

## 7.0 EVALUATION OF 2030 TRAFFIC CONDITIONS: NO-BUILD SCENARIO

### 7.1 Operational Analysis Methodology and Criteria

Future year traffic forecasts (2030), along with proposed short-term improvements for I-210, were used to assess 2030 peak period operations, which reflects the 2030 no-build scenario. This evaluation consisted of three different micro-level traffic operations analyses including: 1) intersection capacity analyses for at-grade signalized intersections at seven of the nine study area interchanges; 2) corridor level operational analyses utilizing traffic simulation software; and 3) I-210 ramp merge and diverge analysis. Synchro, CORSIM, and HCS2000 traffic and transportation engineering software packages were respectively utilized to conduct the capacity and simulation analyses. The overall criteria and methodology associated with the three operational analyses was discussed in **Section 3.1**.

### 7.2 Synchro Model Results

The short-term improvements were assumed to be part of the 2030 no-build condition. Therefore, the 2030 turning movement forecasts were applied to 2010 build Synchro models. In other words, the 2010 build geometry was used to evaluate the 2030 no-build conditions. The projected turning movement volumes, for intersections along the I-210 corridor were analyzed with Synchro to determine the level of service (LOS). **Table 7.1** presents the results of the 2030 AM and 2030 PM peak hour Synchro analysis. Detailed Synchro reports are included in **Appendix G**.

**Table 7.1**  
**2030 No-Build Level of Service**

Exit	Location	2030 - No Build <sup>2</sup>			
		AM		PM	
		Delay	LOS	Delay	LOS
3	<b>Prien Lake Road<sup>1</sup></b>	<b>272.5</b>	<b>F</b>	<b>84.0</b>	<b>F</b>
	Kiwanis Lane Eastbound Approach	11.5	B	13	B
	Prien Lake Road Westbound Approach	29.9	D	68	F
	Ihles Road Northbound Approach	434.2	F	131.5	F
	Cove Lane Southbound Approach	20.9	C	25.8	D
4	<b>Nelson Road at Cagle Lane</b>	<b>18.1</b>	<b>B</b>	<b>34.7</b>	<b>C</b>
	Cagle Lane Eastbound Approach	61.6	E	129.5	F
	W. Prien Lake Road Westbound Approach	39.3	D	27.5	C
	Nelson Road Northbound Approach	9.1	A	20.4	C
	Nelson Road Southbound Approach	21.5	C	41.8	D

**Table 7.1**  
**2030 No-Build Level of Service**

Exit	Location	2030 - No Build <sup>2</sup>			
		AM		PM	
		Delay	LOS	Delay	LOS
	<b>Nelson Road at Westbound (WB) Ramp</b>	<b>239.0</b>	<b>F</b>	<b>213.4</b>	<b>F</b>
	WB Off-Ramp Westbound Approach	327.4	F	259.9	F
	Nelson Road Northbound Approach	185.3	F	210.4	F
	Nelson Road Southbound Approach	221.8	F	178.1	F
	<b>Nelson Road at Eastbound (EB) Ramp</b>	<b>79.9</b>	<b>E</b>	<b>102.0</b>	<b>F</b>
	EB Off-Ramp Eastbound Approach	40.5	D	131.2	F
	Nelson Road Northbound Approach	103.3	F	135	F
	Nelson Road Southbound Approach	60.1	E	61.9	E
	<b>Nelson Road at W. Prien Lake Road</b>	<b>364.6</b>	<b>F</b>	<b>137.9</b>	<b>F</b>
	W. Prien Lake Road Eastbound Approach	680.5	F	235.5	F
	Wal-Mart Westbound Approach	20.1	C	30	C
	Nelson Road Northbound Approach	399.6	F	135.9	F
	Nelson Road Southbound Approach	235.8	F	130.6	F
	5	<b>Lake Street at W. Prien Lake Road</b>	<b>53.3</b>	<b>D</b>	<b>68.1</b>
Prien Lake Road Eastbound Approach		56.5	E	90.3	F
Prien Lake Road Westbound Approach		83.3	F	83.6	F
Lake Street Northbound Approach		57.6	E	68.7	E
Lake Street Southbound Approach		38.9	D	42	D
<b>Lake Street at WB Ramp</b>		<b>53.9</b>	<b>D</b>	<b>19.0</b>	<b>B</b>
WB Off-Ramp Westbound Approach		113.3	F	44.8	D
Lake Street Northbound Approach		35.8	D	8	A
Lake Street Southbound Approach		27.8	C	23.7	C
<b>Lake Street at EB Frontage Road/W. College Street</b>		<b>111.0</b>	<b>F</b>	<b>76.0</b>	<b>E</b>
EB Off-Ramp Eastbound Approach		138.6	F	127.8	F
College Westbound Approach		50.5	D	53.9	D
Lake Street Northbound Approach		114	F	71.9	E
Lake Street Southbound Approach		94.4	F	54.6	D
6A	<b>Ryan Street (LA 385) at W. Prien Lake Road</b>	<b>103.7</b>	<b>F</b>	<b>134.6</b>	<b>F</b>
	W. Prien Lake Road Eastbound Approach	97.2	F	97.2	F
	W. Prien Lake Road Westbound Approach	113.1	F	102.9	F
	Ryan Street Northbound Approach	134.8	F	90.9	F
	Ryan Street Southbound Approach	63.7	E	194.4	F
	<b>Ryan Street at WB Ramp</b>	<b>118.5</b>	<b>F</b>	<b>84.2</b>	<b>F</b>
	WB Off-Ramp Westbound Approach	154.4	F	64.2	E
	Ryan Street Northbound Approach	90.1	F	53	D
	Ryan Street Southbound Approach	150.6	F	117.6	D
	<b>Ryan Street at W. College Street</b>	<b>170.4</b>	<b>F</b>	<b>143.1</b>	<b>F</b>
	W. College Street Eastbound Approach	129.5	F	142.9	F
	W. College Street Westbound Approach	51.5	D	48.9	D

**Table 7.1**  
**2030 No-Build Level of Service**

Exit	Location	2030 - No Build <sup>2</sup>			
		AM		PM	
		Delay	LOS	Delay	LOS
	Ryan Street Northbound Approach	225.0	F	162.1	F
	Ryan Street Southbound Approach	161.3	F	154.2	F
6B	<b>Enterprise Boulevard at E. Prien Lake</b>	<b>162.6</b>	<b>F</b>	<b>206.7</b>	<b>F</b>
	E. Prien Lake Road Eastbound Approach	58.7	E	143.7	F
	E. Prien Lake Road Westbound Approach	164.5	F	147.8	F
	Enterprise Boulevard Northbound Approach	230.2	F	273.6	F
	Enterprise Boulevard Southbound Approach	134.8	F	235.6	F
	<b>Enterprise Boulevard at WB Ramp</b>	<b>19.0</b>	<b>B</b>	<b>16.4</b>	<b>B</b>
	WB Off-Ramp Westbound Approach	36.3	D	39.5	D
	Enterprise Boulevard Northbound Approach	11.3	B	13	B
	Enterprise Boulevard Southbound Approach	22.9	C	10.9	B
	<b>Enterprise Boulevard at E. College Street</b>	<b>186.8</b>	<b>F</b>	<b>227.4</b>	<b>F</b>
	E. College Street Eastbound Approach	185.7	F	198.7	F
	E. College Street Westbound Approach	42.8	D	77.5	E
	Enterprise Boulevard Northbound Approach	260.9	F	361.8	F
	Enterprise Boulevard Southbound Approach	164.9	F	202.9	F
	<b>Louisiana Avenue at E. College Street</b>	<b>23.8</b>	<b>C</b>	<b>18.5</b>	<b>B</b>
	E. College Street Eastbound Approach	24.2	C	17.8	B
	E. College Street Westbound Approach	13.1	B	5.8	A
	Louisiana Avenue Northbound Approach	28.9	C	28.6	C
	Louisiana Avenue Southbound Approach	20.5	C	29.8	C
	8	<b>LA 14 at E. Prien Lake Road</b>	<b>123.7</b>	<b>F</b>	<b>204.3</b>
E. Prien Lake Road Eastbound Approach		29.0	C	634.8	F
E. Prien Lake Road Westbound Approach		197.3	F	224.5	F
LA 14 Northbound Approach		123.0	F	127.4	F
LA 14 Southbound Approach		93.1	F	133.5	F
<b>Prien Lake Road at WB On-Ramp</b>		<b>5.5</b>	<b>A</b>	<b>13.1</b>	<b>B</b>
Prien Lake Road Eastbound Approach		11.9	B	17.1	B
Prien Lake Road Westbound Approach		4.6	A	11.6	A
<b>LA 14 at EB Ramp</b>		<b>50.6</b>	<b>D</b>	<b>48.8</b>	<b>D</b>
EB Off-Ramp Eastbound Approach		66.1	E	40.4	D
LA 14 Northbound Approach		71.2	E	39.4	D
LA 14 Southbound Approach		7.0	A	63.2	E
<b>LA 14 at Taylor/Prien Lake Road<sup>1</sup></b>		<b>176.8</b>	<b>F</b>	<b>188.2</b>	<b>F</b>
Taylor Street Eastbound Approach		17.2	N/A	15.2	N/A
Prien Lake Westbound Approach		79.8	N/A	213.8	N/A
LA 14 Northbound Approach		0.5	N/A	0.2	N/A
LA 14 Southbound Approach		419.4	N/A	340.7	N/A
10A	<b>Legion Street at Siebarth Drive</b>	<b>98.4</b>	<b>F</b>	<b>59.6</b>	<b>E</b>
	Legion Street Eastbound Approach	132.1	F	74.9	E
	Legion Street Westbound Approach	54.2	D	42.7	D

**Table 7.1**  
**2030 No-Build Level of Service**

Exit	Location	2030 - No Build <sup>2</sup>			
		AM		PM	
		Delay	LOS	Delay	LOS
	Siebarth Drive Northbound Approach	29.3	C	28.1	C
	Siebarth Drive Southbound Approach	<b>103.5</b>	<b>F</b>	<b>86.7</b>	<b>F</b>
	<b>Legion Street at EB Ramp</b>	24.8	C	47.9	D
	Legion Street Eastbound Approach	9.9	A	31.4	C
	Legion Street Westbound Approach	45.7	D	68.9	E
	EB Off-Ramp Northbound Approach	14	B	16.6	B
	<b>Broad Street at Pamco</b>	<b>83.9</b>	<b>F</b>	<b>46.8</b>	<b>D</b>
10B	Broad Street Eastbound Approach	111.1	F	56.5	E
	Broad Street Westbound Approach	56.9	E	43	D
	Pamco Southbound Approach	110.3	F	45.7	D
	<b>Broad Street at EB Off-Ramp</b>	<b>36.7</b>	<b>D</b>	<b>25.7</b>	<b>C</b>
	Broad Street Eastbound Approach	55.4	E	9.3	A
	Broad Street Westbound Approach	22.8	C	31.5	C
	Northbound Off-Ramp Northbound Approach	27.5	C	25.7	C
	<b>Broad Street at Falconer<sup>1</sup></b>	<b>20.5</b>	N/A	<b>12.0</b>	N/A
	Broad Street Eastbound Approach	1.6	N/A	3.3	N/A
	Broad Street Westbound Approach	0.0	N/A	0.0	N/A
Falconer Southbound Approach	885	N/A	368.8	N/A	
12	<b>Frugé Street at WB Ramp<sup>1</sup></b>	<b>N/A</b>	<b>F</b>	<b>N/A</b>	<b>F</b>
	Frugé Street Eastbound Approach	0.0	N/A	0.0	N/A
	Frugé Street Westbound Approach	5.6	N/A	5.3	N/A
	Pamco Northbound Approach	N/A	F	N/A	F
	Pamco Southbound Approach	N/A	F	N/A	F
	<b>Frugé Street at EB Ramp<sup>1</sup></b>	<b>0.3</b>	N/A	<b>0.6</b>	N/A
	Frugé Street Eastbound Approach	0.7	N/A	1.7	N/A
	Frugé Street Westbound Approach	0.0	N/A	0.0	N/A
	<b>Frugé Street at Bunker Road<sup>1</sup></b>	<b>149</b>	N/A	<b>123.6</b>	N/A
	Frugé Street Eastbound Approach	<b>0.7</b>	N/A	<b>0.6</b>	N/A
	Frugé Street Westbound Approach	1.1	N/A	0.6	N/A
	Bunker Road Northbound Approach	772.7	N/A	634.1	N/A
	Bunker Road Southbound Approach	397.4	N/A	207.7	N/A

Note:

1. Unsignalized intersection.
2. Includes 2010 short-term improvements where applicable.

As indicated by the results, the majority of the interchanges in the corridor fail (LOS E or below) with the addition of the 2030 forecasted traffic. The long-term improvements will focus on improving operations at the interchanges with a poor LOS. The long-term improvements to the interchanges will be discussed in **Section 8** and the results of those improvements on the intersection operations will be discussed in **Section 9**.

### 7.3 CORSIM Model Results

A comprehensive model of the I-210 corridor was developed in CORSIM. The 2010 AM and PM peak hour models with the short-term improvements were used to develop the 2030 existing condition/no-build models. Once the model was executed, results were obtained from the data summary and animation. CORSIM results include MOEs from the freeway network.

The freeway results were analyzed by summarizing the results from multiple model runs. Because Corsim uses random number seeds to generate model results, the output varies from run to run. Therefore an average was calculated from the multiple runs. The results for the freeway analysis include directional travel time (minutes) and average travel speed (miles per hour). The cumulative results of the multiple model runs are presented in **Table 7.2**. The individual results are presented in **Appendix G**.

**Table 7.2**  
**2030 No-Build CORSIM Model Results**

Scenario <sup>1</sup>	Travel Speed (MPH)		Travel Time (Min)	
	EB	WB	EB	WB
AM Peak Hour	53.86	27.87	10.90	26.66
PM Peak Hour	43.01	35.64	21.06	20.07

Note:

- 1. Includes 2010 short-term improvements

As presented in **Table 7.2**, it is evident that the peak direction during the morning peak hour is westbound as indicated by the lower travel speed (27.87 MPH) and greater travel time (26.66 miles). Conversely, eastbound is the peak direction in the PM peak hour. Because of the high projected volume on the mainline, there is a significant increase in travel time to traverse the corridor. While the travel time increases, the travel speed decreases. With the short-term improvements, the travel speed decreases. The average speed in the AM is 40.87 MPH and in the PM is 39.33 MPH.

### 7.4 I-210 Merge/Diverge Results

A merge/diverge analysis was completed for the 2030 no-build scenario for AM and PM peak periods that includes the 2010 proposed short-term improvements. As noted in the *Lane Requirement* worksheet in **Appendix D**, the westbound off-ramp and eastbound on-ramp at Nelson Road begins to fail in 2014. In addition, the mainline between Ryan Street and Louisiana Avenue/Enterprise Boulevard begins to fail in 2018. The results of the future conditions

merge/diverge analysis are presented in **Table 7.3** HCS2000 detailed reports are included in **Appendix G**.

**Table 7.3**  
**2030 HCS Merge/Diverge Analysis Results**

Exit	Direction	Merge / Diverge	2030 AM Peak Hour No-Build <sup>1</sup> LOS	2030 PM Peak Hour No-Build <sup>1</sup> LOS
Exit 3 Prien Lake Road	EB	Diverge	E	F
Exit 4 Nelson Road	EB	Diverge	D	F
	EB	Merge	E	F
	WB	Diverge	F	E
	WB	Merge	F	D
Exit 5 Lake Street	EB	Diverge	E	F
	EB	Merge	E	F
	WB	Diverge	F	E
	WB	Merge	F	E
Exit 6A Ryan Street	EB	Diverge	F	F
	EB	Merge	E	F
	WB	Diverge	F	F
	WB	Merge	F	E
Exit 6B Louisiana/ Enterprise Blvd	EB	Diverge	F	F
	EB	Merge	E	F
	WB	Diverge	F	D
	WB	Merge	F	E
Exit 8 LA 14	EB	Diverge	E	F
	EB	Merge	D	E
	WB	Diverge	F	D
	WB	Merge	F	D
Exit 10A Legion Street	EB	Diverge	D	F
	EB	Merge	D	E
	WB	Diverge	E	D
	WB	Merge	E	D
Exit 10B Broad Street	EB	Diverge	D	E
	WB	Merge	D	D
Exit 12 Frugue Street	EB	Merge	C	D
	WB	Diverge	D	C

Note:

1. Includes 2010 short-term improvements

The results of the 2030 no-build analysis indicate that the ramps and mainline are failing at the interchanges with the highest peak hour volume, which generally occurs at Exits 3 through 8. This shortage of capacity will be addressed as part of the 2030 long-term improvements in **Section 8.2**.