Technical Memorandum

I-290

Preliminary Engineering and Environmental (Phase I)

Study

West of Mannheim Road to East of Cicero Avenue

Appendices A thru D

Existing Roadway Operations

July 2010

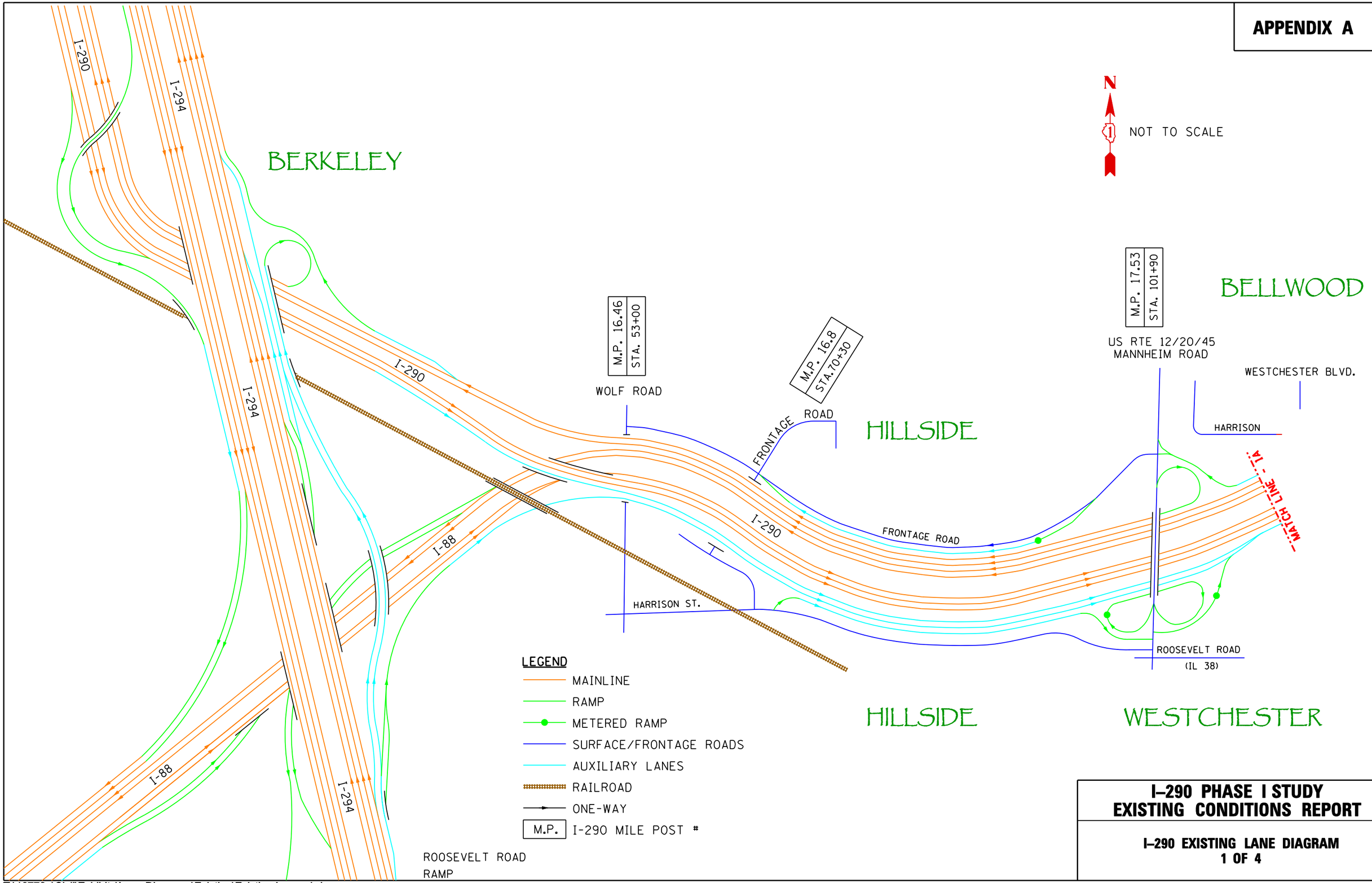
Appendix A - Existing Lane Diagrams
Appendix B - Crossroad Lane Diagrams
Appendix C - Corridor Level of Service Exhibit
Appendix D - Arterial V/C Calculations
Appendix E - HCS Analysis Output (under separate cover)

Technical Memorandum

Appendix A

Existing Lane Diagrams

APPENDIX A



I–290 PHASE I STUDY
EXISTING CONDITIONS REPORT

I–290 EXISTING LANE DIAGRAM
1 OF 4

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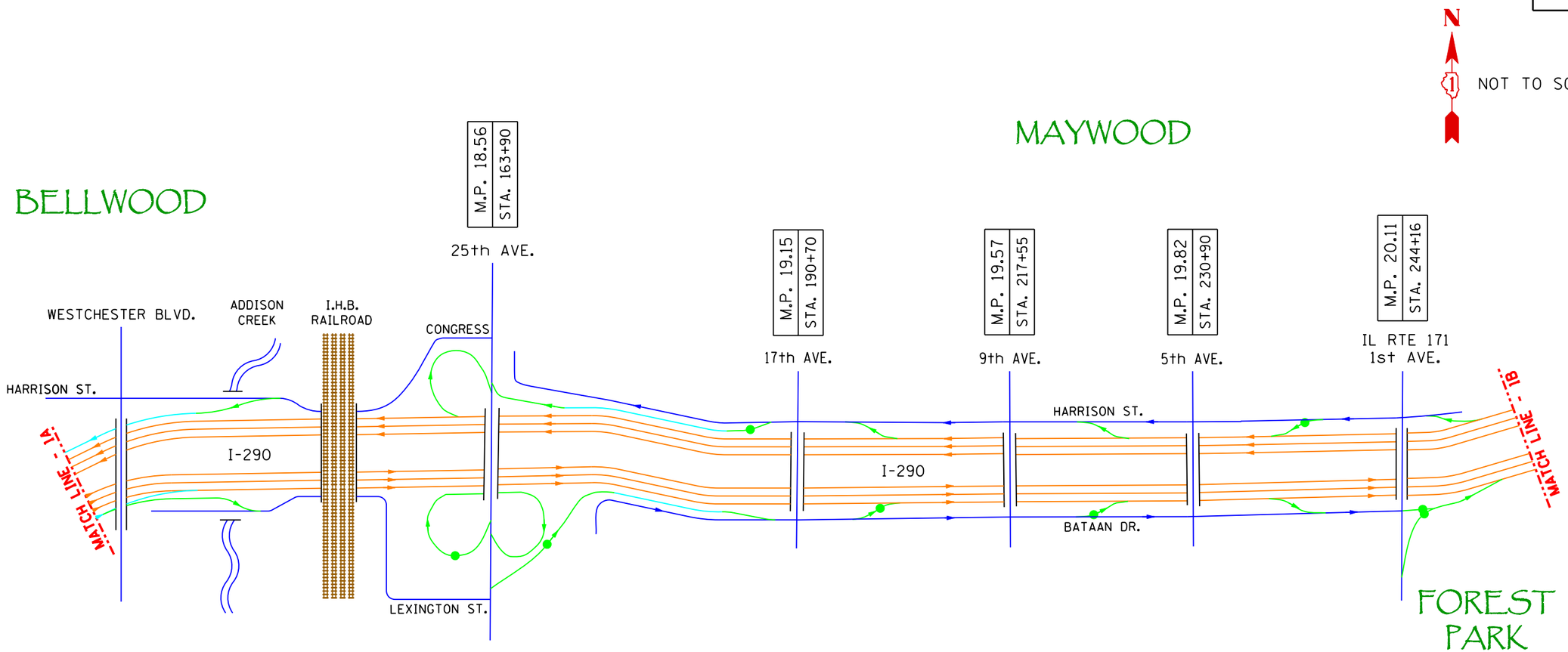
3/29/2010



LEGEND

- MAINLINE
- RAMP
- METERED RAMP
- SURFACE/FRONTAGE ROADS
- AUXILIARY LANES
- RAILROAD
- ONE-WAY
- M.P. I-290 MILE POST #

I–290 PHASE I STUDY
EXISTING CONDITIONS REPORT

I–290 EXISTING LANE DIAGRAM
2 OF 4

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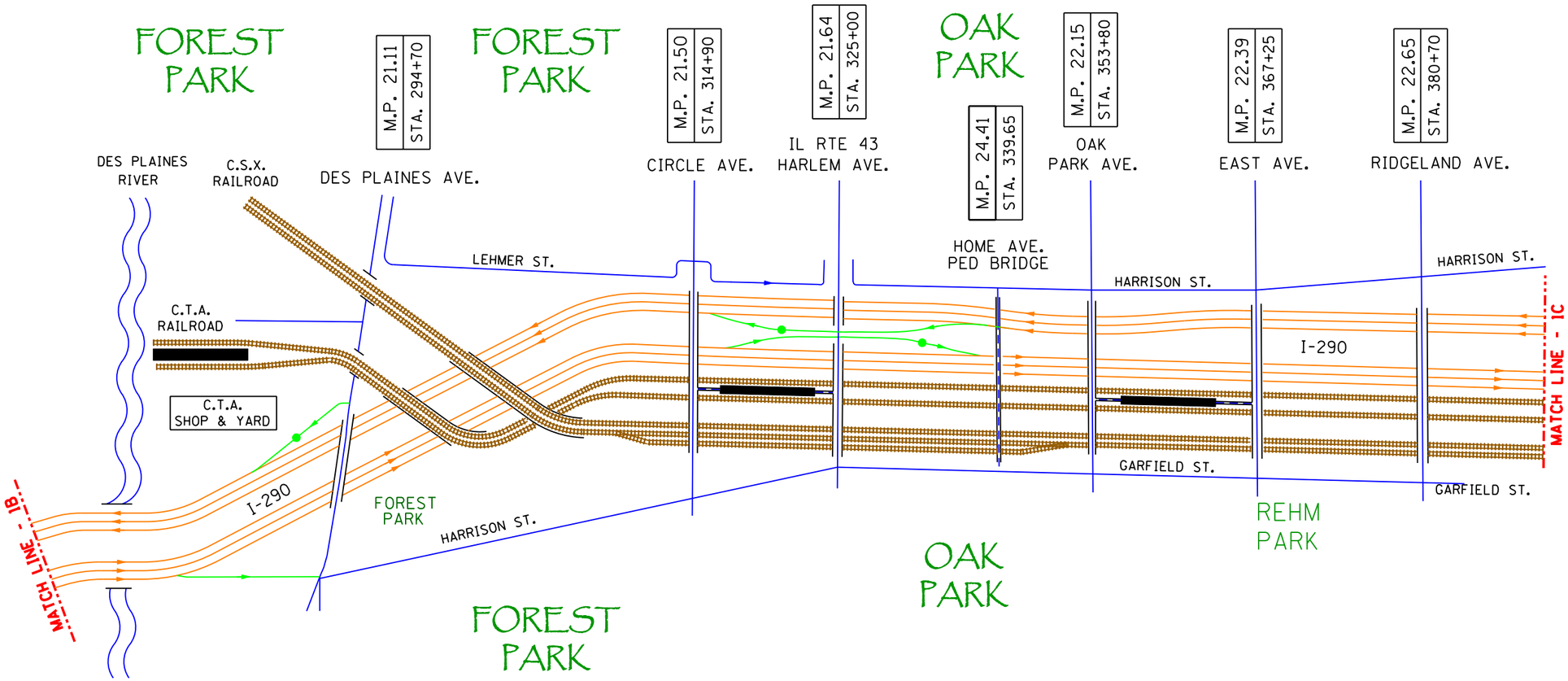
3/29/2010

APPENDIX A

N

NOT TO SCALE



LEGEND

- MAINLINE
- RAMP
- METERED RAMP
- SURFACE/FRONTAGE ROADS
- AUXILIARY LANES
- RAILROAD
- ONE-WAY
- M.P. I-290 MILE POST #

I–290 PHASE I STUDY
EXISTING CONDITIONS REPORT

I–290 EXISTING LANE DIAGRAM
3 OF 4

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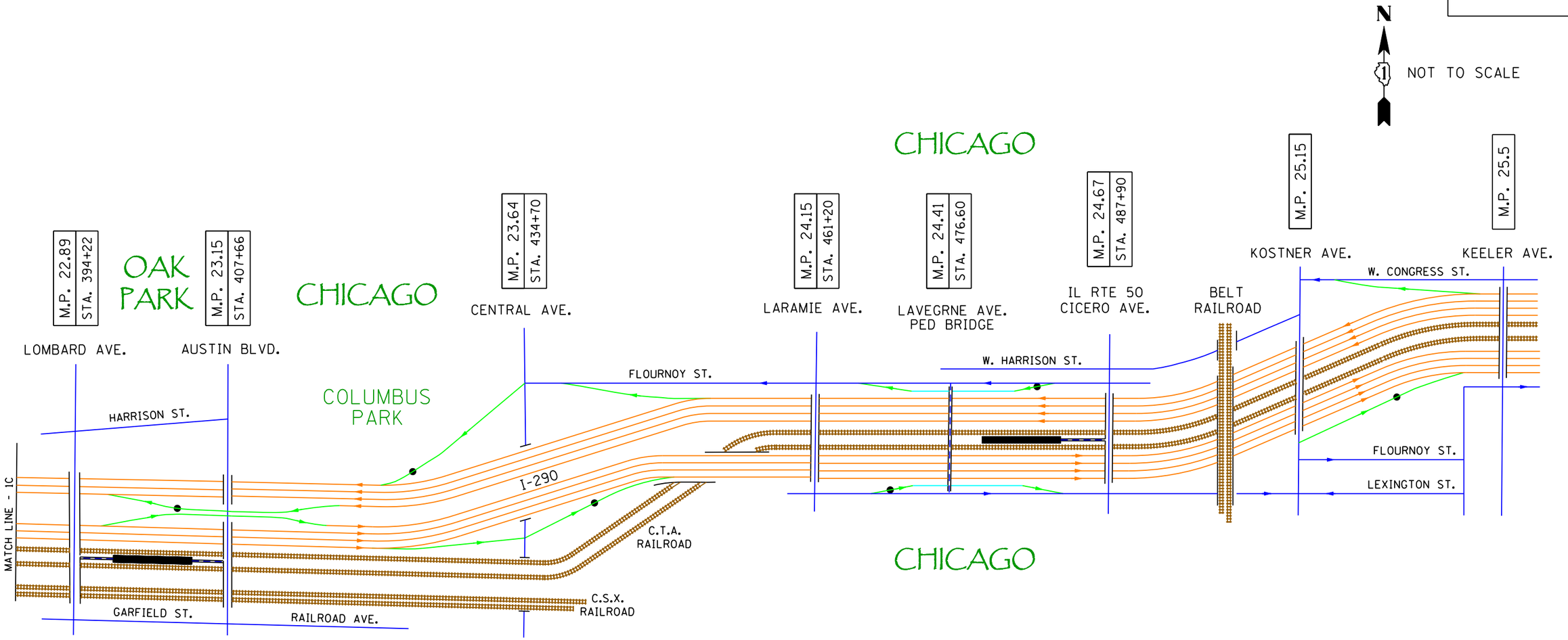
3/29/2010

APPENDIX A

N

NOT TO SCALE



LEGEND

- MAINLINE
- RAMP
- METERED RAMP
- SURFACE/FRONTAGE ROADS
- AUXILIARY LANES
- RAILROAD
- ONE-WAY
- M.P. I-290 MILE POST #

I–290 PHASE I STUDY
EXISTING CONDITIONS REPORT

I–290 EXISTING LANE DIAGRAM
4 OF 4

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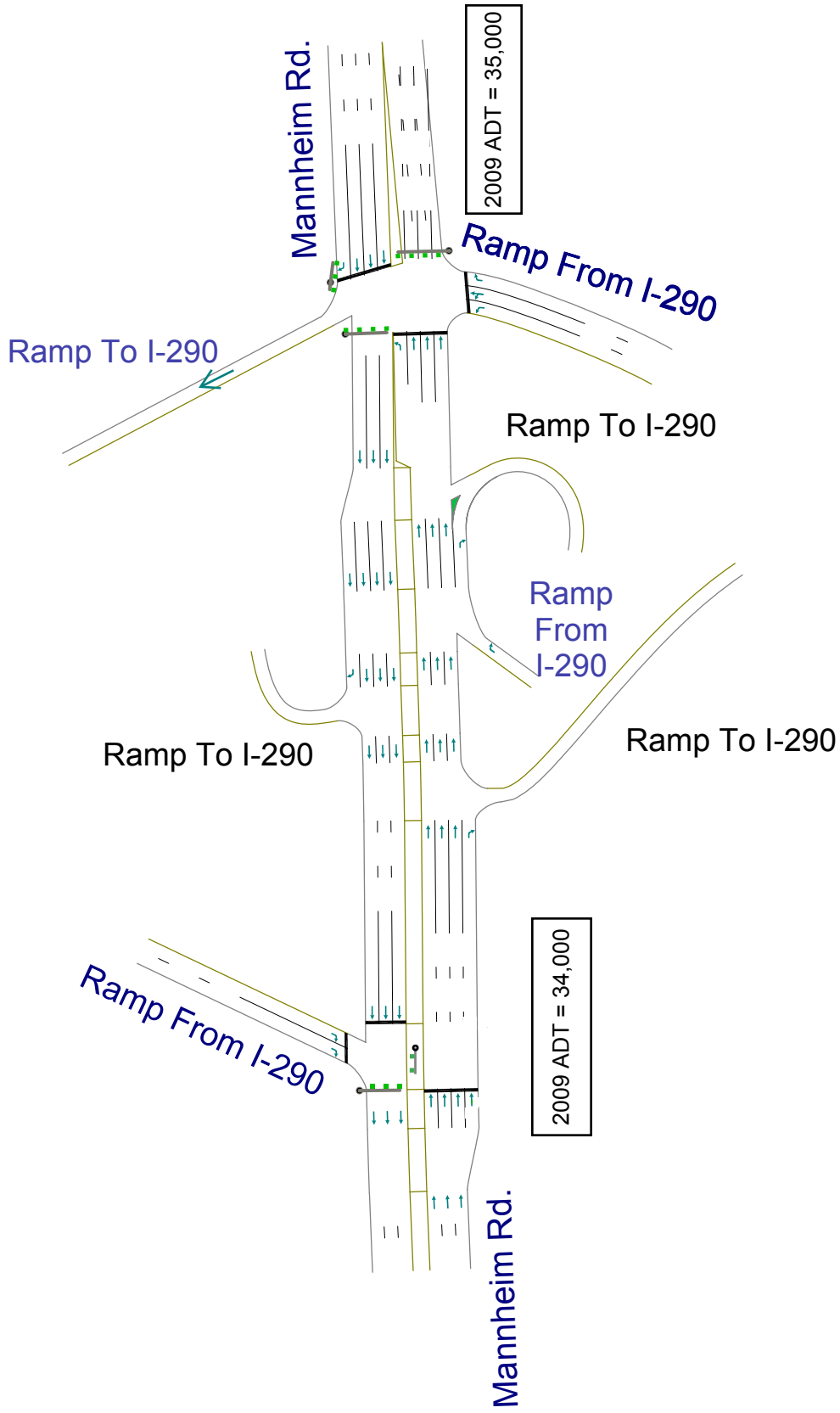
3/29/2010

Technical Memorandum

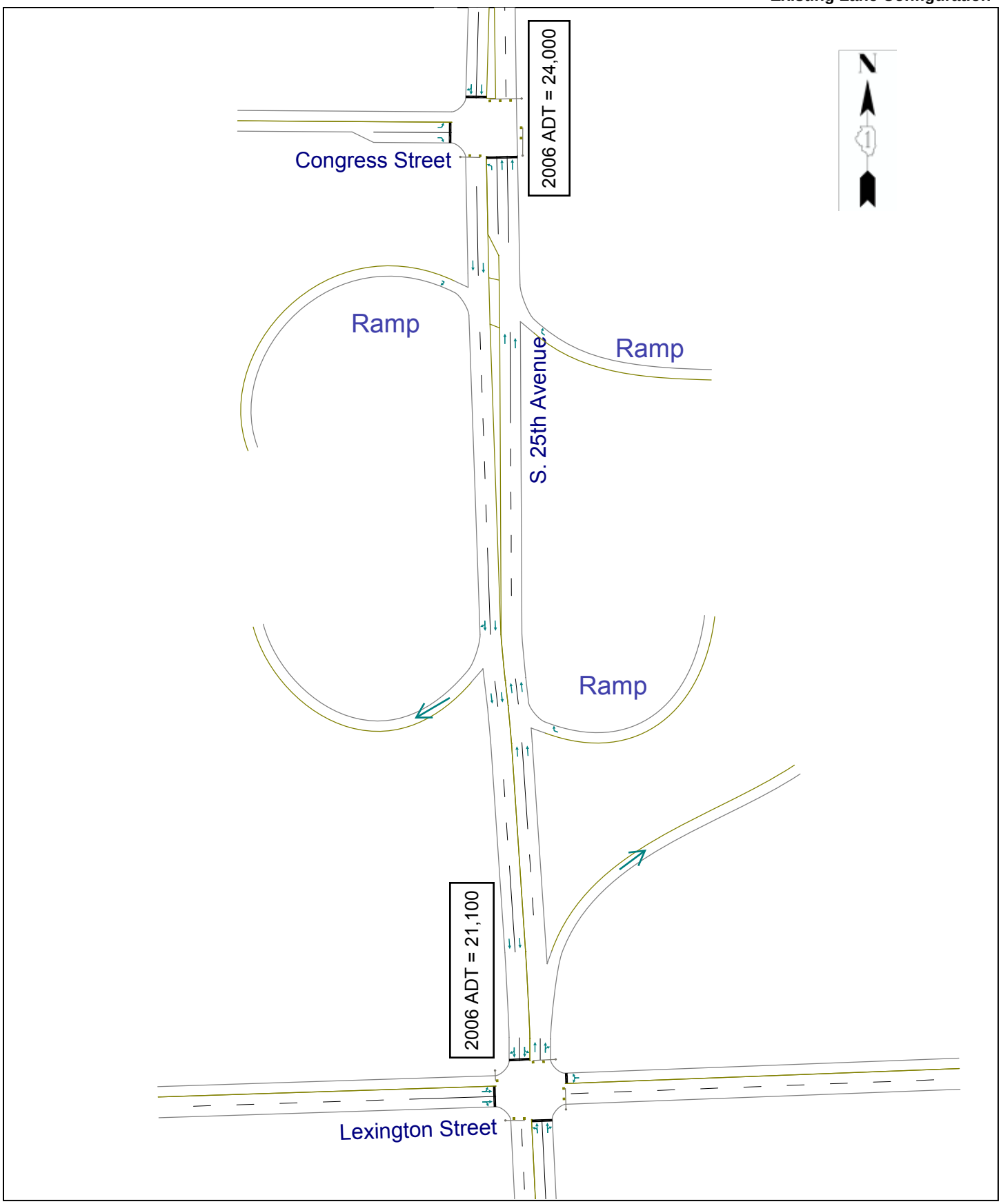
Appendix B

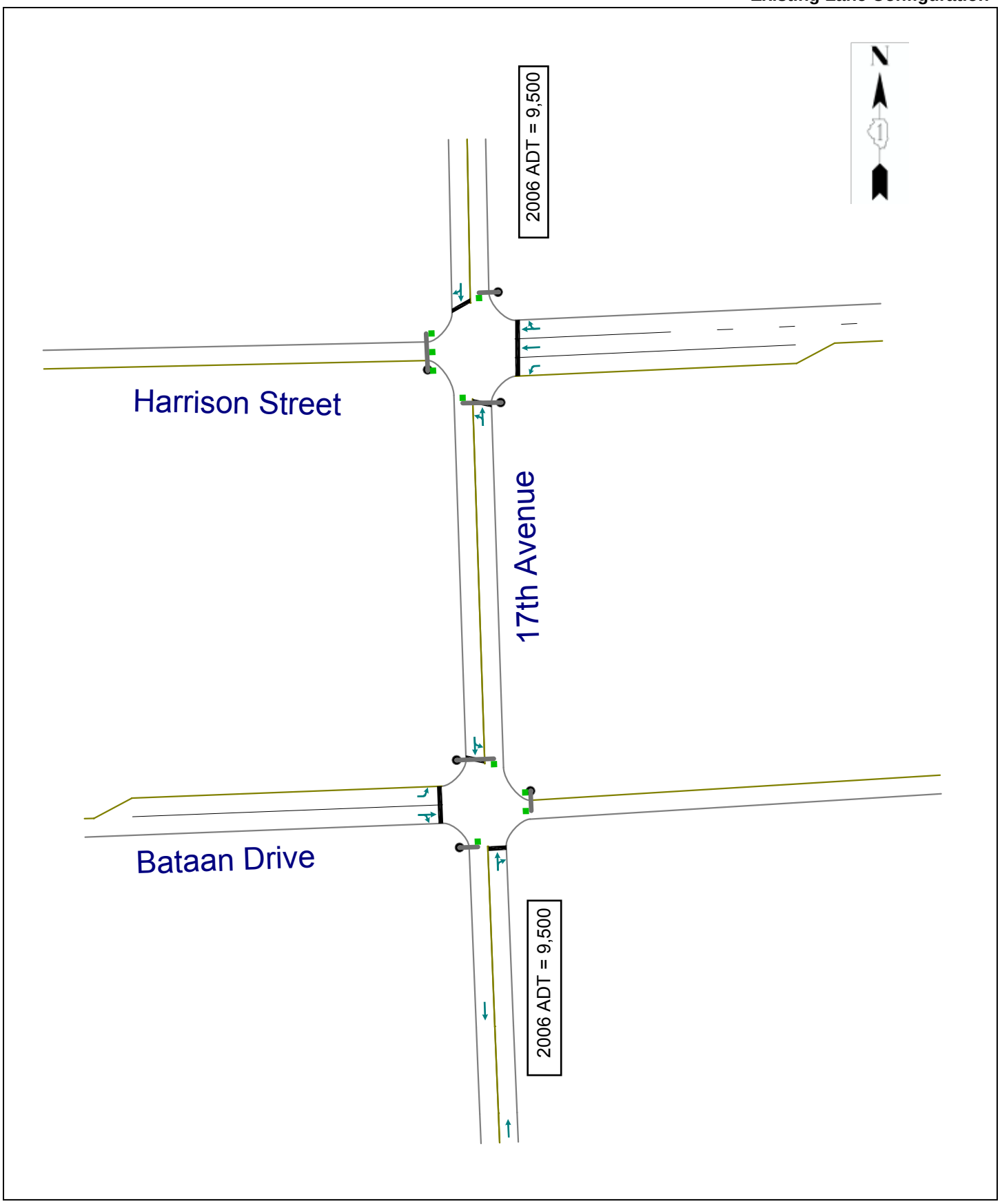
Cross Road Lane Diagrams

Mannheim Road Over I-290
Existing Lane Configuration



25th Avenue over I-290
Existing Lane Configuration

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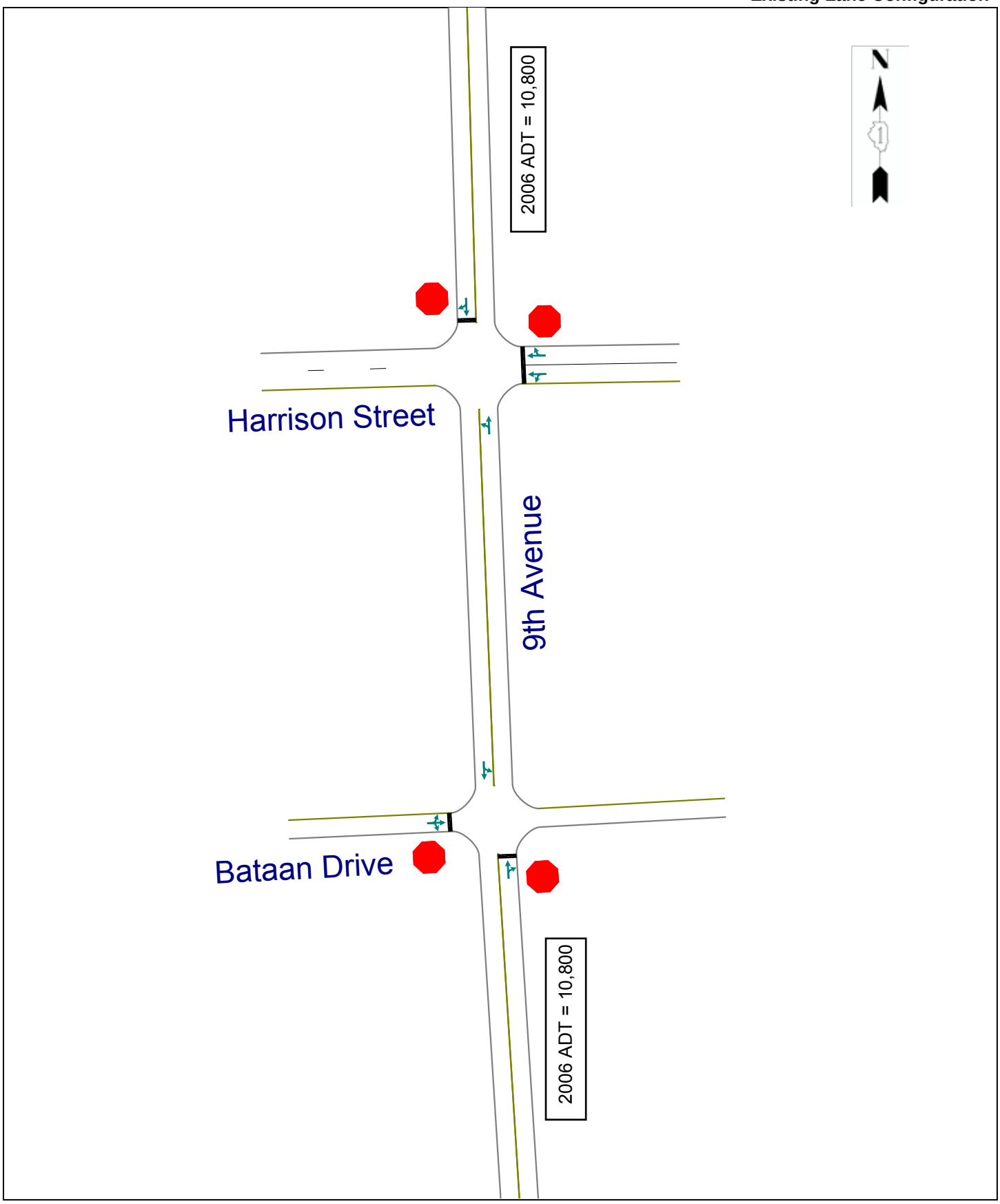
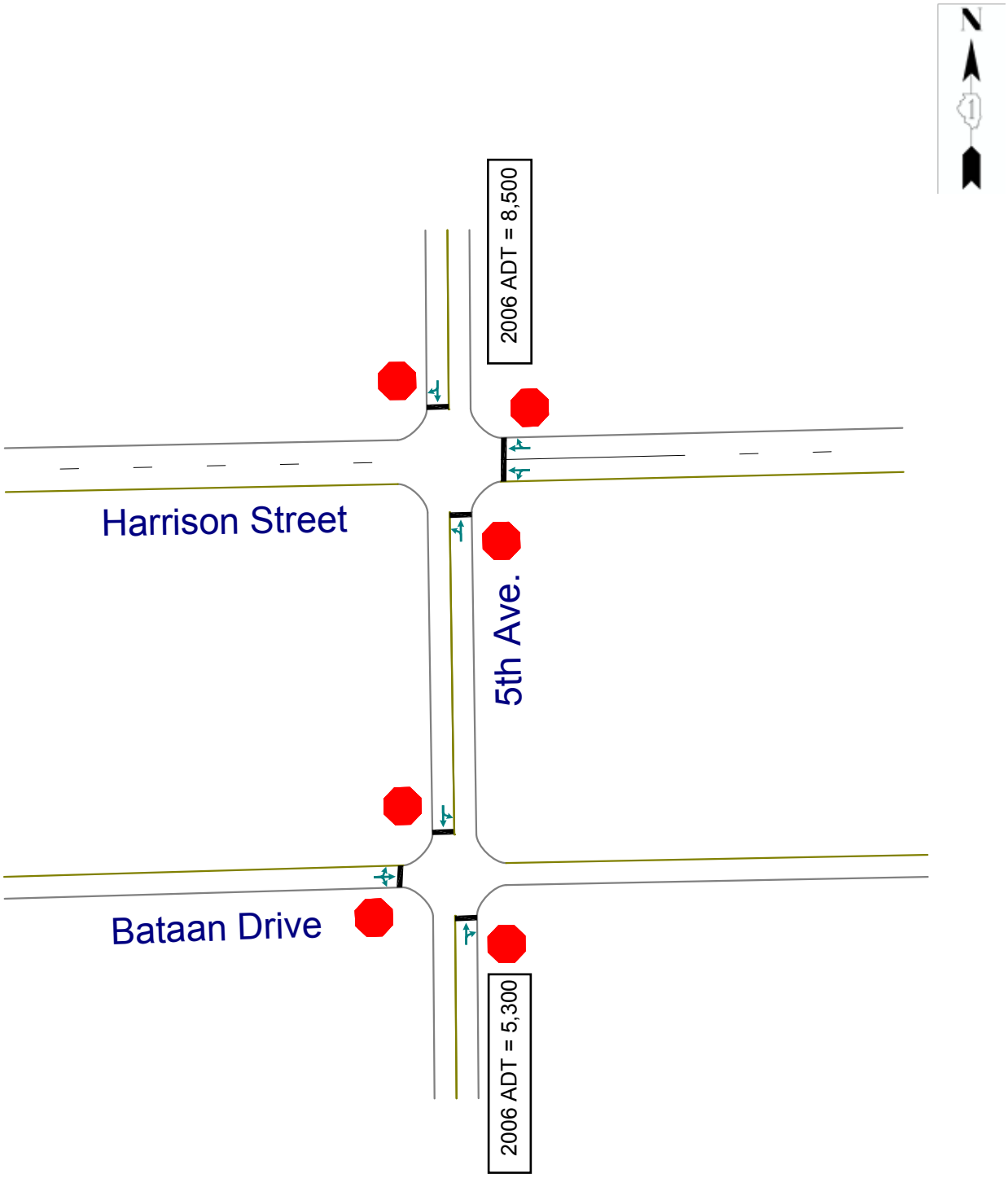
2006 ADT = 9,500
Harrison Street
17th Avenue
Bataan Drive
2006 ADT = 9,500

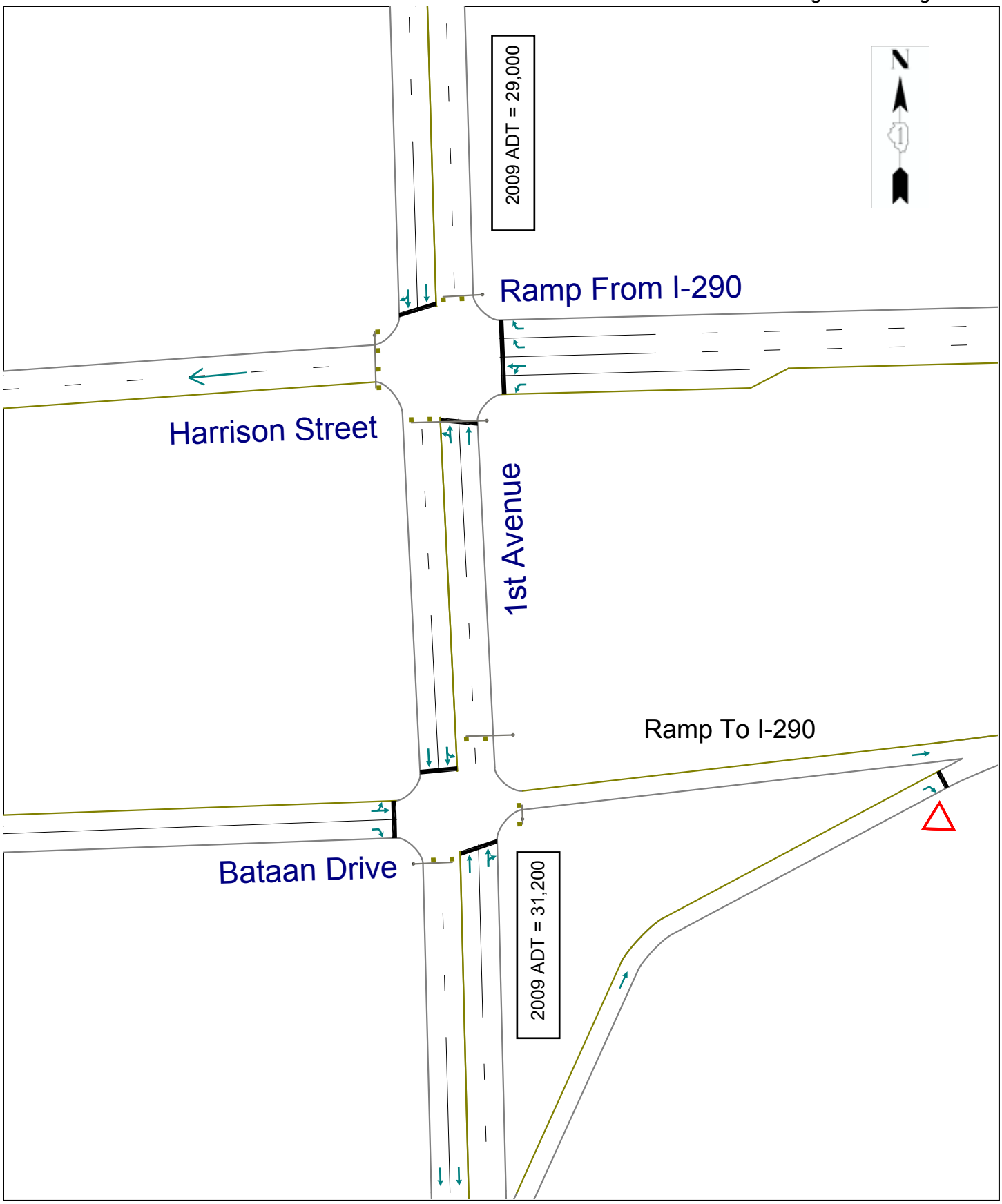
9th Avenue Over I-290
Existing Lane Configuration



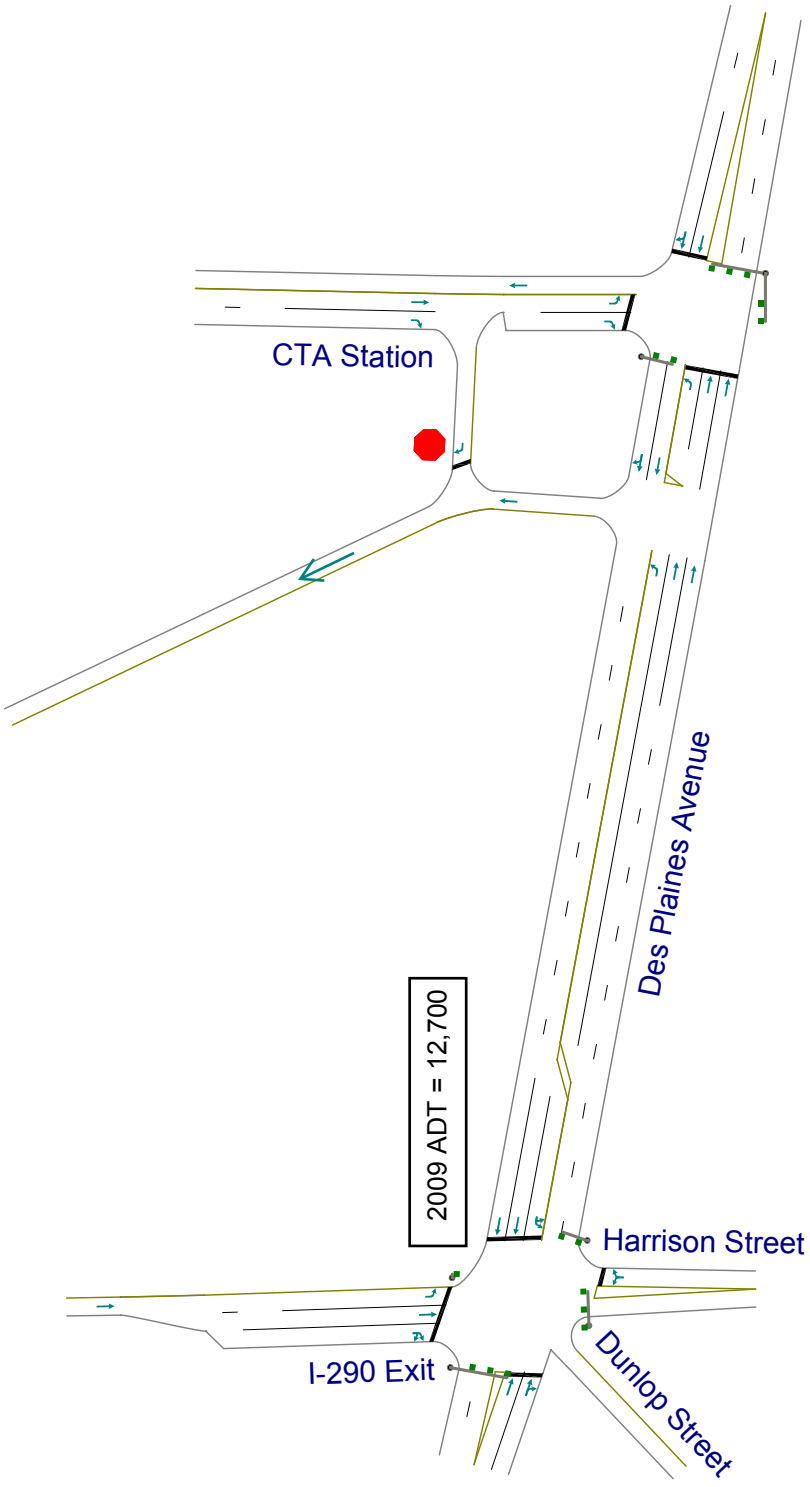
5th Avenue over I-290
Existing Lane Configuration

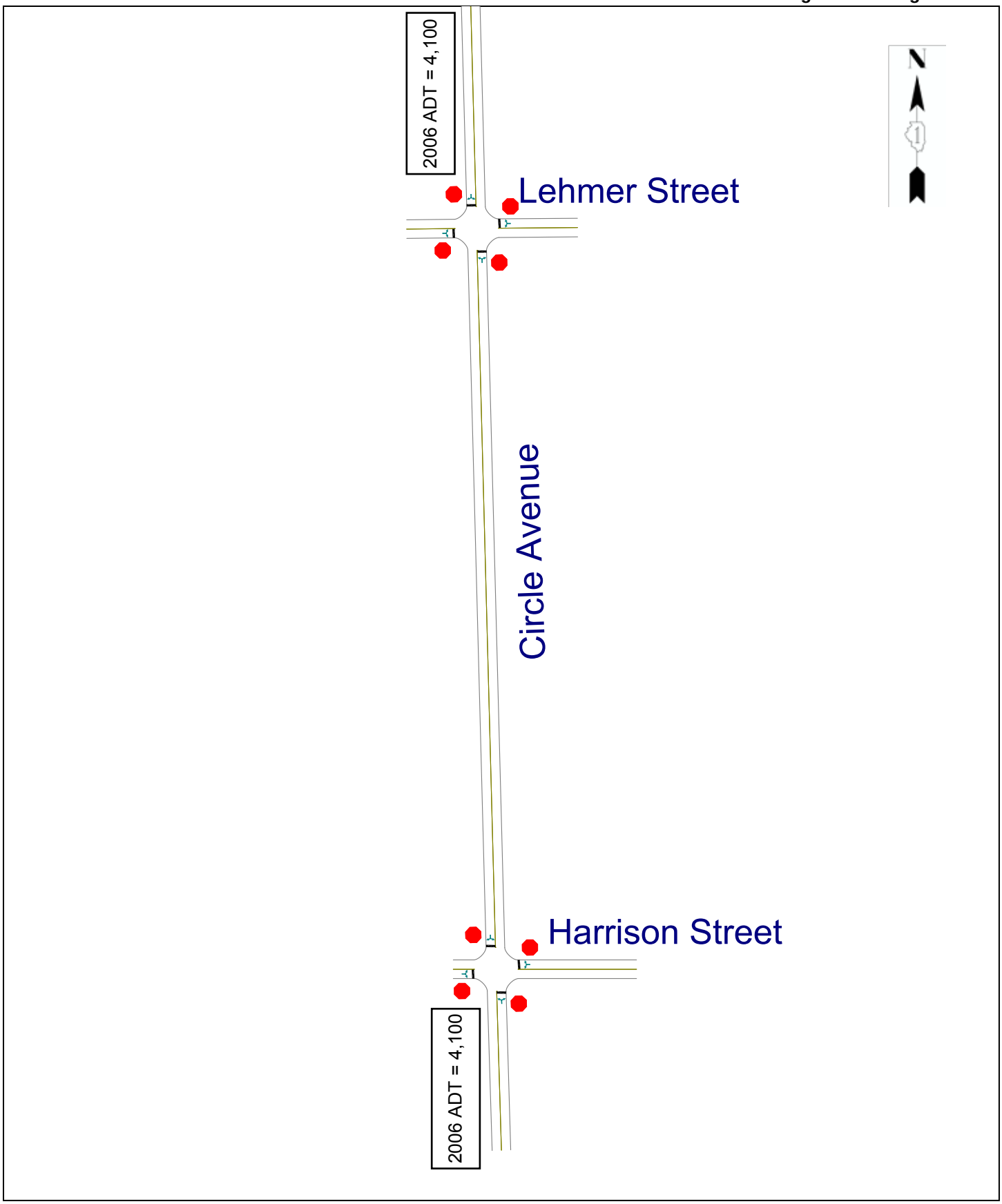


1st Avenue over I-290
Existing Lane Configuration

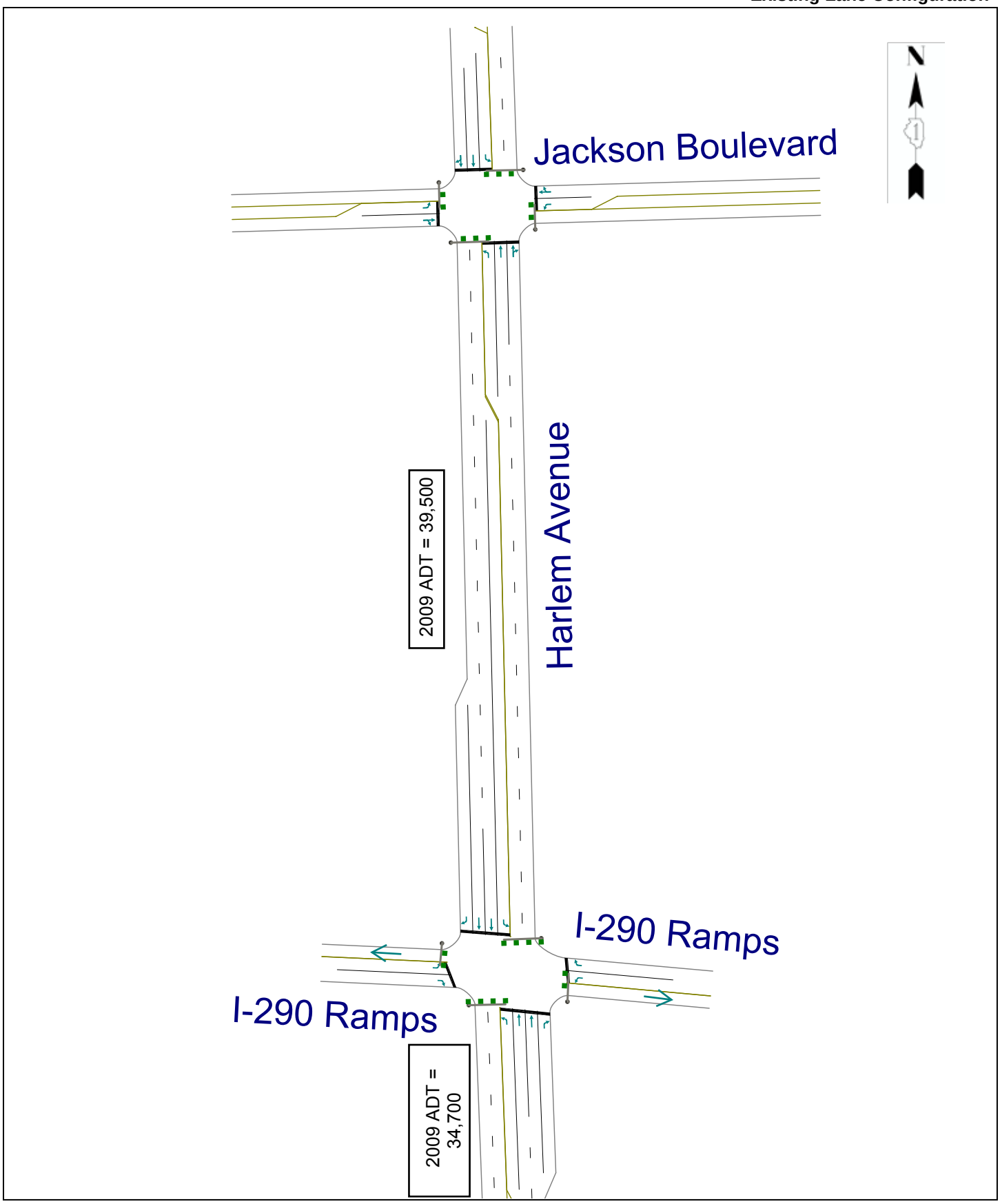


Des Plaines Avenue over I-290
Existing Lane Configuration

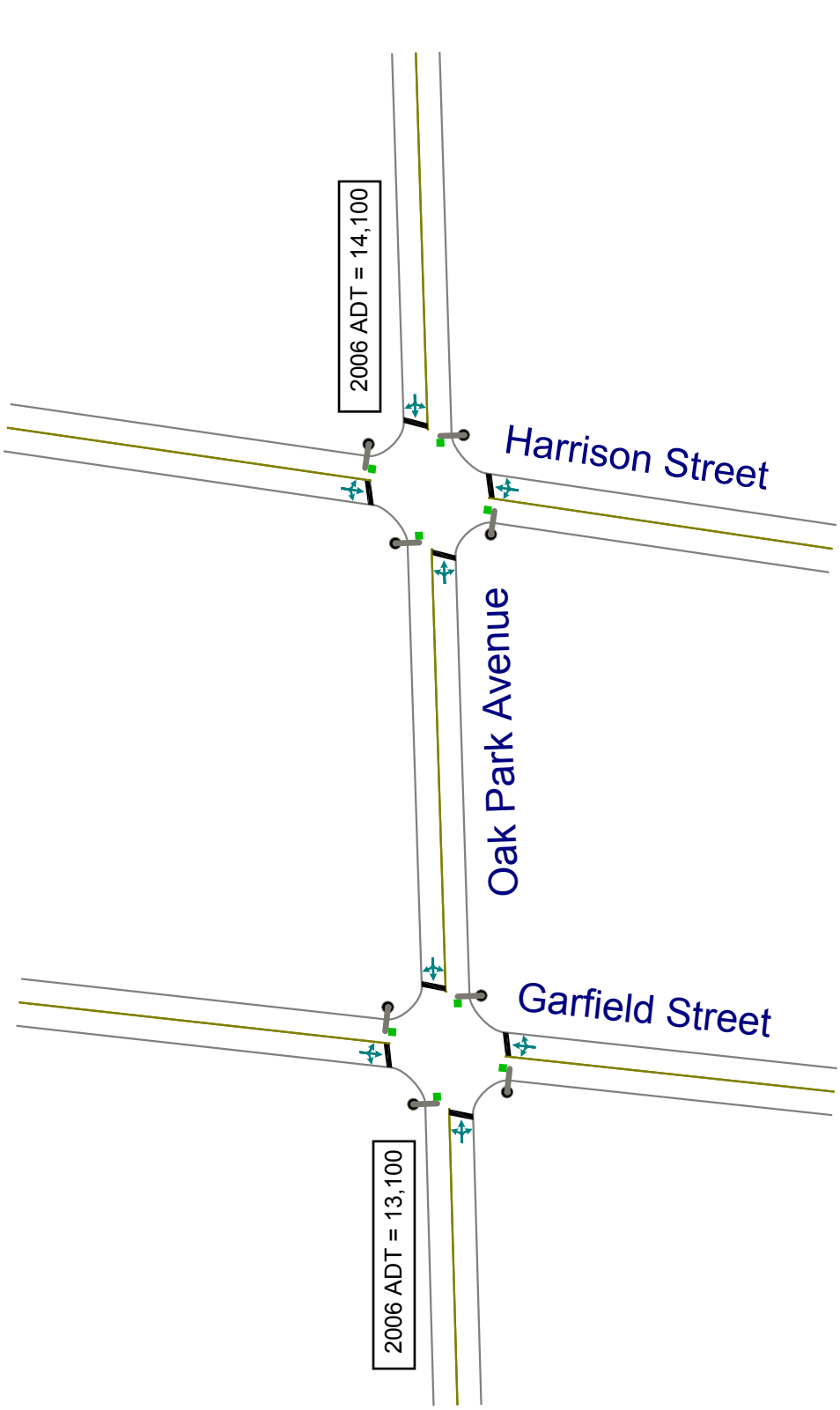



2006 ADT = 4,100
Lehmer Street
N
Circle Avenue
Harrison Street
2006 ADT = 4,100

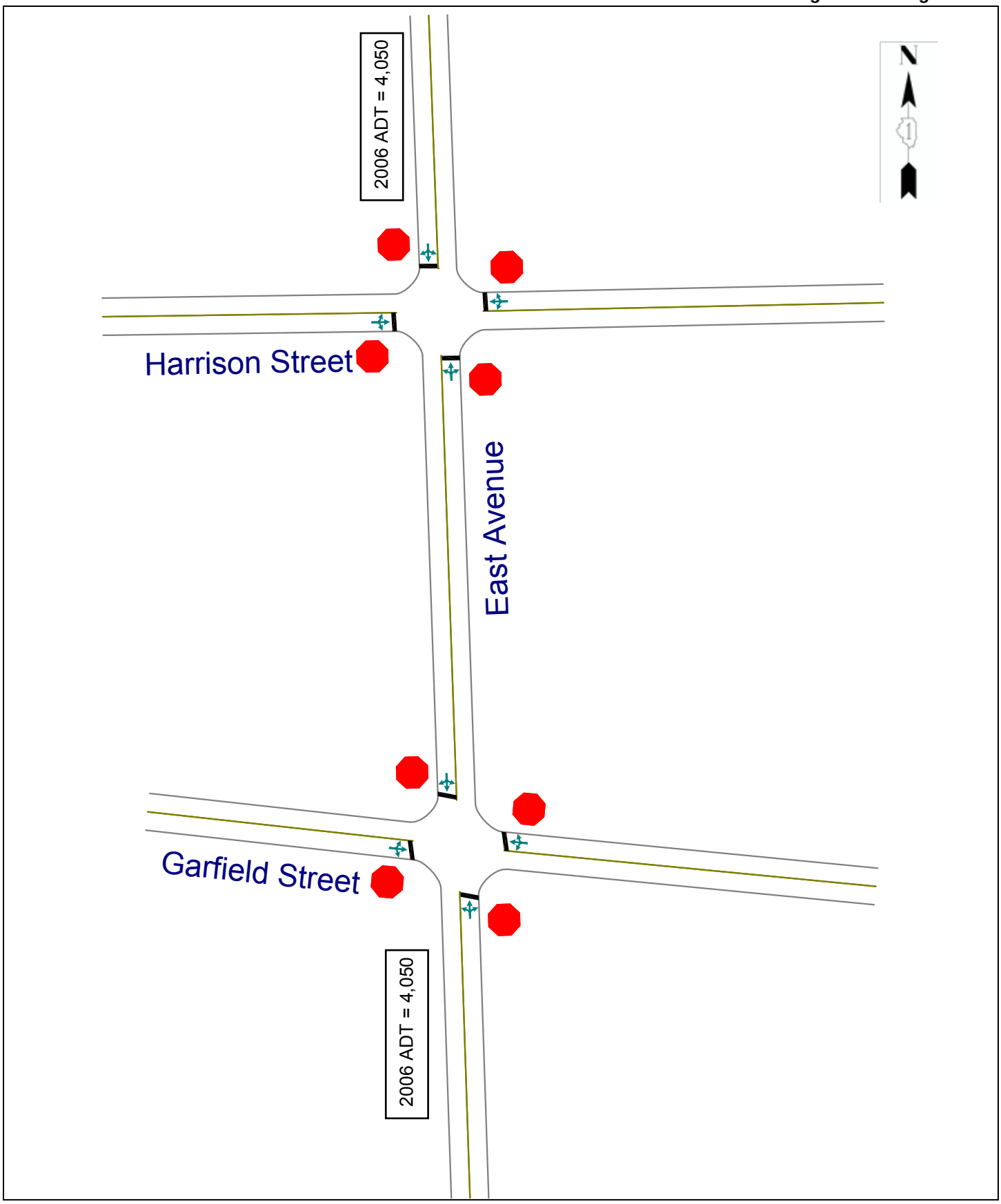
Harlem Ave. over I-290
Existing Lane Configuration



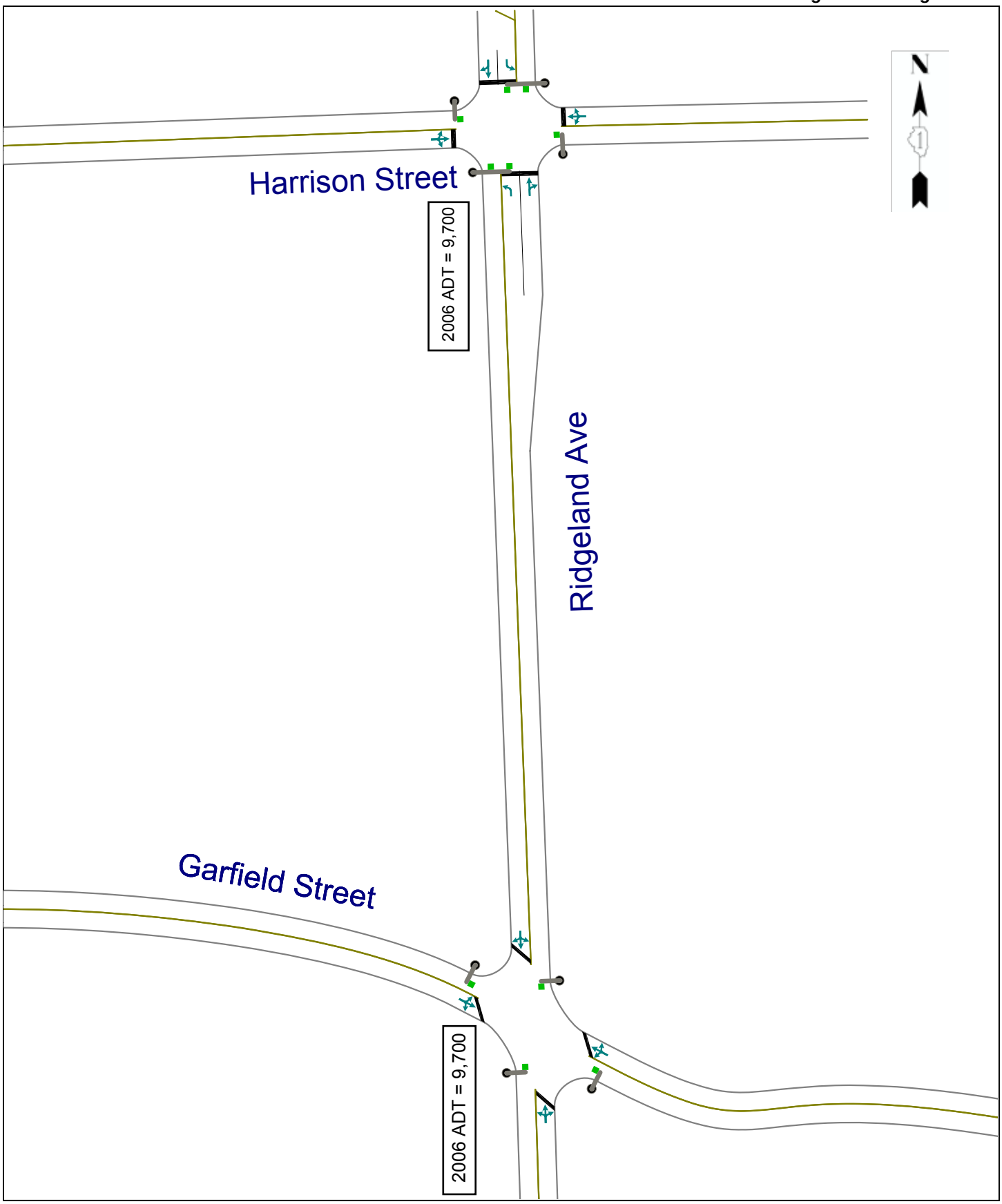
Oak Park Avenue over I-290
Existing Lane Configuration



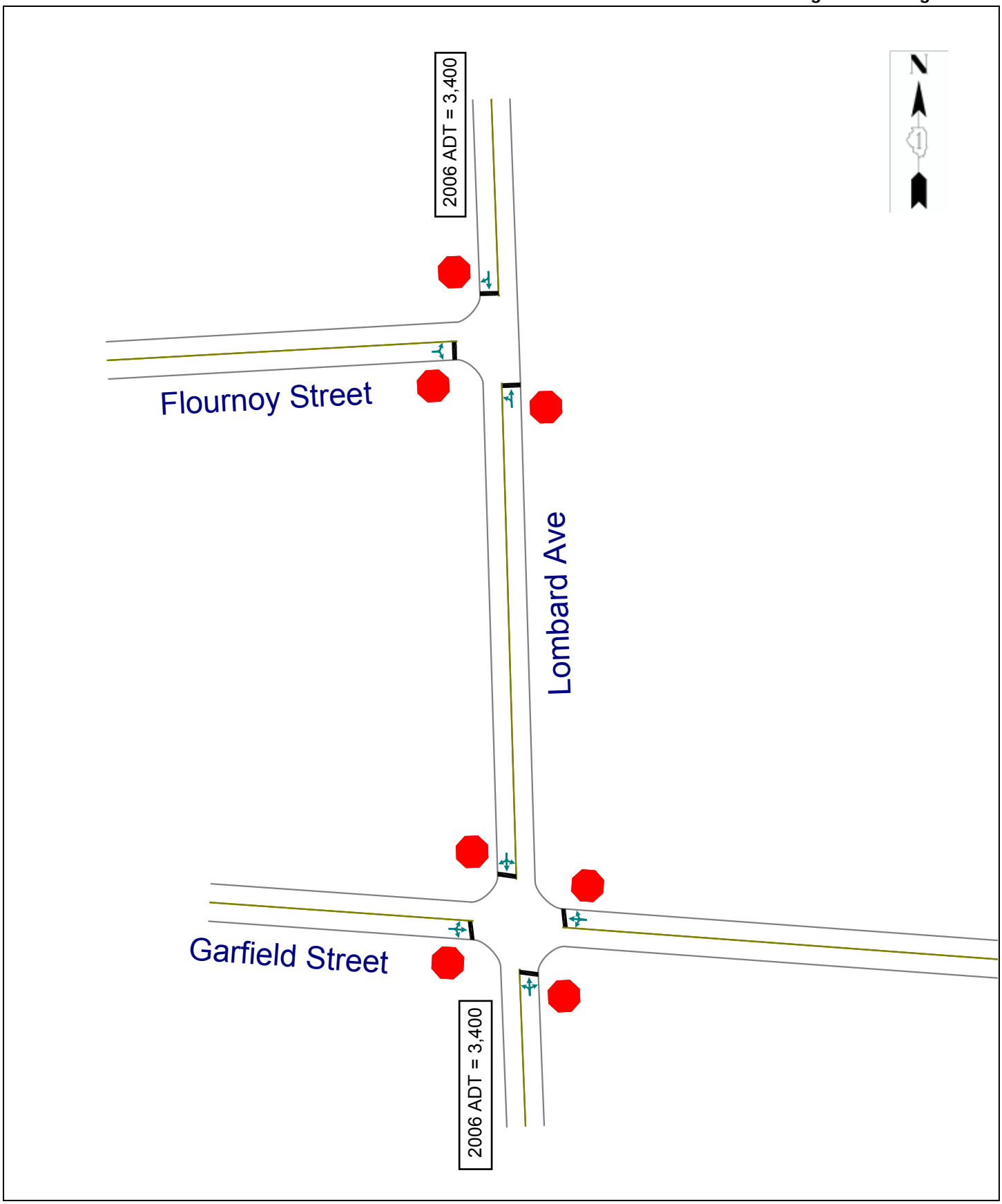
East Avenue over I-290
Existing Lane Configuration



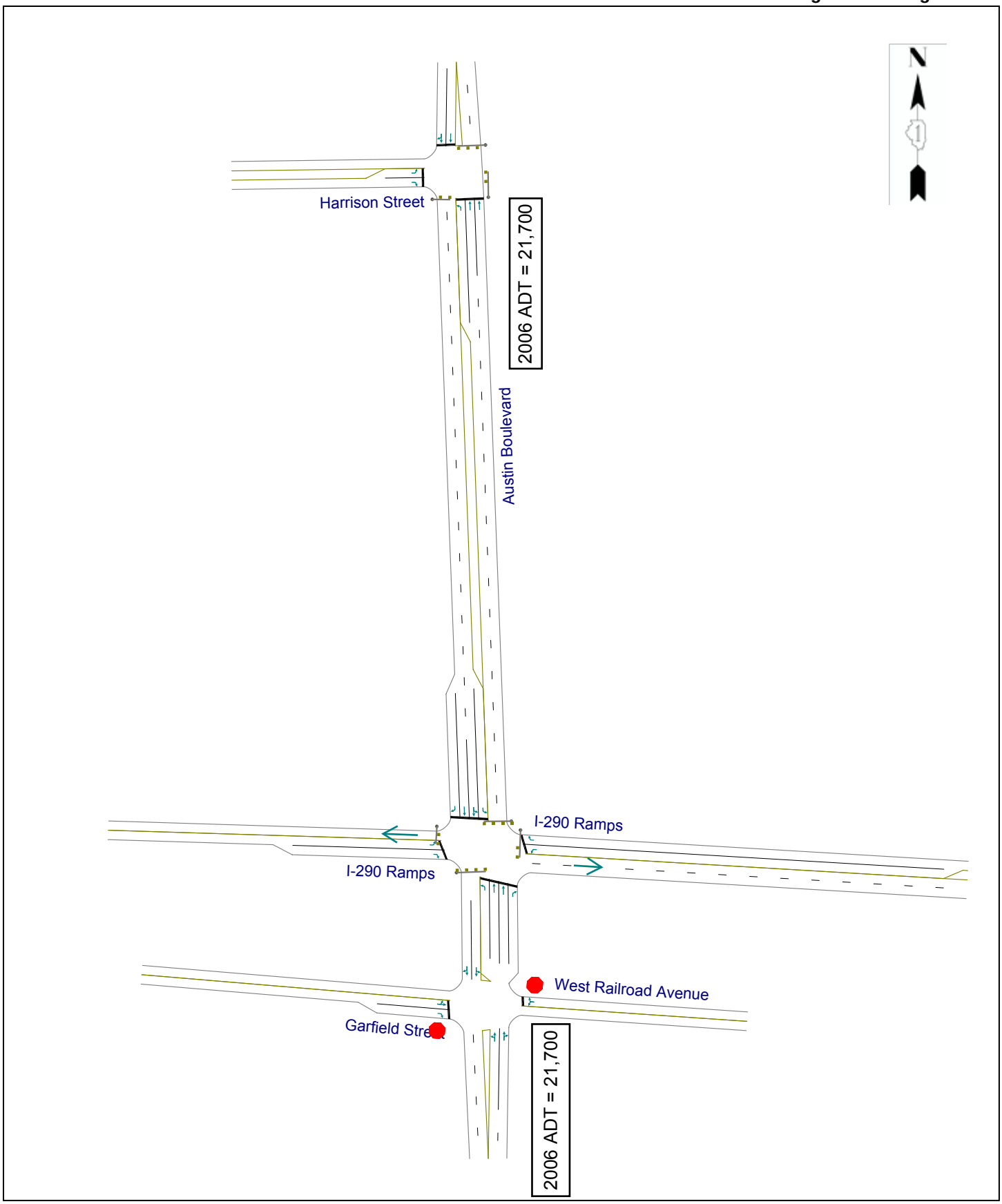
Ridgeland Avenue over I-290
Existing Lane Configuration



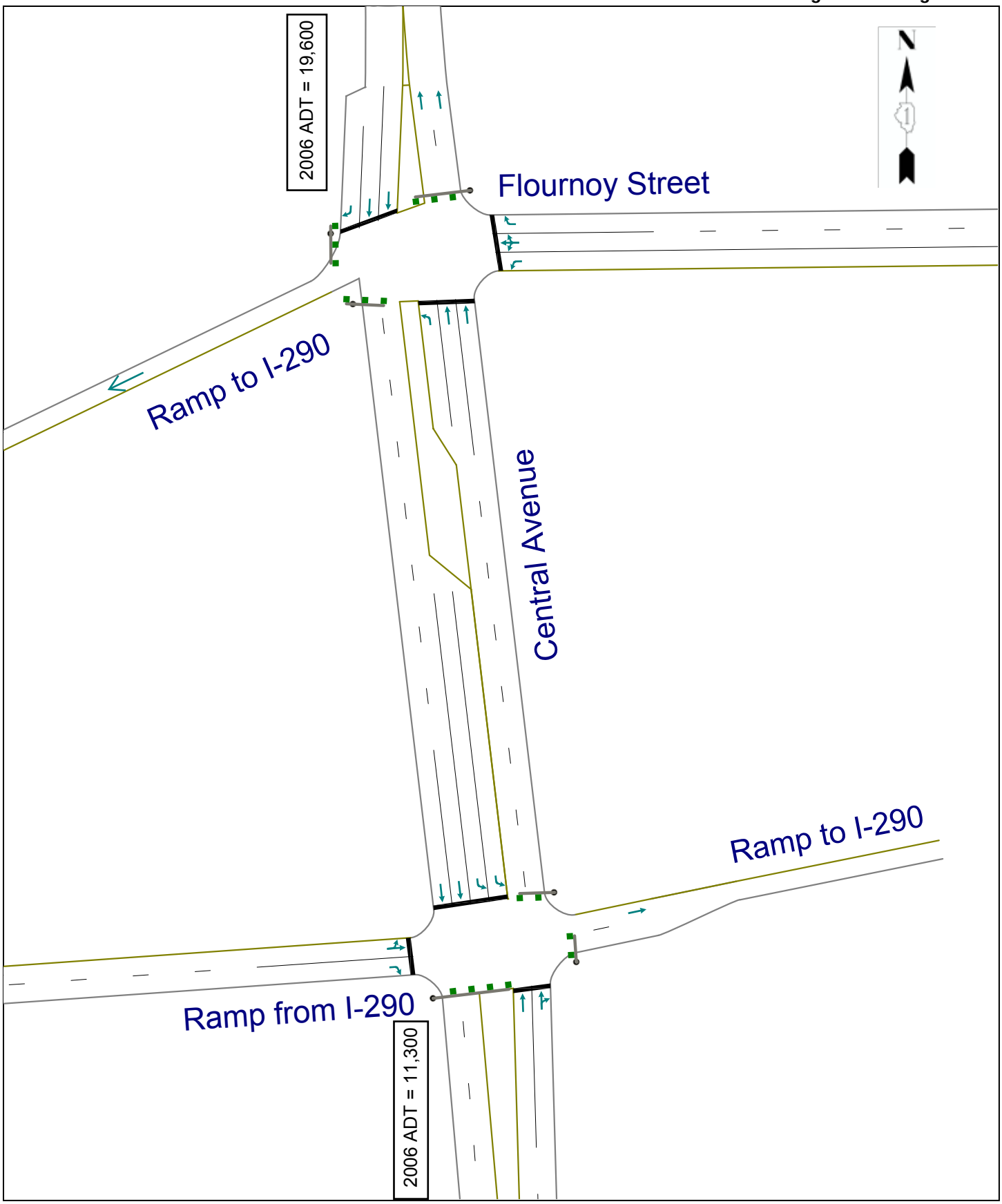
Lombard Avenue over I-290
Existing Lane Configuration



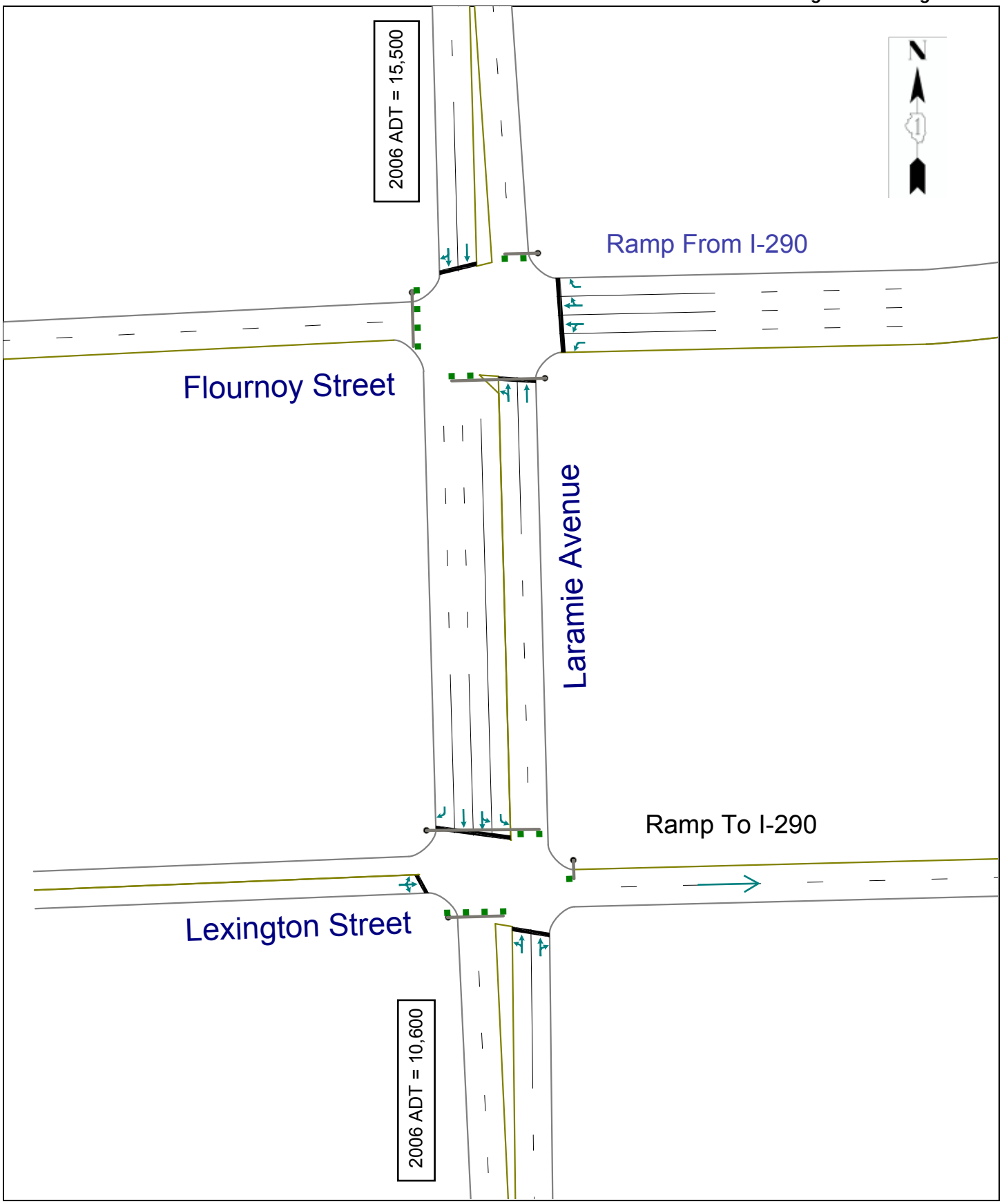
Austin Boulevard over I-290
Existing Lane Configuration



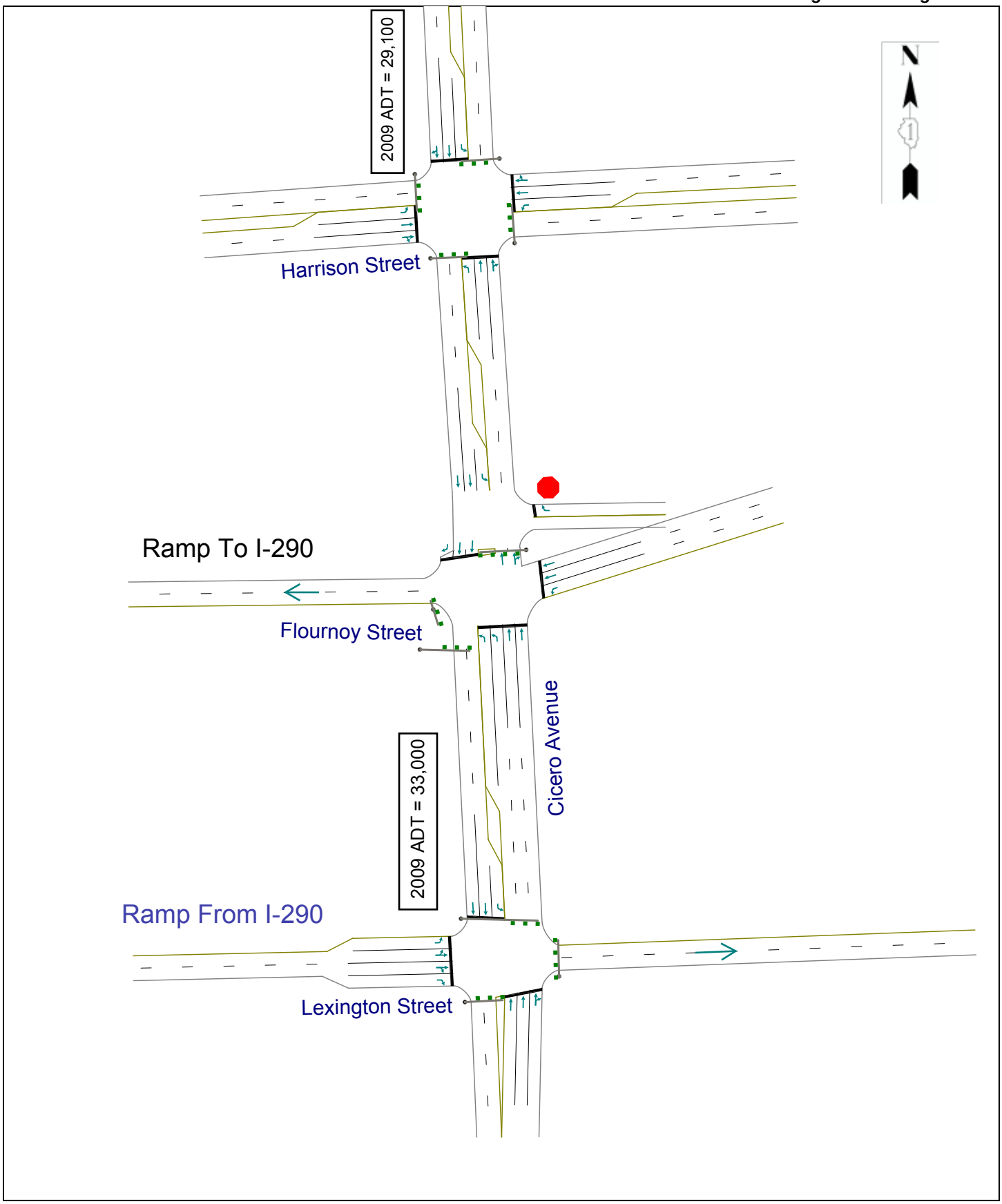
Central Avenue under I-290
Existing Lane Configuration



Laramie Avenue over I-290
Existing Lane Configuration



Cicero Avenue over I-290
Existing Lane Configuration

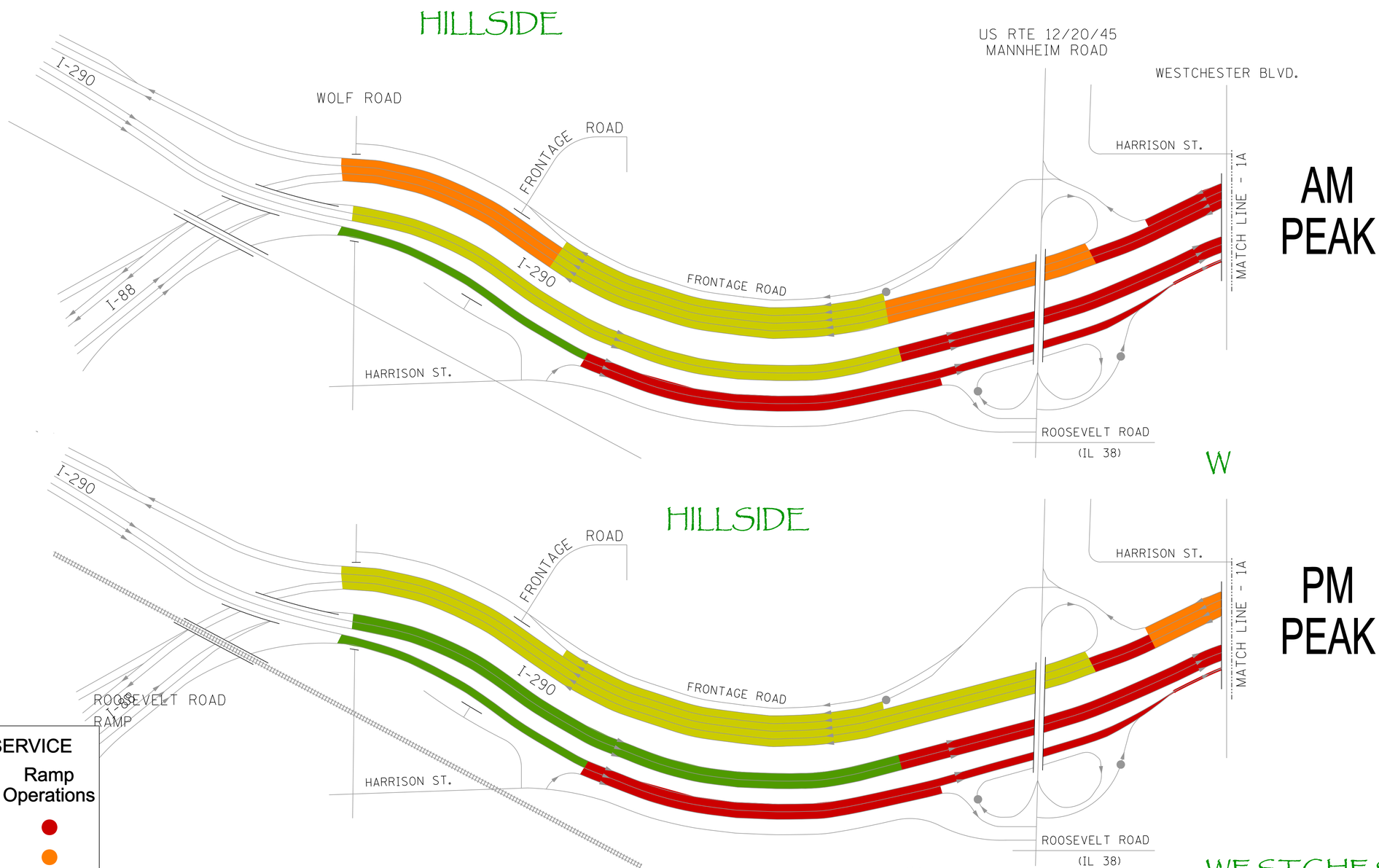


Technical Memorandum

Appendix C

Corridor Level of Service Exhibit

APPENDIX C



OPERATIONS LEVEL OF SERVICE

Mainline Operations	Intersection Operations	Ramp Operations
LOS F	◆	●
LOS E	◆	●
LOS D	◆	●
LOS C	◆	●
LOS B	◆	●
LOS A	◆	●

I-290 PHASE I STUDY
EXISTING CONDITIONS REPORT

I-290 EXISTING LEVEL OF SERVICE
1 OF 4

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6/30/2010

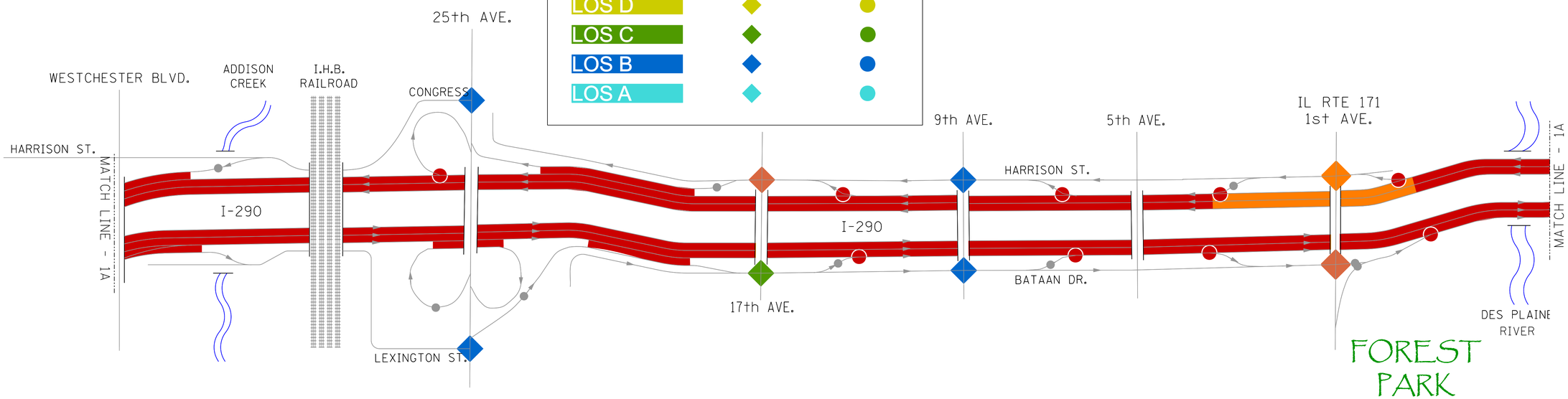
APPENDIX C

OPERATIONS LEVEL OF SERVICE

Mainline Operations	Intersection Operations	Ramp Operations
LOS F	◆	●
LOS E	◆	●
LOS D	◆	●
LOS C	◆	●
LOS B	◆	●
LOS A	◆	●

BELLWOOD

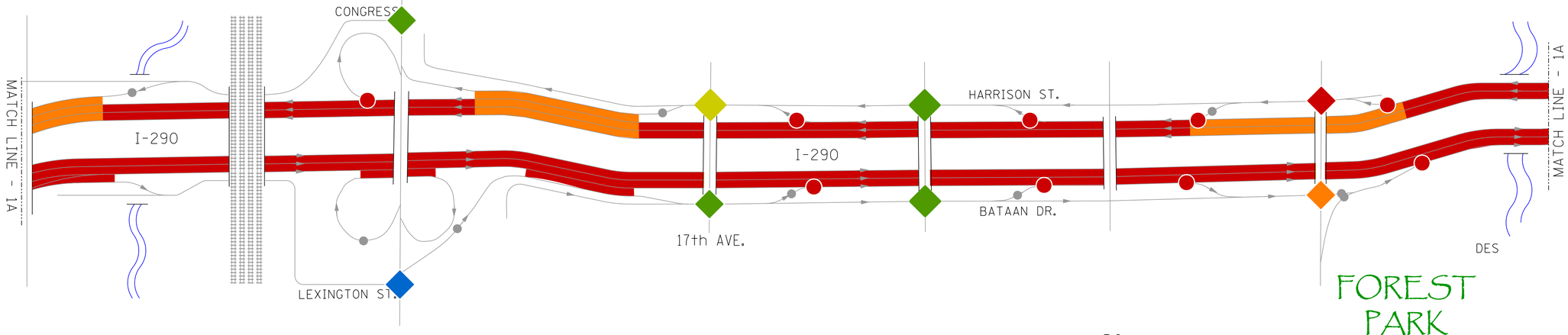
MAYWOOD



AM PEAK

WESTCHESTER

BROADVIEW



PM PEAK

N

1 NOT TO SCALE

I-290 PHASE I STUDY
EXISTING CONDITIONS REPORT

I-290 EXISTING LEVEL OF SERVICE
2 OF 4

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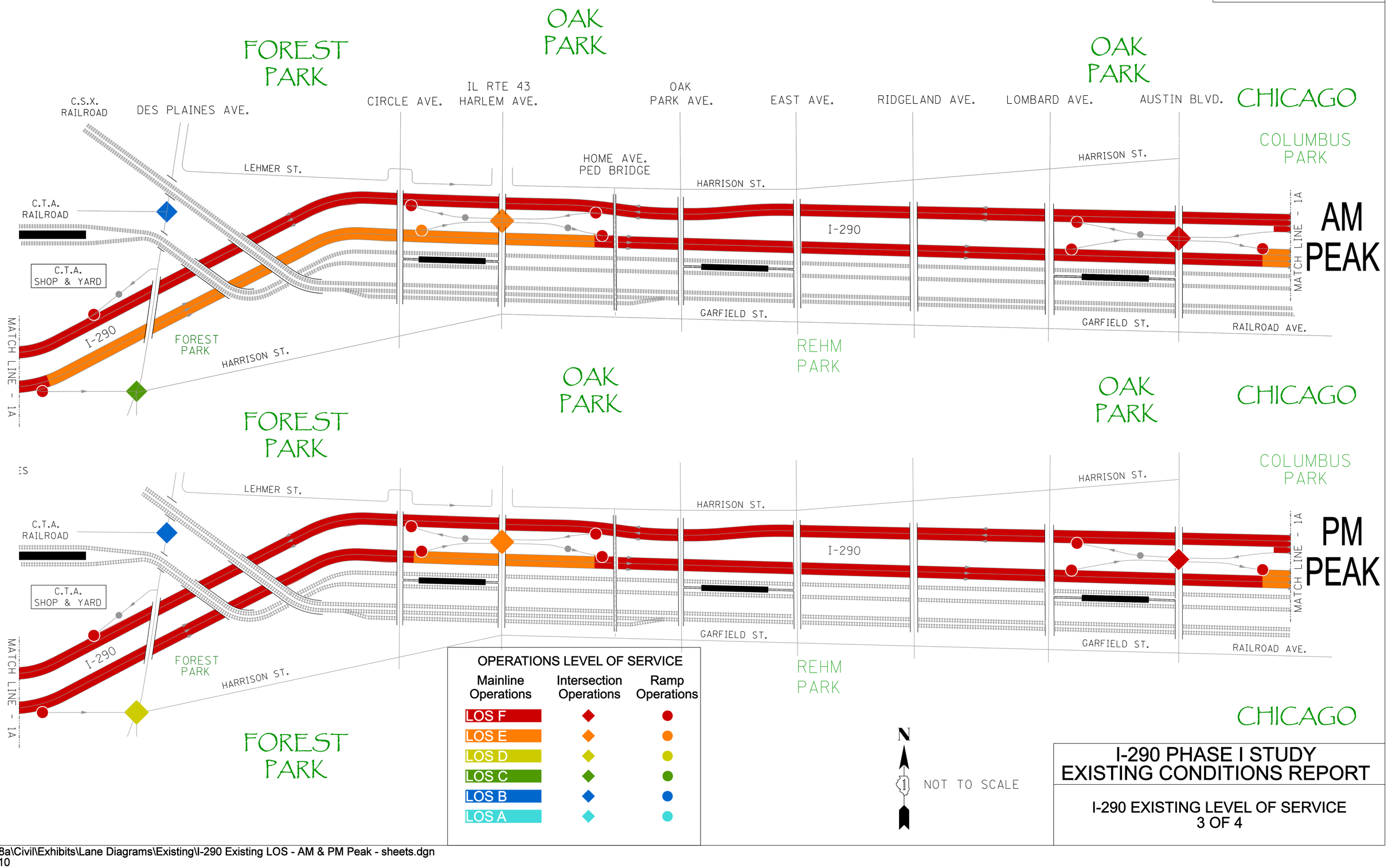
6/30/2010

APPENDIX C



I-290 PHASE I STUDY
EXISTING CONDITIONS REPORT

I-290 EXISTING LEVEL OF SERVICE
3 OF 4

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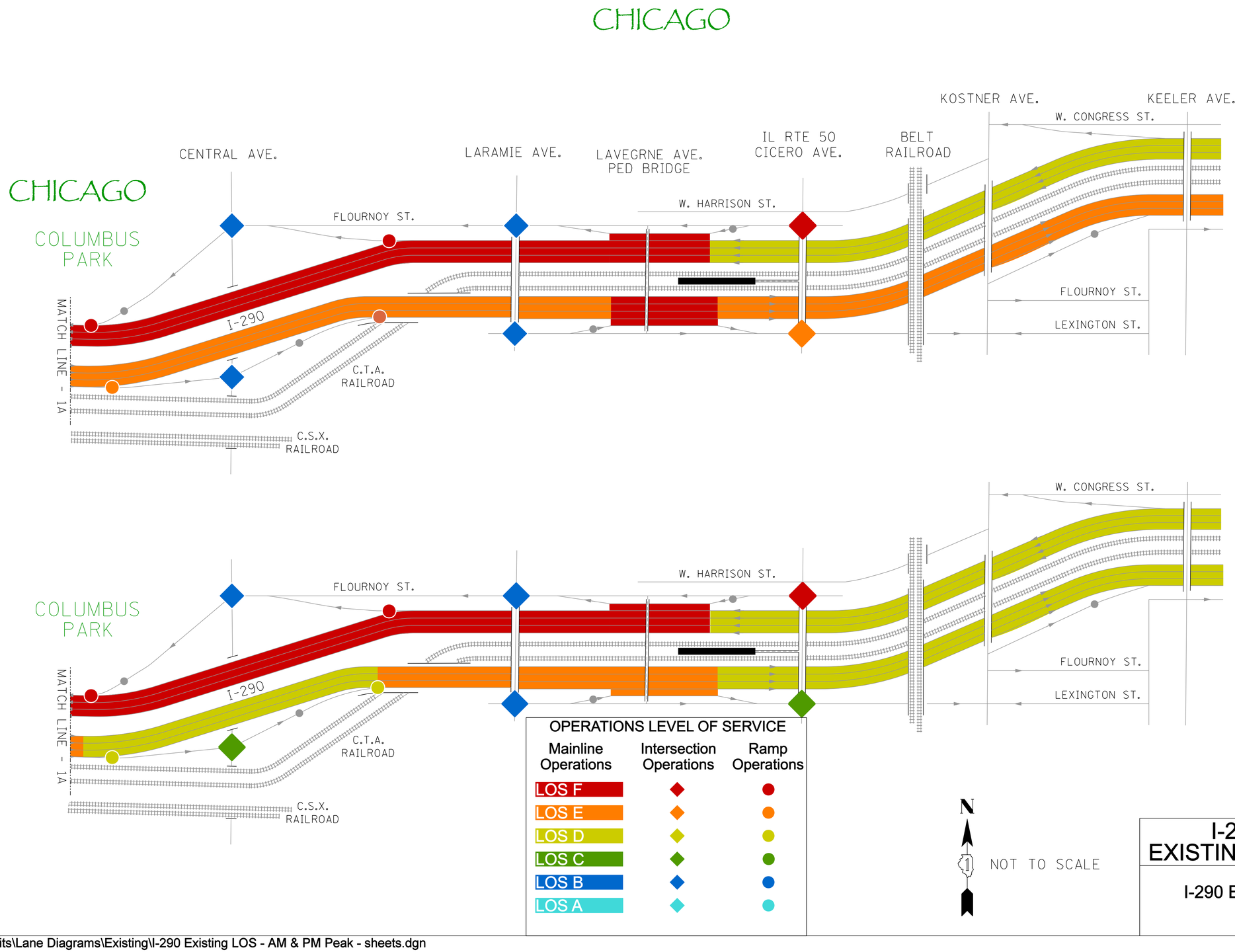
6/30/2010

APPENDIX C

AM PEAK



PM PEAK

I-290 PHASE I STUDY
EXISTING CONDITIONS REPORT

I-290 EXISTING LEVEL OF SERVICE
4 OF 4

T:\16778a\Civil\Exhibits\Lane Diagrams\Existing\I-290 Existing LOS - AM & PM Peak - sheets.dgn
6/30/2010

Technical Memorandum

Appendix D

Arterial V/C Calculations

I-290 Study area 2010 Arterial AADT and V/C ratio calculation methodology

The model provided Volume and Capacity for the entire network. Five arterials in the I-290 corridor were selected for review: North Avenue, Lake Street, Madison Street, Roosevelt Road and Cermak Road. The segments of these roads selected for review were between Wolf Road to Cicero Avenue.

Two hour capacity and volume data for AM and PM peak periods were extracted from the model for each link comprising the arterials and converted to a 1 hour period from which the initial model V/C ratio was calculated.

To calibrate the model output with reported data, the model volumes (two hour) were reduced by half to represent a one hour period and an adjustment factor was calculated using IDOT's 2009 AADT traffic volumes for the arterials. As commonly accepted, 10% of the AADT value was assumed to represent the daily 1 hour peak period volume for 2009. The V/C adjustment factor was then determined by dividing the AADT peak hour volume by the adjusted model output peak hour volume.

The V/C adjustment factor was applied to the model V/C factor for each segment sub-link, then summarized at the segment level on a link length weighted basis.

2010 Arterial PM Peak Period v/c Segment Summary							
Arterial Segment		Capacity	Model 1 hr Vol	AADT 1 hr Vol.	Vol. Ratio	Model v/c	Adjusted v/c
SegID	**North Avenue**						
1	Wolf to Mannheim	4,860	3,341	5,290	1.58	0.73	1.16
2	Mannheim to 25th	4,455	3,715	5,120	1.38	0.89	1.23
3A	25th to 5th	4,590	5,200	5,120	0.98	1.21	1.19
3B	5th to 1st	3,240	3,220	4,590	1.43	0.99	1.42
4A	1st to Thatcher	4,455	2,355	4,590	1.95	0.57	1.11
4B	Thatcher to Harlem	2,925	2,201	3,500	1.59	0.79	1.25
5A	Harlem to Oak Park	2,822	1,625	3,640	2.24	0.63	1.42
5B	Oak Park to Austin	2,770	1,436	3,610	2.51	0.55	1.37
6A	Austin to Central	2,822	1,103	3,610	3.27	0.43	1.41
6B	Central to Cicero	3,014	1,121	2,940	2.62	0.39	1.02
SegID	**Lake Street**						
1	Wolf to Mannheim	3,038	1,922	2,250	1.17	0.68	0.80
2	Mannheim to 25th	2,970	1,423	2,100	1.48	0.52	0.76
3A	25th to Chicago	1,458	1,111	1,350	1.21	0.78	0.95
3B	Chicago to 1st	1,235	777	1,000	1.29	0.70	0.90
4	1st to Harlem	1,296	639	1,460	2.28	0.54	1.24
5A	Harlem to Ridgeland	1,446	972	1,060	1.09	0.69	0.76
5B	Ridgeland to Austin	1,458	821	710	0.86	0.59	0.51
6A	Austin to Central	1,428	975	710	0.73	0.70	0.51
6B	Central to Cicero	3,093	813	1,120	1.38	0.27	0.38
SegID	**Madison Street**						
2	Mannheim to 25th	1,559	231	850	3.68	0.15	0.56
3A	25th to 17th	2,886	118	550	4.67	0.04	0.20
3B	17th to 5th	2,651	110	1,160	10.55	0.06	0.59
3C	5th to 1st	1,124	93	1,090	11.78	0.09	1.11
4	1st to Harlem	2,291	400	1,280	3.20	0.25	0.81
5	Harlem to Austin	3,391	617	1,980	3.21	0.19	0.60
6	Austin to Cicero	3,302	859	2,610	3.04	0.27	0.82
SegID	**Roosevelt Road**						
1	Wolf to Mannheim	3,456	1,268	2,800	2.21	0.51	1.12
2	Mannheim to 25th	3,455	901	2,800	3.11	0.35	1.08
3A	25th to 17th	3,399	657	2,650	4.04	0.26	1.05
3B	17th to 1st	3,401	892	2,830	3.17	0.35	1.12
4A	1st to Des Plaines	3,375	1,494	2,660	1.78	0.62	1.11
4B	Des Plaines to Harlem	3,342	1,508	2,620	1.74	0.61	1.05
5A	Harlem to Oak Park	3,426	1,493	2,240	1.50	0.61	0.92
5B	Oak Park to Ridgeland	3,383	1,214	1,730	1.43	0.54	0.77
5C	Ridgeland to Austin	3,383	1,263	2,020	1.60	0.54	0.86
6	Austin to Cicero	3,162	1,044	1,950	1.87	0.48	0.90

2010 Arterial PM Peak Period v/c Segment Summary							
Arterial Segment		Capacity	Model 1 hr Vol	AADT 1 hr Vol.	Vol. Ratio	Model v/c	Adjusted v/c
SegID	**Cermak Road**						
1	Wolf to Mannheim	3,240	2,332	2,500	1.07	0.76	0.82
2	Mannheim to 25th	3,105	1,863	3,320	1.78	0.63	1.11
3A	25th to 17th	2,970	1,579	3,680	2.33	0.58	1.36
3B	17th to 1st	3,075	1,884	3,700	1.96	0.65	1.27
4A	1st to Des Plaines	4,320	2,284	3,400	1.49	0.57	0.85
4B	Des Plaines to Harlem	3,140	1,663	2,990	1.80	0.58	1.04
5A	Harlem to Oak Park	3,014	1,079	2,660	2.46	0.38	0.93
5B	Oak Park to Ridgeland	3,164	1,130	2,830	2.50	0.36	0.90
5C	Ridgeland to Austin	3,206	1,282	3,030	2.36	0.40	0.95
6A	Austin to Central	3,206	1,024	3,030	2.96	0.33	0.97
6B	Central to Cicero	3,110	985	3,270	3.32	0.33	1.10

I-290 Study area 2010 Arterial AADT and V/C ratio calculation methodology

The model provided Volume and Capacity for the entire network. Five arterials in the I-290 corridor were selected for review: North Avenue, Lake Street, Madison Street, Roosevelt Road and Cermak Road. The segments of these roads selected for review were between Wolf Road to Cicero Avenue.

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The V/C adjustment factor was applied to the model V/C factor for each segment sub-link, then summarized at the segment level on a link length weighted basis.