

Elgin O'Hare – West Bypass: 2040 Off-System Arterial Capacity Requirements

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A traffic analysis was conducted to study the effects of future traffic on the off-system routes near the proposed project. Travel forecasts for the project area showed that most of the arterial system would require no change in capacity improvements. Arterials near the project, however, would require some capacity improvements to accommodate increased travel near the interchanges and along some sections of arterials. The extent of the improvements typically requires added travel lanes and turning lanes, and updated traffic signals. Added travel lanes commonly extend from the interchange areas for varying distances, depending on how long it take to efficiently transition high traffic volumes at the interchange areas to the existing lane configuration. The added lane capacity was determined with the use of an ADT threshold criterion. Four steps define the analysis process:

1. ADT was determined for 2010 (existing) and 2040 Build and No-Build conditions for each section of the arterial/secondary road system. Threshold one-way traffic demand levels were computed for each roadway cross-section. The criteria is shown below for three conditions:
 - When existing arterial conditions are one lane in each direction, an ADT of greater than 9,500 (one-way) would require added travel lanes¹.
 - When existing arterial conditions are two lanes in each direction, an ADT of greater than 18,500 (one-way) would require added travel lanes (Institute of Transportation Engineers, 1999).
 - When existing arterial conditions are three lanes in each direction, an ADT of greater than 28,500 (one-way) would require added travel lanes (Institute of Transportation Engineers, 1999).
2. Demand volume for each section of the Build and No-Build Alternatives was compared with the calculated threshold to identify deficiencies
3. ADTs (as identified above) were compared to find sections where the Build Alternative volume was greater than the No-Build Alternative volume, and to identify sections where the difference between Build Alternative and No-Build Alternative volumes was equal to or greater than 5 percent.

¹ The ADT threshold for arterials that have one lane in each direction was determined by dividing in half, the ADT threshold for arterials with two lanes in each direction, as identified in the second bullet.

4. Sections requiring improvement were designated if the Build Alternative threshold was exceeded, and the Build Alternative demand volume exceeded the No-Build Alternative demand volume.

Table 1 presents the results of these calculations for the arterials and secondary roadways indicating requirement for capacity improvements for the roadway sections. Table D-1 lists the crossing and connecting road improvements. Arterial improvements along Elmhurst Road and Touhy Avenue are more lengthy examples of capacity improvements that are warranted by the effects of the proposed project. All of the arterial improvements have been included in the overall project footprint and have been accounted for in the project's right-of-way needs and costs.

TABLE 1
2040 Off-System Arterial Capacity Requirements

Corridor	Location	From	To	2010 Two-Way ADT	2040 Two-Way ADT		Difference between Build Alternative and No-Build Alternative ADT (%)	Existing Number of Lanes (Two-Way)	Build Alternative ADT/ADT Threshold ^a	Build Alternative ADT Greater Than No-Build Alternative ADT	Difference between Build Alternative and No-Build Alternative Greater Than or Equal to 5%	Build Alternative ADT Exceeds Threshold	Capacity Improvements Required
					No-Build Alternative	Build Alternative							
Elgin O'Hare Corridor	Springingsuth Rd	IL 19	Elgin-O'Hare Expressway	9,900	10,700	8,600	-19.6%	2	0.46	N	N	N	N
	Gary Ave	Elgin-O'Hare Expressway	Central Ave	24,600	30,400	32,500	6.9%	4	0.86	Y	Y	N	N
		Central Ave	US 20	22,100	27,900	30,100	7.9%	4	0.79	Y	Y	N	N
	Irving Park Rd (IL 19)	Springingsuth Rd	Elgin-O'Hare Expressway	17,900	18,400	23,400	27.2%	6	0.41	Y	Y	N	N
		Elgin-O'Hare Expressway	Rodenburg Rd	17,200	15,300	15,400	0.7%	6	0.27	Y	N	N	N
	Wright Blvd	Wise Rd	Elgin-O'Hare Expressway	13,100	13,100	13,500	3.1%	2	0.71	Y	N	N	N
		Elgin-O'Hare Expressway	Irving Park Rd (IL 19)	8,600	8,300	12,600	51.8%	2	0.67	Y	Y	N	N
	Roselle Rd	Nerge Rd	Elgin-O'Hare Expressway	24,100	27,300	22,400	-17.9%	4	0.59	N	N	N	N
		Elgin-O'Hare Expressway	Irving Park Rd (IL 19)	15,400	17,100	18,400	7.6%	4	0.49	Y	Y	N	N
	Meacham Rd	Nerge Rd	Elgin-O'Hare Expressway	12,800	12,800	12,300	-3.9%	4	0.33	N	N	N	N
		Elgin-O'Hare Expressway	Irving Park Rd (IL 19)	12,200	13,000	15,400	18.5%	2	0.81	Y	Y	N	N
	Rohlwing Rd	Nerge Rd	Elgin-O'Hare Expressway	21,600	23,000	22,400	-2.6%	4	0.59	N	N	N	N
		Elgin-O'Hare Expressway	Irving Park Rd (IL 19)	27,100	27,100	23,500	-13.3%	2	1.24	N	N	Y	N
Arlington Heights Rd	Prospect Ave	Elgin O'Hare corridor	9,600	14,600	18,700	28.1%	2	0.99	Y	Y	N	N	
	Elgin O'Hare corridor	Irving Park Rd (IL 19)	8,600	9,900	10,200	3.0%	2	0.54	Y	N	N	N	
Prospect Ave	Arlington Heights Rd	Elgin O'Hare corridor	14,200	16,300	22,400	37.4%	4	0.59	Y	Y	N	N	
	Elgin O'Hare corridor	Irving Park Rd (IL 19)	13,800	14,200	18,300	28.9%	4	0.48	Y	Y	N	N	
Wood Dale Rd	Devon Ave	Elgin O'Hare corridor	12,600	15,900	21,000	32.1%	4	0.56	Y	Y	N	N	
	Elgin O'Hare corridor	Foster Ave	13,100	14,500	15,700	8.3%	4	0.42	Y	Y	N	N	

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Corridor	Location	From	To	2010 Two-Way ADT	2040 Two-Way ADT		Difference between Build Alternative and No-Build Alternative ADT (%)	Existing Number of Lanes (Two-Way)	Build Alternative ADT/ADT Threshold ^a	Build Alternative ADT Greater Than No-Build Alternative ADT	Difference between Build Alternative and No-Build Alternative Greater Than or Equal to 5%	Build Alternative ADT Exceeds Threshold	Capacity Improvements Required
					No-Build Alternative	Build Alternative							
Elgin O'Hare Corridor	IL 83	Devon Ave	Elgin O'Hare corridor	40,100	42,600	44,300	4.0%	6	0.78	Y	N	N	N
		Elgin O'Hare corridor	Foster Ave	38,400	38,400	39,300	2.3%	6	0.69	Y	N	N	N
	York Rd	Devon Ave	Elgin O'Hare corridor	24,800	29,600	23,200	-21.6%	4	0.61	N	N	N	N
		Elgin O'Hare corridor	Foster Ave	36,600	38,500	27,800	-27.8%	4	0.74	N	N	N	N
West Bypass Corridor	Franklin Ave	York Rd	County Line Rd	17,000	19,200	24,000	25.0%	4	0.63	Y	Y	N	N
		County Line Rd	Taft Ave	17,700	19,200	24,500	27.6%	2	1.30	Y	Y	Y	Y
		Taft Ave	Wolf Rd	17,700	19,200	22,600	17.7%	2	1.20	Y	Y	Y	Y
	Irving Park Rd (IL 19)	York Rd	West Bypass corridor	36,200	40,400	38,100	-5.7%	4	1.00	N	N	Y	N
		West Bypass corridor	Taft Ave	36,100	40,100	36,600	-8.7%	4	0.96	N	N	N	N
	Devon Ave	Busse Rd	Elmhurst Rd	21,800	21,800	23,600	8.3%	4	0.62	Y	Y	N	N
	Pratt Blvd	Busse Rd	Elmhurst Rd	8,800	9,800	14,400	46.9%	4	0.38	Y	Y	N	N
	Touhy Ave	Elmhurst Rd	West Bypass corridor	50,300	51,700	48,400	-6.4%	6	0.85	N	N	N	N
West Bypass corridor		Mount Prospect Rd	50,300	52,200	51,900	-0.6%	6	0.91	N	N	N	N	
I-90	Elmhurst Rd	Oakton St	I-90	37,400	41,600	44,900	7.9%	4	1.18	Y	Y	Y	Y
		I-90	Touhy Ave	28,500	31,000	29,500	-4.8%	4	0.78	N	N	N	N
I-294	IL 64	West of US 20	US 20	34,000	38,400	38,400	0.0%	4	1.01	N	N	Y	N
		US 20	East of US 20	39,700	44,800	41,700	-6.9%	6	0.73	N	N	N	N
	US 20	I-355	Edge of study area	24,800	27,200	28,700	5.5%	4	0.76	Y	Y	N	N

Note: Y=Yes, N=No

^a One-way ADT threshold for 1 lane is 9,500, for 2 lanes is 18,900 (Institute of Transportation Engineers, 1999), and 3 lanes is 28,500 (Institute of Transportation Engineers, 1999). One-way ADT threshold for 1 lane was calculated by dividing in half the one-way ADT threshold for 2 lanes.

References

Institute of Transportation Engineers. 1999. *Transportation Planning Handbook*. Second Edition. January.