



Tollway Contract 4383-Task Order 1
I-294 at Irving Park Road
Interchange Feasibility Study

Appendix D
Level 2 Synchro Analysis
Comparison Tables

Irving Park Road at I-294 Feasibility Study Level 2 Analysis of Study Area Intersections

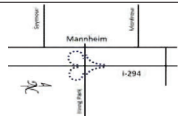
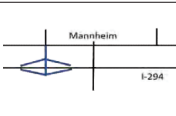
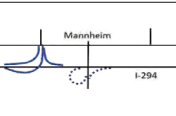
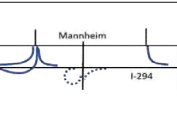
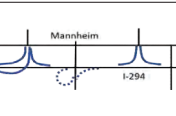
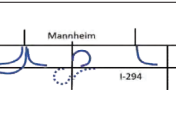
Intersection	Existing - Baseline Condition			Concept 4C			Concept 4D			Concept 4E			Concept 4F			Concept 4G			Concept 4H			Concept 4I		
	LOS (Delay - Sec)		Total 95th % Thru Q (PM)	LOS (Delay - Sec)		Total 95th % Thru Q (PM)	LOS (Delay - Sec)		Total 95th % Thru Q (PM)	LOS (Delay - Sec)		Total 95th % Thru Q (PM)	LOS (Delay - Sec)		Total 95th % Thru Q (PM)	LOS (Delay - Sec)		Total 95th % Thru Q (PM)	LOS (Delay - Sec)		Total 95th % Thru Q (PM)	LOS (Delay - Sec)		Total 95th % Thru Q (PM)
	AM	PM		AM	PM		AM	PM		AM	PM		AM	PM		AM	PM		AM	PM		AM	PM	
Mannheim at Seymour	B-16.7	B-18.6	620	C-30.3	C-24.1	1,025	C-27.2	C-23.4	1,039	C-30.6	C-27.1	874	C-28.7	C-23.0	870	C-27.2	C-23.4	1,039	C-28.7	C-22.2	666	C-28.7	C-22.2	656
Mannheim at United Way	B-17.8	B-14.9	560	B-15.3	B-17.6	626	B-16	B-14.9	492	B-15.9	B-15.4	655	B-15.8	B-15.3	640	B-16	B-14.9	492	B-15.7	B-12.6	521	B-15.8	B-12.6	521
Mannheim at Irving	E-66.0	E-56.3	1,829	E-66.3	E-59.2	1,838	E-58.2	E-57.8	1,866	E-59.3	E-59.8	1,945	E-58.8	E-58.5	1,945	E-58	E-56.3	1,858	F-102.2	F-90.6	2,016	F-100.9	F-86.4	1,671
Mannheim at Montrose	B-12.5	B-18.7	1,075	B-14.1	B-18.4	1,150	C-23.8	C-30.2	1,282	B-18.1	C-27.0	1,271	B-18.1	C-26.9	1,269	C-22.3	C-30.7	1,344	F-113.3	E-78.0	1,639	C-32.3	E-63.4	1,576
Mannheim at Lawrence	B-17.9	C-34.5	1,131	B-19.7	D-39.8	1,341	C-23	D-51.3	1,542	B-15.9	D-35.1	1,408	B-15.9	C-35.0	1,408	C-23	D-51.3	1,542	C-23.1	D-42.8	1,699	B-16.0	D-36.1	1,477
Irving Park at Seymour	B-17.6	B-13.9	1,128	B-16.0	B-13.7	1,122	B-16.0	B-13.7	1,122	B-16.0	B-13.7	1,122	B-16.0	B-13.7	1,122	B-16.0	B-13.7	1,122	B-16.0	A-9.9	802	B-16.0	A-9.9	791
Irving Park at Judd	B-17.2	C-22.7	1,138	B-19.9	C-28.7	1,547	B-19.9	C-30.8	1,514	B-19.9	C-28.7	1,547	B-19.9	C-28.7	1,547	B-19.9	C-30.8	1,514	C-21.0	C-28.7	1,547	C-21.0	C-28.7	1,547
Irving Park at 25th	D-40.1	E-61.4	1,596	D-45.7	E-63.0	2,185	D-45.4	E-68.0	2,337	D-45.8	E-62.9	2,164	D-45.8	E-62.9	2,164	D-45.4	E-68.0	2,337	D-44.4	E-62.9	2,164	D-44.4	E-62.9	2,164
Irving Park at Des Plaines River Road	F-81.7	E-65.9	2,436	E-64.2	D-53.6	1,901	E-64.6	D-53.7	2,205	E-64.7	D-53.8	2,213	E-64.7	D-53.8	2,213	E-64.6	D-53.7	2,205	E-64.5	D-53.8	2,213	E-64.5	D-53.8	2,213
Lawrence at 25th	B-14.9	B-13.3	753	B-14.6	B-16.1	988	B-17.3	B-17.4	780	B-14.4	B-17	1,076	B-14.4	B-17	1,076	B-17.3	B-17.4	780	B-15.3	B-19.2	1,212	B-14.3	B-16.6	1,051
Lawrence at Des Plaines River Road	D-38.6	F-80.5	1,948	D-37.9	D-48.4	1,632	D-42.7	D-48.8	1,643	D-38.9	D-48.3	1,632	D-38.9	D-48.3	1,632	D-42.7	D-48.8	1,643	D-42.7	D-48.4	1,636	D-39.1	D-48.0	1,632
Balmoral at Des Plaines River Road	B-15.5	C-23.7	1,040	B-13.5	B-17.3	674	B-13.1	B-16.9	676	B-13.5	B-16.9	676	B-13.5	B-16.9	676	B-13.1	B-16.9	676	B-13.5	B-16.9	676	B-13.5	B-16.9	676
Additional Results (see additional results notes)				1, 3, 4, 5, 6, 7, 8			1, 2, 3, 4, 5, 6, 7, 8			1, 3, 4, 5, 6, 7, 8			1, 3, 4, 5, 6, 7, 8			1, 2, 3, 4, 5, 6, 7, 8			1, 2, 3, 4, 5, 6, 7, 8			1, 2, 3, 4, 5, 6, 7, 8		

Comparison to Baseline		Avg Int Delay (sec)	Total Thru Lane Q (feet)
	Relatively Strong	-20 (+)	-400 (+)
		-5 to -20	-200 to -400
	Neutral	-5 to +5	+/- 200
		+5 to +20	+200 to +400
	Relatively Weak	+20 (+)	+400 (+)

General Notes:

- * Synchro Version 10 used for intersection analysis.
- * Existing intersection cycle length was used for analysis of alternatives (as available), with adjustments to phasing and timing as warranted.
- * For purpose of Queue Analysis, the total queue is the sum of all thru lane approach queues, or longest approach queue if no thru lane.
- * For Irving Park at Judd analysis, existing geometry was used for concepts for relative comparison of effect. IDOT planned improvements include a new WB left turn lane at Judd that will improve operations at this intersection.

Irving Park Road at I-294 Feasibility Study Level 2 Analysis of Study Area Intersections

Intersection	Existing - Baseline Condition			Concept 5A			Concept 5B			Concept 5C			Concept 5D			Concept 5E		
																		
	LOS (Delay - Sec)		Total 95th % Thru Q (PM)	LOS (Delay - Sec)		Total 95th % Thru Q (PM)	LOS (Delay - Sec)		Total 95th % Thru Q (PM)	LOS (Delay - Sec)		Total 95th % Thru Q (PM)	LOS (Delay - Sec)		Total 95th % Thru Q (PM)	LOS (Delay - Sec)		Total 95th % Thru Q (PM)
	AM	PM		AM	PM		AM	PM		AM	PM		AM	PM		AM	PM	
Mannheim at Seymour	B-16.7	B-18.6	620	F-168.8	E-77	1,629	E-69.7	D-43.4	1,195	D-38.9	C-30.7	911	D-35.5	C-28.1	1,091	D-36.0	C-27.1	993
Mannheim at United Way	B-17.8	B-14.9	560	B-19.7	B-14.6	430	B-15.7	B-12.7	319	B-15.1	B-11.8	524	B-15.3	B-11.9	527	B-14.9	A-9.5	434
Mannheim at Irving	E-66.0	E-56.3	1,829	F-134.6	F-65.4	2,060	E-77.0	E-65.1	2,033	E-76.2	E-61.2	1,916	E-76.3	E-61.0	1,915	E-76.6	E-57.5	1,906
Mannheim at Montrose	B-12.5	B-18.7	1,075	B-15.5	C-20.4	1,372	B-15.5	B-16.2	891	B-18.5	C-27.1	1,223	C-21.8	C-28.0	1,282	B-19.2	C-20.1	1,053
Mannheim at Lawrence	B-17.9	C-34.5	1,131	B-17.2	C-32.7	1,508	B-17.2	C-33.9	1,474	C-25.1	D-40.3	1,311	C-23.2	D-51.5	1,544	B-16.0	D-37.4	1,477
Irving Park at Seymour	B-17.6	B-13.9	1,128	B-17.6	B-10.3	833	B-17.6	B-10.3	833	B-15.9	B-10.0	796	B-16.0	A-9.9	791	B-16.0	A-9.9	791
Irving Park at Judd	B-17.2	C-22.7	1,138	B-16.8	C-34.0	1,650	B-16.8	C-34.0	1,650	B-19.2	C-26.4	1,453	B-19.9	C-30.8	1,514	B-19.9	C-28.7	1,736
Irving Park at 25th	D-40.1	E-61.4	1,596	D-53.0	E-68.0	1,752	D-53.0	E-68.0	1,752	D-44.5	E-63.0	2,168	D-45.4	E-68.0	2,337	D-45.8	E-62.9	2,164
Irving Park at Des Plaines River Road	F-81.7	E-65.9	2,436	E-78.6	D-52.1	1,903	E-78.6	D-52.1	1,903	E-64.3	D-53.8	2,209	E-64.6	D-53.7	2,205	E-64.7	D-53.8	2,213
Lawrence at 25th	B-14.9	B-13.3	753	B-14.7	B-17.6	997	B-14.7	B-17.6	997	B-14.3	B-16.7	731	B-17.9	B-18.2	838	B-14.7	B-16.6	1,051
Lawrence at Des Plaines River Road	D-38.6	F-80.5	1,948	D-37.3	D-50.6	1,558	D-37.3	D-50.6	1,558	D-39.1	D-48.3	1,641	D-42.9	D-48.6	1,643	D-38.6	D-48.0	1,629
Balmoral at Des Plaines River Road	B-15.5	C-23.7	1,040	B-13.5	B-15.1	630	B-13.5	B-15.3	622	B-13.5	B-16.9	676	B-13.1	B-16.9	676	B-13.5	B-16.9	676
Additional Results <small>(see additional results notes)</small>				1, 3, 4, 5, 6, 7, 8			1, 3, 4, 5, 6, 7, 8			1, 3, 4, 5, 6, 7, 8			1, 3, 4, 5, 6, 7, 8			1, 3, 4, 5, 6, 7, 8		

Comparison to Baseline		Avg Int Delay (sec)	Total Thru Lane Q (feet)
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Relatively Weak		+5 to +20	+200 to +400
		+20 (+)	+400 (+)

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Irving Park Road at I-294 Feasibility Study

Level 2 Analysis of Study Area Intersections

Additional Results Notes:

1. Mannheim at Irving Park
 - a. Concept 4C retains the SB to WB CTS exit ramp and increases the WB to SB LT volume/queues. Overall intersection LOS not impacted
 - b. Concepts 4D/4E/4F/4G/4H/4I/5A/5B/5C/5D/5E relocate the SB to WB CTS exit ramp from Irving Park Road to Montrose, thereby eliminating the WB approach weave and substantially reducing the WB to SB LT volumes/queues.
 - c. Concepts 4D/4E/4F/4G increase the SB queues 200' (due to SB exit moved north to Montrose) but overall intersection LOS not impacted
 - d. Concepts 4H/4I add more SB traffic with the relocation of both SB exits to Montrose, and worsen intersection LOS to F
 - e. Concept 5A worsens intersection LOS to F
 - f. Concepts 5A/5B/5C/5D/5E all result in increased delay, with 5A and 5B having the highest impacts
2. Mannheim at Montrose
 - a. With added SB entrance at Montrose (Concepts 4D/4G), NB queues increase but intersection operates at LOS C.
 - b. With relocation of both SB exit ramps from Irving Park (Concept 4I), SB CTS exit queues can exceed 600' and intersection operates at LOS E in the PM.
 - c. With relocation of both SB exit ramps from Irving Park and added SB entrance at Montrose (Concept 4H), exit queues are 800' and the intersection operates at LOS F in the AM and LOS E in the PM.
3. Mannheim at Lawrence
 - a. WB queues increase for all Concepts, with Concepts 4D/4G/4H/5D having the greatest impact and queues extending to 25th Avenue
4. Mannheim at Seymour
 - a. All Concepts provide extensive PM queue reductions in the southbound direction based on existing cycle length and optimized phasing with added 4th leg
 - b. All Concepts provide extensive PM queue increases in the northbound direction based on existing cycle length and optimized phasing with added 4th leg
 - c. Concepts 5A/5B have the greatest AM westbound queues with left turn queues at 1,000' and 900' respectively
 - d. Concepts 5A/5B have the longest AM(PM) southbound left-turn queues at 1280' (861') and 350' (476') respectively
5. Irving Park at 25th
 - a. All concepts result in worse intersection LOS and increased delay
 - b. AM WB queues increase 200' and delay increases from 16.8 to 43 sec
 - c. PM EB queues and delay increase from 450' to 900', and from 24.8 to 52.9 sec
6. River Road at Irving Park
 - a. All Concepts result in a reduction in intersection delay and reduced vehicle queues
7. River Road at Lawrence
 - a. Concepts 4D/4G/4H/5D AM increase WB queues and delay and overall intersection delay slightly due to the additional SB entrance ramp at Montrose, however, PM shows significant reduction in intersection delay
 - b. All Concepts show improved PM intersection LOS and reduce intersection delay
8. River Road at Balmoral
 - a. All concepts result in improved PM intersection LOS, reduction in intersection delay and reduced vehicle queues