



# IDOT PHASE I INTERSECTION IMPROVEMENTS IL-131 (GREEN BAY RD.) / IL-132 (GRAND AVE.) REGION 1 / DISTRICT 1

CLIENT:  
Civiltech Engineering, Inc.

CONTACT:  
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CONTRACT:  
Illinois Department of Transportation  
PTB 203/ Item 25

## PROJECT PURPOSE:

- Conduct environmental and location design studies to develop and refine feasible alternatives for intersection improvements
- Evaluate costs and impacts and start coordination with jurisdictional agencies and start public engagement
- Collect current traffic and turning movement counts at intersection using **Miovision** cameras, assess signal timings, and evaluate 2040 traffic projections

DAMA worked with Civiltech on the intersection of IL-132 (Grand Ave.) and IL-131 (Green Bay Rd.) in Lake County. Both roadways are classified as arterials and have commercial developments on all four corners of the intersection. Grand Ave. leads west to the Tri-State Tollway/I-294, US-41, and regional destinations in Gurnee. The intersection is located in Waukegan.

DAMA set up and captured existing traffic data using **Miovision** devices including weekday 24hour turning movement traffic counts, peak hour turning movement counts, and classification counts of trucks and other heavy vehicles.

DAMA also used **Synchro** to evaluate 2027 peak hour capacity and potential changes to the length of storage bays at the intersection.



Peak Hour	Movement	T	S	Q	Gr/Cl	Queue Length	Queue Length	DMV	# Lanes	Cycle/ Hour	Peak Hour	Storage Bay Length	Provisional
		N	S	W	E	(ft)	(ft)					(ft)	
AM	Left	3	23.1	0	31.2	0.132	140	2	28.8	500	112.63	150	155
	Thru	2	23.1	0	23.1	0.135	130	2	28.8	500	106.83	140	145
	Right	2	19	0	19	0.132	140	2	28.8	500	106.83	140	145
	Right	2	19	0	19	0.135	130	2	28.8	500	102.03	130	135
PM	Left	2	13.7	0	13.7	0.135	130	2	27.7	585	112.60	150	155
	Thru	2	49.7	0	49.7	0.148	135	2	27.7	585	107.80	140	145
	Right	2	25	0	25	0.132	140	2	27.7	585	102.00	130	135
	Right	2	25	0	25	0.135	130	2	27.7	585	97.20	120	125

$$S = \frac{L \cdot (1 - G \cdot C \cdot DMP^X)}{1 - DMP^X}$$
  

$$Storage\ Length\ (ft) = \frac{L \cdot (1 - G \cdot C \cdot DMP^X)}{1 - DMP^X}$$

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configuration	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
Traffic Volume (vph)	255	860	150	190	715	135	200	1060	215	180	810	300
Future Volume (vph)	255	860	150	190	715	135	200	1060	215	180	810	300
Signal Phase (vph)	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Storage Length (ft)	407	250	325	250	405	250	217	260	245	217	260	245
Storage Length (ft)	25	25	25	25	25	25	25	25	25	25	25	25
Lane M. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
FS	0.950			0.950			0.950		0.950			0.950
Satd. Flow (vph)	1770	3725	1563	1770	3725	1563	3423	3725	1563	3423	3725	1563
FS Permitted	0.147			0.136			0.950		0.950			0.950
Satd. Flow (vph)	274	3725	1563	253	3725	1563	3423	3725	1563	3423	3725	1563
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (vph)		70			113			84			84	
Link Speed (mph)	35			35			35			35		35
Link Distance (ft)	1192			1717			822			1095		1095
Turnoff Time (s)	2.52			2.54			2.13			2.13		2.13
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
Adj. Flow (vph)	277	924	163	207	777	147	217	1152	234	201	880	424
Shared Lane Traffic (%)												
Lane Group Flow (vph)	277	924	163	207	777	147	217	1152	234	201	880	424
Enter/Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L	L	R	L	L	R	L	L	R	L	L	R
Median Width (ft)	12			12			24		24		24	
Lane Overlap	0			0			0		0		0	
Crosswalk Width (ft)	16			16			16		16		16	
Two-Way Left Turn Lane												
Headway Factor	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00
Turning Speed (mph)	15		15		15		15		15		15	
Number of Detectors	1	2	1	2	1	2	1	2	1	2	1	2
Detector Template	L	Thru	R	L	Thru	R	L	Thru	R	L	Thru	R
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Spacing (ft)	20	6	20	6	20	6	20	6	20	6	20	6
Detector 1 Type	ChEx	ChEx	ChEx	ChEx	ChEx	ChEx	ChEx	ChEx	ChEx	ChEx	ChEx	ChEx
Detector 2 Channel												
Detector 2 Entend (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Enter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Delay (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (ft)	94			94			94		94		94	
Detector 2 Spacing (ft)	6			6			6		6		6	
Detector 2 Type	ChEx			ChEx			ChEx		ChEx		ChEx	
Detector 2 Channel												
Detector 2 Entend (ft)	0.0			0.0			0.0		0.0		0.0	
Turn Type	pm2gt	NA	pm2gt	NA	pm2gt	NA	pm2gt	NA	pm2gt	NA	pm2gt	NA
Permitted Phases	5	2	3	1	6	7	3	8	1	7	4	8
Permitted Phases	2	2	6	6	6	6	6	6	6	6	6	6