
Approach LOS	B			A			D			E		
Timer:												
	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Case No	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0				
Phs Duration (G+Y+Rc), s	12.0	22.1	10.3	75.6	16.7	17.4	10.9	75.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green (Gmax), s	6.0	32.0	6.0	52.0	19.0	19.0	6.0	52.0				
Max Allow Headway (MAH), s	3.8	5.4	3.7	4.9	3.8	5.5	3.7	4.9				
Max Q Clear (g_c+I1), s	8.0	3.7	3.5	33.8	10.1	11.1	5.0	2.0				
Green Ext Time (g_e), s	0.0	0.1	0.0	8.6	0.6	0.3	0.0	11.0				
Prob of Phs Call (p_c)	0.97	1.00	0.85	1.00	1.00	1.00	0.97	1.00				
Prob of Max Out (p_x)	1.00	0.00	1.00	0.41	0.02	0.25	1.00	0.03				
Left-Turn Movement Data												
Assigned Mvmt	1		3		5		7					
Mvmt Sat Flow, veh/h	1781		1781		3456		1781					
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		756		3489		207		3297				
Right-Turn Movement Data												
Assigned Mvmt		12		14		16		18				
Mvmt Sat Flow, veh/h		945		134		1410		297				
Left Lane Group Data												
Assigned Mvmt	1	0	3	0	5	0	7	0				



## HCM 7th Signalized Intersection Capacity Analysis

### 2: Street C/Gaylord East Driveway & E 64th Ave

08/12/2024

Lane Assignment	L (Pr/Pm)		L (Pr/Pm)		L (Pr/Pm)		L (Pr/Pm)	
Lanes in Grp	1	0	1	0	2	0	1	0
Grp Vol (v), veh/h	110	0	57	0	266	0	109	0
Grp Sat Flow (s), veh/h/ln	1781	0	1781	0	1728	0	1781	0
Q Serve Time (g_s), s	6.0	0.0	1.5	0.0	8.1	0.0	3.0	0.0
Cycle Q Clear Time (g_c), s	6.0	0.0	1.5	0.0	8.1	0.0	3.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	1383	0	385	0	1228	0	417	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	11.4	0.0	69.0	0.0	12.1	0.0	69.0	0.0
Perm LT Serve Time (g_u), s	11.4	0.0	37.8	0.0	2.3	0.0	69.0	0.0
Perm LT Q Serve Time (g_ps), s	1.0	0.0	5.2	0.0	1.2	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	281	0	244	0	476	0	373	0
V/C Ratio (X)	0.39	0.00	0.23	0.00	0.56	0.00	0.29	0.00
Avail Cap (c_a), veh/h	281	0	270	0	715	0	389	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	46.7	0.0	13.6	0.0	43.1	0.0	9.4	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.5	0.0	1.0	0.0	0.4	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	47.6	0.0	14.1	0.0	44.1	0.0	9.9	0.0
1st-Term Q (Q1), veh/ln	3.0	0.0	0.5	0.0	3.5	0.0	1.1	0.0
2nd-Term Q (Q2), veh/ln	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	1.80	0.00	1.80	0.00	1.80	0.00
%ile Back of Q (95%), veh/ln	5.5	0.0	1.0	0.0	6.4	0.0	2.0	0.0
%ile Storage Ratio (RQ%)	0.70	0.00	0.13	0.00	0.81	0.00	0.26	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Middle Lane Group Data</b>								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T			
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	686	0	0	0	649
Grp Sat Flow (s), veh/h/ln	0	0	0	1777	0	0	0	1777
Q Serve Time (g_s), s	0.0	0.0	0.0	31.7	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	31.7	0.0	0.0	0.0	0.0
Lane Grp Cap (c), veh/h	0	0	0	1031	0	0	0	1021
V/C Ratio (X)	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.64
Avail Cap (c_a), veh/h	0	0	0	1031	0	0	0	1021
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	17.2	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	3.4	0.0	0.0	0.0	3.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	20.6	0.0	0.0	0.0	3.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	11.7	0.0	0.0	0.0	0.0

## HCM 7th Signalized Intersection Capacity Analysis

### 2: Street C/Gaylord East Driveway & E 64th Ave

08/12/2024

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.9
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.46	0.00	1.00	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	0.0	0.0	18.5	0.0	0.0	0.0	1.5
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.10
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

#### Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	27	0	714	0	125	0	667
Grp Sat Flow (s), veh/h/ln	0	1700	0	1846	0	1617	0	1817
Q Serve Time (g_s), s	0.0	1.7	0.0	31.8	0.0	9.1	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	1.7	0.0	31.8	0.0	9.1	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.56	0.00	0.07	0.00	0.87	0.00	0.16
Lane Grp Cap (c), veh/h	0	229	0	1071	0	154	0	1044
V/C Ratio (X)	0.00	0.12	0.00	0.67	0.00	0.81	0.00	0.64
Avail Cap (c_a), veh/h	0	453	0	1071	0	256	0	1044
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	45.7	0.0	17.3	0.0	53.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.2	0.0	3.3	0.0	9.7	0.0	3.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	45.9	0.0	20.6	0.0	62.9	0.0	3.0
1st-Term Q (Q1), veh/ln	0.0	0.7	0.0	12.1	0.0	3.7	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	1.0	0.0	0.4	0.0	0.9
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.80	0.00	1.45	0.00	1.80	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	1.3	0.0	19.1	0.0	7.4	0.0	1.6
%ile Storage Ratio (RQ%)	0.00	0.19	0.00	0.85	0.00	0.34	0.00	0.10
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

#### Intersection Summary

HCM 7th Control Delay, s/veh	17.8
HCM 7th LOS	B

**ATTACHMENT B**

**Town Center at Painted Prairie Traffic Impact Analysis**

# **TRAFFIC IMPACT ANALYSIS**

Town Center at Painted Prairie

Prepared for:

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FHU Reference No. 120085-01

September 2020





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## I. INTRODUCTION

Town Center is a planned development encompassing approximately 59 acres of property in Aurora, Colorado within the Painted Prairie Master Plan. This report was prepared in support of Town Center as the third phase of the Painted Prairie Master Plan (two residential Filings have been submitted). The proposed land uses include:

- 4 hotels, 750 total rooms
- Approximately 87,500 square feet of food and beverage space
- Approximately 77,000 square feet of retail space
- Approximately 46,500 square feet of office space
- 1,544 multifamily dwelling units

It should be noted that this is one possible land use scenario. This specific land use scenario was chosen reflective of one possible scenario within the context of the proposed development plan. Ultimately, specific land uses may be modified, and the need for any follow-up traffic study work can likely be addressed through trip generation compliance letters.

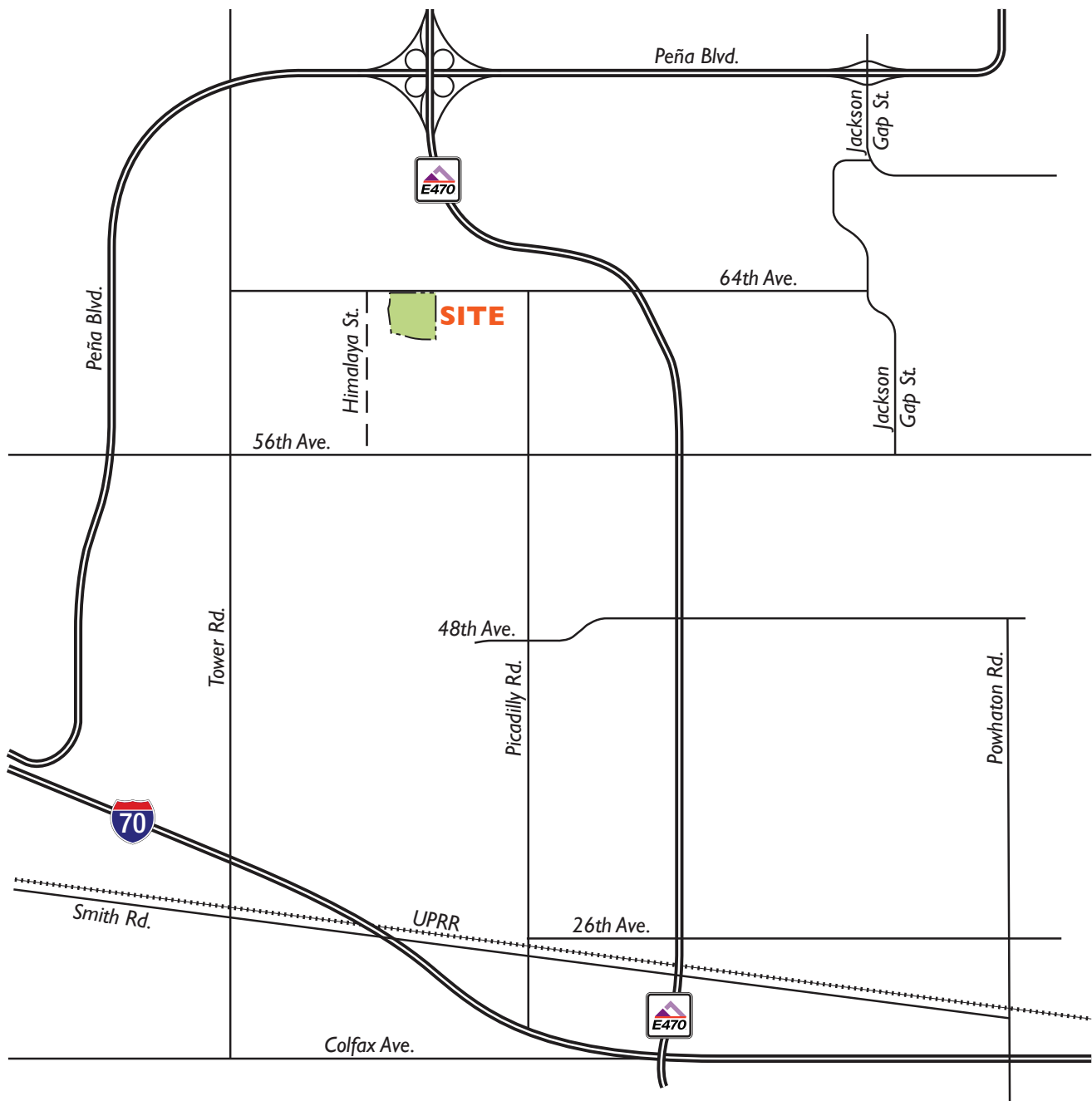
**Figure 1** shows the location of the site. The site is in the northwest portion of the Painted Prairie Master Plan with frontage onto 64<sup>th</sup> Avenue immediately south of the Gaylord Rockies Resort and Convention Center.

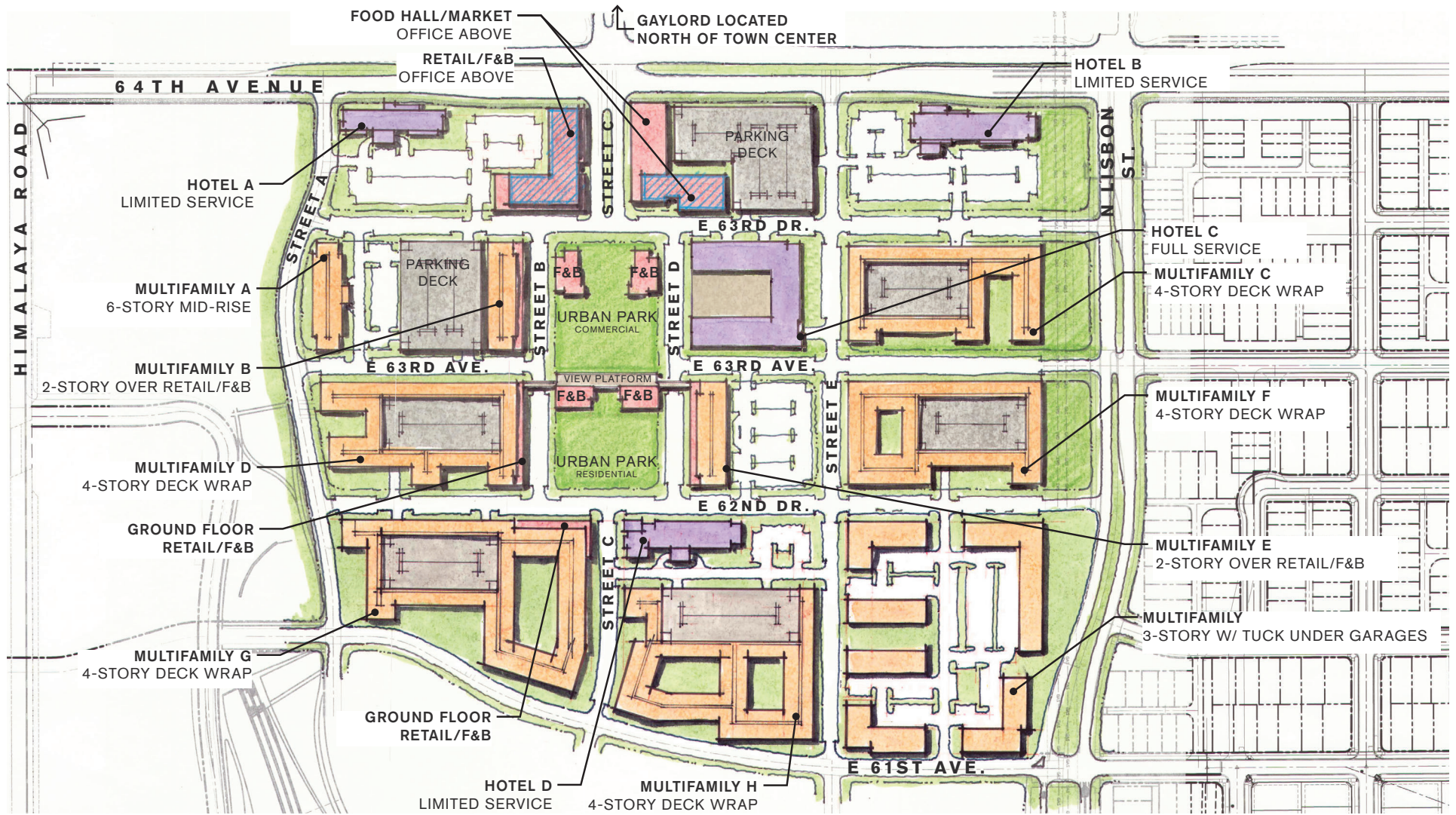
Town Center is bounded by 64<sup>th</sup> Avenue and 62<sup>nd</sup> Avenue to the north and south, and by Town Center West Drive and Lisbon Street to the west and east. **Figure 2** shows the proposed site plan.

The purpose of this study is to assess the traffic impacts on the internal and boundary roadways related to the proposed development. This report includes information on existing traffic conditions, vehicle-trips associated with the planned development, total traffic volume projections and recommendations on future roadway needs. The focus of this analysis is on the long-term timeframe, year 2040, using the recently completed Aurora Northeast Area Transportation Study (NEATS) Refresh Transportation Plan and the Painted Prairie Master Plan traffic study as a means of developing background traffic along study area roadways. It should be noted that ownership interests in both Painted Prairie and High Point have recently received approval from City of Aurora to augment the design of 64<sup>th</sup> Avenue to include four lanes for through traffic and on-street parallel parking. The approval letter includes a proposed layout of 64<sup>th</sup> Avenue which does not provide right-turn lanes in either direction of 64<sup>th</sup> Avenue along the frontage of the Town Center development. A copy of the letter stating such is provided in Appendix D.

There is little development in the area, and various master plan developments are currently being planned. A short-term timeframe was not specifically analyzed in this study because of the numerous variables associated with all the development (and its timing). Short-term analysis can be achieved either through conformance letters or a detailed TIS as parcels within Town Center develop, and these future efforts should focus on the timing of the need for traffic signalization. The applicant has committed to doing more detailed analysis to assess a short-term analysis when appropriate. The long-term (year 2040) timeframe is the focus of this study realizing that a roadway improvement phasing plan (in conjunction with other development) will be needed to serve this and the surrounding planned development.







## II. EXISTING CONDITIONS

### II.A. Surrounding Land Use

The area around the Town Center is mostly vacant. The Gaylord Rockies Resort and Convention Center was recently opened and is located to the north of the property. High Point residential exists to the west, and the Green Valley Ranch residential development also exists about 1 mile south in Denver.

### II.B. Transportation Network

#### *Roadways*

The existing transportation system near Town Center includes only one facility: 64<sup>th</sup> Avenue. This roadway serves as the northern boundary of the site. The roadway was recently improved in association with the Gaylord Rockies Resort, and it provides two lanes of through traffic. The roadway extends west to Tower Road and east to E-470.

Himalaya Road to the west exists only as a stub to provide access to staff parking lots at the Gaylord Rockies Resort and Convention Center at this time, and Picadilly Road to the east was recently constructed and is paved from 56<sup>th</sup> Avenue to 64<sup>th</sup> Avenue. Himalaya Road will provide access to the south to 56<sup>th</sup> Avenue and to additional development planned to the north. Picadilly Road is planned to connect south of 64<sup>th</sup> Avenue to an ultimate future interchange at I-70. To the north, Picadilly Road is currently planned to cross over E-470, pass through DEN, and serve areas in Commerce City per the city's NEATS Refresh. There are numerous costly challenges in this extension to the north and its ultimate construction will be a challenge, but this study has been completed assuming that it is ultimately in place to remain consistent with NEATS.

#### *Traffic Volumes*

Existing traffic volumes in the vicinity of the site are presented on **Figure 3** and the traffic count data can also be found in **Appendix A**. Specifically, turning movement counts were collected at the 64<sup>th</sup> Avenue/Gaylord Rockies Boulevard intersection. Current peak hour demands at the intersections are low. Daily traffic volumes along 64<sup>th</sup> Avenue were found to be 2,850 vehicles per day (VPD) east of Gaylord.

#### *Traffic Operations*

Calculations were carried out to assess operations given current traffic demands. These were conducted using techniques documented in the Highway Capacity Manual (Transportation Research Board, 2016) using the existing traffic volumes and intersection geometry. Level of Service (LOS) is a qualitative measure of traffic operational conditions, based on roadway capacity and vehicle delay. Levels of service are described by a letter designation ranging from A to F, with LOS A representing almost free-flow travel, while LOS F represents congested conditions. For signalized intersections, LOS is calculated for the entire intersection while LOS for unsignalized intersections is calculated for movements that must yield right-of-way to other traffic movements. For the existing signalized intersection at 64<sup>th</sup> Avenue/Gaylord Rockies Boulevard at which turning movement counts were collected, the intersection operates no worse than a LOS B during peak hours.



#### LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

**XXXX** = Daily Traffic Volumes

### III. FUTURE ROADWAY NETWORK

In 2018, the City of Aurora completed the NEATS Refresh study. This study provides Year 2040 and regional build-out transportation recommendations for the roadways and a multimodal transportation system. The NEATS Refresh study area encompassed a regional area extending from approximately between Tower Road east to Schumaker Road, and from Jewell Avenue on the south to 72<sup>nd</sup> Avenue on the north. Recommendations with respect to the Painted Prairie FDP include:

- Constructing Picadilly Road, 56<sup>th</sup> Avenue, and 64<sup>th</sup> Avenue as a major arterial including six-through lanes plus turn lanes.
- Constructing Himalaya Road as a two-lane collector with turn lanes at intersections as needed

The city has undertaken a study to assess specific needs for 64<sup>th</sup> Avenue and parallel facilities. The results of that study indicate that a cross-section with four through-lanes, turn lanes at intersections, and parallel parking should be implemented, at least between Picadilly Road and Himalaya Street. As such, this study incorporates that cross-section notion along the Town Center frontage to assess its functionality.

Picadilly Road is shown in the NEATS Refresh report as extending north of 64<sup>th</sup> Avenue, crossing E-470 (without an interchange), extending through DEN, and crossing over Peña Boulevard to areas within Commerce City. The implementation of this improvement faces a number of hurdles and there is some question as to the feasibility of this roadway, but because this is recognized in NEATS, it is recognized in this study as well.



## IV. PROJECTED CONDITIONS

This traffic study assesses the long-term timeframe at the site plan's build out. The intent is to assess the laneage of the Town Center roadways under a condition of the entire Painted Prairie Master Plan being built out to its maximum density. The build-out scenario assesses year 2040 conditions consistent with NEATS.

Traffic projections shown in this study are based on the premise that the remainder of Painted Prairie would be built out to its maximum allowed densities per the FDP proposal. Traffic demands associated with the remainder of the area and region are based on raw travel demand modeling results associated with NEATS. Other master plan traffic studies being completed in the area are being conducted in the same manner, and therefore these other studies, utilizing NEATS data, do not reflect the land use level in Painted Prairie that is being analyzed here for Town Center. Nor does this study reflect the full maximum buildout of the other area FDPs in using NEATS as the source for background traffic.

### IV.A. Site Trip Generation

The number of vehicle-trips that will be generated by the proposed development was forecast based on trip rates and procedures documented in *Trip Generation* (Institute of Transportation Engineers, Tenth Edition, 2017). The categories used in this analysis include hotels, high-turnover (sit-down) restaurants, retail (shopping center), and various residential categories. Credits were taken for internal trip making using methodology in NCHRP 684 and for pass-by considerations associated with retail uses of based on ITE data available in the *Trip Generation Handbook* (Institute of Transportation Engineers, Third Edition, 2017). **Table I** summarizes the trip generation estimates by Planning Area and by zones developed for purposes of traffic assignment. The Traffic Analysis Zones (TAZ) are shown on **Figure 4**.

NCHRP 684 provides methodology for internal capture reductions based on the interactions of different land uses within mixed-use developments including office, retail, restaurant, residential, cinema, and hotel. The methodology considers that mixed-use developments will keep a portion of the trips generated internal to the site, thus reducing impacts to the adjacent roadway network. Given the mix of uses in Town Center, the recommended internal capture reductions are 17 percent for AM peak and 31 percent for PM peak hour. Internal daily trips were estimated from the internal PM peak hour trips using a factor of 10. Internal capture worksheets can be found in **Appendix B**.

In total, the entire Town Center development is estimated to generate approximately 19,850 external vehicle trips per day. This is approximately a 16 percent increase as compared to the 17,050 external trips analyzed within the Painted Prairie Master Plan traffic study. While this is a modest increase, it is partially offset by a reduction in Filing 3 to the immediate east, whose recently submitted traffic study saw a reduction of approximately 1,100 external vehicle trips per day as compared to the master traffic study.

**Table 1. Trip Generation Estimates**

TAZ	Planning Area/ Land Use	Unit	Size	Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
1	Hotel	Rooms	125	984	34	23	57	35	33	68
	Shopping Center	KSF	16.0	1,045	24	15	39	45	48	93
	High-Turnover (Sit-Down) Restaurant	KSF	9.6	1,077	52	43	95	58	36	94
	General Office	KSF	19.5	217	39	6	45	3	16	19
	<b>Subtotals</b>			<b>3,323</b>	<b>149</b>	<b>87</b>	<b>236</b>	<b>141</b>	<b>133</b>	<b>274</b>
2	Shopping Center	KSF	16.8	1,097	25	16	41	47	51	98
	High-Turnover (Sit-Down) Restaurant	KSF	35.2	3,949	192	157	349	213	131	344
	General Office	KSF	27.0	298	45	7	52	4	20	24
	<b>Subtotals</b>			<b>5,344</b>	<b>262</b>	<b>180</b>	<b>442</b>	<b>264</b>	<b>202</b>	<b>466</b>
3	Hotel	Rooms	125	984	34	23	57	35	33	68
	<b>Subtotals</b>			<b>984</b>	<b>34</b>	<b>23</b>	<b>57</b>	<b>35</b>	<b>33</b>	<b>68</b>
4	Shopping Center	KSF	9.6	626	15	9	24	27	29	56
	High-Turnover (Sit-Down) Restaurant	KSF	9.6	1,075	52	43	95	58	36	94
	Multifamily Housing (Mid-Rise)	DUs	112	609	10	28	38	30	20	50
	<b>Subtotals</b>			<b>2,310</b>	<b>77</b>	<b>80</b>	<b>157</b>	<b>115</b>	<b>85</b>	<b>200</b>
5	High-Turnover (Sit-Down) Restaurant	KSF	19.2	2,154	105	86	191	116	71	187
	<b>Subtotals</b>			<b>2,154</b>	<b>105</b>	<b>86</b>	<b>191</b>	<b>116</b>	<b>71</b>	<b>187</b>
6	Hotel	Rooms	350	3,525	100	70	170	121	116	237
	<b>Subtotals</b>			<b>3,525</b>	<b>100</b>	<b>70</b>	<b>170</b>	<b>121</b>	<b>116</b>	<b>237</b>

TAZ	Planning Area/ Land Use	Unit	Size	Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
7	Multifamily Housing (Mid-Rise)	DUs	212	1,154	19	53	72	56	36	92
	<b>Subtotals</b>			<b>1,154</b>	<b>19</b>	<b>53</b>	<b>72</b>	<b>56</b>	<b>36</b>	<b>92</b>
8	Shopping Center	KSF	11.1	725	17	10	27	31	33	64
	High-Turnover (Sit-Down) Restaurant	KSF	5.0	561	27	22	49	30	19	49
	Multifamily Housing (Mid-Rise)	DUs	171	930	15	43	58	45	29	74
	<b>Subtotals</b>			<b>2,216</b>	<b>59</b>	<b>75</b>	<b>134</b>	<b>106</b>	<b>81</b>	<b>187</b>
9	Shopping Center	KSF	14.2	927	22	13	35	40	43	83
	High-Turnover (Sit-Down) Restaurant	KSF	5.0	561	27	22	49	30	19	49
	Multifamily Housing (Mid-Rise)	DUs	29	156	3	8	11	8	6	14
	<b>Subtotals</b>			<b>1,644</b>	<b>52</b>	<b>43</b>	<b>95</b>	<b>78</b>	<b>68</b>	<b>146</b>
10	Multifamily Housing (Mid-Rise)	DUs	241	1,312	21	60	81	63	41	104
	<b>Subtotals</b>			<b>1,312</b>	<b>21</b>	<b>60</b>	<b>81</b>	<b>63</b>	<b>41</b>	<b>104</b>
11	Shopping Center	KSF	9.6	627	15	9	24	27	29	56
	High-Turnover (Sit-Down) Restaurant	KSF	4.0	449	22	18	40	24	15	39
	Multifamily Housing (Mid-Rise)	DUs	308	1,677	27	76	103	80	51	131
	<b>Subtotals</b>			<b>2,753</b>	<b>64</b>	<b>103</b>	<b>167</b>	<b>131</b>	<b>95</b>	<b>226</b>
12	Hotel	Rooms	150	1,267	41	29	70	44	42	86
	Multifamily Housing (Mid-Rise)	DUs	277	1,508	24	69	93	72	46	118
	<b>Subtotals</b>			<b>2,775</b>	<b>65</b>	<b>98</b>	<b>163</b>	<b>116</b>	<b>88</b>	<b>204</b>



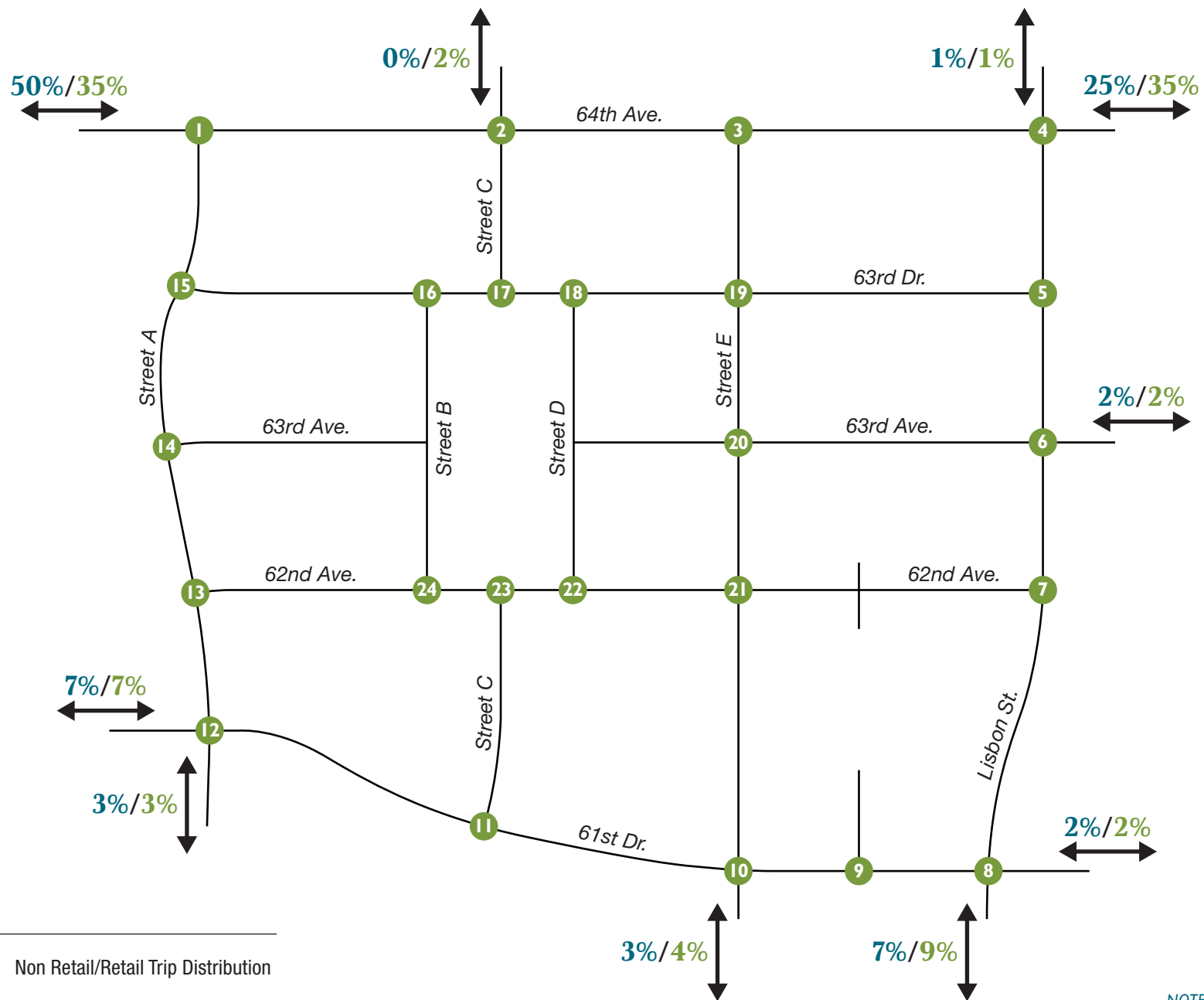
TAZ	Planning Area/ Land Use	Unit	Size	Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
13	Multifamily Housing (Mid-Rise)	DUs	194	1,056	17	48	65	51	33	84
	Subtotals			1,056	17	48	65	51	33	84
PROJECT SUBTOTAL				30,550	1,024	1,006	2,030	1,393	1,082	2,475
Pass-By Trips (30% of Daily Trips for Shopping Center and Restaurant, 30% of PM Trips for Shopping Center, 40% of PM Trips for Restaurant) <sup>1</sup>				4,461	--	--	--	239	239	478
Net New Trips				26,089	1,024	1,006	2,030	1,154	843	1,997
Internal Trip Reduction <sup>2</sup>				6,240	168	168	336	312	312	624
New External Trips				19,849	856	838	1,694	842	531	1,373
<sup>1</sup> From information provided in Trip Generation Handbook.										
<sup>2</sup> From NCHRP 684 Methodology. See <b>Appendix B</b> .										



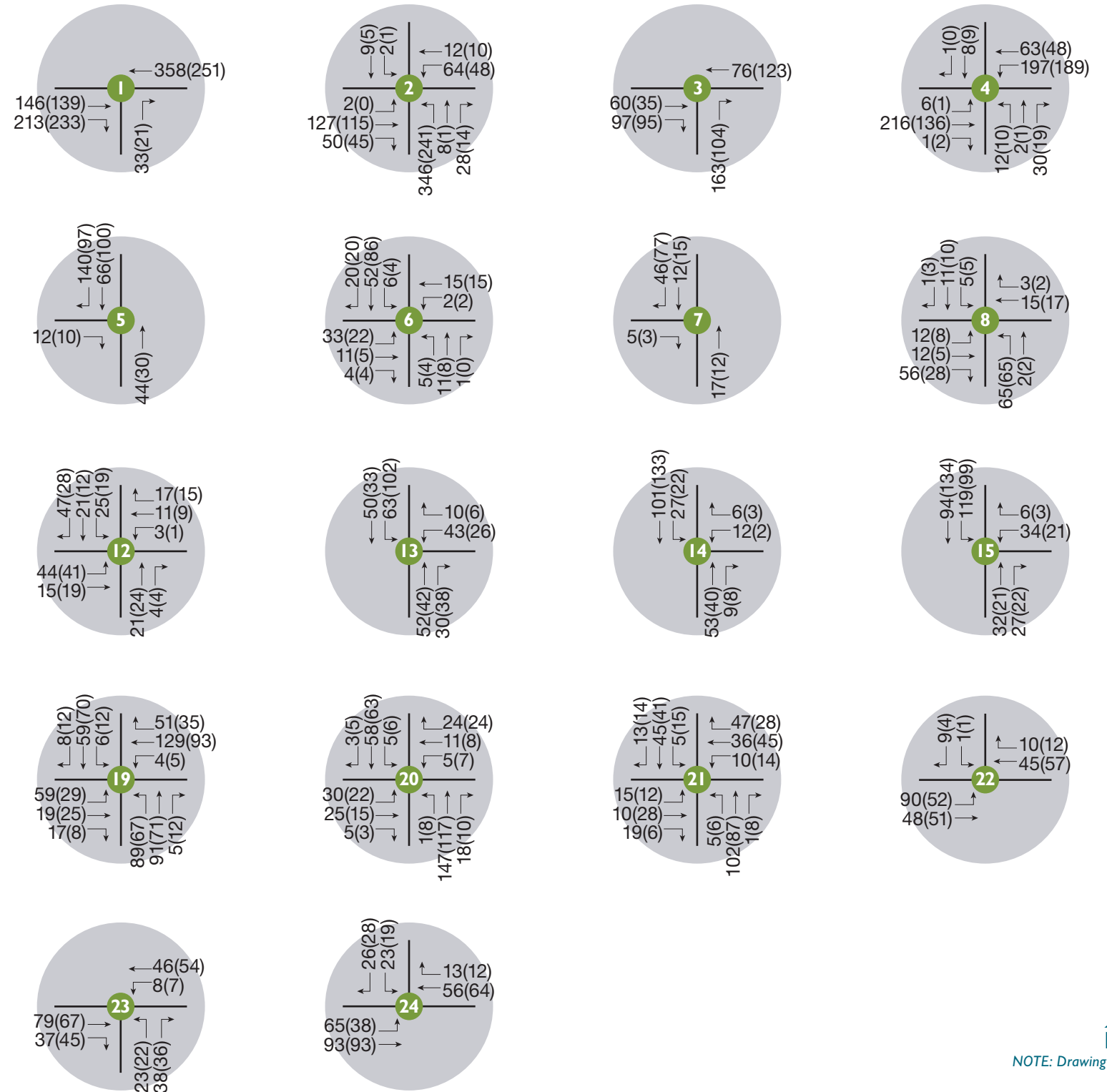
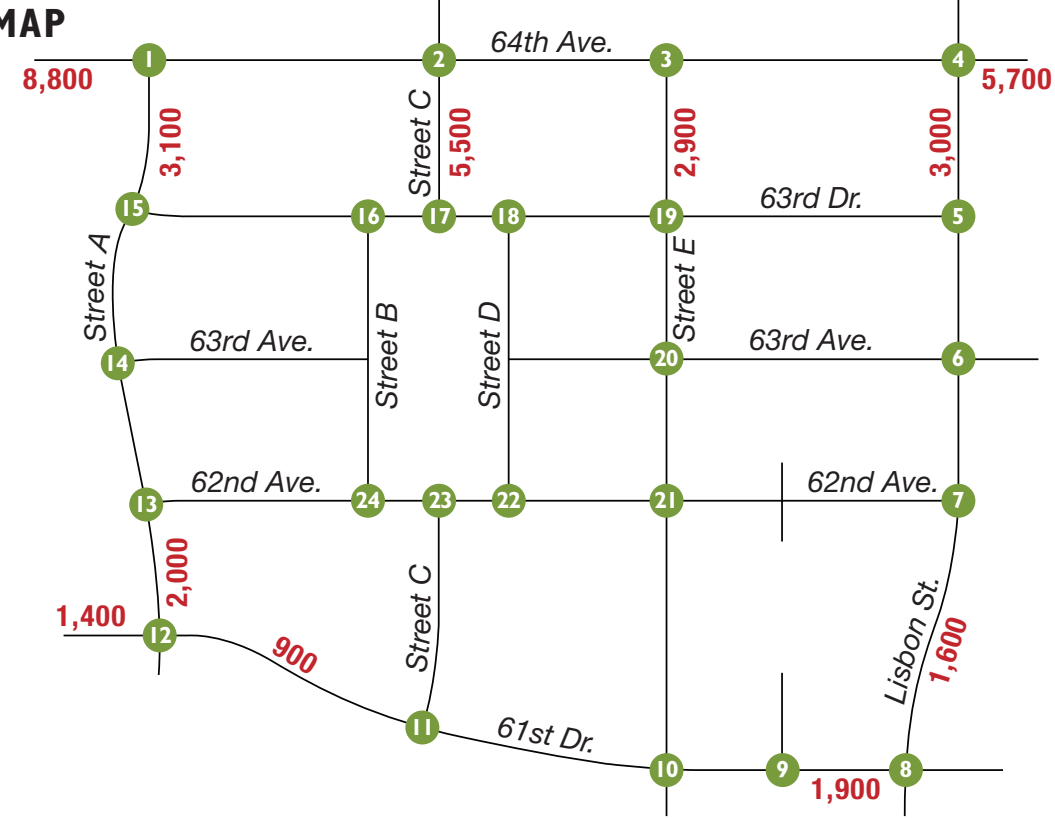
#### **IV.B. Trip Distribution and Traffic Assignment**

The site trip distribution assumptions for Town Center have been estimated from the Painted Prairie Master Plan study which was based on NEATS modeling TAZ centroid traffic loadings and professional judgment of the directionality of these trips apparent in the 2040 NEATS assignment results. The distribution percentages are varied pending retail versus non-retail uses, recognizing that retail trips are more likely to be destined to the surrounding area, and non-retail traffic can be a bit more regional in nature. **Figure 5** shows distribution percentages used for analysis. In general, trips are anticipated to be oriented most to/from the west, and secondarily to the south. The percentages also account for the location of Town Center within Painted Prairie; trips are more inclined to use 64<sup>th</sup> Avenue and Himalaya Road.

**Figure 6** shows the site-generated traffic that results from applying the distribution percentages of **Figure 5** to the trip generation estimates of **Table I**. 64<sup>th</sup> Avenue is anticipated to be the most impacted segment of roadway serving approximately 5,700 to 8,800 VPD of Town Center traffic.



KEY MAP



**LEGEND**

xxx(xxx) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes

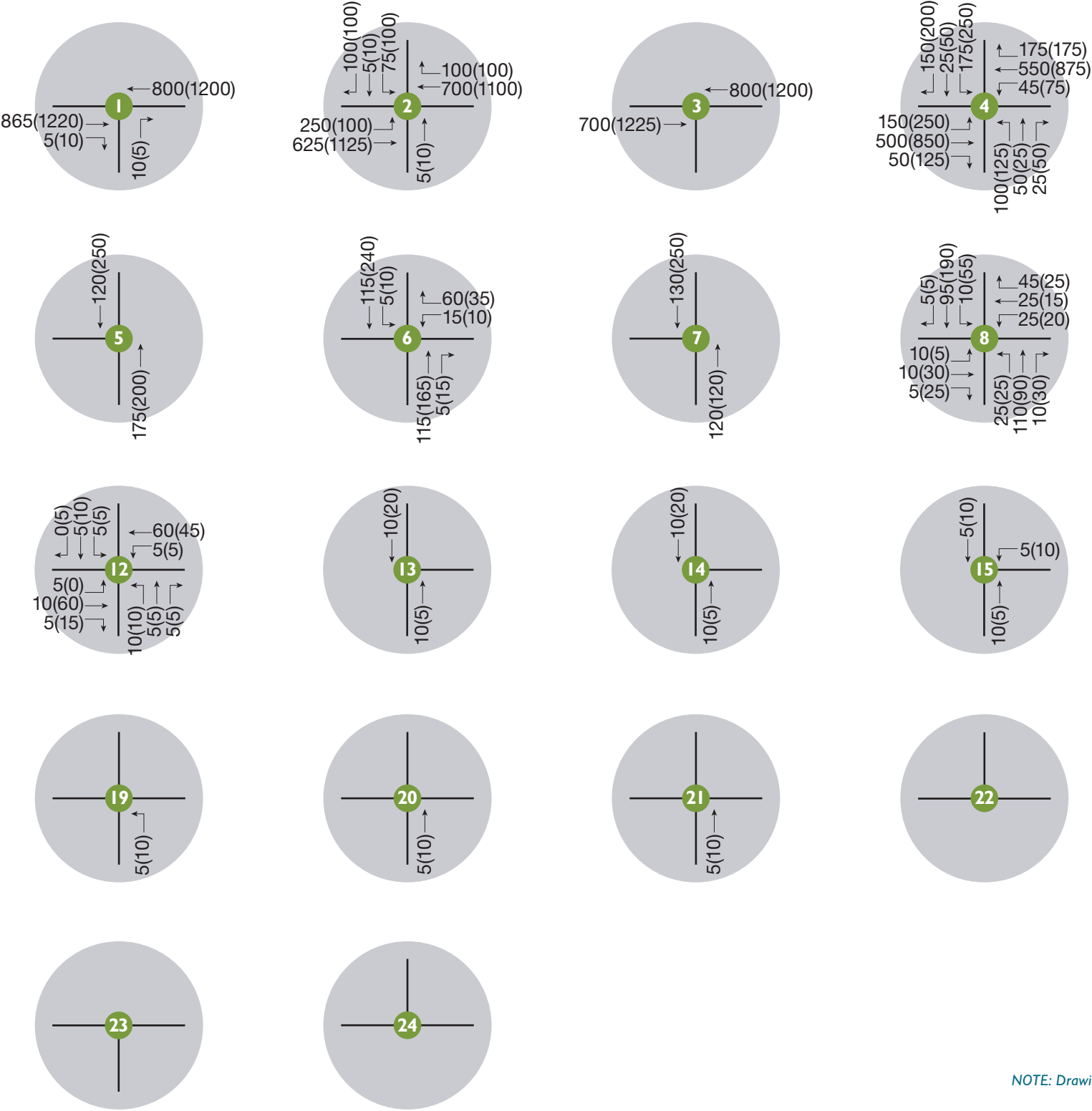
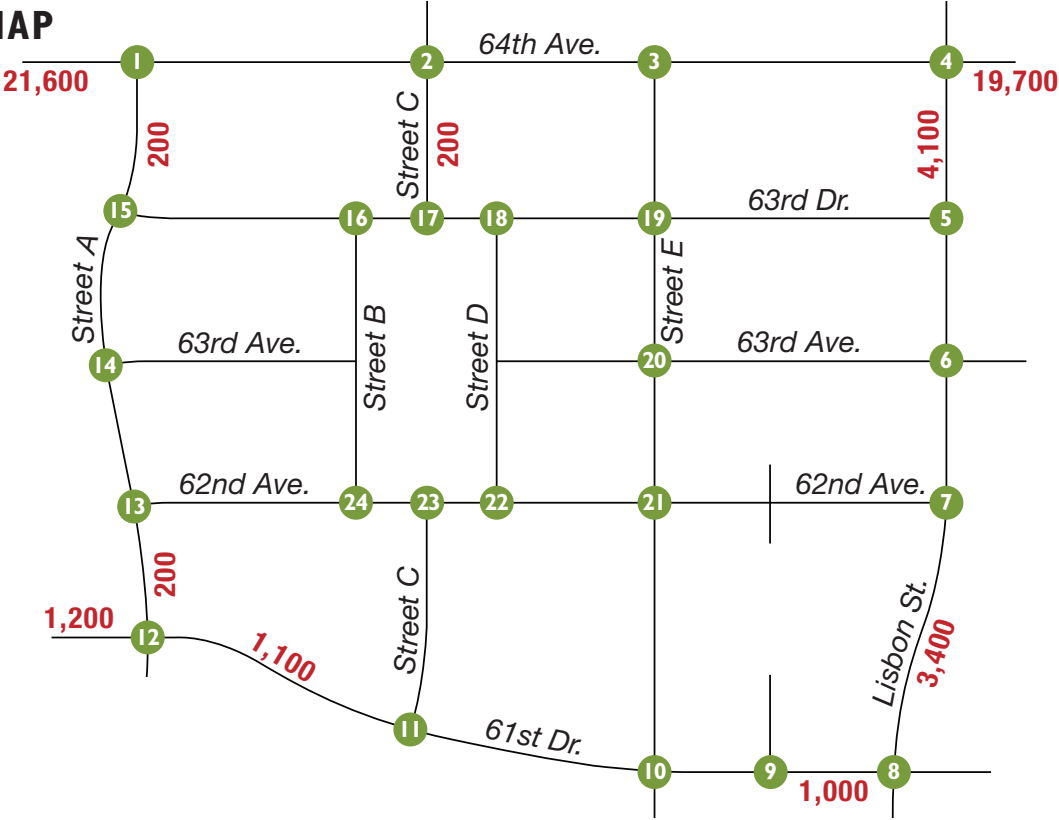
#### **IV.C. Background Traffic Volumes**

The Painted Prairie master traffic study was the primary source in developing background traffic for the Town Center traffic study, which is grounded in the NEATS study. Volumes from the Painted Prairie master study were reduced by those trips associated with Town Center TAZ.

Background traffic volume estimates are shown on **Figure 7**. 64<sup>th</sup> Avenue will be the busiest roadway in the study area serving an estimated background traffic demand of 19,700 to 21,600 VPD. These are based on 2040 modeling results from the NEATS Refresh effort and on the assumption that the remainder of Painted Prairie would develop to its maximum allowed densities. Some of the internal roads will also serve small amounts of background traffic cutting through the site, and **Figure 7** attempts to capture this phenomenon as well, which is not expected to be significant.



KEY MAP



**LEGEND**  
xxx(xxx) = AM(PM) Peak Hour Traffic Volumes  
**XXXX** = Daily Traffic Volumes

## V. YEAR 2040 TOTAL TRAFFIC CONDITIONS

The daily and peak hour traffic volume estimates for Town Center of **Figure 6** were combined with the Year 2040 background traffic volume projections of **Figure 7** to create total long-term traffic forecasts along the study area roads and intersections. These estimates are represented on **Figure 8**.

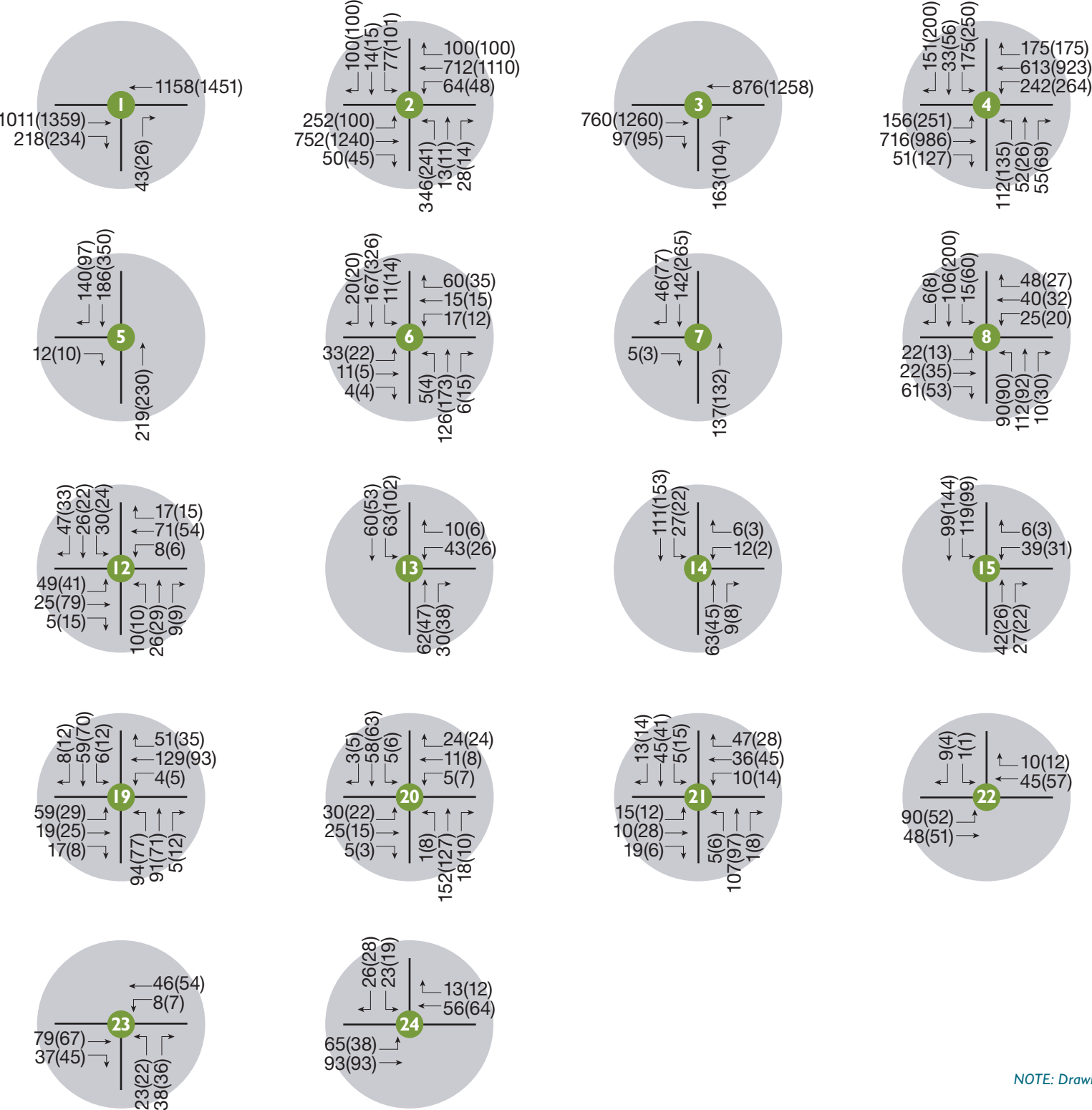
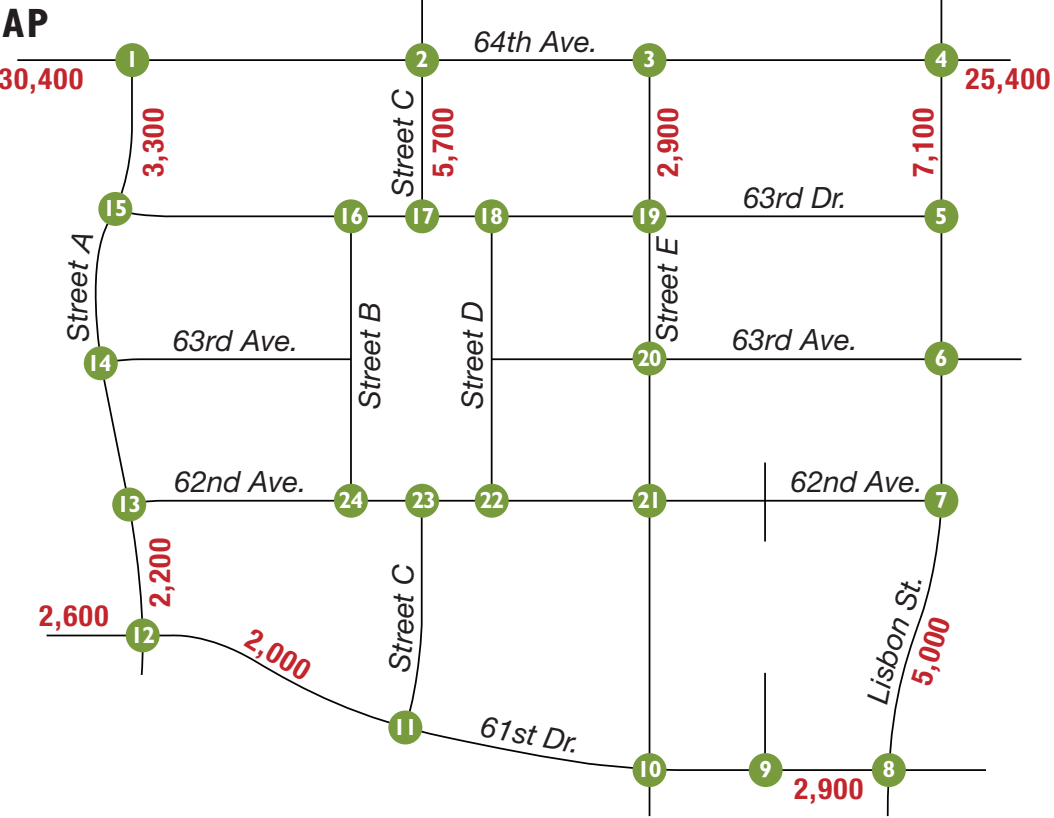
64<sup>th</sup> Avenue will be the busiest roadway in the study area serving volumes ranging from 25,400 to 30,400 VPD. All other roads will serve volumes far less with Lisbon Street being the next busiest at a projected volume of 5,000 vehicles per day south of 61<sup>st</sup> Avenue. Internal roadways will all be less than this, many of them much less.

### ***Traffic Signalization Warrant Analyses***

The *Manual on Uniform Traffic Control Devices* (MUTCD) identifies eight warrants that provide guidance to determine whether installation of a traffic signal is justified. Some of these warrants are based on traffic volume levels, while others are based on the accident history of an intersection or whether the intersection is a designated school crossing. Further, intersection 2 (64<sup>th</sup> Avenue/Gaylord Rockies Boulevard) is currently signalized and is presumed to be so in the future as well. The four-hour warrant has been applied to assess the need at intersection 4 (64<sup>th</sup> Avenue/Lisbon Street) in both the Painted Prairie and High Point master TIS reports and identified the location for signalization. This intersection well exceeds volume threshold limits in both master studies and has been assumed as signalized for the purposes of this report. The projected peak hour traffic at all other study area intersections will clearly not warrant signalization from the projections shown on **Figure 8**.



KEY MAP



**LEGEND**

xxx(xxx) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes

## Capacity Analyses

Capacity analyses were conducted for the surrounding roadway network using the traffic volume estimates on **Figure 8**. The level of service analysis results and intersection laneage requirements can be found on **Figure 9** (worksheets are shown in **Appendix C**). With respect to the roadways, the following cross-sections should be planned:

- 64<sup>th</sup> Avenue will function adequately as a four-lane east-west arterial. There is no need for a six-lane cross section as originally planned in NEATS.
- Lisbon Street, which runs north-south through the center of Painted Prairie (along the east side of the Town Center site), is projected to serve approximately 5,000 VPD adjacent to Town Center. This road should continue to be planned as a four-lane Boulevard roadway per the Painted Prairie street standards.
- 61<sup>st</sup> Drive Avenue, which runs east-west through the northern third of Painted Prairie, is projected to serve approximately 2,600 VPD adjacent to Town Center, and this road should continue to be planned as a two-lane roadway per the Painted Prairie street standards.

The analysis of each intersection also informs turn lane needs. These are described for each major intersection as follows:

- 64<sup>th</sup> Avenue/Gaylord Rockies Boulevard – Lane needs include single left turn along the eastbound, westbound, and southbound approaches; dual left turn lanes along the northbound approach are needed to limit queuing; and a single right turn lane along the eastbound and westbound approaches.
- 64<sup>th</sup> Avenue/Lisbon – Lane needs include single left turn lanes along all approaches, and a right turn lane along all approaches.

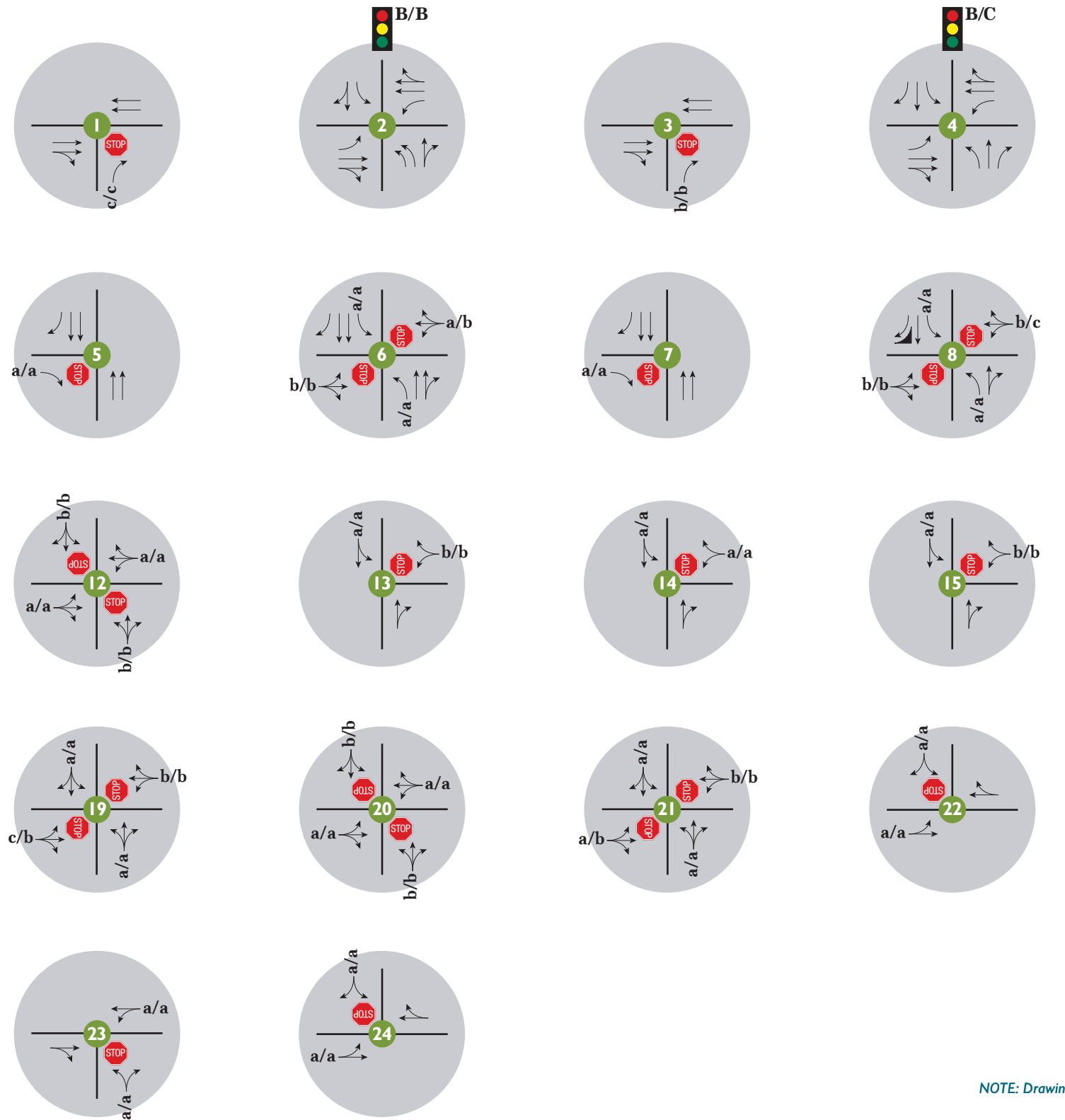
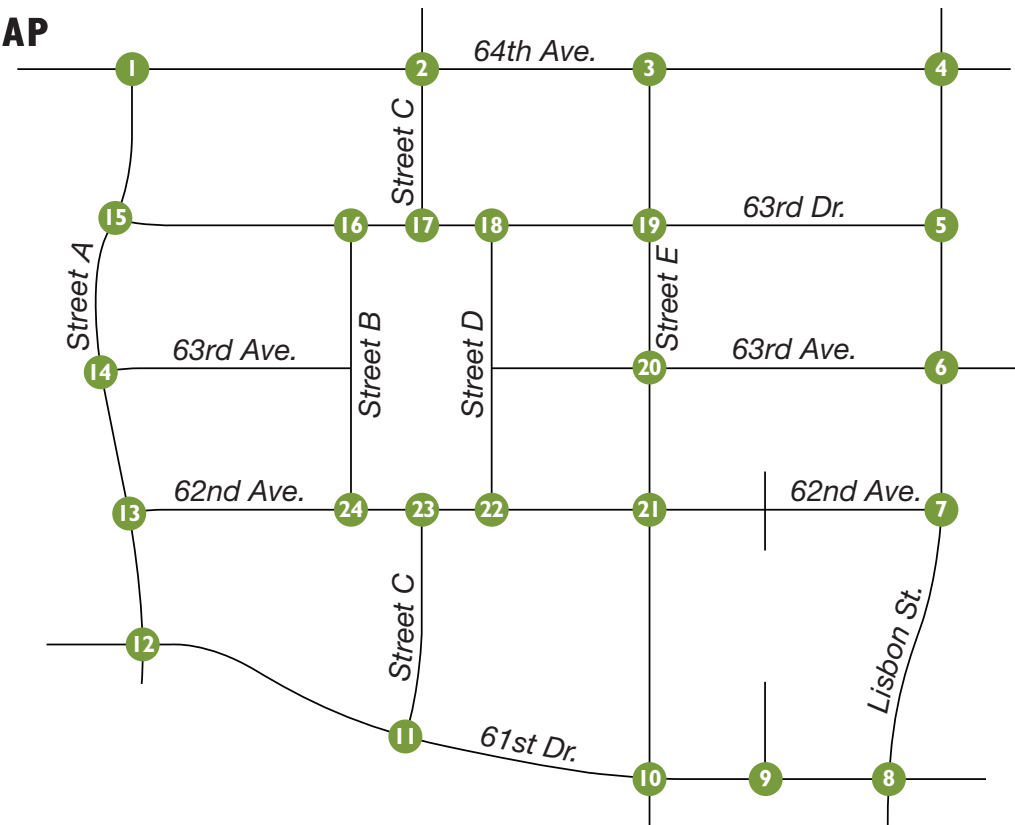
One additional intersection utilizes unconventional traffic control. The intersection of 63<sup>rd</sup> Drive/ Street C has stop control for east-west traffic and free flow for the southbound approach. While this is not standard traffic control, it is used in this case to limit queuing of inbound traffic and is often found in shopping mall ring roads so that queues do not back up and conflict with the external street network. The idea behind allowing the southbound approach to be freeflow is to robustly ensure that traffic does not back up to 64<sup>th</sup> Avenue. Within this vein, there should not be any traffic control configuration at this intersection that could threaten this. The city's TIS guidelines indicate that intersections should be assessed as a roundabout if an all-way stop or signal is being contemplated. This intersection is not being recommended for either and the southbound approach should be subject to yielding to any other movements. As such, a roundabout analysis was not conducted for this intersection, which was raised in the city's review comments..

All other intersections, projected to be less busy have also been analyzed in the report, with LOS results shown on **Figure 9**. All remaining intersections are projected to perform acceptably.

### 64<sup>th</sup> Avenue

As mentioned, a city study assessed the possibility of reducing this roadway's cross-section to include four through lanes; the NEATS Refresh study shows six. A four-lane cross-section would function adequately along the Town Center's frontage. The approval letter from City of Aurora includes a roadway layout which does not include right-turn lanes along the frontage of the Town Center development, as agreed per the letter provided in **Appendix D**.

## KEY MAP



### LEGEND

**X/X** = AM/PM Peak Hour Signalized Intersection Level of Service

**x/x** = AM/PM Peak Hour Unsignalized Intersection Level of Service

 = Stop Sign

 = Traffic Signal

  
**NORTH**  
*NOTE: Drawing Not to Scale*

## FIGURE 9

## Year 2040

## Lane Geometry and Level of Service

Painted Prairie Town Center Traffic Study 20-085 04/07/20

### Auxiliary Lane Requirements

City of Aurora *Traffic Impact Study Guidelines* indicate that the *CDOT SHAC* be used to determine storage and taper lengths. These values yield overly conservative results and provide storage well in excess 95<sup>th</sup> percentile queues (which already incorporate a heavy vehicle percentage), often by a factor of two to three. The *SHAC* procedures do not account for other conditions in the intersection such as low opposing through movements if a left-turn movement is in question with respect to affecting queuing. Rather, our recommendation is that the values in **Table 2** corresponding to the 95<sup>th</sup> percentile lengths be used for storage lengths, plus tapers. The *SHAC* procedures allow for the ability to not provide left-turn auxiliary lanes when opposing through volume is low, and right-turn auxiliary lanes are not needed when the parallel through volume is low. Section 3.5(5) of the *SHAC* states that “The right turn deceleration lane may be dropped if the volume in the travel lane is predicted to be below 150 DHV. The left turn deceleration lane may be dropped if the opposing traffic is predicted to be below 100 DHV.” So, the combination of turning movement volume AND through volume need to be considered per the *SHAC*. This provision robustly applies in this study since through traffic projections at many of the internal intersections are lower than these thresholds. Plus, limiting turning lanes allows the Painted Prairie Town Center to be a pedestrian friendly mixed-use environment by limiting crossing distances where possible. Additionally, *SHAC* criteria is written for roadways with classifications of arterial or higher. Applying such criteria to local roadways is excessive given that the purpose of these roadways is to provide access not throughput of high traffic volumes.

Ownership interests in both the Painted Prairie and High Point developments have expressed and received approval from the City of Aurora for a redesign of 64<sup>th</sup> Avenue between Himalaya Road and Picadilly Road. The new cross section would convert the currently constructed 3-lanes, which represent the northern half of what was to be the ultimate roadway, to two through-lanes with an on-street parking lane and added bulb-outs at intersections to shorten pedestrian crossing distances. The southern half of the roadway, which fronts the Painted Prairie development, would mirror this layout. By providing bulb-outs at intersections, right-turn auxiliary lanes would not be provided along 64<sup>th</sup> Avenue, and this analysis was conducted accordingly. Please see accompanying letters from stakeholders, the planned layout which includes no right-turn lanes on both sides of 64<sup>th</sup> Avenue, and a letter of approval from City of Aurora in **Appendix D**.

**Table 2. Year 2040 Intersection Queuing Results**

Intersection	Approach	Movement	2040 95 <sup>th</sup> Percentile Queue Length (ft)		Recommended Storage Length	2040 SCHAC Recommended Storage Length
			AM	PM		
64 <sup>th</sup> Avenue/ Street A (Intersection 1)	Northbound	Right-Turn	10	8	Continuous	Continuous
64 <sup>th</sup> Avenue/ Gaylord East Driveway and Street C (Intersection 2)	Eastbound	Left-Turn	130	40	150	275
		Through/Right-Turn	255	408	Continuous	Continuous
	Westbound	Left-Turn	30	20	50	225
		Through/Right-Turn	18	33	Continuous	Continuous
	Northbound	Left-Turn*	213	158	Continuous	175
		Through/Right-Turn	53	33	Continuous	Continuous

Intersection	Approach	Movement	2040 95 <sup>th</sup> Percentile Queue Length (ft)		Recommended Storage Length	2040 SCHAC Recommended Storage Length
			AM	PM		
	Southbound	Left-Turn	103	135	150	125
		Through/Right-Turn	183	185	Continuous	Continuous
64 <sup>th</sup> Avenue/ Street E (Intersection 3)	Northbound	Right-Turn	23	18	Continuous	Continuous
E 64 <sup>th</sup> Avenue/ Lisbon Street (Intersection 4)	Eastbound	Left-Turn	73	145	150	275
		Through/Right-Turn	15	43	Continuous	Continuous
	Westbound	Left-Turn	115	155	175	275
		Through/Right-Turn	253	458	Continuous	Continuous
	Northbound	Left-Turn	150	175	175	150
		Through	75	35	Continuous	Continuous
		Right-Turn	80	95	100	75
	Southbound	Left-Turn	220	295	300	250
		Through	45	73	Continuous	Continuous
		Right-Turn	228	298	300	200
Lisbon Street/ 63 <sup>rd</sup> Drive (Intersection 5)	Eastbound	Right-Turn	0	0	Continuous	Continuous
	Southbound	Right-Turn	0	0	50	150
E 64 <sup>th</sup> Avenue/ Lisbon Street (Intersection 6)	Eastbound	Left/Through/Right-Turn	5	5	Continuous	Continuous
	Westbound	Left/Through/Right-Turn	10	8	Continuous	Continuous
	Northbound	Left-Turn	0	0	50	50
	Southbound	Left-Turn	0	0	50	50
Lisbon Street/ 62 <sup>nd</sup> Avenue (Intersection 7)	Eastbound	Right-Turn	0	0	Continuous	Continuous
	Southbound	Right-Turn	0	0	50	100
61 <sup>st</sup> Drive/ Lisbon Street (Intersection 8)	Eastbound	Left/Through/Right-Turn	15	20	Continuous	Continuous
	Westbound	Left/Through/Right-Turn	20	20	Continuous	Continuous
	Northbound	Left-Turn	5	5	50	100
	Southbound	Left-Turn	0	3	50	75
		Right-Turn	0	0	Continuous	Continuous

Intersection	Approach	Movement	2040 95 <sup>th</sup> Percentile Queue Length (ft)		Recommended Storage Length	2040 SCHAC Recommended Storage Length
			AM	PM		
61 <sup>st</sup> Drive/ TAZ 13 Driveway (Intersection 9)	Eastbound	Through/Left-Turn	0	0	Continuous	Continuous
	Southbound	Left/Right-Turn	3	3	Continuous	Continuous
Street E/ 61 <sup>st</sup> Drive (Intersection 10)	Eastbound	Left/Through/Right-Turn	0	0	Continuous	Continuous
	Westbound	Left/Through/Right-Turn	0	0	Continuous	Continuous
	Northbound	Left/Through/Right-Turn	8	8	Continuous	Continuous
	Southbound	Left/Through/Right-Turn	10	5	Continuous	Continuous
Street C/ 61 <sup>st</sup> Drive (Intersection 11)	Eastbound	Through/Left-Turn	0	0	Continuous	Continuous
	Southbound	Left/Right-Turn	3	3	Continuous	Continuous
Street A/ 61 <sup>st</sup> Drive (Intersection 12)	Eastbound	Left/Through/Right-Turn	3	3	Continuous	Continuous
	Westbound	Left/Through/Right-Turn	0	0	Continuous	Continuous
	Northbound	Left/Through/Right-Turn	5	8	Continuous	Continuous
	Southbound	Left/Through/Right-Turn	13	10	Continuous	Continuous
Street A/ 62 <sup>nd</sup> Drive (Intersection 13)	Westbound	Left/Right-Turn	8	5	Continuous	Continuous
	Southbound	Through/Left-Turn	3	5	Continuous	Continuous
Street A/ 63 <sup>rd</sup> Avenue (Intersection 14)	Westbound	Left/Right-Turn	3	0	Continuous	Continuous
	Southbound	Through/Left-Turn	3	0	Continuous	Continuous
Street A/ 63 <sup>rd</sup> Drive (Intersection 15)	Westbound	Left/Right-Turn	8	5	Continuous	Continuous
	Southbound	Left -Turn	8	5	Continuous	Continuous
	Westbound	Through/Left-Turn	5	3	Continuous	Continuous
	Northbound	Left/Right-Turn	13	5	Continuous	Continuous
Street B/ 63 <sup>rd</sup> Drive (Intersection 16)	Westbound	Through/Left-Turn	5	3	Continuous	Continuous
	Northbound	Left/Right-Turn	13	5	Continuous	Continuous
	Eastbound	Left-Turn	35	15	50	50

Intersection	Approach	Movement	2040 95 <sup>th</sup> Percentile Queue Length (ft)		Recommended Storage Length	2040 SCHAC Recommended Storage Length
			AM	PM		
Street C/ 63 <sup>rd</sup> Drive (Intersection 17)		Through	13	10	Continuous	Continuous
		Through	8	5	Continuous	Continuous
	Westbound	Right-Turn	20	10	50	50
	Southbound	Left -Turn	0	0	Continuous	Continuous
		Right -Turn	0	0	Continuous	Continuous
Street D/ 63 <sup>rd</sup> Drive (Intersection 18)	Westbound	Through/Left-Turn	0	0	Continuous	Continuous
	Northbound	Left/Right-Turn	5	3	Continuous	Continuous
Street E/ 63 <sup>rd</sup> Drive (Intersection 19)	Eastbound	Left/Through/Right-Turn	25	13	Continuous	Continuous
	Westbound	Left/Through/Right-Turn	38	23	Continuous	Continuous
	Northbound	Left/Through/Right-Turn	5	5	Continuous	Continuous
	Southbound	Left/Through/Right-Turn	0	0	Continuous	Continuous
Street E/ 63 <sup>rd</sup> Avenue (Intersection 20)	Eastbound	Left/Through/Right-Turn	3	0	Continuous	Continuous
	Westbound	Left/Through/Right-Turn	0	0	Continuous	Continuous
	Northbound	Left/Through/Right-Turn	25	20	Continuous	Continuous
	Southbound	Left/Through/Right-Turn	8	8	Continuous	Continuous
Street E/ 62 <sup>nd</sup> Avenue (Intersection 21)	Eastbound	Left/Through/Right-Turn	5	5	Continuous	Continuous
	Westbound	Left/Through/Right-Turn	10	10	Continuous	Continuous
	Northbound	Left/Through/Right-Turn	0	0	Continuous	Continuous
	Southbound	Left/Through/Right-Turn	0	0	Continuous	Continuous
Street D/ 62 <sup>nd</sup> Avenue (Intersection 22)	Eastbound	Through/Left-Turn	5	3	Continuous	Continuous
	Southbound	Left/Right-Turn	0	0	Continuous	Continuous
Street C/ 62 <sup>nd</sup> Avenue (Intersection 23)	Westbound	Through/Left-Turn	0	0	Continuous	Continuous
	Northbound	Left/Right-Turn	5	5	Continuous	Continuous

Intersection	Approach	Movement	2040 95 <sup>th</sup> Percentile Queue Length (ft) <sup>1</sup>		Recommended Storage Length	2040 SCHAC Recommended Storage Length
			AM	PM		
Street B/ 62 <sup>nd</sup> Avenue (Intersection 24)	Eastbound	Through/Left-Turn	3	3	Continuous	Continuous
	Southbound	Left/Right-Turn	5	5	Continuous	Continuous

\*Dual Left-Turn queues and storage are per lane.

<sup>1</sup> Calculations based on HCM methodology.

Many of the roadways within Town Center do not meet the need for auxiliary lanes based on low through volumes along local roadways within the development, as stipulated in the SHAC. Where they are met, taper lengths should be added to these dimensions based on design speed and lane width per SHAC to identify the total length of each auxiliary lane. These recommended taper lengths would be 96 feet to meet the 8:1 taper ratio for a 12-foot lane at 30 mph, 120 feet to meet the 10:1 taper ratio for a 12-foot lane at 35 mph, and 162 feet to meet the 13.5:1 taper ratio for a 12-foot lane at 45 mph.



## VI. SUMMARY AND RECOMMENDATIONS

The Painted Prairie Owner, LLC is planning to develop Town Center, a planned development encompassing approximately 59 acres of property in Aurora, Colorado within the Painted Prairie Master Plan. This report was prepared in support of Town Center as the first phase of the Painted Prairie Master Plan. The proposed land uses include:

- 4 hotels, 750 total rooms
- Approximately 87,500 square feet of food and beverage space
- Approximately 77,000 square feet of retail space
- Approximately 46,500 square feet of office space
- 1,544 multifamily dwelling units

This specific land use scenario was chosen reflective of one possible scenario within the context of the proposed development plan. Ultimately, specific land uses may be modified, and the need for any follow-up traffic study work can likely be addressed through trip generation compliance letters.

Traffic signals are anticipated to be installed at the major intersections including:

- 64<sup>th</sup> Avenue/Gaylord Rockies Boulevard
- 64<sup>th</sup> Avenue/Lisbon Street

The recently updated Aurora Northeast Area Transportation Study (NEATS) Refresh identifies the appropriate roadway classification and laneage of the surrounding street system. The NEATS study was a key resource in preparing this traffic impact study with respect to the major roadways and the traffic demand for the rest of the area outside Painted Prairie.

The overarching roadway recommendations resulting from this study include:

- Along 64<sup>th</sup> Avenue, the NEATS Refresh study identifies this roadway to ultimately be a six-lane major arterial road through the FDP site. A recent agreement with the city has altered this cross-section such that 64<sup>th</sup> Avenue need only provide four through-lanes of traffic along the Painted Prairie frontage along with on-street parallel parking lanes. Intersection bulb-outs to safely accommodate pedestrians are also part of the updated 64<sup>th</sup> Avenue cross-section which would preclude the additional of any separate right turn lanes. The approval letter from City of Aurora includes a roadway layout which does not include right-turn lanes in both directions of 64<sup>th</sup> Avenue, including along the frontage of the Town Center development. From this analysis, a four-lane 64<sup>th</sup> Avenue would function acceptably given peak hour traffic shown at the four site entrance intersections along the south side of 64<sup>th</sup> Avenue.
- The intersection of 63<sup>rd</sup> Drive/Street C should be configured to provide stop control along the east-west directions and free flow for the southbound approach. While this is not standard traffic control, it should be used in this case to limit queuing of inbound traffic. This is often found in shopping mall ring roads so that queues do not conflict with the external street network. This intersection is not being recommended for all-way stop-control or signalization and as such does not need to be evaluated as a roundabout per City of Aurora TIS guidelines.
- Lisbon Street is expected to be a major internal roadway and visual focal point for the Painted Prairie Master Plan and is anticipated to be built as a four-lane boulevard along the frontage with Town Center.
- Signalization should remain at the 64<sup>th</sup> Avenue/Gaylord Entrance intersection (Street C for the Town Center site) and eventually be installed at 64<sup>th</sup> Avenue and Lisbon Street.

- The internal roads will all operate adequately with two through lanes. The only intersection in which turn lanes should be added is at 63<sup>rd</sup> Drive and Street C.

## APPENDIX A. EXISTING TRAFFIC COUNTS



(303) 216-2439  
www.alltrafficdata.net

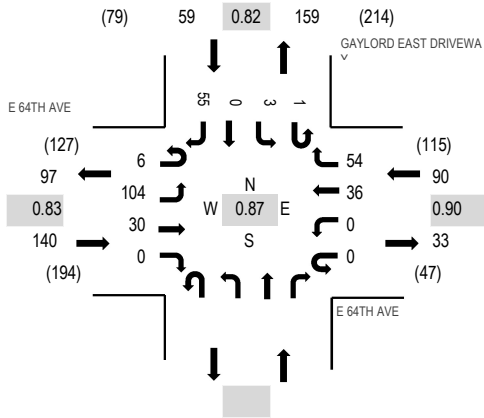
**Location:** 2 GAYLORD EAST DRIVEWAY & E 64TH AVE AM

**Date:** Tuesday, February 26, 2019

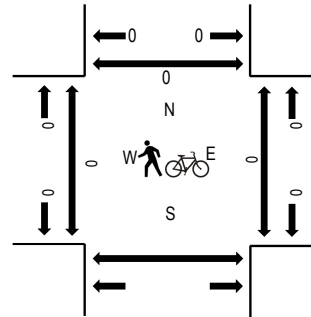
**Peak Hour:** 07:15 AM - 08:15 AM

**Peak 15-Minutes:** 07:45 AM - 08:00 AM

### Peak Hour - All Vehicles



### Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

### Traffic Counts

Interval Start Time	E 64TH AVE Eastbound				E 64TH AVE Westbound				Northbound				Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
6:45 AM	1	20	7	0	0	0	0	5	5				0	0	0	8	46	241	0	0	0	0
7:00 AM	0	21	5	0	0	0	0	6	9				0	2	0	10	53	278	0	0	0	2
7:15 AM	0	24	9	0	0	0	0	8	14				0	2	0	16	73	289	0	0	0	0
7:30 AM	2	24	6	0	0	0	0	10	15				0	0	0	12	69		0	0	0	0
7:45 AM	1	32	9	0	0	0	0	12	12				1	1	0	15	83		0	0	0	0
8:00 AM	3	24	6	0	0	0	0	6	13				0	0	0	12	64		0	0	0	0
Count Total	7	145	42	0	0	0	0	47	68				1	5	0	73	388		0	0	0	2
Peak Hour	6	104	30	0	0	0	0	36	54				1	3	0	55	289		0	0	0	0



(303) 216-2439  
www.alltrafficdata.net

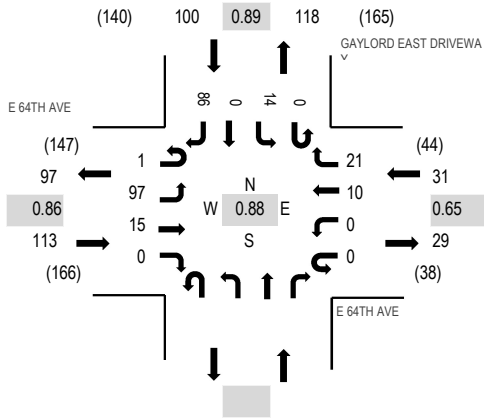
**Location:** 2 GAYLORD EAST DRIVEWAY & E 64TH AVE PM

**Date:** Tuesday, February 26, 2019

**Peak Hour:** 04:30 PM - 05:30 PM

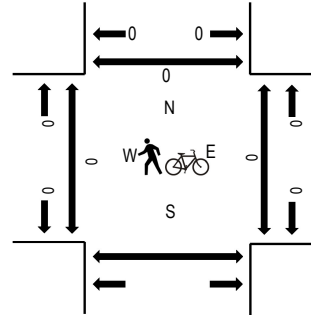
**Peak 15-Minutes:** 04:30 PM - 04:45 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	E 64TH AVE Eastbound				E 64TH AVE Westbound				Northbound				Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:15 PM	0	24	1	0	0	0	0	2	0				0	0	0	18	45	237	0	0	0	0
4:30 PM	1	28	4	0	0	0	0	5	3				0	4	0	24	69	244	0	0	0	0
4:45 PM	0	27	4	0	0	0	0	1	4				0	3	0	19	58	236	0	0	0	0
5:00 PM	0	23	2	0	0	0	0	3	10				0	3	0	24	65		0	0	0	0
5:15 PM	0	19	5	0	0	0	0	1	4				0	4	0	19	52		0	0	0	0
5:30 PM	0	20	8	0	0	0	0	8	3				0	0	0	22	61		0	0	0	0
Count Total	1	141	24	0	0	0	0	20	24				0	14	0	126	350		0	0	0	0
Peak Hour	1	97	15	0	0	0	0	10	21				0	14	0	86	244		0	0	0	0

Site Code: 5  
Station ID: 5  
E 64TH AVE E.O. GAYLORD WEST DRIVEWAY

Start Time	26-Feb-19 Tue	EB	WB	Total
12:00 AM		8	13	21
01:00		10	11	21
02:00		6	9	15
03:00		3	8	11
04:00		11	12	23
05:00		17	25	42
06:00		79	64	143
07:00		143	101	244
08:00		112	86	198
09:00		63	63	126
10:00		59	76	135
11:00		83	85	168
12:00 PM		74	71	145
01:00		69	73	142
02:00		87	100	187
03:00		72	67	139
04:00		115	98	213
05:00		115	115	230
06:00		90	86	176
07:00		64	72	136
08:00		50	71	121
09:00		36	61	97
10:00		30	33	63
11:00		28	28	56
Total		1424	1428	2852
Percent		49.9%	50.1%	
AM Peak	-	07:00	07:00	07:00
Vol.	-	143	101	244
PM Peak	-	16:00	17:00	17:00
Vol.	-	115	115	230
Grand Total		1424	1428	2852
Percent		49.9%	50.1%	
ADT		ADT 2,852	AADT 2,852	

## APPENDIX B. NCHRP 684 (INTERNAL CAPTURE) WORKSHEETS

NCHRP 684 Internal Trip Capture Estimation Tool					
Project Name:	Town Center			Organization:	Felsburg Holt & Ullevig
Project Location:	Aurora, CO			Performed By:	PJD
Scenario Description:	Buildout			Date:	2/19/2020
Analysis Year:	2040			Checked By:	
Analysis Period:	AM Street Peak Hour			Date:	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips <sup>3</sup>		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office	710	46,500	SF	97	84	13
Retail	820	77,280	SF	190	118	72
Restaurant	932	87,580	SF	868	477	391
Cinema/Entertainment				0		
Residential	220,221	1,544	DUs	521	136	385
Hotel	310	750	Rooms	354	209	145
All Other Land Uses <sup>2</sup>				0		
				2,030	1,024	1,006

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized
Office	1.00			1.00		
Retail	1.00			1.00		
Restaurant	1.00			1.00		
Cinema/Entertainment	1.00			1.00		
Residential	1.00			1.00		
Hotel	1.00			1.00		
All Other Land Uses <sup>2</sup>	1.00			1.00		

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		4	8	0	0	0
Retail	3		9	0	3	0
Restaurant	12	9		0	7	8
Cinema/Entertainment	0	0	0		0	0
Residential	3	4	77	0		0
Hotel	3	5	13	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	2,030	1,024	1,006
Internal Capture Percentage	17%	16%	17%
External Vehicle-Trips <sup>5</sup>	1,694	856	838
External Transit-Trips <sup>6</sup>	0	0	0
External Non-Motorized Trips <sup>6</sup>	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	25%	92%
Retail	19%	21%
Restaurant	22%	9%
Cinema/Entertainment	N/A	N/A
Residential	7%	22%
Hotel	4%	14%

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

<sup>3</sup>Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

<sup>4</sup>Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

<sup>5</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

<sup>6</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1



NCHRP 684 Internal Trip Capture Estimation Tool					
<b>Project Name:</b>	City Lake	<b>Organization:</b>	Felsburg Holt & Ullevig		
<b>Project Location:</b>	Aurora, CO	<b>Performed By:</b>	RSA		
<b>Scenario Description:</b>	Buildout	<b>Date:</b>	5/9/2019		
<b>Analysis Year:</b>	2040	<b>Checked By:</b>	PJD		
<b>Analysis Period:</b>	PM Street Peak Hour	<b>Date:</b>	5/10/2019		

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips <sup>3</sup>		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office	710	66,000	SF	43	7	36
Retail	820	50,125	SF	316	150	166
Restaurant	932	66,075	SF	512	357	155
Cinema/Entertainment				0		
Residential	220,221	1,047	DUs	667	405	262
Hotel	310	620	Rooms	459	235	224
All Other Land Uses <sup>2</sup>				0		
				1,997	1,154	843

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized
Office	1.00			1.00		
Retail	1.00			1.00		
Restaurant	1.00			1.00		
Cinema/Entertainment	1.00			1.00		
Residential	1.00			1.00		
Hotel	1.00			1.00		
All Other Land Uses <sup>2</sup>	1.00			1.00		

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		7	1	0	1	0
Retail	2		48	0	43	8
Restaurant	2	64		0	28	11
Cinema/Entertainment	0	0	0		0	0
Residential	3	15	50	0		8
Hotel	0	3	18	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	1,997	1,154	843
Internal Capture Percentage	31%	27%	37%
External Vehicle-Trips <sup>5</sup>	1,373	842	531
External Transit-Trips <sup>6</sup>	0	0	0
External Non-Motorized Trips <sup>6</sup>	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	100%	25%
Retail	59%	61%
Restaurant	33%	68%
Cinema/Entertainment	N/A	N/A
Residential	18%	29%
Hotel	11%	9%

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

<sup>3</sup>Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

<sup>4</sup>Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made.

<sup>5</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

<sup>6</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1





















## APPENDIX C. YEAR 2040 TOTAL TRAFFIC LEVEL OF SERVICE WORKSHEETS

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗		↑↑		↗
Traffic Vol, veh/h	1011	218	0	1158	0	43
Future Vol, veh/h	1011	218	0	1158	0	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1099	237	0	1259	0	47
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	550
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	479
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	479
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		13.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	479	-	-	-		
HCM Lane V/C Ratio	0.098	-	-	-		
HCM Control Delay (s)	13.3	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0.3	-	-	-		

Timings  
2: Street C/Gaylord East Driveway & E 64th Ave

Painted Prairie Town Center

09/30/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	252	752	50	64	712	100	346	13	77	14
Future Volume (vph)	252	752	50	64	712	100	346	13	77	14
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	12.0	48.0	48.0	12.0	48.0	48.0	35.0	48.0	12.0	25.0
Total Split (%)	10.0%	40.0%	40.0%	10.0%	40.0%	40.0%	29.2%	40.0%	10.0%	20.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None
Act Effect Green (s)	80.9	71.2	71.2	64.1	56.9	56.9	30.1	18.0	17.7	7.9
Actuated g/C Ratio	0.67	0.59	0.59	0.53	0.47	0.47	0.25	0.15	0.15	0.07
v/c Ratio	0.52	0.39	0.05	0.17	0.46	0.13	0.61	0.16	0.36	0.60
Control Delay	12.3	15.2	0.1	8.0	17.7	0.8	41.4	22.3	38.7	25.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	15.2	0.1	8.0	17.7	0.8	41.4	22.3	38.7	25.0
LOS	B	B	A	A	B	A	D	C	D	C
Approach Delay		13.8			15.0			39.4		30.5
Approach LOS		B			B			D		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 19.4

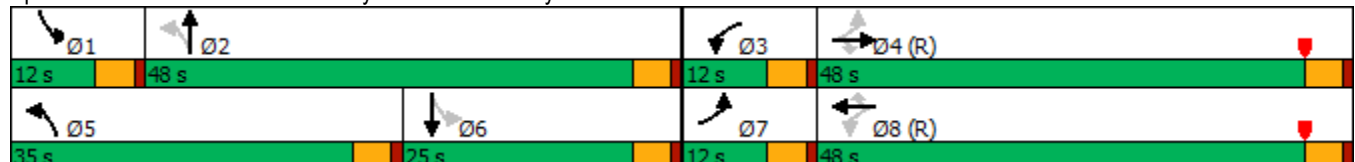
Intersection LOS: B

Intersection Capacity Utilization 61.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: Street C/Gaylord East Driveway & E 64th Ave

























# HCM 6th Signalized Intersection Summary

## 2: Street C/Gaylord East Driveway & E 64th Ave

Painted Prairie Town Center

09/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	252	752	50	64	712	100	346	13	28	77	14	100
Future Volume (veh/h)	252	752	50	64	712	100	346	13	28	77	14	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	274	817	54	70	774	109	376	14	30	84	15	109
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	531	2120	946	430	2032	906	586	85	182	288	19	135
Arrive On Green	0.06	0.60	0.60	0.08	1.00	1.00	0.12	0.16	0.16	0.06	0.10	0.10
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	530	1136	1781	195	1420
Grp Volume(v), veh/h	274	817	54	70	774	109	376	0	44	84	0	124
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	0	1666	1781	0	1615
Q Serve(g_s), s	7.5	14.5	1.7	1.9	0.0	0.0	11.2	0.0	2.7	5.0	0.0	9.0
Cycle Q Clear(g_c), s	7.5	14.5	1.7	1.9	0.0	0.0	11.2	0.0	2.7	5.0	0.0	9.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.68	1.00		0.88
Lane Grp Cap(c), veh/h	531	2120	946	430	2032	906	586	0	268	288	0	154
V/C Ratio(X)	0.52	0.39	0.06	0.16	0.38	0.12	0.64	0.00	0.16	0.29	0.00	0.81
Avail Cap(c_a), veh/h	531	2120	946	474	2032	906	1047	0	604	301	0	276
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.3	12.7	10.1	9.7	0.0	0.0	40.3	0.0	43.4	45.5	0.0	53.2
Incr Delay (d2), s/veh	0.9	0.5	0.1	0.2	0.5	0.3	1.2	0.0	0.3	0.6	0.0	9.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.2	9.2	1.0	1.2	0.3	0.1	8.5	0.0	2.1	4.1	0.0	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.2	13.2	10.2	9.9	0.5	0.3	41.4	0.0	43.7	46.0	0.0	62.7
LnGrp LOS	B	B	B	A	A	A	D	A	D	D	A	E
Approach Vol, veh/h	1145			953			420			208		
Approach Delay, s/veh	12.3			1.2			41.7			56.0		
Approach LOS	B			A			D			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.1	23.8	9.0	76.1	19.0	15.9	12.0	73.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	43.5	7.5	43.5	30.5	20.5	7.5	43.5				
Max Q Clear Time (g_c+I1), s	7.0	4.7	3.9	16.5	13.2	11.0	9.5	2.0				
Green Ext Time (p_c), s	0.0	0.2	0.0	5.8	1.2	0.4	0.0	6.0				
Intersection Summary												
HCM 6th Ctrl Delay	16.3											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Vol, veh/h	760	97	0	876	0	163
Future Vol, veh/h	760	97	0	876	0	163
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	826	105	0	952	0	177

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 413
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - - 3.32
Pot Cap-1 Maneuver	-	- 0	- 0 *772
Stage 1	-	- 0	- 0 -
Stage 2	-	- 0	- 0 -
Platoon blocked, %	-	-	- - - 1
Mov Cap-1 Maneuver	-	-	- - - *772
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11
HCM LOS			B

























Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	772	-	-	-
HCM Lane V/C Ratio	0.229	-	-	-
HCM Control Delay (s)	11	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.9	-	-	-

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Timings  
4: E 64th Ave & Lisbon St

Painted Prairie Town Center

09/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	716	51	242	613	175	112	52	55	175	33	151
Future Volume (vph)	156	716	51	242	613	175	112	52	55	175	33	151
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	16.0	50.0	50.0	27.0	61.0	61.0	15.0	23.0	23.0	20.0	28.0	28.0
Total Split (%)	13.3%	41.7%	41.7%	22.5%	50.8%	50.8%	12.5%	19.2%	19.2%	16.7%	23.3%	23.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Act Effect Green (s)	70.9	61.1	61.1	81.9	67.8	67.8	20.1	9.0	9.0	28.4	12.2	12.2
Actuated g/C Ratio	0.59	0.51	0.51	0.68	0.56	0.56	0.17	0.08	0.08	0.24	0.10	0.10
v/c Ratio	0.33	0.43	0.06	0.52	0.33	0.19	0.45	0.41	0.21	0.57	0.19	0.53
Control Delay	10.0	14.2	0.5	12.0	16.1	3.0	41.8	60.8	1.7	44.2	49.5	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	14.2	0.5	12.0	16.1	3.0	41.8	60.8	1.7	44.2	49.5	13.7
LOS	B	B	A	B	B	A	D	E	A	D	D	B
Approach Delay		12.7			12.9			36.3			31.9	
Approach LOS		B			B			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 20 (17%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 17.5

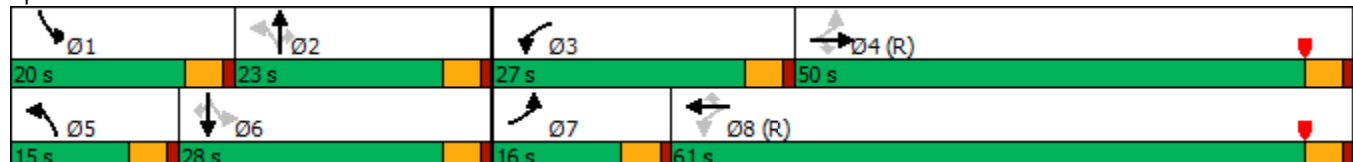
Intersection LOS: B

Intersection Capacity Utilization 60.8%

ICU Level of Service B

Analysis Period (min) 15




























Splits and Phases: 4: E 64th Ave & Lisbon St







# HCM 6th Signalized Intersection Summary

## 4: E 64th Ave & Lisbon St

Painted Prairie Town Center  
09/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (veh/h)	156	716	51	242	613	175	112	52	55	175	33	151
Future Volume (veh/h)	156	716	51	242	613	175	112	52	55	175	33	151
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	170	778	55	263	666	190	122	57	60	190	36	164
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	486	2024	903	581	2105	939	300	163	138	333	228	193
Arrive On Green	0.12	1.00	1.00	0.08	0.59	0.59	0.08	0.09	0.09	0.11	0.12	0.12
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	170	778	55	263	666	190	122	57	60	190	36	164
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.9	0.0	0.0	7.2	11.3	6.7	7.4	3.4	4.3	11.3	2.1	12.2
Cycle Q Clear(g_c), s	4.9	0.0	0.0	7.2	11.3	6.7	7.4	3.4	4.3	11.3	2.1	12.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	486	2024	903	581	2105	939	300	163	138	333	228	193
V/C Ratio(X)	0.35	0.38	0.06	0.45	0.32	0.20	0.41	0.35	0.43	0.57	0.16	0.85
Avail Cap(c_a), veh/h	552	2024	903	769	2105	939	319	288	244	365	366	310
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.0	0.0	0.0	8.5	12.3	11.3	45.0	51.6	52.0	41.8	47.2	51.6
Incr Delay (d2), s/veh	0.4	0.6	0.1	0.6	0.4	0.5	0.9	1.3	2.1	1.8	0.3	11.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	0.3	0.1	4.6	7.6	4.1	6.0	3.0	3.2	8.8	1.8	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.4	0.6	0.1	9.0	12.7	11.8	45.9	52.8	54.1	43.5	47.5	63.3
LnGrp LOS	A	A	A	A	B	B	D	D	D	D	D	E
Approach Vol, veh/h		1003			1119			239			390	
Approach Delay, s/veh		2.0			11.7			49.6			52.2	
Approach LOS		A			B			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.9	15.0	14.3	72.8	13.7	19.1	11.6	75.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	15.5	18.5	22.5	45.5	10.5	23.5	11.5	56.5				
Max Q Clear Time (g_c+I1), s	13.3	6.3	9.2	2.0	9.4	14.2	6.9	13.3				
Green Ext Time (p_c), s	0.1	0.3	0.6	5.9	0.0	0.5	0.2	5.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			17.2									
HCM 6th LOS			B									



Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	12	0	219	186	140
Future Vol, veh/h	0	12	0	219	186	140
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	13	0	238	202	152
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	101	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	*1023	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %		1		-	-	-
Mov Cap-1 Maneuver	-	*1023	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.6	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 1023		-	-		
HCM Lane V/C Ratio	- 0.013		-	-		
HCM Control Delay (s)	- 8.6		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q(veh)	- 0		-	-		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	33	11	4	17	15	60	5	126	6	11	167	20
Future Vol, veh/h	33	11	4	17	15	60	5	126	6	11	167	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	12	4	18	16	65	5	137	7	12	182	22

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	293	360	91	272	379	72	204	0	0	144	0	0
Stage 1	206	206	-	151	151	-	-	-	-	-	-	-
Stage 2	87	154	-	121	228	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	777	651	*1023	*806	635	975	1480	-	-	1436	-	-
Stage 1	913	811	-	*836	771	-	-	-	-	-	-	-
Stage 2	911	769	-	*965	793	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1	1	-	-	-	-	-	-
Mov Cap-1 Maneuver	704	644	*1023	*784	628	975	1480	-	-	1436	-	-
Mov Cap-2 Maneuver	704	644	-	*784	628	-	-	-	-	-	-	-
Stage 1	910	804	-	*833	769	-	-	-	-	-	-	-
Stage 2	829	767	-	*938	786	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.5		9.7		0.3		0.4	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1480	-	-	707 859	1436	-	-
HCM Lane V/C Ratio	0.004	-	-	0.074 0.116	0.008	-	-
HCM Control Delay (s)	7.4	-	-	10.5 9.7	7.5	-	-
HCM Lane LOS	A	-	-	B A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2 0.4	0	-	-

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	5	0	137	142	46
Future Vol, veh/h	0	5	0	137	142	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	0	149	154	50
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	77	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	*1049	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %		1		-	-	-
Mov Cap-1 Maneuver	-	*1049	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.5	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 1049		-	-		
HCM Lane V/C Ratio	- 0.005		-	-		
HCM Control Delay (s)	- 8.5		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q(veh)	- 0		-	-		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	22	22	61	25	40	48	90	112	10	15	106	6
Future Vol, veh/h	22	22	61	25	40	48	90	112	10	15	106	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	100	-	-	100	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	24	66	27	43	52	98	122	11	16	115	7

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	518	476	115	516	471	128	115	0	0	133	0	0
Stage 1	147	147	-	324	324	-	-	-	-	-	-	-
Stage 2	371	329	-	192	147	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	490	504	*998	492	507	922	*1494	-	-	1452	-	-
Stage 1	908	800	-	688	650	-	-	-	-	-	-	-
Stage 2	649	646	-	856	800	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1	1	-	-	-	-	-	-
Mov Cap-1 Maneuver	405	465	*998	416	469	922	*1494	-	-	1452	-	-
Mov Cap-2 Maneuver	405	465	-	416	469	-	-	-	-	-	-	-
Stage 1	848	791	-	643	607	-	-	-	-	-	-	-
Stage 2	531	603	-	766	791	-	-	-	-	-	-	-




Approach	EB	WB	NB	SB
HCM Control Delay, s	11.8	13	3.2	0.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 1494	-	-	645	572	1452	-
HCM Lane V/C Ratio	0.065	-	-	0.177	0.215	0.011	-
HCM Control Delay (s)	7.6	-	-	11.8	13	7.5	-
HCM Lane LOS	A	-	-	B	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.6	0.8	0	-

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection





Int Delay, s/veh 1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	90	134	2	15	10
Future Vol, veh/h	5	90	134	2	15	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	98	146	2	16	11

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	148	0	0 255 147
Stage 1	-	-	- 147 -
Stage 2	-	-	- 108 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1434	-	- 734 900
Stage 1	-	-	- 880 -
Stage 2	-	-	- 916 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1434	-	- 731 900
Mov Cap-2 Maneuver	-	-	- 731 -
Stage 1	-	-	- 876 -
Stage 2	-	-	- 916 -




Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1434	-	-	-	790
HCM Lane V/C Ratio	0.004	-	-	-	0.034
HCM Control Delay (s)	7.5	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	45	10	6	82	56	20	31	10	40	26	1
Future Vol, veh/h	12	45	10	6	82	56	20	31	10	40	26	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	49	11	7	89	61	22	34	11	43	28	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	150	0	0	60	0	0	229	245	55	237	220	120
Stage 1	-	-	-	-	-	-	81	81	-	134	134	-
Stage 2	-	-	-	-	-	-	148	164	-	103	86	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1431	-	-	1544	-	-	726	657	1012	717	678	931
Stage 1	-	-	-	-	-	-	927	828	-	869	785	-
Stage 2	-	-	-	-	-	-	855	762	-	903	824	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1431	-	-	1544	-	-	694	648	1012	674	669	931
Mov Cap-2 Maneuver	-	-	-	-	-	-	694	648	-	674	669	-
Stage 1	-	-	-	-	-	-	919	821	-	861	781	-
Stage 2	-	-	-	-	-	-	819	758	-	849	817	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.4			0.3			10.6			11		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	705	1431	-	-	1544	-	-	675				
HCM Lane V/C Ratio	0.094	0.009	-	-	0.004	-	-	0.108				
HCM Control Delay (s)	10.6	7.5	0	-	7.3	0	-	11				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.4				

Intersection





Int Delay, s/veh 1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	58	87	16	9	9
Future Vol, veh/h	6	58	87	16	9	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	63	95	17	10	10




Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	112	0	0 181 104
Stage 1	-	-	- 104 -
Stage 2	-	-	- 77 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1478	-	- 808 951
Stage 1	-	-	- 920 -
Stage 2	-	-	- 946 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1478	-	- 804 951
Mov Cap-2 Maneuver	-	-	- 804 -
Stage 1	-	-	- 915 -
Stage 2	-	-	- 946 -




Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	9.2
HCM LOS			A





Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1478	-	-	-	871
HCM Lane V/C Ratio	0.004	-	-	-	0.022
HCM Control Delay (s)	7.4	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1




Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	49	25	5	8	71	17	10	26	9	30	26	47
Future Vol, veh/h	49	25	5	8	71	17	10	26	9	30	26	47
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	53	27	5	9	77	18	11	28	10	33	28	51
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	95	0	0	32	0	0	280	249	30	259	242	86
Stage 1	-	-	-	-	-	-	136	136	-	104	104	-
Stage 2	-	-	-	-	-	-	144	113	-	155	138	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1499	-	-	1580	-	-	672	654	1044	694	660	973
Stage 1	-	-	-	-	-	-	867	784	-	902	809	-
Stage 2	-	-	-	-	-	-	859	802	-	847	782	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1499	-	-	1580	-	-	595	627	1044	643	632	973
Mov Cap-2 Maneuver	-	-	-	-	-	-	595	627	-	643	632	-
Stage 1	-	-	-	-	-	-	836	756	-	870	804	-
Stage 2	-	-	-	-	-	-	781	797	-	779	754	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	4.6			0.6			10.8			10.6		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	673	1499	-	-	1580	-	-	757				
HCM Lane V/C Ratio	0.073	0.036	-	-	0.006	-	-	0.148				
HCM Control Delay (s)	10.8	7.5	0	-	7.3	0	-	10.6				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.5				










Intersection						
Int Delay, s/veh	3.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	43	10	62	30	63	60
Future Vol, veh/h	43	10	62	30	63	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	11	67	33	68	65
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	285	84	0	0	100	0
Stage 1	84	-	-	-	-	-
Stage 2	201	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	705	975	-	-	1493	-
Stage 1	939	-	-	-	-	-
Stage 2	833	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	672	975	-	-	1493	-
Mov Cap-2 Maneuver	672	-	-	-	-	-
Stage 1	939	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.5	0		3.9		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 714		1493	-	
HCM Lane V/C Ratio	-	- 0.081		0.046	-	
HCM Control Delay (s)	-	- 10.5		7.5	0	
HCM Lane LOS	-	- B		A	A	
HCM 95th %tile Q(veh)	-	- 0.3		0.1	-	

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	6	63	9	27	111
Future Vol, veh/h	12	6	63	9	27	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	7	68	10	29	121
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	252	73	0	0	78	0
Stage 1	73	-	-	-	-	-
Stage 2	179	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	737	989	-	-	1520	-
Stage 1	950	-	-	-	-	-
Stage 2	852	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	722	989	-	-	1520	-
Mov Cap-2 Maneuver	722	-	-	-	-	-
Stage 1	950	-	-	-	-	-
Stage 2	835	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.7	0		1.5		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	793	1520	-	
HCM Lane V/C Ratio	-	-	0.025	0.019	-	
HCM Control Delay (s)	-	-	9.7	7.4	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-	

Intersection						
Int Delay, s/veh	4.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	6	42	27	119	99
Future Vol, veh/h	39	6	42	27	119	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	7	46	29	129	108
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	427	61	0	0	75	0
Stage 1	61	-	-	-	-	-
Stage 2	366	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	584	1004	-	-	1524	-
Stage 1	962	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	534	1004	-	-	1524	-
Mov Cap-2 Maneuver	534	-	-	-	-	-
Stage 1	962	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.9	0		4.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	570	1524	-	
HCM Lane V/C Ratio	-	-	0.086	0.085	-	
HCM Control Delay (s)	-	-	11.9	7.6	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.3	0.3	-	




Intersection						
Int Delay, s/veh	3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	201	8	60	135	2	99
Future Vol, veh/h	201	8	60	135	2	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	218	9	65	147	2	108
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	227	0	500	223
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	277	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1341	-	530	817
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	770	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1341	-	502	817
Mov Cap-2 Maneuver	-	-	-	-	502	-
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	729	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.4		10.2	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	807	-	-	1341	-	
HCM Lane V/C Ratio	0.136	-	-	0.049	-	
HCM Control Delay (s)	10.2	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.5	-	-	0.2	-	





Intersection												
Int Delay, s/veh	10.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	181	119	0	0	78	206	0	1	0	11	0	117
Future Vol, veh/h	181	119	0	0	78	206	0	1	0	11	0	117
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	-	-	50	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	197	129	0	0	85	224	0	1	0	12	0	127

Major/Minor	Minor2		Minor1		Major1						
Conflicting Flow All	156	1	-	-	1	1	0	0	0		
Stage 1	0	0	-	-	1	-	-	-	-		
Stage 2	156	1	-	-	0	-	-	-	-		
Critical Hdwy	7.12	6.52	-	-	6.52	6.22	4.12	-	-		
Critical Hdwy Stg 1	-	-	-	-	5.52	-	-	-	-		
Critical Hdwy Stg 2	6.12	5.52	-	-	-	-	-	-	-		
Follow-up Hdwy	3.518	4.018	-	-	4.018	3.318	2.218	-	-		
Pot Cap-1 Maneuver	810	895	0	0	895	1084	-	-	-		
Stage 1	-	-	0	0	895	-	-	-	-		
Stage 2	846	895	0	0	-	-	-	-	-		
Platoon blocked, %								-	-		
Mov Cap-1 Maneuver	596	895	-	-	895	1084	-	-	-		
Mov Cap-2 Maneuver	596	895	-	-	895	-	-	-	-		
Stage 1	-	-	-	-	895	-	-	-	-		
Stage 2	608	895	-	-	-	-	-	-	-		

Approach	EB		WB		NB	
HCM Control Delay, s	12.3		9.3		0	
HCM LOS	B		A			





Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2
Capacity (veh/h)	-	-	-	596	895	895	1084
HCM Lane V/C Ratio	-	-	-	0.33	0.145	0.095	0.207
HCM Control Delay (s)	0	-	-	14	9.7	9.4	9.2
HCM Lane LOS	A	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	-	1.4	0.5	0.3	0.8




Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	121	9	8	249	34	3
Future Vol, veh/h	121	9	8	249	34	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	132	10	9	271	37	3
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	142	0	426	137
Stage 1	-	-	-	-	137	-
Stage 2	-	-	-	-	289	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1441	-	585	911
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	760	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1441	-	581	911
Mov Cap-2 Maneuver	-	-	-	-	581	-
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	755	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.2		11.4	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	599	-	-	1441	-	
HCM Lane V/C Ratio	0.067	-	-	0.006	-	
HCM Control Delay (s)	11.4	-	-	7.5	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0	-	




Intersection												
Int Delay, s/veh	9.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	19	17	4	129	51	94	91	5	6	59	8
Future Vol, veh/h	59	19	17	4	129	51	94	91	5	6	59	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	21	18	4	140	55	102	99	5	7	64	9
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	486	391	69	408	393	102	73	0	0	104	0	0
Stage 1	83	83	-	306	306	-	-	-	-	-	-	-
Stage 2	403	308	-	102	87	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	492	545	994	554	543	953	1527	-	-	1488	-	-
Stage 1	925	826	-	704	662	-	-	-	-	-	-	-
Stage 2	624	660	-	904	823	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	343	504	994	496	502	953	1527	-	-	1488	-	-
Mov Cap-2 Maneuver	343	504	-	496	502	-	-	-	-	-	-	-
Stage 1	859	822	-	654	615	-	-	-	-	-	-	-
Stage 2	421	613	-	861	819	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	16.4		14.5		3.7		0.6					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1527	-	-	419	578	1488	-	-				
HCM Lane V/C Ratio	0.067	-	-	0.246	0.346	0.004	-	-				
HCM Control Delay (s)	7.5	0	-	16.4	14.5	7.4	0	-				
HCM Lane LOS	A	A	-	C	B	A	A	-				
HCM 95th %tile Q(veh)	0.2	-	-	1	1.5	0	-	-				




Intersection												
Int Delay, s/veh	8.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	25	5	5	11	24	1	152	18	5	58	3
Future Vol, veh/h	30	25	5	5	11	24	1	152	18	5	58	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	27	5	5	12	26	1	165	20	5	63	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	38	0	0	32	0	0	164	144	30	223	133	25
Stage 1	-	-	-	-	-	-	96	96	-	35	35	-
Stage 2	-	-	-	-	-	-	68	48	-	188	98	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1572	-	-	1580	-	-	801	747	1044	733	758	1051
Stage 1	-	-	-	-	-	-	911	815	-	981	866	-
Stage 2	-	-	-	-	-	-	942	855	-	814	814	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1572	-	-	1580	-	-	733	729	1044	583	740	1051
Mov Cap-2 Maneuver	-	-	-	-	-	-	733	729	-	583	740	-
Stage 1	-	-	-	-	-	-	892	798	-	960	863	-
Stage 2	-	-	-	-	-	-	868	852	-	620	797	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.7			0.9			11.3			10.4		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	753	1572	-	-	1580	-	-	735				
HCM Lane V/C Ratio	0.247	0.021	-	-	0.003	-	-	0.098				
HCM Control Delay (s)	11.3	7.3	0	-	7.3	0	-	10.4				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	1	0.1	-	-	0	-	-	0.3				



Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	10	19	10	36	47	5	107	1	5	45	13
Future Vol, veh/h	15	10	19	10	36	47	5	107	1	5	45	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	11	21	11	39	51	5	116	1	5	49	14
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	238	193	56	209	200	117	63	0	0	117	0	0
Stage 1	66	66	-	127	127	-	-	-	-	-	-	-
Stage 2	172	127	-	82	73	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	716	702	1011	748	696	935	1540	-	-	1471	-	-
Stage 1	945	840	-	877	791	-	-	-	-	-	-	-
Stage 2	830	791	-	926	834	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	644	697	1011	720	691	935	1540	-	-	1471	-	-
Mov Cap-2 Maneuver	644	697	-	720	691	-	-	-	-	-	-	-
Stage 1	942	837	-	874	789	-	-	-	-	-	-	-
Stage 2	743	789	-	892	831	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Control Delay, s	9.9		10.2		0.3			0.6				
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1540	-	-	780	800	1471	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.061	0.126	0.004	-	-				
HCM Control Delay (s)	7.3	0	-	9.9	10.2	7.5	0	-				
HCM Lane LOS	A	A	-	A	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.4	0	-	-				

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	90	48	45	10	1	9
Future Vol, veh/h	90	48	45	10	1	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	98	52	49	11	1	10
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	60	0	-	0	303	55
Stage 1	-	-	-	-	55	-
Stage 2	-	-	-	-	248	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1544	-	-	-	689	1012
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	793	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1544	-	-	-	644	1012
Mov Cap-2 Maneuver	-	-	-	-	644	-
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	793	-
Approach	EB	WB		SB		
HCM Control Delay, s	4.9	0		8.8		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1544	-	-	-	957	
HCM Lane V/C Ratio	0.063	-	-	-	0.011	
HCM Control Delay (s)	7.5	0	-	-	8.8	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.2	-	-	-	0	

















Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	79	37	8	46	23	38
Future Vol, veh/h	79	37	8	46	23	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	40	9	50	25	41
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	126	0	174	106
Stage 1	-	-	-	-	106	-
Stage 2	-	-	-	-	68	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1460	-	816	948
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	955	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1460	-	811	948
Mov Cap-2 Maneuver	-	-	-	-	811	-
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	949	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.1		9.4	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	891	-	-	1460	-	
HCM Lane V/C Ratio	0.074	-	-	0.006	-	
HCM Control Delay (s)	9.4	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0	-	

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	65	93	56	13	23	26
Future Vol, veh/h	65	93	56	13	23	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	101	61	14	25	28
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	75	0	-	0	311	68
Stage 1	-	-	-	-	68	-
Stage 2	-	-	-	-	243	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1524	-	-	-	681	995
Stage 1	-	-	-	-	955	-
Stage 2	-	-	-	-	797	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1524	-	-	-	648	995
Mov Cap-2 Maneuver	-	-	-	-	648	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	797	-
Approach	EB	WB		SB		
HCM Control Delay, s	3.1	0		9.9		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1524	-	-	-	795	
HCM Lane V/C Ratio	0.046	-	-	-	0.067	
HCM Control Delay (s)	7.5	0	-	-	9.9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↱			↑↑		↱
Traffic Vol, veh/h	1359	243	0	1451	0	26
Future Vol, veh/h	1359	243	0	1451	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1477	264	0	1577	0	28
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	871
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	294
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	294
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		18.5	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	294	-	-	-		
HCM Lane V/C Ratio	0.096	-	-	-		
HCM Control Delay (s)	18.5	-	-	-		
HCM Lane LOS	C	-	-	-		
HCM 95th %tile Q(veh)	0.3	-	-	-		

# Timings 2: Street C/Gaylord East Driveway & E 64th Ave

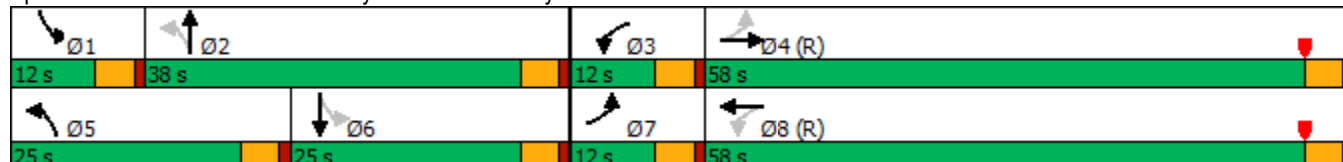
Painted Prairie Town Center  
09/30/2020

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	100	1240	48	1110	241	11	101	15
Future Volume (vph)	100	1240	48	1110	241	11	101	15
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	12.0	58.0	12.0	58.0	25.0	38.0	12.0	25.0
Total Split (%)	10.0%	48.3%	10.0%	48.3%	20.8%	31.7%	10.0%	20.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None
Act Effect Green (s)	82.7	75.4	78.2	71.6	22.0	11.5	20.1	7.9
Actuated g/C Ratio	0.69	0.63	0.65	0.60	0.18	0.10	0.17	0.07
v/c Ratio	0.41	0.63	0.22	0.63	0.52	0.15	0.40	0.60
Control Delay	11.2	17.0	9.2	14.5	44.9	28.4	43.4	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.2	17.0	9.2	14.5	44.9	28.4	43.4	25.3
LOS	B	B	A	B	D	C	D	C
Approach Delay		16.6		14.3		43.4		33.8
Approach LOS		B		B		D		C

## Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.63  
 Intersection Signal Delay: 19.1  
 Intersection LOS: B  
 Intersection Capacity Utilization 64.7%  
 ICU Level of Service C  
 Analysis Period (min) 15

## Splits and Phases: 2: Street C/Gaylord East Driveway & E 64th Ave



























# HCM 6th Signalized Intersection Summary

## 2: Street C/Gaylord East Driveway & E 64th Ave

Painted Prairie Town Center

09/30/2020





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 		 				 	
Traffic Volume (veh/h)	100	1240	45	48	1110	100	241	11	14	101	15	100
Future Volume (veh/h)	100	1240	45	48	1110	100	241	11	14	101	15	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	109	1348	49	52	1207	109	262	12	15	110	16	109
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	2208	80	276	2061	186	475	92	115	304	20	135
Arrive On Green	0.04	0.63	0.63	0.07	1.00	1.00	0.09	0.12	0.12	0.06	0.10	0.10
Sat Flow, veh/h	1781	3497	127	1781	3297	297	3456	756	945	1781	207	1410
Grp Volume(v), veh/h	109	684	713	52	649	667	262	0	27	110	0	125
Grp Sat Flow(s),veh/h/ln	1781	1777	1848	1781	1777	1817	1728	0	1700	1781	0	1617
Q Serve(g_s), s	2.6	27.7	27.8	1.2	0.0	0.0	8.0	0.0	1.7	6.6	0.0	9.1
Cycle Q Clear(g_c), s	2.6	27.7	27.8	1.2	0.0	0.0	8.0	0.0	1.7	6.6	0.0	9.1
Prop In Lane	1.00		0.07	1.00		0.16	1.00		0.56	1.00		0.87
Lane Grp Cap(c), veh/h	393	1122	1167	276	1111	1136	475	0	207	304	0	155
V/C Ratio(X)	0.28	0.61	0.61	0.19	0.58	0.59	0.55	0.00	0.13	0.36	0.00	0.81
Avail Cap(c_a), veh/h	432	1122	1167	326	1111	1136	759	0	475	304	0	276
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.1	13.3	13.3	10.3	0.0	0.0	43.1	0.0	47.0	45.3	0.0	53.2
Incr Delay (d2), s/veh	0.4	2.5	2.4	0.3	2.3	2.2	1.0	0.0	0.3	0.7	0.0	9.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	15.8	16.3	0.8	1.3	1.3	6.3	0.0	1.3	5.4	0.0	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.5	15.7	15.7	10.6	2.3	2.2	44.1	0.0	47.3	46.0	0.0	62.7
LnGrp LOS	A	B	B	B	A	A	D	A	D	D	A	E
Approach Vol, veh/h	1506		1368				289		235			
Approach Delay, s/veh	15.1		2.6				44.4		54.9			
Approach LOS	B		A				D		D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	19.1	8.6	80.3	15.1	16.0	9.4	79.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	33.5	7.5	53.5	20.5	20.5	7.5	53.5				
Max Q Clear Time (g_c+I1), s	8.6	3.7	3.2	29.8	10.0	11.1	4.6	2.0				
Green Ext Time (p_c), s	0.0	0.1	0.0	9.8	0.6	0.4	0.1	11.1				
Intersection Summary												
HCM 6th Ctrl Delay	15.3											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗		↑↑		↗
Traffic Vol, veh/h	1260	95	0	1258	0	104
Future Vol, veh/h	1260	95	0	1258	0	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1370	103	0	1367	0	113
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	685
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*567
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*567
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		12.9	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	567	-	-	-		
HCM Lane V/C Ratio	0.199	-	-	-		
HCM Control Delay (s)	12.9	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0.7	-	-	-		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon



Timings  
4: E 64th Ave & Lisbon St

Painted Prairie Town Center  
09/30/2020

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	251	986	264	923	135	26	69	250	56	200
Future Volume (vph)	251	986	264	923	135	26	69	250	56	200
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	24.0	51.0	24.0	51.0	15.0	25.0	25.0	20.0	30.0	30.0
Total Split (%)	20.0%	42.5%	20.0%	42.5%	12.5%	20.8%	20.8%	16.7%	25.0%	25.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None	None	None
Act Effect Green (s)	76.8	58.3	82.3	61.2	16.9	7.3	7.3	26.9	11.7	11.7
Actuated g/C Ratio	0.64	0.49	0.69	0.51	0.14	0.06	0.06	0.22	0.10	0.10
v/c Ratio	0.69	0.71	0.69	0.67	0.65	0.25	0.33	0.86	0.34	0.62
Control Delay	42.5	17.8	29.8	25.6	54.5	58.3	4.0	68.6	54.6	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.5	17.8	29.8	25.6	54.5	58.3	4.0	68.6	54.6	14.7
LOS	D	B	C	C	D	E	A	E	D	B
Approach Delay		22.3		26.4		39.8			45.8	
Approach LOS		C		C		D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 1 (1%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 28.5

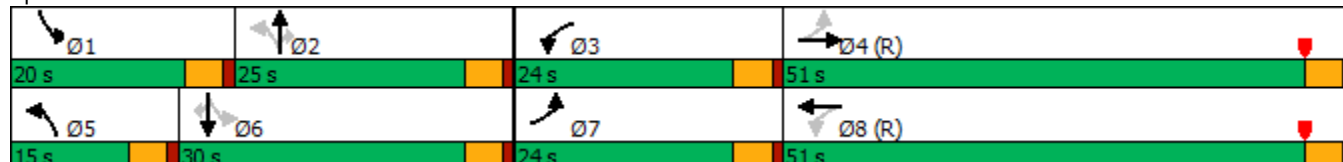
Intersection LOS: C

Intersection Capacity Utilization 77.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: E 64th Ave & Lisbon St

























# HCM 6th Signalized Intersection Summary








## 4: E 64th Ave & Lisbon St

Painted Prairie Town Center

09/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	251	986	127	264	923	175	135	26	69	250	56	200
Future Volume (veh/h)	251	986	127	264	923	175	135	26	69	250	56	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	273	1072	138	287	1003	190	147	28	75	272	61	217
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	356	1615	208	467	1517	287	341	213	181	420	291	247
Arrive On Green	0.20	1.00	1.00	0.10	0.51	0.51	0.09	0.11	0.11	0.13	0.16	0.16
Sat Flow, veh/h	1781	3167	407	1781	2982	564	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	273	601	609	287	597	596	147	28	75	272	61	217
Grp Sat Flow(s),veh/h/ln	1781	1777	1797	1781	1777	1769	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	9.3	0.0	0.0	9.1	29.8	30.0	8.6	1.6	5.3	15.5	3.4	16.1
Cycle Q Clear(g_c), s	9.3	0.0	0.0	9.1	29.8	30.0	8.6	1.6	5.3	15.5	3.4	16.1
Prop In Lane	1.00		0.23	1.00		0.32	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	356	906	916	467	904	900	341	213	181	420	291	247
V/C Ratio(X)	0.77	0.66	0.66	0.61	0.66	0.66	0.43	0.13	0.41	0.65	0.21	0.88
Avail Cap(c_a), veh/h	471	906	916	584	904	900	341	320	271	420	397	337
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.8	0.0	0.0	11.1	21.8	21.8	41.7	47.8	49.4	39.0	44.2	49.6
Incr Delay (d2), s/veh	5.4	3.8	3.8	1.3	3.8	3.8	0.9	0.3	1.5	3.5	0.4	17.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.8	1.7	1.7	6.2	18.3	18.3	7.0	1.4	3.8	11.8	2.9	11.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.2	3.8	3.8	12.4	25.6	25.7	42.6	48.1	51.0	42.4	44.6	67.3
LnGrp LOS	C	A	A	B	C	C	D	D	D	D	D	E
Approach Vol, veh/h	1483		1480				250		550			
Approach Delay, s/veh	7.2		23.1				45.7		52.5			
Approach LOS	A		C				D		D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	18.2	16.1	65.7	15.0	23.2	16.3	65.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	15.5	20.5	19.5	46.5	10.5	25.5	19.5	46.5				
Max Q Clear Time (g_c+I1), s	17.5	7.3	11.1	2.0	10.6	18.1	11.3	32.0				
Green Ext Time (p_c), s	0.0	0.2	0.5	9.5	0.0	0.6	0.5	6.4				
Intersection Summary												
HCM 6th Ctrl Delay			22.6									
HCM 6th LOS			C									

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	10	0	230	350	97
Future Vol, veh/h	0	10	0	230	350	97
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	0	250	380	105
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	190	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	*945	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %		1		-	-	-
Mov Cap-1 Maneuver	-	*945	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	8.9		0		0	
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 945		-	-		
HCM Lane V/C Ratio	- 0.012		-	-		
HCM Control Delay (s)	- 8.9		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q(veh)	- 0		-	-		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	5	4	12	15	35	4	173	15	14	326	20
Future Vol, veh/h	22	5	4	12	15	35	4	173	15	14	326	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	5	4	13	16	38	4	188	16	15	354	22
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	494	596	177	414	610	102	376	0	0	204	0	0
Stage 1	384	384	-	204	204	-	-	-	-	-	-	-
Stage 2	110	212	-	210	406	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	658	535	*971	*761	524	933	1366	-	-	1365	-	-
Stage 1	821	740	-	*779	732	-	-	-	-	-	-	-
Stage 2	883	726	-	*916	722	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1	1	-	-	-	-	-	-
Mov Cap-1 Maneuver	610	527	*971	*743	516	933	1366	-	-	1365	-	-
Mov Cap-2 Maneuver	610	527	-	*743	516	-	-	-	-	-	-	-
Stage 1	819	732	-	*777	730	-	-	-	-	-	-	-
Stage 2	826	724	-	*895	714	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	11.1		10.3		0.2		0.3					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1366	-	-	624	749	1365	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.054	0.09	0.011	-	-				
HCM Control Delay (s)	7.6	-	-	11.1	10.3	7.7	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	3	0	132	265	77
Future Vol, veh/h	0	3	0	132	265	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	0	143	288	84
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	144	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	*997	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %		1		-	-	-
Mov Cap-1 Maneuver	-	*997	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	8.6		0		0	
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 997		-	-		
HCM Lane V/C Ratio	- 0.003		-	-		
HCM Control Delay (s)	- 8.6		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q(veh)	- 0		-	-		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	13	35	53	20	32	27	90	92	30	60	200	8
Future Vol, veh/h	13	35	53	20	32	27	90	92	30	60	200	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	100	-	-	100	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	38	58	22	35	29	98	100	33	65	217	9

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	692	676	217	708	660	117	217	0	0	133	0	0
Stage 1	347	347	-	313	313	-	-	-	-	-	-	-
Stage 2	345	329	-	395	347	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	379	386	*920	368	396	935	*1377	-	-	1452	-	-
Stage 1	731	662	-	698	657	-	-	-	-	-	-	-
Stage 2	671	646	-	682	662	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1	1	1	-	-	-	-	-
Mov Cap-1 Maneuver	311	343	*920	289	351	935	*1377	-	-	1452	-	-
Mov Cap-2 Maneuver	311	343	-	289	351	-	-	-	-	-	-	-
Stage 1	679	632	-	648	610	-	-	-	-	-	-	-
Stage 2	569	600	-	574	632	-	-	-	-	-	-	-




Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.2		15.9		3.3		1.7	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 1377	-	-	501 417	1452	-	-
HCM Lane V/C Ratio	0.071	-	-	0.219 0.206	0.045	-	-
HCM Control Delay (s)	7.8	-	-	14.2 15.9	7.6	-	-
HCM Lane LOS	A	-	-	B C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.8 0.8	0.1	-	-

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection





Int Delay, s/veh 1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	91	123	7	10	6
Future Vol, veh/h	15	91	123	7	10	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	99	134	8	11	7

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	142	0	0 269 138
Stage 1	-	-	- 138 -
Stage 2	-	-	- 131 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1441	-	- 720 910
Stage 1	-	-	- 889 -
Stage 2	-	-	- 895 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1441	-	- 711 910
Mov Cap-2 Maneuver	-	-	- 711 -
Stage 1	-	-	- 878 -
Stage 2	-	-	- 895 -

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	9.8
HCM LOS			A




Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1441	-	-	-	775
HCM Lane V/C Ratio	0.011	-	-	-	0.022
HCM Control Delay (s)	7.5	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	82	17	5	70	54	14	35	6	18	13	2
Future Vol, veh/h	10	82	17	5	70	54	14	35	6	18	13	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	89	18	5	76	59	15	38	7	20	14	2
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	135	0	0	107	0	0	244	265	98	259	245	106
Stage 1	-	-	-	-	-	-	120	120	-	116	116	-
Stage 2	-	-	-	-	-	-	124	145	-	143	129	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1449	-	-	1484	-	-	710	640	958	694	657	948
Stage 1	-	-	-	-	-	-	884	796	-	889	800	-
Stage 2	-	-	-	-	-	-	880	777	-	860	789	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1449	-	-	1484	-	-	690	632	958	652	649	948
Mov Cap-2 Maneuver	-	-	-	-	-	-	690	632	-	652	649	-
Stage 1	-	-	-	-	-	-	877	790	-	882	797	-
Stage 2	-	-	-	-	-	-	859	774	-	807	783	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			0.3			10.9			10.7		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	671	1449	-	-	1484	-	-	663				
HCM Lane V/C Ratio	0.089	0.008	-	-	0.004	-	-	0.054				
HCM Control Delay (s)	10.9	7.5	0	-	7.4	0	-	10.7				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.2				



Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	101	68	18	8	7
Future Vol, veh/h	11	101	68	18	8	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	110	74	20	9	8

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	94	0	0 218 84
Stage 1	-	-	- 84 -
Stage 2	-	-	- 134 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1500	-	- 770 975
Stage 1	-	-	- 939 -
Stage 2	-	-	- 892 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1500	-	- 763 975
Mov Cap-2 Maneuver	-	-	- 763 -
Stage 1	-	-	- 931 -
Stage 2	-	-	- 892 -

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	9.3
HCM LOS			A




Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1500	-	-	-	849
HCM Lane V/C Ratio	0.008	-	-	-	0.019
HCM Control Delay (s)	7.4	0	-	-	9.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1




Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	41	79	15	6	54	15	10	29	9	24	22	33
Future Vol, veh/h	41	79	15	6	54	15	10	29	9	24	22	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	45	86	16	7	59	16	11	32	10	26	24	36





Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	75	0	0	102	0	0	295	273	94	286	273	67
Stage 1	-	-	-	-	-	-	184	184	-	81	81	-
Stage 2	-	-	-	-	-	-	111	89	-	205	192	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1524	-	-	1490	-	-	657	634	963	666	634	997
Stage 1	-	-	-	-	-	-	818	747	-	927	828	-
Stage 2	-	-	-	-	-	-	894	821	-	797	742	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1524	-	-	1490	-	-	598	611	963	616	611	997
Mov Cap-2 Maneuver	-	-	-	-	-	-	598	611	-	616	611	-
Stage 1	-	-	-	-	-	-	793	724	-	898	824	-
Stage 2	-	-	-	-	-	-	833	817	-	731	719	-




Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.3			0.6			11			10.6		
HCM LOS							B			B		








Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	653	1524	-	-	1490	-	-	731
HCM Lane V/C Ratio	0.08	0.029	-	-	0.004	-	-	0.117
HCM Control Delay (s)	11	7.4	0	-	7.4	0	-	10.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.4

Intersection						
Int Delay, s/veh	4.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	6	47	38	102	53
Future Vol, veh/h	26	6	47	38	102	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	7	51	41	111	58
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	352	72	0	0	92	0
Stage 1	72	-	-	-	-	-
Stage 2	280	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	646	990	-	-	1503	-
Stage 1	951	-	-	-	-	-
Stage 2	767	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	597	990	-	-	1503	-
Mov Cap-2 Maneuver	597	-	-	-	-	-
Stage 1	951	-	-	-	-	-
Stage 2	709	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.9	0	5			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	645	1503	-	
HCM Lane V/C Ratio	-	-	0.054	0.074	-	
HCM Control Delay (s)	-	-	10.9	7.6	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-	

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	3	45	8	22	153
Future Vol, veh/h	2	3	45	8	22	153
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	3	49	9	24	166
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	268	54	0	0	58	0
Stage 1	54	-	-	-	-	-
Stage 2	214	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	721	1013	-	-	1546	-
Stage 1	969	-	-	-	-	-
Stage 2	822	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	709	1013	-	-	1546	-
Mov Cap-2 Maneuver	709	-	-	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.2	0		0.9		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	865	1546	-	
HCM Lane V/C Ratio	-	-	0.006	0.015	-	
HCM Control Delay (s)	-	-	9.2	7.4	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0	0	-	

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	3	26	22	99	144
Future Vol, veh/h	31	3	26	22	99	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	3	28	24	108	157
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	413	40	0	0	52	0
Stage 1	40	-	-	-	-	-
Stage 2	373	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	595	1031	-	-	1554	-
Stage 1	982	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	554	1031	-	-	1554	-
Mov Cap-2 Maneuver	554	-	-	-	-	-
Stage 1	982	-	-	-	-	-
Stage 2	648	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.7	0		3.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	578	1554	-	
HCM Lane V/C Ratio	-	-	0.064	0.069	-	
HCM Control Delay (s)	-	-	11.7	7.5	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-	




Intersection						
Int Delay, s/veh	2.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	134	5	61	96	2	50
Future Vol, veh/h	134	5	61	96	2	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	146	5	66	104	2	54
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	151	0	385	149
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	236	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1430	-	618	898
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	803	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1430	-	588	898
Mov Cap-2 Maneuver	-	-	-	-	588	-
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	764	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		3		9.4	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	880	-	-	1430	-	
HCM Lane V/C Ratio	0.064	-	-	0.046	-	
HCM Control Delay (s)	9.4	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	

Intersection												
Int Delay, s/veh	9.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	96	88	0	0	58	170	0	1	0	9	0	99
Future Vol, veh/h	96	88	0	0	58	170	0	1	0	9	0	99
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	-	-	50	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	104	96	0	0	63	185	0	1	0	10	0	108

Major/Minor	Minor2		Minor1		Major1				
Conflicting Flow All	125	1	-	-	1	1	0	0	0
Stage 1	0	0	-	-	1	-	-	-	-
Stage 2	125	1	-	-	0	-	-	-	-
Critical Hdwy	7.12	6.52	-	-	6.52	6.22	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	5.52	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	-	4.018	3.318	2.218	-	-
Pot Cap-1 Maneuver	849	895	0	0	895	1084	-	-	-
Stage 1	-	-	0	0	895	-	-	-	-
Stage 2	879	895	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	666	895	-	-	895	1084	-	-	-
Mov Cap-2 Maneuver	666	895	-	-	895	-	-	-	-
Stage 1	-	-	-	-	895	-	-	-	-
Stage 2	678	895	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	10.5	9.1	0
HCM LOS	B	A	





Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2
Capacity (veh/h)	-	-	-	666	895	895	1084
HCM Lane V/C Ratio	-	-	-	0.157	0.107	0.07	0.17
HCM Control Delay (s)	0	-	-	11.4	9.5	9.3	9
HCM Lane LOS	A	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0.6	0.4	0.2	0.6




Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	89	8	3	201	27	2
Future Vol, veh/h	89	8	3	201	27	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	9	3	218	29	2
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	106	0	326	102
Stage 1	-	-	-	-	102	-
Stage 2	-	-	-	-	224	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1485	-	668	953
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	813	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1485	-	667	953
Mov Cap-2 Maneuver	-	-	-	-	667	-
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	811	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.1		10.5		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	681	-	-	1485	-	
HCM Lane V/C Ratio	0.046	-	-	0.002	-	
HCM Control Delay (s)	10.5	-	-	7.4	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	









Intersection												
Int Delay, s/veh	7.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	29	25	8	5	93	35	77	71	12	12	70	12
Future Vol, veh/h	29	25	8	5	93	35	77	71	12	12	70	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	27	9	5	101	38	84	77	13	13	76	13
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	430	367	83	379	367	84	89	0	0	90	0	0
Stage 1	109	109	-	252	252	-	-	-	-	-	-	-
Stage 2	321	258	-	127	115	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	535	562	976	579	562	975	1506	-	-	1505	-	-
Stage 1	896	805	-	752	698	-	-	-	-	-	-	-
Stage 2	691	694	-	877	800	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	416	524	976	523	524	975	1506	-	-	1505	-	-
Mov Cap-2 Maneuver	416	524	-	523	524	-	-	-	-	-	-	-
Stage 1	843	798	-	708	657	-	-	-	-	-	-	-
Stage 2	529	653	-	832	793	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	13.4		12.9		3.6		0.9					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1506	-	-	494	597	1505	-	-				
HCM Lane V/C Ratio	0.056	-	-	0.136	0.242	0.009	-	-				
HCM Control Delay (s)	7.5	0	-	13.4	12.9	7.4	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0.2	-	-	0.5	0.9	0	-	-				

Intersection												
Int Delay, s/veh	8.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		<div>↕</div>			<div>↕</div>			<div>↕</div>			<div>↕</div>	
Traffic Vol, veh/h	22	15	3	7	8	24	8	127	10	6	63	5
Future Vol, veh/h	22	15	3	7	8	24	8	127	10	6	63	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	16	3	8	9	26	9	138	11	7	68	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	35	0	0	19	0	0	141	117	18	178	105	22
Stage 1	-	-	-	-	-	-	66	66	-	38	38	-
Stage 2	-	-	-	-	-	-	75	51	-	140	67	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1576	-	-	1597	-	-	829	773	1061	784	785	1055
Stage 1	-	-	-	-	-	-	945	840	-	977	863	-
Stage 2	-	-	-	-	-	-	934	852	-	863	839	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1576	-	-	1597	-	-	757	758	1061	658	769	1055
Mov Cap-2 Maneuver	-	-	-	-	-	-	757	758	-	658	769	-
Stage 1	-	-	-	-	-	-	931	827	-	962	859	-
Stage 2	-	-	-	-	-	-	851	848	-	701	826	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	4			1.3			10.8			10.2		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	773	1576	-	-	1597	-	-	773				
HCM Lane V/C Ratio	0.204	0.015	-	-	0.005	-	-	0.104				
HCM Control Delay (s)	10.8	7.3	0	-	7.3	0	-	10.2				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.3				

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	28	6	14	45	28	6	97	8	15	41	14
Future Vol, veh/h	12	28	6	14	45	28	6	97	8	15	41	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	30	7	15	49	30	7	105	9	16	45	15
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	248	213	53	227	216	110	60	0	0	114	0	0
Stage 1	85	85	-	124	124	-	-	-	-	-	-	-
Stage 2	163	128	-	103	92	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	706	684	1014	728	682	943	1544	-	-	1475	-	-
Stage 1	923	824	-	880	793	-	-	-	-	-	-	-
Stage 2	839	790	-	903	819	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	638	673	1014	690	671	943	1544	-	-	1475	-	-
Mov Cap-2 Maneuver	638	673	-	690	671	-	-	-	-	-	-	-
Stage 1	918	815	-	876	789	-	-	-	-	-	-	-
Stage 2	758	786	-	854	810	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.6		10.6		0.4		1.6					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1544	-	-	693	743	1475	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.072	0.127	0.011	-	-				
HCM Control Delay (s)	7.3	0	-	10.6	10.6	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.4	0	-	-				

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	52	51	57	12	1	4
Future Vol, veh/h	52	51	57	12	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	55	62	13	1	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	75	0	-	0	238	69
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	169	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1524	-	-	-	750	994
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	861	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1524	-	-	-	721	994
Mov Cap-2 Maneuver	-	-	-	-	721	-
Stage 1	-	-	-	-	917	-
Stage 2	-	-	-	-	861	-
Approach	EB	WB		SB		
HCM Control Delay, s	3.8	0		8.9		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1524	-	-	-	924	
HCM Lane V/C Ratio	0.037	-	-	-	0.006	
HCM Control Delay (s)	7.5	0	-	-	8.9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0	

Intersection						
Int Delay, s/veh	2.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	67	45	7	54	22	36
Future Vol, veh/h	67	45	7	54	22	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	49	8	59	24	39
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	122	0	173	98
Stage 1	-	-	-	-	98	-
Stage 2	-	-	-	-	75	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1465	-	817	958
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	948	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1465	-	812	958
Mov Cap-2 Maneuver	-	-	-	-	812	-
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	942	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.9		9.3	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	897	-	-	1465	-	
HCM Lane V/C Ratio	0.07	-	-	0.005	-	
HCM Control Delay (s)	9.3	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0	-	

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	38	93	64	12	19	28
Future Vol, veh/h	38	93	64	12	19	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	101	70	13	21	30
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	83	0	-	0	260	77
Stage 1	-	-	-	-	77	-
Stage 2	-	-	-	-	183	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1514	-	-	-	729	984
Stage 1	-	-	-	-	946	-
Stage 2	-	-	-	-	848	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1514	-	-	-	708	984
Mov Cap-2 Maneuver	-	-	-	-	708	-
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	848	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.2	0		9.5		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1514	-	-	-	850	
HCM Lane V/C Ratio	0.027	-	-	-	0.06	
HCM Control Delay (s)	7.4	0	-	-	9.5	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	

## APPENDIX D. 64<sup>TH</sup> AVENUE CORRESPONDANCE WITH CITY OF AURORA

To: George Adams, Mindy Parnes, Victor Rachael, Mac Callison, Jason Batchelor, Jim Twombly, and Jacob Cox

From: 64<sup>th</sup> Ave. Stakeholders Coalition (All property owners affected by proposed changes to 64<sup>th</sup> Ave, between Himalaya and Picadilly – RIDA High Point Land, LLC, Painted Prairie Owner, LLC., Highpoint, LLC)

RE: Proposed changes to and redesign of 64<sup>th</sup> Ave. between Himalaya and Picadilly.

Dear City Officials and Staff,

The 64<sup>th</sup> Ave. Stakeholders (Stakeholders) wish to express their consensus on matters regarding discussions around the potential redesign of 64<sup>th</sup> Ave.

- I. Schedule. Any redesign of 64<sup>th</sup>, amendment to City policy, or amendment to the City's transportation plans will not delay the processing of any applications, or development, by the Stakeholders.
- II. Retain Existing Capital Improvements from centerline of median north. Any redesign or reconstruction needs to retain the existing capital improvements including, but not limited to pavement, curb, gutter, striping, landscaping, tree lawn, sidewalk, utilities, fiber, conduit, and lighting, unless altered by the City at its sole cost.
- III. No Additional Property Interests. Any redesign of 64<sup>th</sup> Avenue shall not require any additional easements or right-of-way from the property owners on the north side of 64<sup>th</sup> Avenue.
- IV. Acceptable Northern Redesign. The City's redesign of 64<sup>th</sup> may include replacing the northernmost westbound travel lane with a parallel parking lane with landscaping bulb outs and pedestrian refuge "bulb-outs" at the intersections; provided, a) any costs are borne by the City, and, b) the City, at its expense, converts the parking lane back to a drive lane when such lane is needed to support the traffic demands and flows to or from the Gaylord Rockies Resort and Rockies Village. (See attached proposed 64<sup>th</sup> Ave. plan for reference)
- V. Acceptable Southern Redesign. The south side of 64<sup>th</sup> may have narrower travel lanes (11') than the north side and the parallel parking isle will be a typical width (8'-9') not the larger width of lane 3 on the north side. The tree lawn on the south side will be 10' wide, the same as the north, but the sidewalk/trail will be 12' rather than the 10' on the north side. Again, for reference, please see the attached proposed 64<sup>th</sup> Ave. plan.
- VI. Median. The median will be 14' in width.
- VII. No Enhanced Architectural Requirements. There shall be no additional design criteria to the developments along 64<sup>th</sup>. The individual FDP design guidelines will stand on their own.
- VIII. Landscaping and Irrigation. If the City wants 64<sup>th</sup> Avenue to have a median, and to have the 10' tree lawns on each side of the street, for the aesthetic enhancements they could provide, these areas need landscaping treatments which include trees. That in turn will require irrigation, as trees will either not survive or at best will not thrive in this harsh micro-climate, without irrigation. While some xeriscape treatments can be executed and result in a pleasing



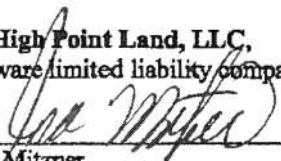
and beautiful manner, and be done using greatly reduced amounts of water, they virtually all require some irrigation. Completely non-irrigated planting zones will not be aesthetically pleasing enough for the environment and the desired outcome. The Stakeholders will need to have the right to design or approve the design and palette of landscape materials. It is the Stakeholders position that the City should provide the water tap at no cost to the Stakeholders, as well as the ongoing service charges relating to the use of water in the median and tree lawns. The party or parties who will be responsible for maintenance of those zones should be discussed and agreed upon, as the typical City - PROS maintained zones are not acceptable for creating a world class destination.

- IX. Expiration of Warranty. If the City alters any existing improvements during the applicable warranty period, the existing warranty is void and the Stakeholders shall not be responsible for the costs to repair or replace the improvements.

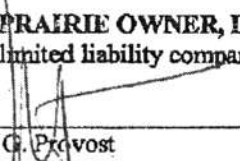
The forgoing represents the consensus of the Stakeholder group. Please let us know if these concessions by the Stakeholders are acceptable to the City.

Signed:

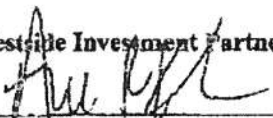
**RIDA High Point Land, LLC,**  
A Delaware limited liability company

  
By: Ira Mitzner  
Authorized Signator

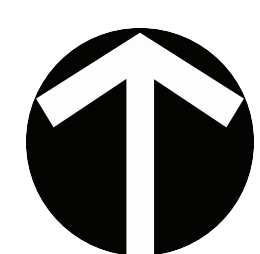
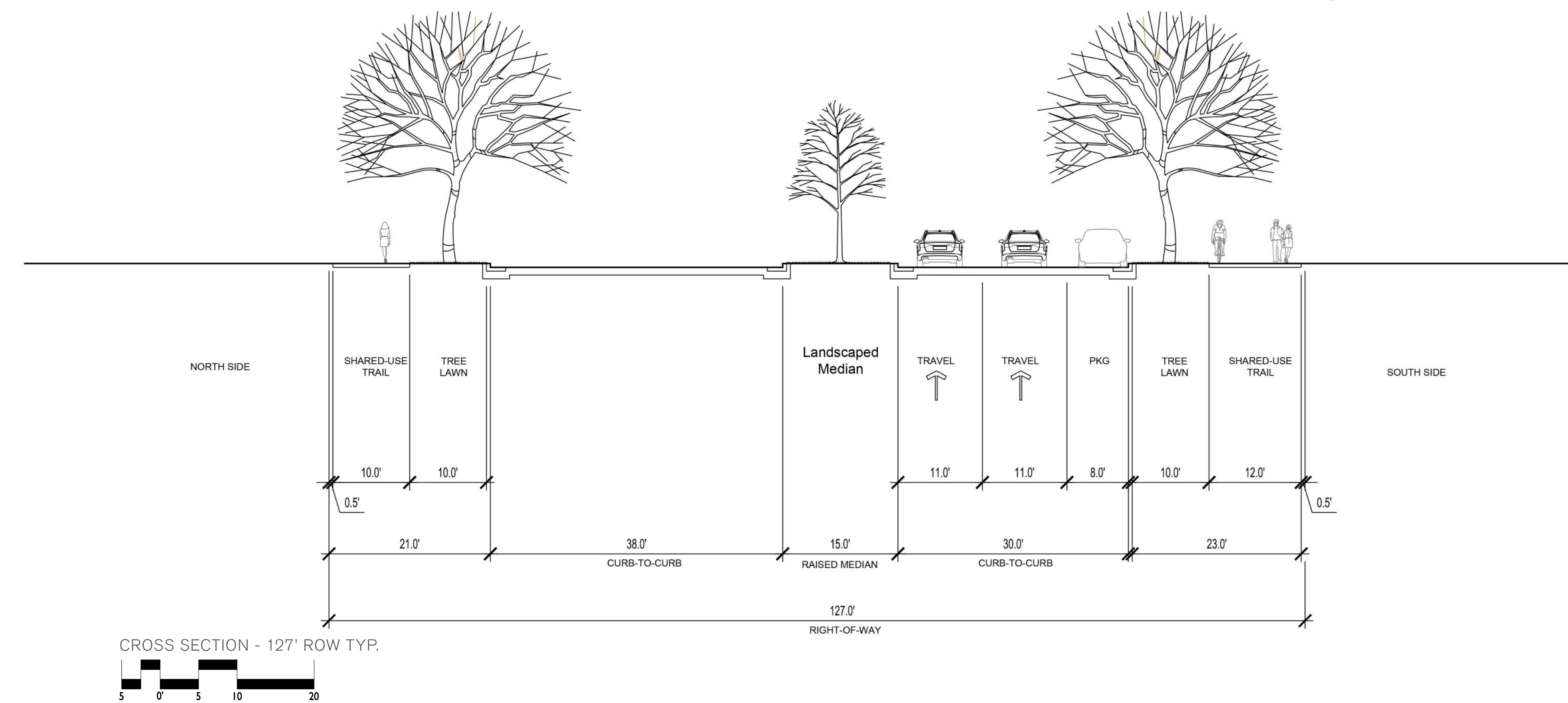
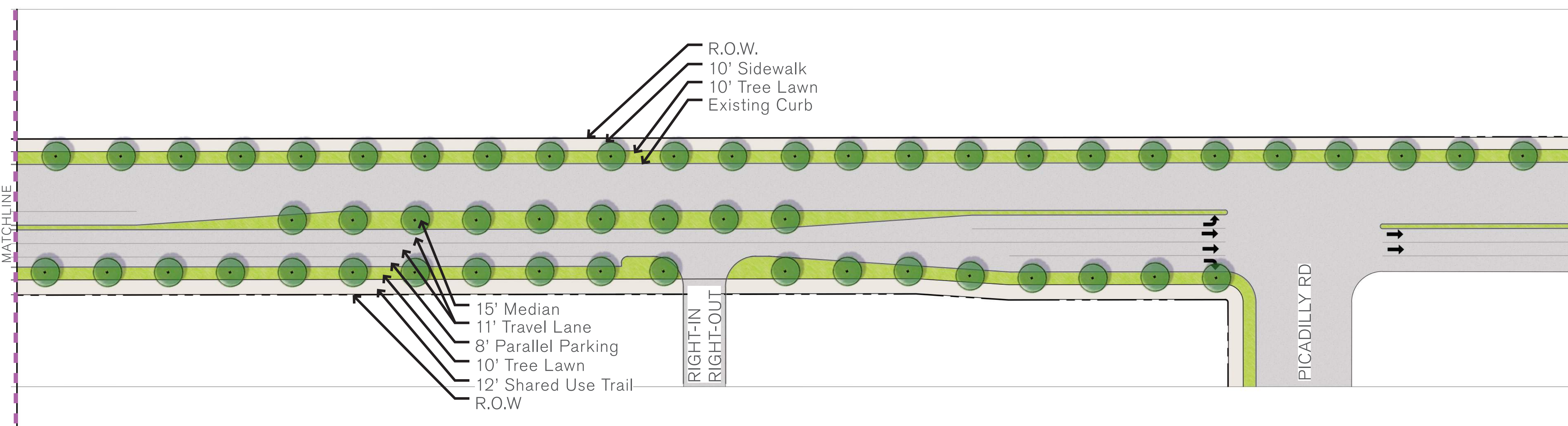
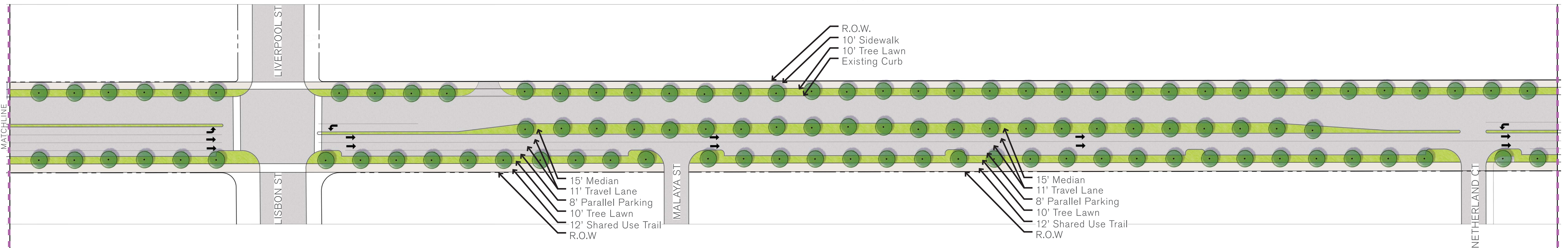
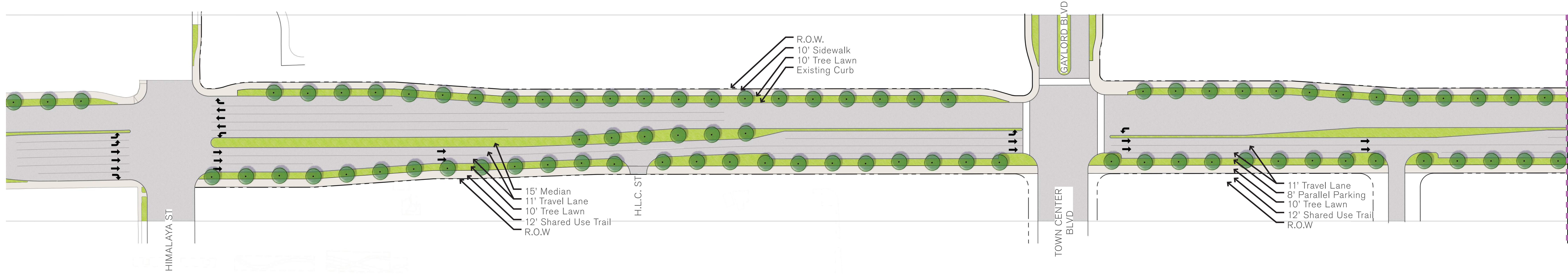
**PAINTED PRAIRIE OWNER, LLC,**  
a Delaware limited liability company

  
By: Donald G. Provost  
Title: Authorized Signatory

**Westside Investment Partners, Inc.**

  
By: Andy Klein





# PAINTED PRAIRIE AURORA, CO ▪ 64TH AVE 127' ROW

PN 3518019 | 02.20.2020 | RESOLUTE STRATEGIES & ALBERTA DEVELOPMENT GROUP, LLC

LandDesign®






April 6, 2020

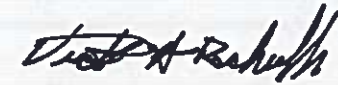
64<sup>th</sup> Avenue Stakeholder Coalition

Thank you for your letter regarding proposed changes to and redesign of 64<sup>th</sup> Avenue between Himalaya and Picadilly delivered to the city of Aurora on February 5, 2020. Please find the city's response to your letter below.

- I. Schedule - The city concurs with this item.
- II. Retain Existing Capital Improvements from centerline of median north – The city concurs with this item.
- III. No additional property interests - The city concurs with this item.
- IV. Acceptable Northern Redesign - The city concurs with this item. The city is developing design specifications for implementing improvements such as curb extensions that will be applicable in the northernmost westbound travel lane to create a parallel parking lane and reduce pedestrian crossing distance at intersections. In regard to this redesign the city's responsibilities extend from the northern curb of the existing median to the curb of the existing northern portion of the street section. We will keep you informed and coordinate with the stakeholders as this process evolves.
- V. Acceptable Southern Redesign – The city concurs with this item.
- VI. Median - The city concurs with this item.
- VII. No Enhanced Architectural Requirements - The city concurs with this item.
- VIII. Landscaping and Irrigation – The existing median has irrigation and completed landscape improvements. Median maintenance is scheduled to be assumed by the City starting Fall 2020. Additional median landscape improvements and associated maintenance responsibility should be coordinated with the city's Parks, Recreation and Open Space Department (PROS).

- IX. Expiration of Warranty - The city concurs with this item. However, any items identified as a warranty issue prior to the City starting work shall be rectified by the appropriate development party.

  
George Adams, Director  
Planning and Development  
Services Department

  
Victor Rachael, Deputy Director  
Public Works Department

4/3/2020