JOPLIN AREA TRANSPORTATION
STUDY ORGANIZATION

SOUTH JOPLIN AREA

TRANSPORTATION STUDY

FINAL REPORT

July 2013

PREPARED BY:

CJW

Table of Contents

Executive Summary I

Chapter 1 – Objective 3

Chapter 2 – Existing Conditions 3

2.1 – Land Use 3
2.2 – Existing Roadway Network 5
2.3 – Traffic Data 5
2.4 – Measures of Effectiveness 7

Chapter 3 – Projected Conditions 9

3.1 – Land Use 9
3.2 – Trip Generation 11
3.3 – Trip Distribution 12
3.4 – Traffic Assignment 16
3.5 – Measures of Effectiveness 18
3.6 – Proposed Improvements 19

Chapter 4 – 2025 Future Conditions 21

4.1 – 2025 and 2030 Land Use, Trip generation & Trip Distribution 21
4.2 – 2025 and 2030 Trip Generation 21
4.3 – 2025 School Trip Distribution 22
4.4 – 2025 Traffic Assignment 24
4.5 – 2025 Measures of Effectiveness 27
4.6 – 2025 Proposed Improvements 28
4.7 – Reroute of Existing Traffic for the 50th Street Extension Alternative 28
4.8 – 2025 Trip Distribution with 50th Street Extension Alternative 30
4.9 – 2025 Traffic Assignment with 50th Street Extension Alternative 36
4.10 – 2025 Measures of Effectiveness with 50th Street Extension Alternative 39

Chapter 5 – 2030 Future Conditions 41

5.1 – 2030 Land Use, Trip generation & Trip Distribution 41
5.2 – 2030 Traffic Assignment 41
5.3 – 2030 Measures of Effectiveness 44
5.4 – 2030 Proposed Improvements 45
5.5 – Reroute of Existing Traffic due to 50th Street Extension 45
5.6 –2030 Trip Distribution with 50th Street Extension Alternative 45
5.7 –2030 Traffic Assignment with 50th Street Extension Alternative 45
5.8 – 2030 Revised Measures of Effectiveness with 50th Street Extension Alternative 48

Chapter 6 – Findings & Recommendations 50

List of Tables

Table 1: AM and PM Peak Hour Level of Service (Existing) 8
Table 2: Average Daily, AM Peak Hour, and PM Peak Trip Generation 11
Table 3: 2015 Future Land Use Trip Directional Distribution 12
Table 4: 2015 Hospital Trip Directional Distribution 13
Table 5: 2015 AM and PM Peak Hour Traffic Assignment 16
Table 6: AM and PM Peak Hour Level of Service (Projected 2015 Condition) 18

Table 7: Suggested Lane Configurations....19
Table 8: Projected 2015 Average Daily Traffic (ADT)....20
Table 9: Proposed Roadway Widening....20
Table 10: Average Daily, AM Peak Hour, and PM Peak Trip Generation....21
Table 11: 2025 and 2030 New Trip Directional Distribution for the School....22
Table 12: 2025 AM and PM Peak Hour Traffic Assignment....24
Table 13: AM and PM Peak Hour Level of Service (Projected 2025 Condition)....27
Table 14: 2025 New Trip Directional Distribution with 50th Street Extension Alternative....30
Table 15: 2025 and 2030 Hospital Trip Directional Distribution with 50th Street Extension....32
Table 16: 2025 and 2030 New Trip Directional Distribution for the School with 50th Street Extension....34
Table 17: 2025 AM and PM Peak Hour Traffic Assignment with 50th Street Extension Alternative....36
Table 18: 2025 AM and PM Peak Hour Level of Service (50th St. Extension Alternative)....39
Table 19: 2030 AM and PM Peak Hour Traffic Assignment....41
Table 20: AM and PM Peak Hour Level of Service (Projected 2030 Condition)....44
Table 21: 2030 AM and PM Peak Hour Traffic Assignment with 50th Street Extension Alternative....46
Table 22: AM and PM Peak Hour Level of Service with 50th Street Extension....48
Table 23: 2015 Geometric and Roadway Improvements....50
Table 24: 2025 Geometric and Roadway Improvements....53
Table 25: 2030 Geometric and Roadway Improvements....54

List of Exhibits

Exhibit 1: Study Area....4
Exhibit 2: Existing Traffic....6
Exhibit 3: 2015 Proposed Land Uses....10
Exhibit 4: 2015 New Land Use Directional Distribution....14
Exhibit 5: 2015 Hospital Directional Distribution....15
Exhibit 6: 2015 Traffic Assignment....17
Exhibit 7: 2025 and 2030 School Directional Distribution....23
Exhibit 8: Proposed 2025 Traffic Assignment....26
Exhibit 9: Reroute of Existing Traffic Due to the Extension of 50th Street....29
Exhibit 10: 2025 and 2030 Land Use Direction Distribution with the Extension of 50th Street....31
Exhibit 11: 2025 and 2030 Hospital Direction Distribution with the Extension of 50th Street....33
Exhibit 12: 2025 and 2030 School Direction Distribution with the Extension of 50th Street....35
Exhibit 13: 2025 Proposed Traffic Assignment with the Extension of 50th Street....38
Exhibit 14: Proposed 2030 Traffic Assignment....43
Exhibit 15: 2030 Proposed Traffic Assignment with 50th Street Extension....47
Exhibit 16: Projected ADT for 2014, 2025 and 2030 with proposed land uses....57
Exhibit 17: Projected ADT for 2014, 2025 and 2030 with proposed land uses and 50th Street Extension....58

List of Figures

Figure 1: Typical Arterial Capacities....19

List of Appendices

I. Existing Traffic
II. Projected 2015 Traffic Conditions
III. Projected 2025 Traffic Conditions
IV. Projected 2030 Traffic Conditions
V. Roadway Alignment Analysis and Cost Estimation

PRELIMINARY
EXECUTIVE SUMMARY

Future land use changes in the southern region of the Joplin Area Transportation Study Organization predicated the need for further evaluation of the roadway infrastructure within that area. The study area is between Main Street and Range Line Road from Interstate 44 to 50th Street. The study focuses on the analysis of current traffic conditions, prediction and analysis of future conditions, and development of alternatives to address potential transportation needs in the study area.

Trip generation for the proposed land uses was conducted using appropriate trip generations rates provided by the Institute of Transportation Engineers (ITE) and hospital projections provided by JATSO, proposed development patterns provided by JATSO, Joplin Public Schools, and property owners/developers. Trip generation calculations indicate that the changes in land use could potentially attract 71,826 new trips in the near term and as much as 79,676 in the future conditions. Handling these additional trips requires careful consideration of the capacity of the roadway network.

Traffic modeling indicates that the existing roadway network, although currently adequate, is grossly undersized to handle the additional trips generated by the changes in land uses in the future. **Table 1** illustrates the projected average daily traffic (ADT) for the roadways based upon 71,826 additional trips per day.

Table 1: Projected Average Daily Traffic (ADT) based on 71,826 additional trips

ROADWAY	From	To	Existing ADT	Projected ADT
44th Street	Range Line	S. Richard Joseph	**4,389**	**31,244**
44th Street	S. Richard Joseph	Connecticut	**3,544**	**20,633**
44th Street	Connecticut	Indiana	**667**	**4,933**
Connecticut	50th Street	44th Street	**2,367**	**10,700**
Connecticut	44th Street	Interstate 44	**4,800**	**18,856**
Range Line	48th Street	44th Street	**8,889**	**20,933**
Range Line	44th Street	Interstate 44	**8,844**	**37,467**
50th Street	Indiana	Connecticut	**2,367**	**10,711**
50th Street	Main Street	Indiana	**2,389**	**25,711**

As illustrated in **Table 1** the projected land uses would drastically increase the ADT on the study area roadway network, thus overwhelming the current roadway capacity. Along 50th Street there are improvements that are to be constructed between Main Street and Indiana Avenue to handle the additional volume anticipated at this location due to the hospital land use changes. Connecticut Avenue is affected by both the land use changes from the hospital and from the mixed use commercial development along 44th Street. The additional volume along 44th Street and along Range Line Road is primarily driven by the mix use commercial development adjacent to 44th Street. Based upon the

project ADT volumes for the future and comparing them to the typical arterial capacities, Table 2 identifies the roadways that would need to be widened to accommodate the additional volume.

Table 2: Proposed Roadway Widening

ROADWAY	From	To	Existing Configuration	Proposed Configuration
44th Street	Connecticut Ave.	Range Line Rd.	**2 Lanes**	**5 Lanes**
Connecticut Ave.	32nd Street	44th Street	**2 Lanes**	**5 Lanes**
Range Line Rd.	44th Street	(to South)	**2 Lanes**	**5 Lanes**

It would be recommended that Connecticut Avenue be widened first since it provides greater access to the study area, and the necessary widening is predicated on multiple land use changes within the study area. The 44th Street and Range Line road expansions would be needed when the mixed use development along 44th Street is being built and the anticipated land uses in this study are finally being realized. It is important to note that the roadway improvements along 44th Street and Range Line Road are primarily based upon the land uses provided in the current plan for the mixed use development along 44th Street. If those proposed land uses were to change, so too may the roadway infrastructure need. In addition to the roadway improvements, improvements to the intersections of 44th and Range Line and 44th and Connecticut would also need to be made.

When analyzing the 2030 full build out condition, based upon the new improvements one additional area of concern was identified in the traffic modeling. The intersection of 44th Street and Range Line Road would have difficulties serving the needs of the projected traffic demand. In the scenario with the 71,826 additional trips, the intersection is near capacity and some of the movements such as the eastbound left and northbound left are over capacity. Consequently, in the full build out condition producing an additional 7,850 trips for a total beyond existing of up to 79,676 trips, a relief route for 44th Street and for the intersection of 44th Street and Range Line Road was analyzed. The logical choice for the parallel route is the extension of 50th Street from Connecticut Avenue to Range Line Road as a two lane facility. This would provide the additional relief to 44th Street and to the intersection of 44th Street and Range Line Road that is needed.

Table 3 illustrates the projected ADT based upon 79,676 additional trips and the extension of 50th Street.

Table 3: Projected Average Daily Traffic (ADT) based on 79,676 Additional Trips

ROADWAY	From	To	Existing ADT	Projected ADT
44th Street	Range Line	S. Richard Joseph	**4,389**	**28,544**
44th Street	S. Richard Joseph	Connecticut	**3,544**	**18,989**
44th Street	Connecticut	Indiana	**667**	**5,222**
Connecticut	50th Street	44th Street	**2,367**	**13,378**
Connecticut	44th Street	Interstate 44	**4,800**	**18,678**
Range Line	48th Street	44th Street	**8,889**	**23,444**
Range Line	44th Street	Interstate 44	**8,844**	**41,144**
50th Street	Main Street	Indiana	**2,389**	**30,700**
50th Street	Indiana	Connecticut	**2,367**	**12,768**
50th Street Extension	Connecticut	Range Line	**-**	**5,833**

As Table 3 illustrates the extension of 50th Street allows a reduction in the traffic congestion along 44th Street. It is important to note that the need for the 50th Street extension is predicated on providing a relief to 44th Street, thus land uses and traffic projections that require the need for the 50th Street extension are primarily based upon the projected land uses and intensities of the development along 44th Street. It is recommended that 50th Street be the last piece of the roadway infrastructure puzzle in the study area. While it will be important to move forward with an alignment study, and preserve the future corridor and right-of-way for a potential 50th Street extension, construction of the corridor would not be need until full build out conditions are realized.

In summary, analysis of future land use changes in the study area and their respective effects on the roadway network indicates that Connecticut Avenue would need to be widened to five lanes from 32nd Street to 44th Street with intersection improvements at 44th Street and Connecticut Avenue. Once the land use changes along 44th Street take place, 44th Street would need to be widened to 5 lanes from Connecticut Avenue to Range Line Road, and improvements would also be necessary at Range Line Road and 44th Street intersection with a widening to the south. Lastly, when reviewing the future 2030 full build out condition it was found there would be a need to provide relief to 44th Street by providing an alternate parallel route. The most logical means of providing this connection is the extension of 50th Street as a two lane road, which would also provide additional connectivity between Main Street and Range Line Road.

In addition, consideration should be given to improving the vertical alignment of 50th Street from Indiana Avenue to Connecticut Avenue, Connecticut Avenue from 44th Street to 50th Street, and 44th Street from Indiana Avenue to Connecticut Avenue. From a safety perspective it would be appropriate to improve the vertical alignment by rebuilding the roadways to current standards and practices, whereby providing the vehicular sight distance, curb and gutter, and sidewalk improvements.

CHAPTER 1 – OBJECTIVE

Land use changes and the potential for future development in the southern Joplin metropolitan area are anticipated to create greater demand on area roadway infrastructure. In addition to the new Mercy Hospital campus currently under construction, the area bound by Interstate 44, Main Street (State Highway 86), 50th Street, and South Range Line Road (Business Loop 49) is anticipated to produce new retail, commercial and recreational development. **Exhibit 1** illustrates the location of the study area.

Predicted traffic intensities based on land uses are expected to require new roadway and intersection geometric improvements. The purpose of this study is to determine the potential impact to the transportation network due to the new land uses and make recommendations on planning for such improvements to mitigate projected capacity constraints and potential safety issues.

CHAPTER 2 – EXISTING CONDITIONS

2.1 – LAND USE

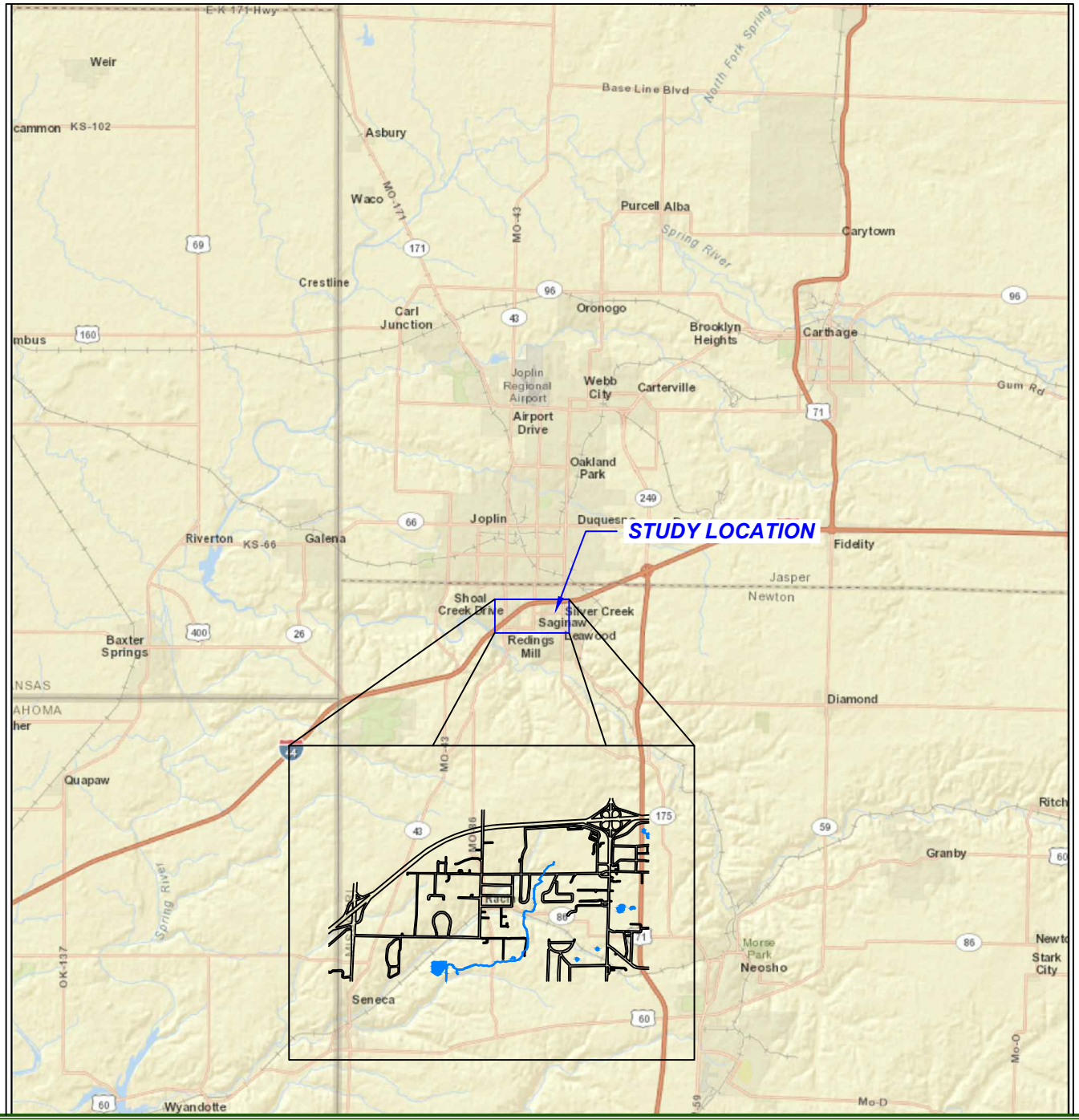
Existing conditions have been evaluated using current land uses. Some of these uses are expected to change for future conditions and are outlined in Chapter 3.

Land uses were designated according to City of Joplin zoning regulations as follows:

R1 – Single-Family Residential District
R3 – Apartment House District
C1 – Neighborhood Commercial District
C2 – Central Business District
C3 – Commercial District
M2 – Heavy Industrial District
PD – Planned Development

EXHIBIT 1
PROJECT LOCATION
STUDY AREA

NORTH



CJW

CJW PROJECT No. 1321

www.GoCJW.com

2.2 – EXISTING ROADWAY NETWORK

Exhibit 2 illustrates the existing roadway system and the existing daily AM and PM peak hour traffic volumes. The roadways analyzed within the study area have the following characteristics:

44th Street – 44th Street is a two-lane east/west roadway classified as a minor arterial (east of Connecticut) by the Joplin Area Transportation Study Organization (JATSO). The roadway is under the jurisdiction of the City of Joplin and is currently posted with a 45 MPH speed limit.

Connecticut Avenue – Connecticut Avenue is a north/south roadway that connects with 44th Street at a four-way stop. Connecticut is classified as a minor arterial by JATSO. The roadway is under the jurisdiction of the City of Joplin and is currently posted with a 35 MPH speed limit.

Range Line Road – Range Line Road is a four lane north/south roadway with 12' lanes and a raised median north of 44th Street. It converges to a two-lane undivided roadway south of 44th Street. Range Line is classified as a principal arterial by JATSO. The roadway is under the jurisdiction of the Missouri Department of Transportation (MoDOT) and is currently posted with a 45 MPH speed limit.

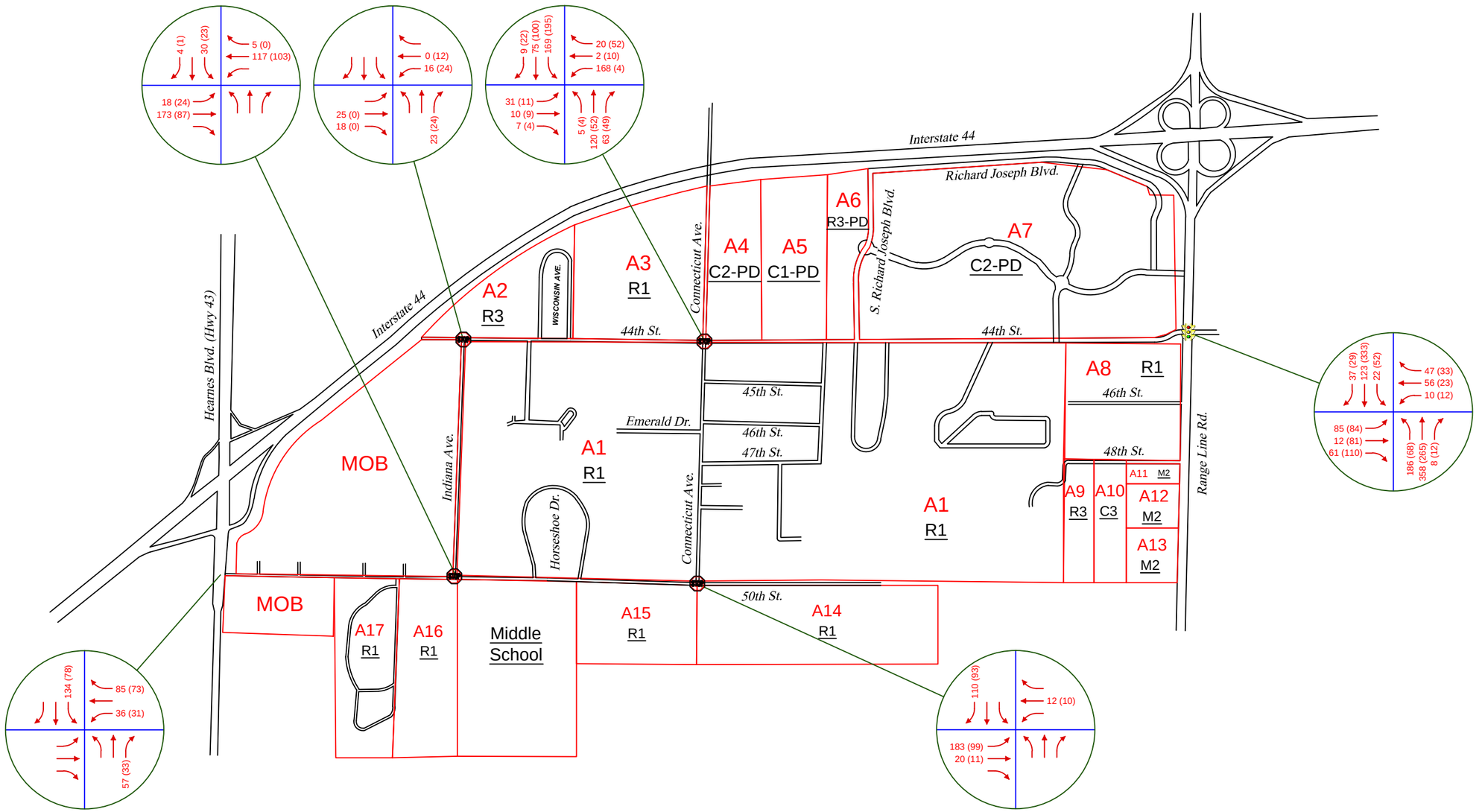
50th Street – 50th Street is a two-lane east/west roadway classified as a minor arterial by JATSO. The roadway is under the jurisdiction of the City of Joplin and Village of Leawood and is currently posted with a 45 MPH speed limit.

Main Street – Main Street (State Route 86) is a four lane north/south roadway with 12' lanes and a grass median north of 50th Street. It converges to a two-lane undivided roadway south of 50th Street. Main Street is classified as a principal arterial by JATSO. The roadway is under the jurisdiction of the Missouri Department of Transportation (MoDOT) and is currently posted with a 45 MPH speed limit.

2.3 – TRAFFIC DATA

Existing traffic data at 50th Street and Indiana Avenue was taken from the Mercy Health Systems Replacement Hospital and Medical Campus traffic study. All other traffic count data was collected by CJW for the AM and PM peak hours. Traffic is typically analyzed in the peak hour condition, which allows an analysis of the "worst-case scenario" due to the nature of traffic in the study area and projected land uses, the AM and PM peak hours were determined to be the most applicable periods for analysis.

EXHIBIT 2
EXISTING TRAFFIC VOLUMES
PEAK HOUR



CJW

CJW PROJECT No. 1321

LEGEND

AM PEAK (PM PEAK)

STOP SIGN CONTROL

TURNING MOVEMENT

SIGNAL CONTROL

N

1000 0 1000

SCALE: 1" = 1000'

2.4 – MEASURES OF EFFECTIVENESS

A capacity analysis of the roadway system was conducted to analyze intersection operations during the AM and PM peak hour for the existing condition.

2.4.1 – Capacity

The capacity was analyzed using procedures and techniques outlined in the *HIGHWAY CAPACITY MANUAL*, 2010 Edition which is published by the Transportation Research Board to determine operational level of service (LOS) and lane requirements. The quality of traffic flow is estimated based on calculations of delay to vehicle on each approach at an intersection. A grading system has been developed in the *Highway Capacity Manual* related to delay per vehicle which defines the quality of flow from Level A for free flowing conditions through Level F representing extreme congestion with excessive delays. Levels of traffic service are quantifiable measures of traffic flow that are represented by such factors as speed and delay time, traffic interruptions, safety, driving comfort and convenience. Level of service (LOS) and vehicular delay are key measures of effectiveness (MOEs) in the analysis of intersections.

The thresholds that define LOS are based on the type of traffic control used at an intersection; i.e., whether it is signalized or unsignalized. For signalized intersections, the average control delay per vehicle is estimated for each movement and aggregated for each approach and the intersection as a whole. At intersections with partial (side-street) stop control, the delay for each minor movement and approach is determined with no report for the intersection as a whole (since motorists on the main road are not required to stop and are assumed to operate under free-flow conditions). LOS is directly related to control delay. Highway designers strive for a minimum LOS of "C" as design criteria for operations, but a LOS E is acceptable during the peak hour.

Table 1 summarizes the AM and PM peak hour level of service for intersections within the study area.

2.4.2 – Queuing Analysis

A queuing analysis was conducted to determine the average length of queues. Queue provides a baseline for understanding the overall backup at a given intersection and can be compared to projected queue lengths in the future. Queue was established using the 95th percentile queue length.

Table 1: AM and PM Peak Hour Level of Service (Existing)

INTERSECTION N/S	E/W	# of Lanes	Traffic Control	Queue	AM Peak Delay (s)	AM Peak LOS	PM Peak Delay (s)	PM Peak LOS
Connecticut Avenue	**at 44th Street**		**TWSC**					
Eastbound Left/Through/Right		1	Stop	-	9.1	**A**	8.6	**A**
Westbound Left/Through/Right		1	Stop	-	10.3	**B**	9.8	**A**
Northbound Left/Through/Right		1	Stop	-	9.8	**A**	8.6	**A**
Southbound Left / Right		1	Stop	-	11.4	**B**	11.9	**B**
Range Line Road	**at 44th Street**		**Signal**					
Eastbound Left		1		92	37.7	**D**	37.7	**D**
Eastbound Through/Right		1		137	11.6	**B**	25.4	**C**
Westbound left		1		23	32.9	**C**	33.0	**C**
Westbound Through/Right		1		44	21.4	**C**	16.4	**B**
Northbound Left		1		77	48.5	**D**	35.2	**D**
Northbound Through		1		103	26.8	**C**	25.4	**C**
Northbound Through/Right		1		103	26.8	**C**	25.4	**C**
Southbound Left		1		63	32.6	**C**	34.3	**C**
Southbound Through		1		278	26.1	**C**	35.5	**D**
Southbound Right		1		8	8.3	**A**	9.0	**A**
Connecticut Avenue	**at 50th Street**		**TWSC**					
Eastbound Left / Through		1	Free	-	8.5	**A**	8.0	**A**
Westbound Through/Right		1	Stop	-	7.6	**A**	7.3	**A**
Southbound Left / Right		1	Free	-	7.7	**A**	7.1	**A**
Indiana Avenue	**at 50th Street**		**TWSC**					
Eastbound Left/Through		1	Free	1	0.8	**A**	1.7	**A**
Westbound Through / Right		1	Free	0	0.0	**A**	0.0	**A**
Southbound Left/Right		1	Stop	4	10.8	**B**	10.2	**B**

CHAPTER 3 – PROJECTED CONDITIONS

3.1 – LAND USE

A new Joplin area hospital is currently under construction on the west edge of the study area with several new access points along 50th Street and Indiana Avenue. All traffic generated by the hospital was taken from the Mercy Health Systems Replacement Hospital and Medical Campus traffic study dated February 2012. The new hospital has also purchased land south of 50th Street at the site of an existing junior college. The new land uses have been accounted for in the Mercy Health Systems Replacement Hospital and medical Campus traffic study.

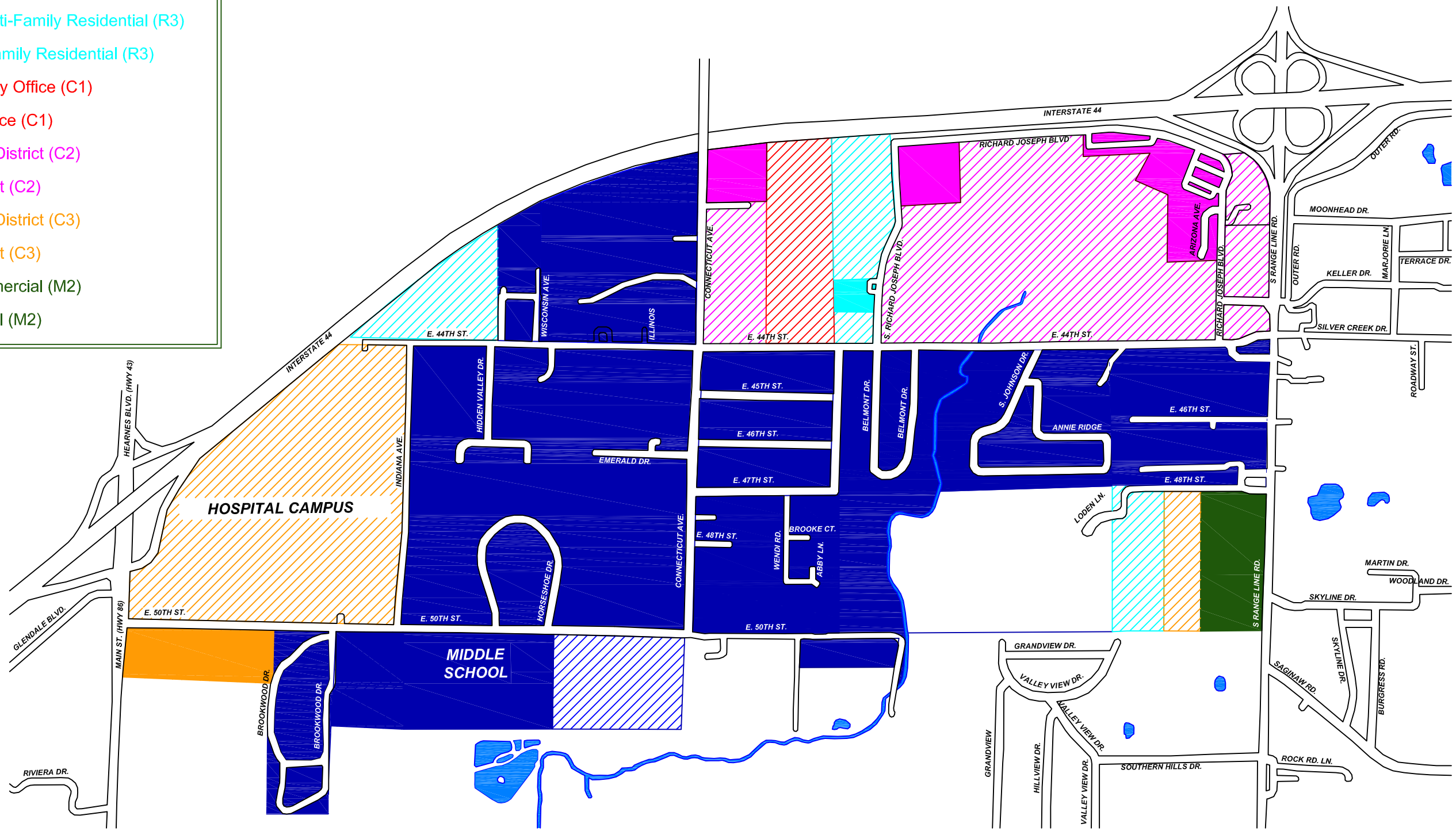
Projections are made on further development of the existing land uses based on information provided by Steele Development, LLC and the City of Joplin. Land uses intensities and projected traffic volumes were evaluated based on total area of each undeveloped lot. **Exhibit 3** shows expected future land uses.

EXHIBIT 3
2015 PROJECTED LAND USES

JOPLIN AREA TRANSPORTATION STUDY ORGANIZATION
SOUTH JOPLIN AREA TRANSPORTATION STUDY

LEGEND

- Undeveloped Single Family Residential (R1)
- Existing Single Family Residential (R1)
- Undeveloped High Desity Multi-Family Residential (R3)
- Existing High Density Multi-Family Residential (R3)
- Undeveloped Medium Intensity Office (C1)
- Existing Medium Intensity Office (C1)
- Undeveloped General Retail District (C2)
- Existing General Retail District (C2)
- Undeveloped General Retail District (C3)
- Existing General Retail District (C3)
- Undeveloped Industrial Commercial (M2)
- Existing Industrial Commercial (M2)



CJW

CJW PROJECT No. 1321

N

500 0 500

SCALE: 1" = 500'

3.2 – TRIP GENERATION

Traffic generated to and from the future land uses was estimated based upon data provided in "Trip Generation, 8th Edition," an informative report published by the Institute of Transportation Engineers (2009). The ITE Trip Generation Report is recognized by land use and traffic planners as the most authoritative text available for estimating the trip generation of various types of land development. Traffic volumes for future development are estimated in terms of "Trip Ends" for each land use. A Trip End is defined as a one-way trip to or from the subject property that has the property as either its origin or destination. In determining trip generation, the average rate as given by the ITE Trip Generation Report was used. Average daily trip generations have been calculated for the projected uses.

For the purpose of this study, the criterion above was used to compute the trips generated and develop traffic projections. **Table 2** summarizes the average daily, AM peak hour, and PM peak hour generated to and from the property for the proposed development, based on the expectations previously stated.

Table 2: Average Daily, AM Peak Hour, and PM Peak Trip Generation

LAND USE	ITE CODE	Size	Variable	24-HOUR WEEKDAY	AM PEAK IN	AM PEAK OUT	PM PEAK IN	PM PEAK OUT
Main Hospital*	610	261	Beds	3,082	211	87	123	219
Medical Office Building	720	250,000	Sq. Ft.	9,033	454	121	234	631
Rehabilitation Hospital*	610	30	Beds	354	24	10	14	25
Detached Medical Office Building*	720	100,000	Sq. Ft.	3,874	182	48	76	206
Behavioral Health Center Hospital*	610	41	Beds	484	33	14	19	35
Hospice Facility/ Nursing Home*	620	10,000	Sq. Ft.	76	4	2	4	4
TOTAL NEW HOSPITAL TRIPS GENERATED				**16,903**	**909**	**281**	**471**	**1,120**
Section A2 (R3)	220	10.01	Acres	2,402	29	151	148	73
Section A3 (R1)	210	14.6	Acres	701	15	44	47	26
Section A4 (C2)	820	17.80	Acres	8,324	118	76	354	369
Section A5 (C1)	710	25.70	Acres	3,081	382	52	71	346
Section A6 (C2)**	820	35.14	Acres	15,590	237	152	703	732
Section A7 (C2)**	820	61.91	Acres	28,950	422	271	1,242	1,292
Section A9 (R3)	220	12.4	Acres	2,976	36	187	183	90
Section A10 (C3)	820	8.2	Acres	5,904	80	51	291	258
Section A15 (R1)	210	10.0	Acres	480	10	30	32	18
Section A16 (R1)	210	5.1	Acres	245	5	15	16	9
TOTAL NEW LAND USE TRIPS GENERATED				**68,653**	**1,333**	**1,030**	**3,087**	**3,213**
TOTAL NEW LAND USE TRIPS (20% Internal Capture)				**54,923**	**1,067**	**824**	**2,469**	**2,571**

*Full Trip Generation Table including the AM and PM Peak Hour Rates and Percent Entering / Percent Exiting can be viewed in the 2015 Appendix. Trip Gen. from Mercy Health Systems Replacement Hospital and Medical Campus Traffic Impact Study.
** Trip Generation based upon land use plan provided by Steele development.

A consideration for trip generation for a multi-use development is internal capture. According to the ITE Trip Generation Handbook, 2nd Edition, Chapter 7, these internal ("captured") trips are made either by walking or by vehicles using internal roadways without using the major, external streets. For the proposed multi-use development along 44th Street, it was determined that internal capture and pass-by/diverted link trips were significant during the AM and PM peak hour. An internal capture rate of 20% was utilized for use in this analysis as calculated utilizing the method included in ITE Trip Generation Handbook, 2nd Edition, Chapter 7.

3.3 – TRIP DISTRIBUTION

For the purpose of this study, a directional distribution of traffic was compiled in order to accurately describe the traffic patterns that any new development is projected to create. The directional distribution is used to distribute the traffic generated by proposed development onto the roadway network. **Table 3, 4 and 5** summarize the expected 2015 new trip directional distribution of traffic to and from the project developments as used in the study.

Table 3: 2015 Future Land Use Trip Directional Distribution

LOCATION			AM Peak New Trip Traffic Distribution		PM Peak Trip Traffic Distribution
ROADWAY	From	To	% IN	% OUT	% OUT
Access A2	-	-	2% / 2.5%		2% / 2.5%
Access A3	-	-	1% / 0.5%		1% / 0.5%
Access A4	-	-	11.5% / 14%		11.5% / 14%
Access A5	-	-	26.5% / 9%		26.5% / 9%
Access A6	-	-	22.5% / 29.5%		22.5% / 29.5%
Access A7a	-	-	19% / 24%		19% / 24%
Access A7b	-	-	7.5% / 8.5%		7.5% / 8.5%
Access A9	-	-	2.5% / 3%		2.5% / 3%
Access A10	-	-	6% / 8%		6% / 8%
Access A15	-	-	1% / 0.5%		1% / 0.5%
Access A16	-	-	0.5% / 0.5%		0.5% / 0.5%
44th St.	Range Line	Access A7a	43.65% / 44.1%		43.65% / 44.1%
44th St.	Access A7a	S. Richard Joseph	37.85% / 35.6%		37.85% / 35.6%
44th St.	S. Richard Joseph	Access A5	31.35% / 26.1%		31.35% / 26.1%
44th St.	Access A5	Connecticut	23.9% / 23.15%		23.9% / 23.15%
44th St.	Connecticut	Access A2	1% / 1%		1% / 1%
44th St.	Access A2	Indiana	1% / 1.5%		1% / 1.5%
50th St.	Connecticut	Access A15	14.7% / 15%		14.7% / 15%

50th St.	Access A15	Indiana	14.55% / 14.95%	14.55% / 14.95%
50th St.	Indiana	Access A16	15.55% / 16.45%	15.55% / 16.45%
50th St.	Access A16	Main Street	15.85% / 16.58%	15.85% / 16.58%
Main St.	South of	50th Street	5% / 5%	5% / 5%
Main St.	North of	50th Street	10.85% / 11.58%	10.85% / 11.58%
Connecticut	50th St.	44th Street	10.85% / 11.58%	10.85% / 11.58%
Connecticut	44th St.	Access A3/A4	14.55% / 14.95%	14.55% / 14.95%
Range Line Rd.	48th St.	44th Street	15% / 25.5%	15% / 25.5%
Range Line Rd.	44th St.	Access A7b	41.65% / 61.6%	41.65% / 61.6%
Range Line Rd.	Access A7b	I-44	49.2% / 48.6%	49.2% / 48.6%

Exhibit 4 illustrates the future land use trip directional distribution of traffic entering and exiting the study area as shown in **Table 3**.

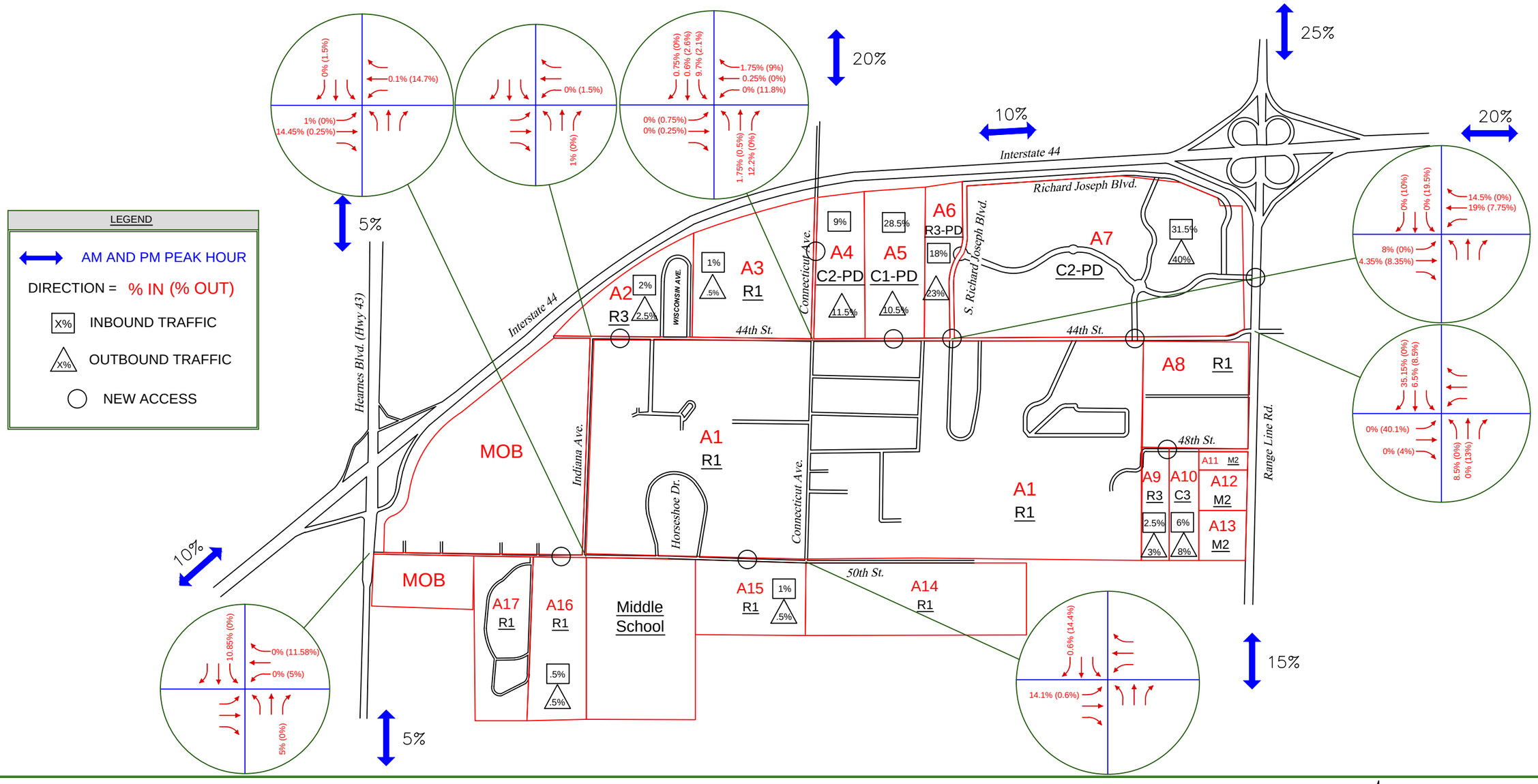
Table 4: 2015 Hospital Trip Directional Distribution

LOCATION			AM Peak New Trip Traffic Distribution		PM Peak Trip Traffic Distribution
ROADWAY	From	To	% IN	% OUT	% OUT
44th St.	Range Line	Access A7a	5% / 5%		5% / 5%
44th St.	Access A7a	S. Richard Joseph	5% / 5%		5% / 5%
44th St.	S. Richard Joseph	Access A5	5% / 5%		5% / 5%
44th St.	Access A5	Connecticut	5% / 5%		5% / 5%
44th St.	Connecticut	Access A2	20% / 20%		20% / 20%
44th St.	Access A2	Indiana	20% / 20%		20% / 20%
50th St.	Indiana	Access A16	20% / 20%		20% / 20%
50th St.	Access A16	Main Street	80% / 80%		80% / 80%
Main St.	South of	50th Street	10% / 10%		10% / 10%
Main St.	North of	50th Street	70% / 70%		70% / 70%
Connecticut	44th St.	Access A3/A4	15% / 15%		15% / 15%
Range Line Rd.	48th St.	44th Street	2% / 2%		2% / 2%
Range Line Rd.	44th St.	Access A7b	3% / 3%		3% / 3%
Range Line Rd.	Access A7b	I-44	3% / 3%		3% / 3%

Exhibit 5 illustrates the hospital trip directional distribution of traffic entering and exiting the study area as shown in **Table 4**.

EXHIBIT 4
2015 AM AND PM PEAK
PROJECTED LAND USE DIRECTIONAL DISTRIBUTION

JOPLIN AREA TRANSPORTATION STUDY ORGANIZATION
SOUTH JOPLIN AREA TRANSPORTATION STUDY



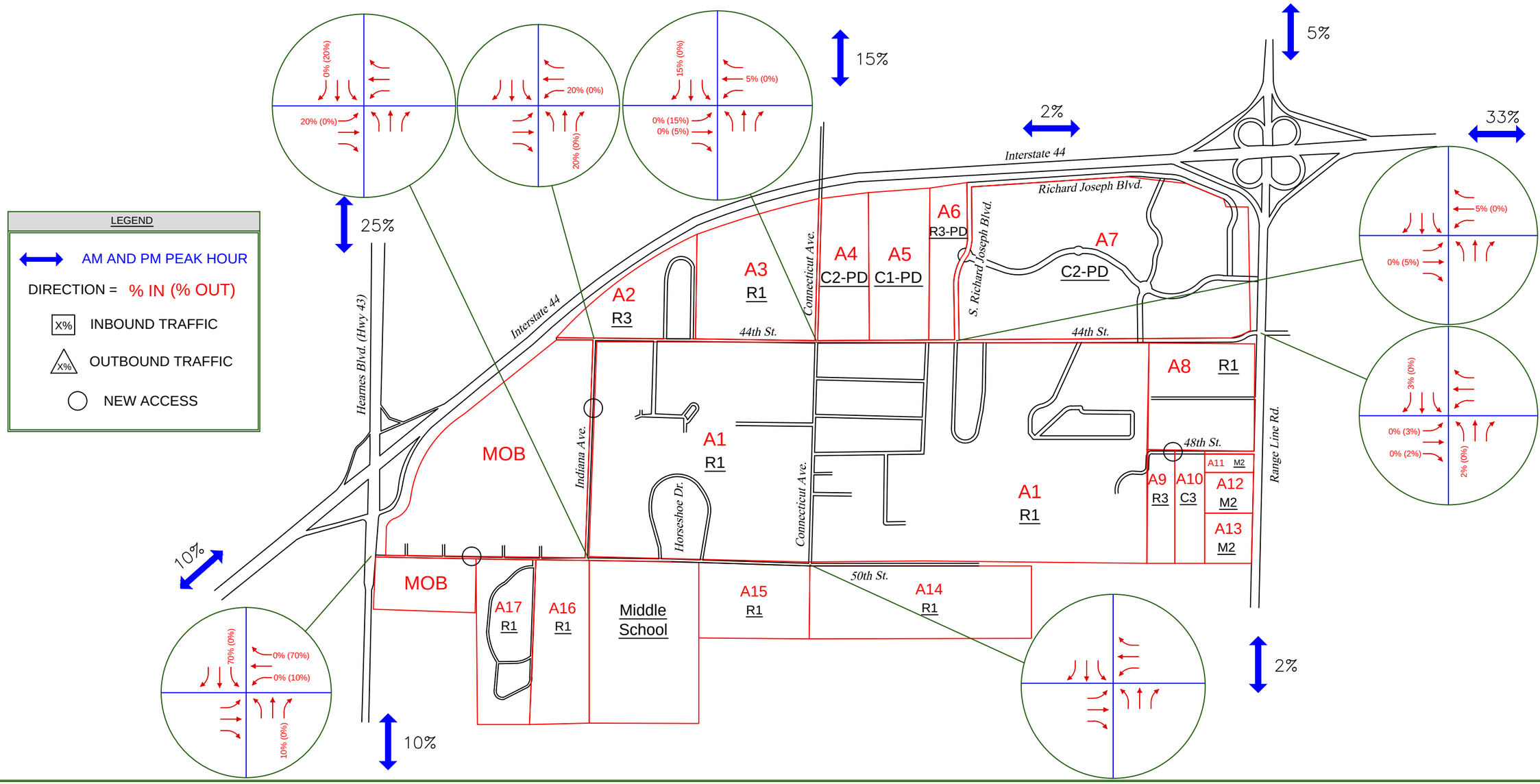
CJW
CJW PROJECT No. 1321

LEGEND
AM PEAK (PM PEAK)
STOP SIGN CONTROL
TURNING MOVEMENT
SIGNAL CONTROL

N
1000 0 1000
SCALE: 1" = 1000'

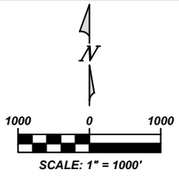
JOPLIN AREA TRANSPORTATION STUDY ORGANIZATION
SOUTH JOPLIN AREA TRANSPORTATION STUDY

EXHIBIT 5
2015 AM AND PM PEAK HOSPITAL DIRECTIONAL DISTRIBUTION



CJW
CJW PROJECT No. 1321





3.4 – TRAFFIC ASSIGNMENT

Using the traffic data collected, estimated generated trip ends from **Table 2,** and the assumed directional distribution of traffic from **Table 3 and 4**, traffic projections were estimated on each of the impacted roadways. **Table 5** represents the two-way traffic during the AM peak hour and PM peak hour on each roadway segment. The 2013 traffic volumes were increased at an average annual rate of 2.0 percent per year to account for additional growth in the study area.

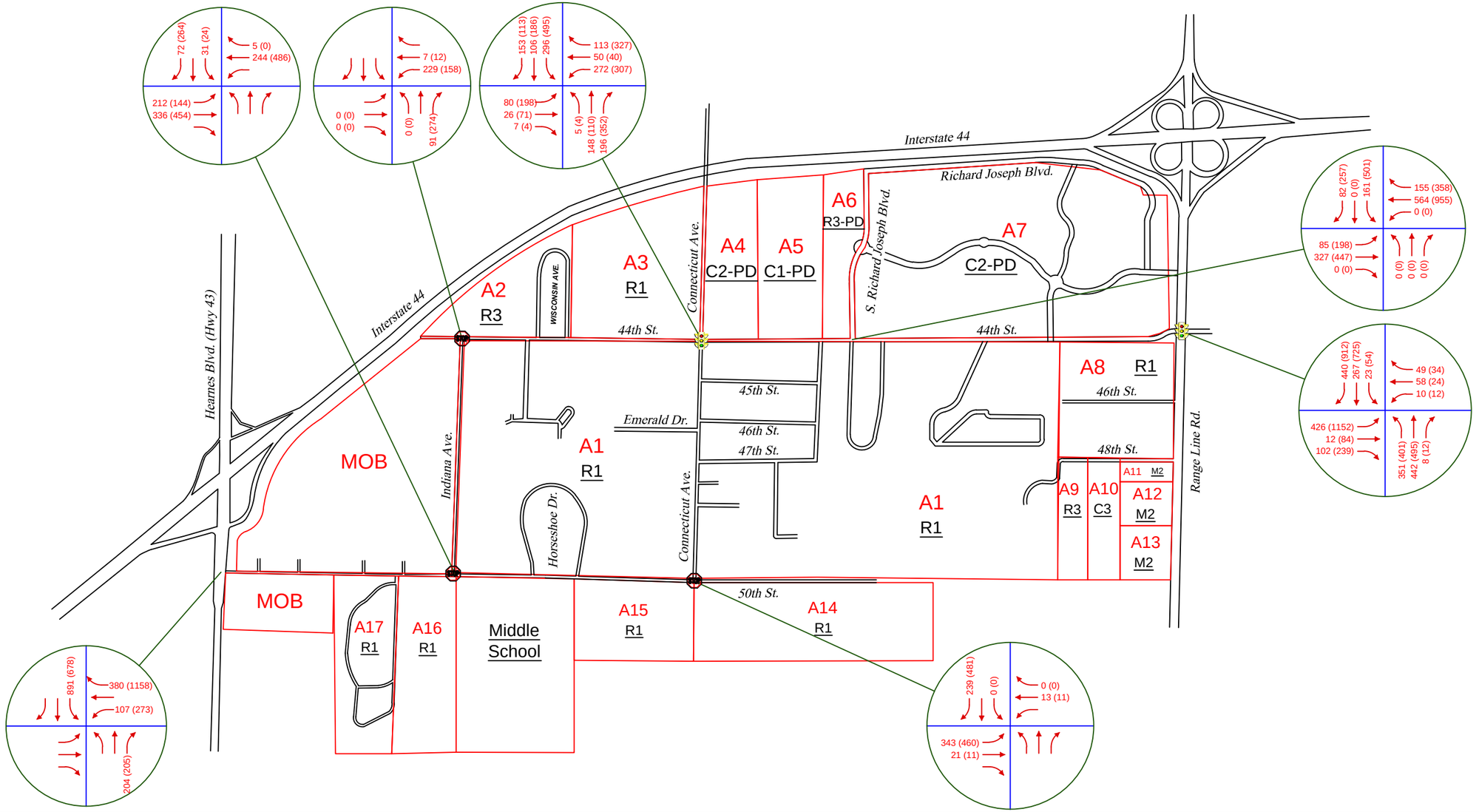
Table 5: 2015 AM and PM Peak Hour Traffic Assignment

			Daily Traffic		AM Peak Hour		PM Peak Hour	
Roadway	From	To	Existing*	2014 Projections with the Development	Existing*	2014 Projections with the Development	Existing*	2014 Projections with the Development
Access A2	-	-	-	1,278	-	42	-	115
Access A3	-	-	-	411	-	14	-	37
Access A4	-	-	-	7,156	-	238	-	644
Access A5	-	-	-	9,844	-	356	-	886
S. Richard Joseph Blvd.	-	-	-	14,600	-	483	-	1,314
Access A7a	-	-	1,933	14,078	5	405	174	1,267
Access A7b	-	-	-	4,489	-	150	-	404
Access A9	-	-	-	5,478	-	182	-	493
Access 15	-	-	-	400	-	14	-	36
Access A16	-	-	-	267	-	9	-	24
44th Street	Range Line	Access A7a	4,389	31,244	437	1,389	395	2,812
44th Street	Access A7a	S. Richard Joseph Blvd.	3,544	25,122	432	1,207	319	2,261
44th Street	S. Richard Joseph Blvd.	Access A5	3,544	20,633	432	1,058	319	1,857
44th Street	Access A5	Connecticut	3,544	17,689	432	953	319	1,592
44th Street	Connecticut	Access A2	667	4,778	64	432	60	430
44th Street	Access A2	Indiana	667	4,933	64	328	60	444
50th Street	Access A15	Connecticut	2,367	10,700	325	616	213	964
50th Street	Indiana	Access A15	2,367	10,711	325	616	213	964
50th Street	Access A16	Indiana	2,389	14,978	312	864	215	1,348
Main Street	South of	50th Street	717	5,311	94	311	65	478
Main Street	North of	50th Street	1,672	20,400	218	1271	151	1,836
Connecticut	50th Street	44th Street	2,367	10,700	438	734	213	963
Connecticut	44th Street	Access A3/A4	4,800	15,878	424	896	432	1,429
Range Line	48th Street	44th Street	8,889	20,933	746	1,180	800	1,884
Range Line	44th Street	Access A7b	8,844	37,467	672	1,647	796	3,372

Exhibit 6 illustrates the assignment of 2015 projections with development traffic as indicated in **Table 5** to the adjacent street system for the 2015 analysis year. These values were subsequently used to analyze the roadway capacity and level of service.

JOPLIN AREA TRANSPORTATION STUDY ORGANIZATION
SOUTH JOPLIN AREA TRANSPORTATION STUDY

EXHIBIT 6
PROJECTED 2015 TRAFFIC ASSIGNMENT
AM AND PM PEAK



CJW

CJW PROJECT No. 1321

LEGEND

AM PEAK (PM PEAK)

STOP SIGN CONTROL

TURNING MOVEMENT

SIGNAL CONTROL

N

1000 0 1000

SCALE: 1" = 1000'

3.5 – MEASURES OF EFFECTIVENESS

A capacity analysis of the roadway system was conducted to analyze intersection operations during the AM and PM peak hour for the Projected 2014 condition.

Table 6: AM and PM Peak Hour Level of Service (Projected 2015 Condition)

INTERSECTION		# of	Traffic		AM Peak		PM Peak	
N/S	E/W	Lanes	Control	Queue	Delay (s)	LOS	Delay (s)	LOS
Connecticut Avenue	**at 44th Street**		**Signal**					
Eastbound Left		1		157	23.6	C	41.2	D
Eastbound Through		1		80	27.3	C	36.4	D
Westbound Left		1		237	25.2	C	32.7	C
Westbound Through		1		46	25.2	C	27.0	C
Westbound Right		1		68	8.3	A	7.8	A
Northbound Left		1		12	36.2	D	41.2	D
Northbound Through / Right		1		289	17.6	B	30.3	C
Southbound Left		2		217	25.1	C	35.2	C
Southbound Through / Right		1		154	6.5	A	10.3	B
Range Line Road	**at 44th Street**		**Signal**					
Eastbound Left		2		633	53.1	D	77.8	E
Eastbound Through/Right		1		198	7.0	A	16.7	B
Westbound Left		1		30	57.6	E	58.9	E
Westbound Through/Right		1		62	40.4	D	40.0	D
Northbound Left		1		494	16.8	B	74.0	E
Northbound Through		1		182	15.9	B	21.4	C
Northbound Through/Right		1		182	15.9	B	21.4	C
Southbound Left		1		44	13.3	B	18.7	B
Southbound Through		2		362	24.7	C	48.1	D
Southbound Right		1		587	5.1	A	48.4	D
Connecticut Avenue	**at 50th Street**		**TWSC**					
Eastbound Left/Through		1	Stop	-	12.8	B	25.8	D
Westbound Through/Right		1	Stop	-	8.2	A	9.3	A
Southbound Left		1	Stop	-	9.3	A	18.7	C
Southbound Right		1	Stop	-	9.3	A	18.7	C
Indiana Avenue	**at 50th Street**		**TWSC**					
Eastbound Left/Through		1	Stop	-	21.7	C	84.9	F
Westbound Through / Right		1	Stop	-	10.8	B	37.7	E
Southbound Left/Right		1	Stop	-	9.7	A	16.9	C

3.6 – PROPOSED IMPROVEMENTS

Based on new land uses, the roadways were analyzed to determine the necessary improvements required for the Projected 2015 condition. Specifically, consideration was given to the average daily traffic when evaluating the roadway network.

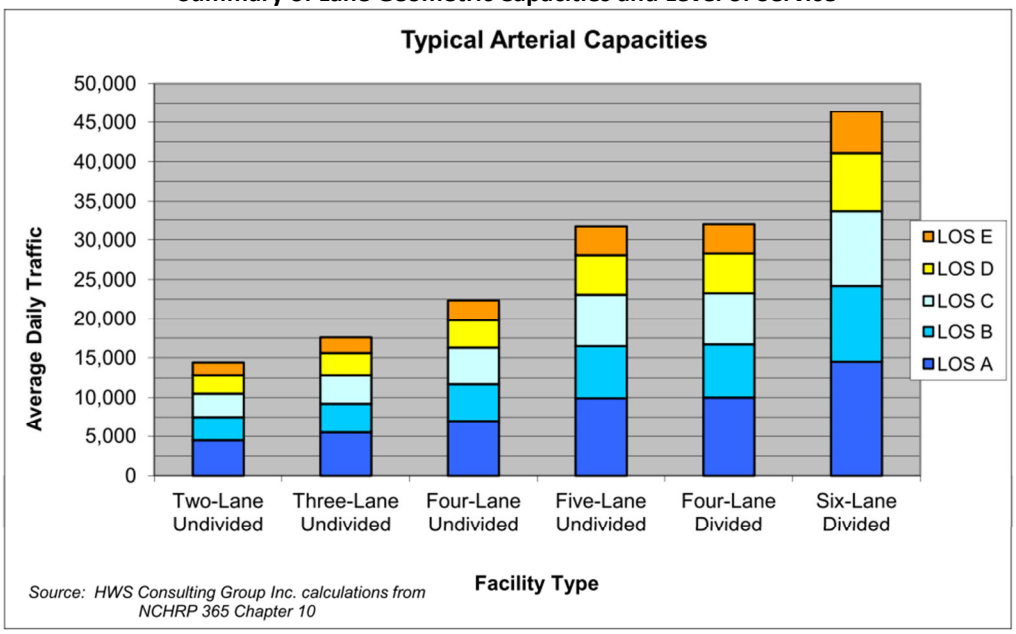
3.6.1 – Roadways

The Average Daily Traffic (ADT) is the average 24 hour volume, being the total volume during a stated period divided by the number of days in that period. It is suggested that the number of lanes for a given roadway conform to the ADT. **Table 7** shows the suggested lane configurations for level of service C, D and E based on the average daily traffic volume according to the JATSO 2030 Long Range Transportation Plan (LRTP).

Table 7: Suggested Lane Configurations
Summary of Lane Geometric Capacities for Level of Service C, D and E

TYPE OF STREET	Level of Service C	Level of Service D	*Level of Service E*
2-Lane Undivided	10,500	12,800	14,400
3-Lane Undivided	12,800	15,600	17,600
4-Lane Undivided	16,300	19,800	22,400
5-Lane Undivided	23,100	28,100	31,700
4-Lane Divided	23,300	28,300	32,000
6-Lane Divided	33,800	41,100	46,400

Figure 1: Typical Arterial Capacities
Summary of Lane Geometric Capacities and Level of Service



The projected 2015 average daily traffic on roadways within the study area are summarized in **Table 8** below.

Table 8: Projected 2015 Average Daily Traffic (ADT)

LOCATION				
ROADWAY	From	To	Existing ADT	Projected ADT
44th Street	Range Line	S. Richard Joseph	**4,389**	**31,244**
44th Street	S. Richard Joseph	Connecticut	**3,544**	**20,633**
44th Street	Connecticut	Indiana	**667**	**4,933**
Connecticut	50th Street	44th Street	**2,367**	**10,700**
Connecticut	44th Street	Interstate 44	**4,800**	**18,856**
Range Line	48th Street	44th Street	**8,889**	**20,933**
Range Line	44th Street	Interstate 44	**8,844**	**37,467**
50th Street	Indiana	Connecticut	**2,367**	**10,711**
50th Street	Main Street	Indiana	**2,389**	**25,711**

Based on **Figure 1**, widening will need to occur along several roadways surrounding the developments. **Table 9** summarizes required roadway widening to maintain acceptable levels of service based on projected volumes.

Table 9: Proposed Roadway Widening

Intersection				
ROADWAY	From	To	Existing Configuration	Proposed Configuration
44th Street	Connecticut Ave.	Range Line Rd.	**2 Lanes**	**5 Lanes**
Connecticut Ave.	32nd Street	44th Street	**2 Lanes**	**5 Lanes**
Range Line Rd.	44th Street	----	**2 Lanes**	**5 Lanes**

3.6.2 – Intersections

Signal Warrant Analyses were conducted to determine the need for signalization for the intersections below. The analyses can be found in Appendix B.

- 44th Street & Connecticut Avenue
- 50th Street and Connecticut Avenue

Based on Projected 2015 traffic, a new signal would be warranted at the intersection of 44th Street and Connecticut Avenue and signal enhancements will need to be made to the existing signal at 44th Street and Range Line Road.

CHAPTER 4 – 2025 FUTURE CONDITIONS

4.1 – 2025 AND 2030 LAND USE, TRIP GENERATION & TRIP DISTRIBUTION

The function of this study is to analyze existing conditions, project future conditions and select suitable remediation options that will accommodate future traffic demand. It is anticipated that the projected land uses, trip generation and trip distribution will expand slightly for the 2025 and 2030 condition.

Based upon information provided by the Joplin Public School District, consideration has also been given to potential future expansion of the South Middle School located along 50th Street. Possible future classroom additions could take the current capacity of 750 up to 1000 students for the middle school. If combined as an elementary/middle school with kindergarten through 8th Grade, total student population could reach as high as 1,500.

4.2 – 2025 AND 2030 TRIP GENERATION

The ITE Trip Generation was utilized for additional projected trip generation for the 2025 and 2030 projections. **Table 10** summarizes the average daily, AM peak hour, and PM peak hour generated to and from proposed developments, based on the expectations previously stated.

Table 10: Average Daily, AM Peak Hour, and PM Peak Trip Generation

LAND USE	ITE CODE	Size	Variable	24-HOUR WEEKDAY	AM PEAK IN	AM PEAK OUT	PM PEAK IN	PM PEAK OUT
Main Hospital*	610	261	Beds	3,082	211	87	123	219
Medical Office Building	720	250,000	Sq. Ft.	9,033	454	121	234	631
Rehabilitation Hospital*	610	30	Beds	354	24	10	14	25
Detached Medical Office Building*	720	100,000	Sq. Ft.	3,874	182	48	76	206
Behavioral Health Center Hospital*	610	41	Beds	484	33	14	19	35
Hospice Facility/ Nursing Home*	620	10,000	Sq. Ft.	76	4	2	4	4
Medical Office Building	720	50,000	Sq. Ft.	1,807	91	24	47	126
Medical Office Building	720	100,000	Sq. Ft.	3,613	182	48	93	253
TOTAL NEW HOSPITAL TRIPS GENERATED				**22,323**	**1,181**	**354**	**610**	**1,499**
School Expansion		1500	Students	2,430	446	365	-	-
TOTAL NEW TRIPS FOR SCHOOL PROPERTY				**2,430**	**446**	**365**	**-**	**-**
Section A2 (R3)	220	10.01	Acres	2,402	29	151	148	73
Section A3 (R1)	210	14.6	Acres	701	15	44	47	26
Section A4 (C2)	820	17.80	Acres	8,324	118	76	354	369

Section A5 (C1)	710	25.70	Acres	3,081	382	52	71	346
Section A6 (C2)**	820	35.14	Acres	15,590	237	152	703	732
Section A7 (C2)**	820	61.91	Acres	28,950	422	271	1,242	1,292
Section A9 (R3)	220	12.4	Acres	2,976	36	187	183	90
Section A10 (C3)	820	8.2	Acres	5,904	80	51	291	258
Section A15 (R1)	210	10.0	Acres	480	10	30	32	18
Section A16 (R1)	210	5.1	Acres	245	5	15	16	9
TOTAL NEW LAND USE TRIPS GENERATED				**68,653**	**1,333**	**1,030**	**3,087**	**3,213**
TOTAL NEW LAND USE TRIPS (20% Internal Capture)				**54,923**	**1,067**	**824**	**2,469**	**2,571**

*Full Trip Generation Table including the AM and PM Peak Hour Rates and Percent Entering / Percent Exiting can be viewed in the 2025 Appendix. Trip Gen. from Mercy Health Systems Replacement Hospital and Medical Campus Traffic Impact Study.
** Trip Generation based upon land use plan provided by Steele development.

As with the 2015 trip generation, an internal capture rate of 20% was utilized for use in this analysis.

4.3 – 2025 School Trip Distribution

It was assumed that the Proposed Hospital and Other Land Uses distribution would remain the same in 2025 and 2030 as they were proposed in the 2015 Model. Therefore the only new directional distribution for the 2025 and 2030 models is for the school expansion. **Table 11** summarizes the expected 2025 and 2030 new trip directional distribution of traffic to and from the school.

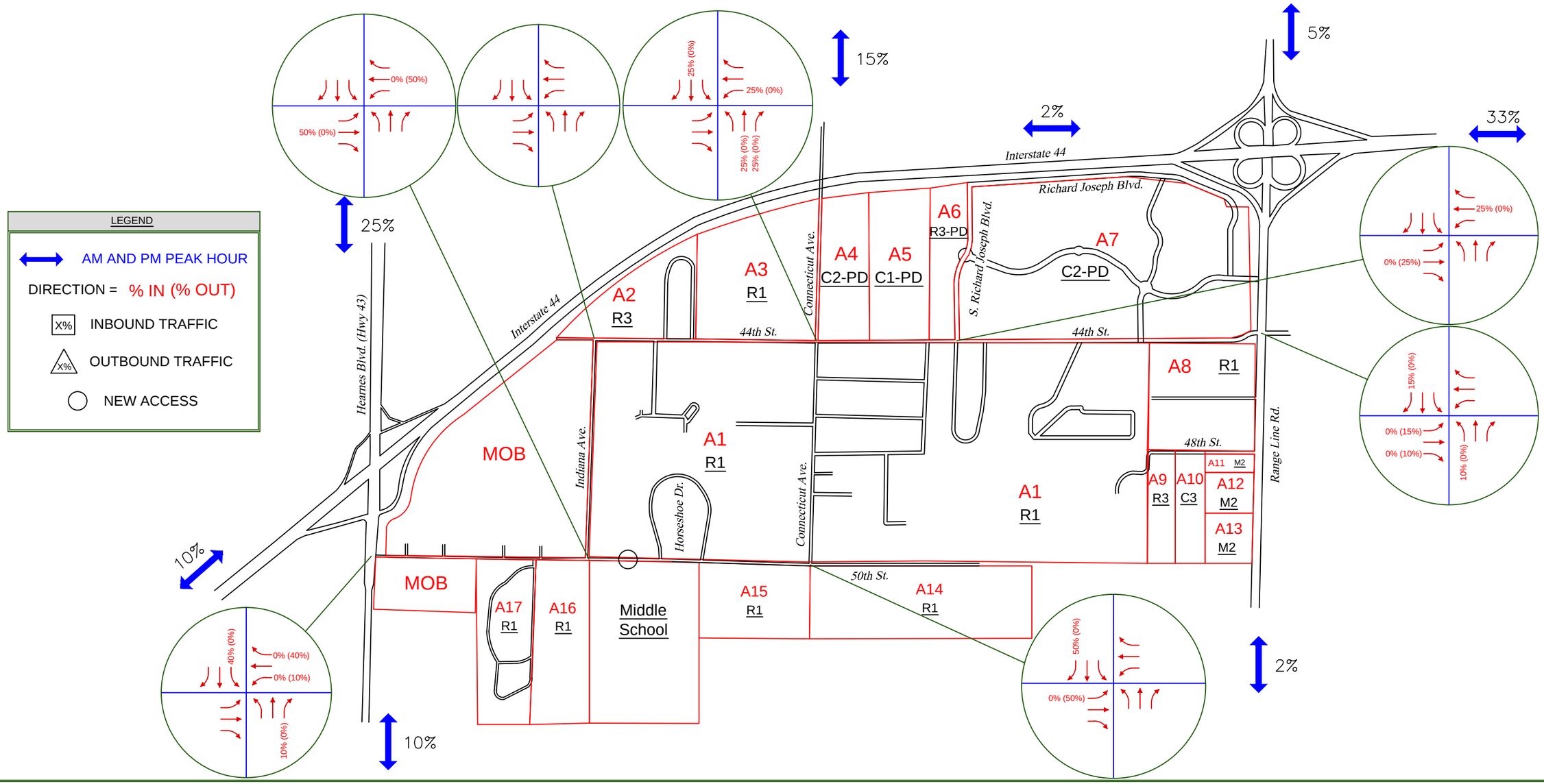
Table 11: 2025 and 2030 New Trip Directional Distribution for the School

LOCATION			AM Peak New Trip Traffic Distribution	
ROADWAY	From	To	% IN	% OUT
School Entrance	-	-	100%	100%
44th St.	Connecticut	Rangeline	25%	25%
50th St.	Connecticut	School Entrance	50%	50%
50th St.	School Entrance	Main Street	50%	50%
Main St.	South of	50th Street	10%	10%
Main St.	North of	50th Street	15%	15%
Connecticut	50th St.	44th Street	50%	50%
Connecticut	North of	44th Street	25%	25%
Range Line Rd.	North of	44th Street	15%	15%
Range Line Rd.	South of	44th Street	10%	10%

Exhibit 7 illustrates the new school trip directional distribution of traffic entering and exiting the study area as shown in **Table 11**.

JOPLIN AREA TRANSPORTATION STUDY ORGANIZATION
SOUTH JOPLIN AREA TRANSPORTATION STUDY

EXHIBIT 7
2025 AND 2030 AM AND PM PEAK SCHOOL DIRECTIONAL DISTRIBUTION



CJW

CJW PROJECT No. 1321

LEGEND

AM PEAK (PM PEAK)

STOP SIGN CONTROL

TURNING MOVEMENT

SIGNAL CONTROL

N

1000 0 1000

SCALE: 1" = 1000'

4.4 – 2025 TRAFFIC ASSIGNMENT

Using the traffic data collected, estimated generated trip ends from **Table 10,** and the assumed directional distribution of traffic from **Table 3, 4**, **and 11**, traffic projections were estimated on each of the impacted roadways. **Table 12** represents the two-way traffic during the AM peak hour and PM peak hour on each roadway segment. The 2013 traffic volumes were increased at an average annual rate of 2.0 percent per year for 12 years to account for additional growth in the study area.

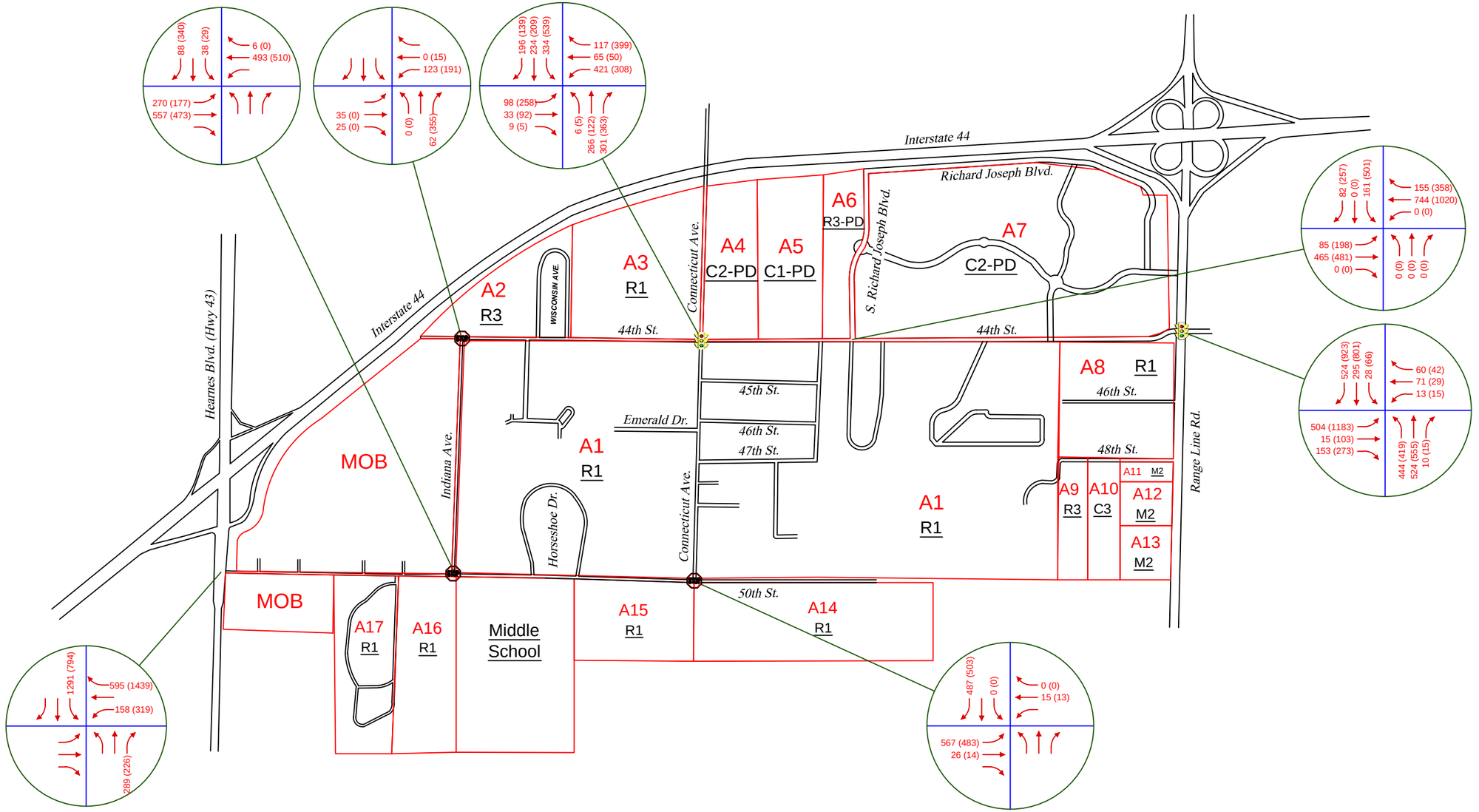
Table 12: 2025 AM and PM Peak Hour Traffic Assignment

			Daily Traffic		AM Peak Hour		PM Peak Hour	
Roadway	From	To	Existing*	2025 Projections with the Development	Existing*	2025 Projections with the Development	Existing*	2025 Projections with the Development
Access A2	-	-	-	1,278	-	42	-	115
Access A3	-	-	-	411	-	14	-	37
Access A4	-	-	-	7,156	-	238	-	644
Access A5	-	-	-	9,844	-	356	-	886
S. Richard Joseph Blvd.	-	-	-	14,600	-	483	-	1,314
Access A7a	-	-	1,933	14,522	5	406	174	1,307
Access A7b	-	-	-	4,489	-	150	-	404
Access A9	-	-	-	5,478	-	182	-	493
Access 15	-	-	-	400	-	14	-	36
Access A16	-	-	-	267	-	9	-	24
School Entrance	-	-	-	9,156	-	824	-	-
44th Street	Range Line	Access A7a	4,389	32,556	437	1,711	395	2,930
44th Street	Access A7a	S. Richard Joseph Blvd.	3,544	26,222	432	1,523	319	2,360
44th Street	S. Richard Joseph Blvd.	Access A5	3,544	21,733	432	1,376	319	1,956
44th Street	Access A5	Connecticut	3,544	18,789	432	1,271	319	1,691
44th Street	Connecticut	Access A2	667	6,100	64	407	60	549
44th Street	Access A2	Indiana	667	6,244	64	411	60	562
50th Street	Access A15	Connecticut	3,611	12,167	325	1,095	213	1,013
50th Street	Access A15	School Entry	3,611	12,167	325	1,095	-	-
50th Street	Indiana	School Entry	3,611	12,167	325	1,095	-	-
50th Street	Access A16	Indiana	2,389	16,667	312	1,408	215	1,500
Main Street	South of	50th Street	717	6,056	94	447	65	545
Main Street	North of	50th Street	1,672	24,811	218	1,886	151	2,233
Connecticut	50th Street	44th Street	2,367	11,244	438	1,237	213	1,012
Connecticut	44th Street	Access A3/A4	4,800	17,844	424	1,245	432	1,606
Connecticut	Access A3/A4	Interstate 44	4,800	20,811	424	1,347	432	1,873
Range Line	48th Street	44th Street	8,889	23,089	746	1,439	800	2,078
Range Line	44th Street	Access A7b	8,844	39,644	672	1,935	796	3,568
Range Line	Access A7b	Interstate 44	8,844	39,267	672	1,944	796	3,534

Exhibit 8 illustrates the assignment of 2025 projections with development traffic as indicated in **Table 12** to the adjacent street system for the 2025 analysis year. These values were subsequently used to analyze the roadway capacity and level of service.

JOPLIN AREA TRANSPORTATION STUDY ORGANIZATION
SOUTH JOPLIN AREA TRANSPORTATION STUDY

EXHIBIT 8
PROJECTED 2025 TRAFFIC ASSIGNMENT
AM AND PM PEAK



CJW

CJW PROJECT No. 1321

LEGEND

AM PEAK (PM PEAK)

STOP SIGN CONTROL

TURNING MOVEMENT

SIGNAL CONTROL

N

1000 0 1000

SCALE: 1" = 1000'

4.5 – 2025 MEASURES OF EFFECTIVENESS

A capacity analysis of the roadway system was conducted to analyze intersection operations during the AM and PM peak hour for the Projected 2025 condition.

Table 13: AM and PM Peak Hour Level of Service (Projected 2025 Condition)

INTERSECTION		# of	Traffic		AM Peak		PM Peak	
N/S	E/W	Lanes	Control	Queue	Delay (s)	LOS	Delay (s)	LOS
Connecticut Avenue	**at 44th Street**		**Signal**					
Eastbound Left		1		212	30.2	C	47.1	D
Eastbound Through		1		102	32.1	C	44.2	D
Eastbound Right		1		102	32.1	C	44.2	D
Westbound Left		1		269	66.1	E	41.3	D
Westbound Through		1		58	29.0	C	34.4	C
Westbound Right		1		175	8.1	A	11.0	B
Northbound Left		1		14	41.3	D	40.6	D
Northbound Through		1		374	33.1	C	27.8	C
Northbound Through / Right		1		374	33.1	C	27.8	C
Southbound Left		2		223	43.6	D	41.3	D
Southbound Through		1		193	11.0	B	10.7	B
Southbound Through / Right		1		193	11.0	B	10.7	B
Range Line Road	**at 44th Street**		**Signal**					
Eastbound Left		2		1099	48.9	D	138.8	F
Eastbound Through/Right		1		122	6.8	A	17.3	B
Eastbound Right		1		122	6.8	A	17.3	B
Westbound left		1		21	59.6	E	61.1	E
Westbound Through/Right		1		33	40.4	D	23.1	C
Northbound Left		2		433	24.3	C	150.0	F
Northbound Through		1		138	19.6	B	29.3	C
Northbound Through/Right		1		138	19.6	B	29.3	C
Southbound Left		1		74	16.2	B	22.9	C
Southbound Through		2		627	34.1	C	97.5	F
Southbound Right		1		332	7.5	A	54.9	D
Connecticut Avenue	**at 50th Street**		**TWSC**					
Eastbound Left/Through		1	Free		8.4	A	8.2	A
Westbound Through/Right		1	Free		0.0	A	0.0	A
Southbound Left		1	Stop		11.7	B	11.9	B
Southbound Right		1	Stop		11.7	B	11.9	B
Indiana Avenue	**at 50th Street**		**TWSC**					
Eastbound Left		1	Free		4.4	A	2.5	A
Eastbound Through		1	Free		6.2	A	4.4	A
Westbound Through / Right		1	Free		0.0	A	0.0	A
Southbound Left/Right		1	Stop		72.9	F	67.9	F

4.6 – 2025 PROPOSED IMPROVEMENTS

Based on projected traffic demand, roadways were analyzed to determine the necessary improvements required for the Projected 2025 condition.

4.4.1 – Roadways

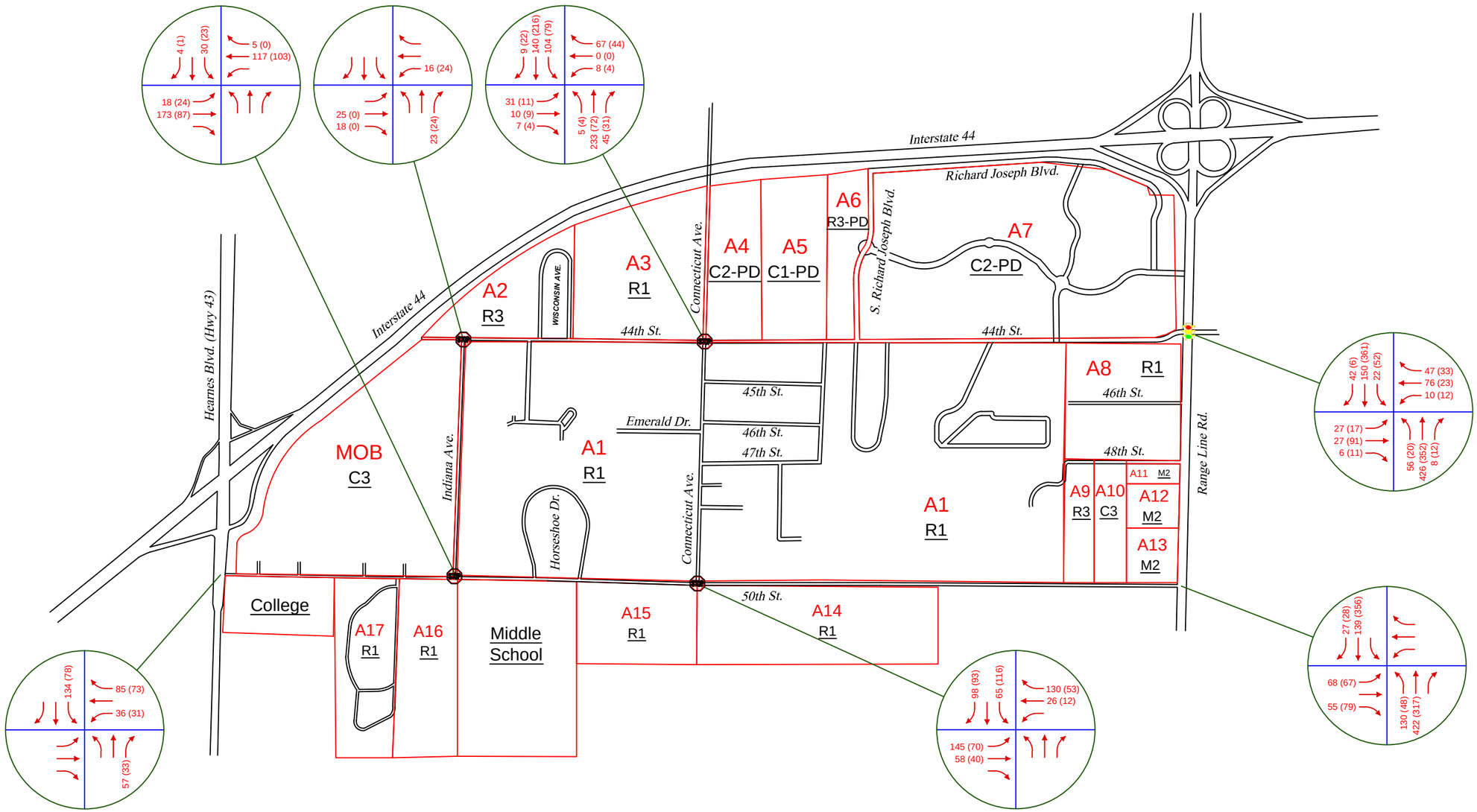
For the 2025 condition, an alternate route is applicable and could enhance the serviceability of the roadway network. 50th Street lies parallel with 44th Street and could provide access to Range Line Road, thus rerouting a portion of traffic attempting to access developments along 50th Street, Connecticut Avenue and Indiana Avenue away from 44th Street. An extension of 50th Street could potentially decrease traffic volumes on 44th Street and reduce some congestion. This alternative was analyzed for both the 2025 and 2030 condition.

4.7 – REROUTE OF EXISTING TRAFFIC FOR THE 50TH STREET EXTENSION ALTERNATIVE

For the purpose of this study, existing traffic counts were modified to take into account an alternative to extend 50th Street to Range Line Road. Traffic was rerouted with the assumption that a percentage of the traffic making northbound left turns at 44th and Range Line would now make northbound left turns at 50th and Range Line if 50th Street was extended. The difference in traffic volumes at Connecticut and 44th and Connecticut and 50th was adjusted to reflect the revised traffic. **Exhibit 9** shows the revised existing traffic for the 50th Street Extension Alternative.

JOPLIN AREA TRANSPORTATION STUDY ORGANIZATION
SOUTH JOPLIN AREA TRANSPORTATION STUDY

EXHIBIT 9
REROUTE OF EXISTING TRAFFIC FOR 50TH ST EXTENSION ALTERNATIVE



CJW

CJW PROJECT No. 1321

LEGEND

AM PEAK (PM PEAK)

STOP SIGN CONTROL

TURNING MOVEMENT

SIGNAL CONTROL

N

1000 0 1000

SCALE: 1" = 1000'

4.8 – 2025 TRIP DISTRIBUTION WITH 50TH STREET EXTENSION ALTERNATIVE

The directional distribution of new development traffic was revised to take into account the 50th Street extension alternative. **Table 14** summarizes the revised 2025 new trip directional distribution of traffic with 50th Street extended.

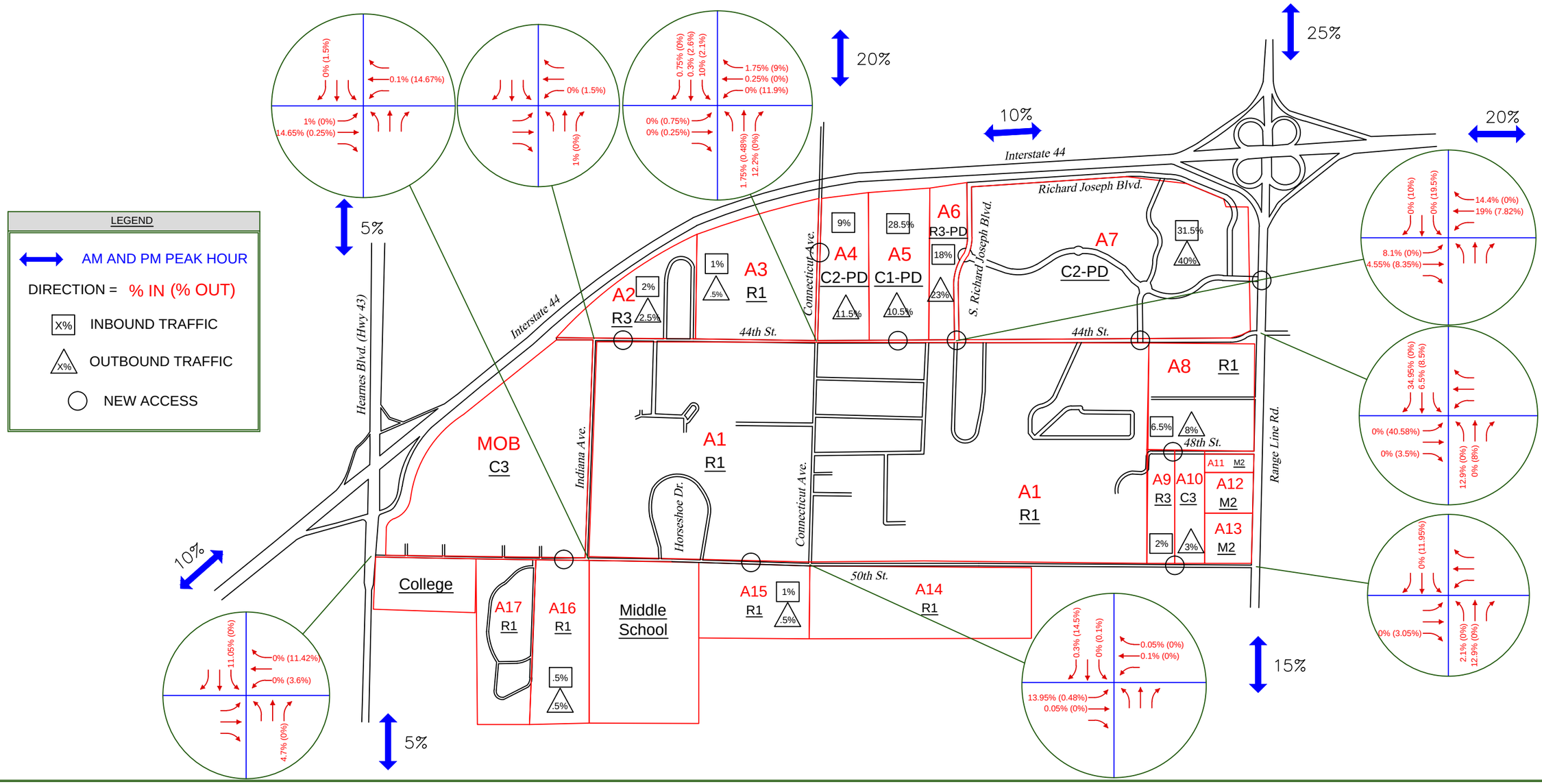
Table 14: 2025 New Trip Directional Distribution with 50th Street Extension Alternative

LOCATION			AM Peak New Trip Traffic Distribution		PM Peak Trip Traffic Distribution
ROADWAY	From	To	% IN	% OUT	% OUT
Access A2	-	-	2% / 2.5%		2% / 2.5%
Access A3	-	-	1% / 0.5%		1% / 0.5%
Access A4	-	-	11.5% / 14%		11.5% / 14%
Access A5	-	-	26.5% / 9%		26.5% / 9%
Access A6	-	-	22.5% / 29.5%		22.5% / 29.5%
Access A7	-	-	19% / 24%		19% / 24%
Access A9	-	-	7.5% / 8.5%		7.5% / 8.5%
Access A10	-	-	2.5% / 3%		2.5% / 3%
Access A15	-	-	6% / 8%		6% / 8%
Access A16	-	-	1% / 0.5%		1% / 0.5%
44th St.	Range Line	Access A7	47.85% / 44.08%		47.85% / 44.08%
44th St.	Access A7	S. Richard Joseph	37.95% / 35.67%		37.95% / 35.67%
44th St.	S. Richard Joseph	Access A5	31.65% / 26.17%		31.65% / 26.17%
44th St.	Access A5	Connecticut	24.2% / 23.25%		24.2% / 23.25%
44th St.	Connecticut	Access A2	1% / 1%		1% / 1%
44th St.	Access A2	Indiana	1% / 1.5%		1% / 1.5%
50th St.	Range Line	Access A10	2.1% / 3.05%		2.1% / 3.05%
50th St.	Access A10	Connecticut	0.2% / 0.1%		0.2% / 0.1%
50th St.	Connecticut	Access A15	14.4% / 14.98%		14.4% / 14.98%
50th St.	Access A15	Indiana	14.75% / 14.92%		14.75% / 14.92%
50th St.	Indiana	Access A16	15.75% / 16.42%		15.75% / 16.42%
50th St.	Access A16	Main Street	15.75% / 15.02%		15.75% / 15.02%
Main St.	South of	50th Street	4.7% / 3.6%		4.7% / 3.6%
Main St.	North of	50th Street	11.05% / 11.42%		11.05% / 11.42%
Connecticut	50th St.	44th Street	15.65% / 15.08%		15.65% / 15.08%
Connecticut	44th St.	Access A3/A4	14.55% / 14.93%		14.55% / 14.93%
Range Line Rd.	48th St.	44th Street	19.4% / 20%		19.4% / 20%
Range Line Rd.	44th St.	I-44	48.95% / 48.58%		48.95% / 48.58%

Exhibit 10 illustrates the new trip directional distribution of traffic with the 50th Street extension as shown in **Table 14**.

JOPLIN AREA TRANSPORTATION STUDY ORGANIZATION
SOUTH JOPLIN AREA TRANSPORTATION STUDY

EXHIBIT 10
2025 AND 2030 AM AND PM PEAK PROJECTED LAND USE DIRECTIONAL DISTRIBUTION WITH 50TH STREET EXTENSION



CJW

CJW PROJECT No. 1321

LEGEND

AM PEAK (PM PEAK)

STOP SIGN CONTROL

TURNING MOVEMENT

SIGNAL CONTROL

N

1000 0 1000

SCALE: 1" = 1000'

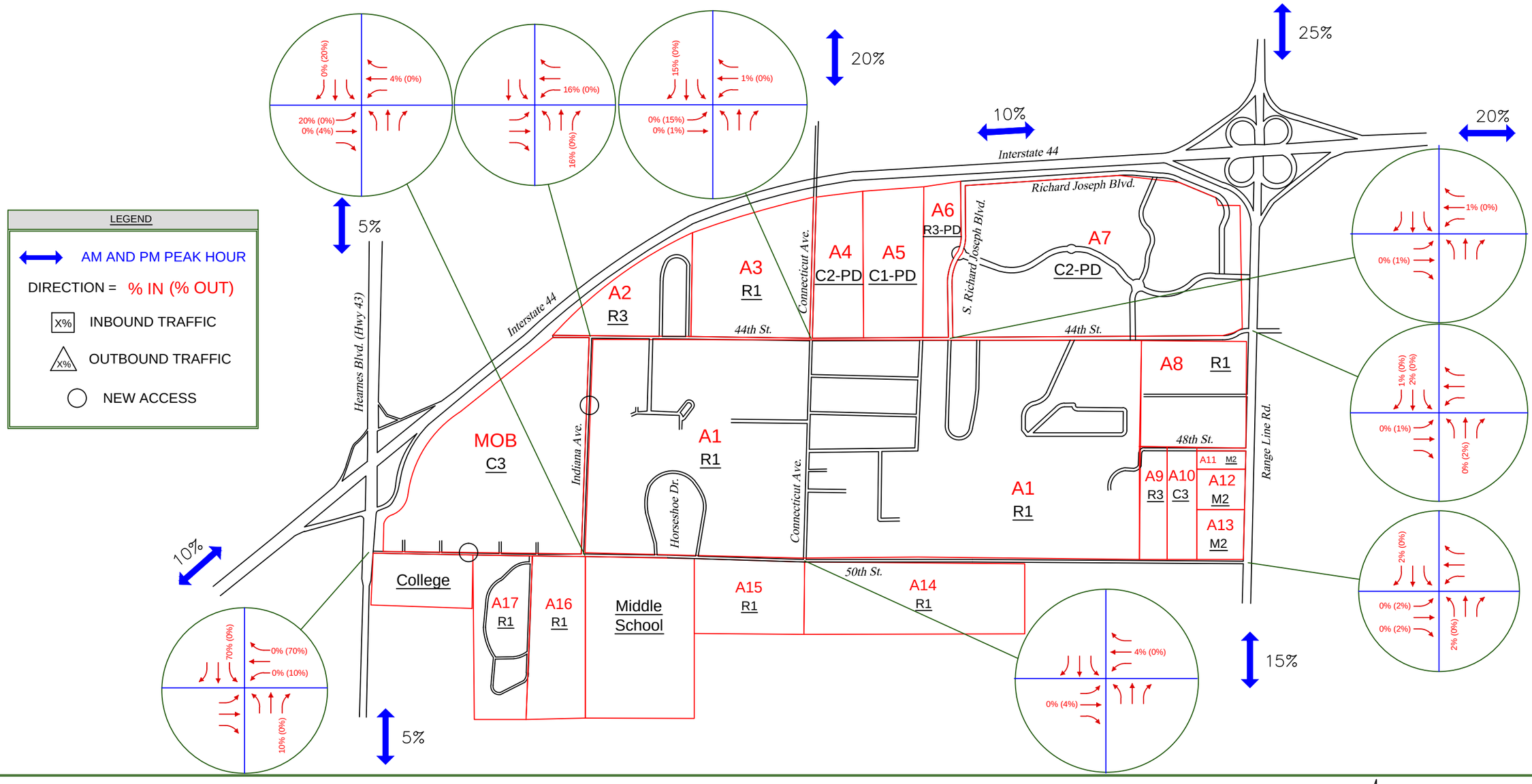
Table 15: 2025 and 2030 Hospital Trip Directional Distribution with 50th Street Extension

LOCATION			AM Peak New Trip Traffic Distribution		PM Peak Trip Traffic Distribution
ROADWAY	From	To	% IN	% OUT	% OUT
44th St.	Range Line	Access A7a	5% / 5%		5% / 5%
44th St.	Access A7a	S. Richard Joseph	5% / 5%		5% / 5%
44th St.	S. Richard Joseph	Access A5	5% / 5%		5% / 5%
44th St.	Access A5	Connecticut	5% / 5%		5% / 5%
44th St.	Connecticut	Access A2	20% / 20%		20% / 20%
44th St.	Access A2	Indiana	20% / 20%		20% / 20%
50th St.	Indiana	Access A16	20% / 20%		20% / 20%
50th St.	Access A16	Main Street	80% / 80%		80% / 80%
Main St.	South of	50th Street	10% / 10%		10% / 10%
Main St.	North of	50th Street	70% / 70%		70% / 70%
Connecticut	44th St.	Access A3/A4	15% / 15%		15% / 15%
Range Line Rd.	48th St.	44th Street	2% / 2%		2% / 2%
Range Line Rd.	44th St.	Access A7b	3% / 3%		3% / 3%
Range Line Rd.	Access A7b	I-44	3% / 3%		3% / 3%

Exhibit 5 illustrates the new hospital trip directional distribution of traffic with the 50th Street extension as shown in **Table 15**.

JOPLIN AREA TRANSPORTATION STUDY ORGANIZATION
SOUTH JOPLIN AREA TRANSPORTATION STUDY

EXHIBIT 11
2025 AND 2030 AM AND PM PEAK HOSPITAL DIRECTIONAL DISTRIBUTION WITH 50TH STREET EXTENSION



CJW
CJW PROJECT No. 1321

LEGEND
AM PEAK (PM PEAK)
STOP SIGN CONTROL
TURNING MOVEMENT
SIGNAL CONTROL

N
1000 0 1000
SCALE: 1" = 1000'

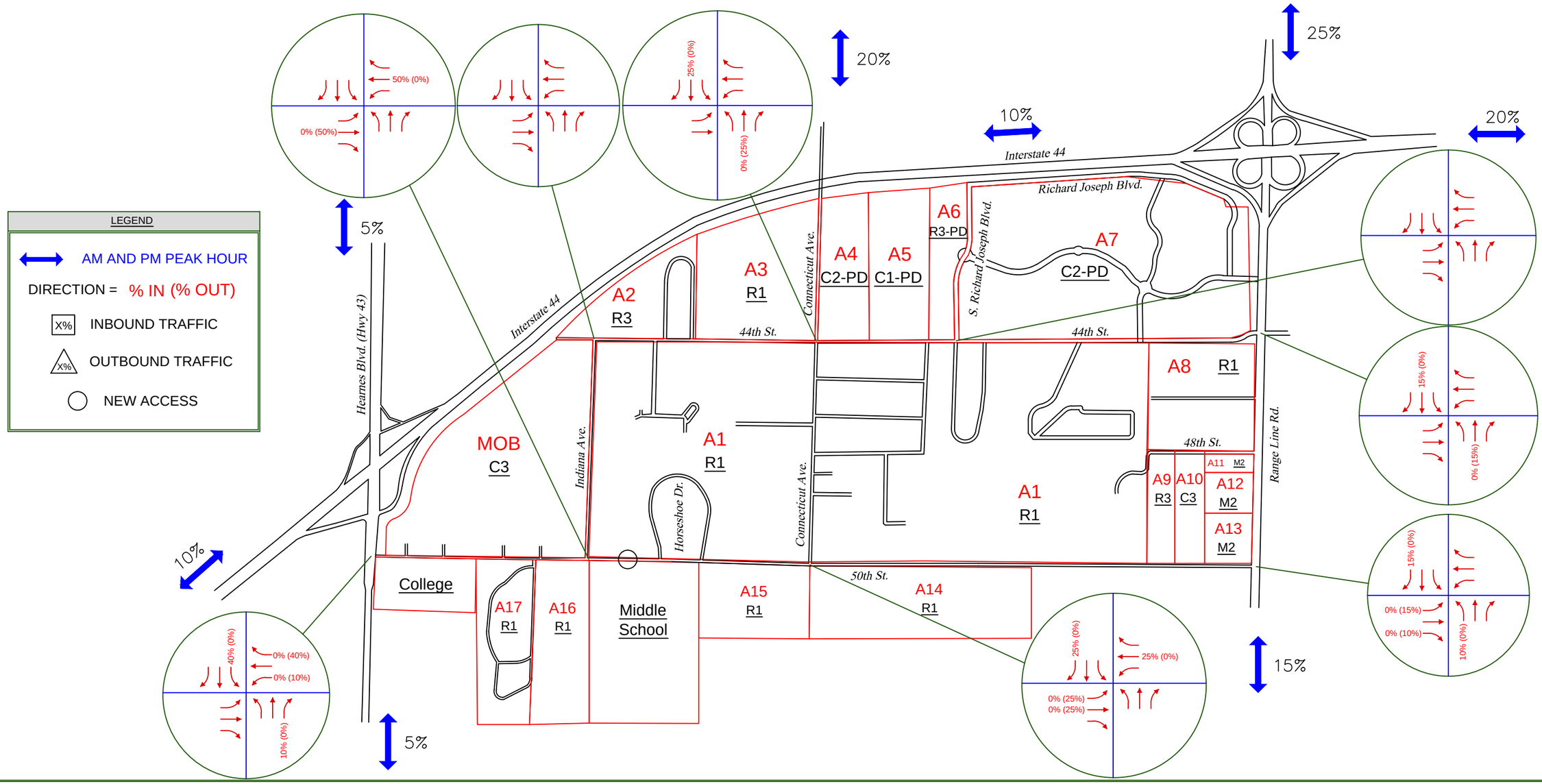
Table 16: 2025 and 2030 New Trip Directional Distribution for the School with 50th Street Extension

LOCATION			AM Peak New Trip Traffic Distribution	
ROADWAY	From	To	% IN	% OUT
School Entrance	-	-	100% / 100%	
44th St.	Connecticut	Range Line	0% / 0%	
50th St	Range Line	Connecticut	25% / 25%	
50th St.	Connecticut	School Entrance	50% / 50%	
50th St.	School Entrance	Main Street	50% / 50%	
Main St.	South of	50th Street	10% / 10%	
Main St.	North of	50th Street	15% / 15%	
Connecticut	50th St.	44th Street	25% / 25%	
Connecticut	North of	44th Street	25% / 25%	
Range Line Rd.	North of	44th Street	15% / 15%	
Rangel Line Rd.	44th Street	50th Street	15% / 15%	
Range Line Rd.	South of	44th Street	10% / 10%	

Exhibit 12 illustrates the new trip directional distribution of traffic entering and exiting the South Middle School with the 50th Street Extension Alternative as shown in **Table 16**.

JOPLIN AREA TRANSPORTATION STUDY ORGANIZATION
SOUTH JOPLIN AREA TRANSPORTATION STUDY

EXHIBIT 12
2025 AND 2030 AM AND PM PEAK SCHOOL DIRECTIONAL DISTRIBUTION WITH 50TH STREET EXTENSION



CJW

CJW PROJECT No. 1321

LEGEND

AM PEAK (PM PEAK)

STOP SIGN CONTROL

TURNING MOVEMENT

SIGNAL CONTROL

N

1000 0 1000

SCALE: 1" = 1000'

4.9 – 2025 TRAFFIC ASSIGNMENT WITH 50TH STREET EXTENSION ALTERNATIVE

Using the traffic data collected, estimated generated trip ends from **Table 10,** and the assumed directional distribution of traffic from **Table 14, 15, and 16**, traffic projections were estimated on each of the impacted roads with the 50th Street Extension Alternative. **Table 17** represents the two-way traffic during the AM peak hour and PM peak hour on each roadway segment. The 2013 traffic volumes were increased at an average annual rate of 2.0% per year for 12 years to account for additional growth in the vicinity of the development site.

Table 17: 2025 AM and PM Peak Hour Traffic Assignment with 50th Street Extension

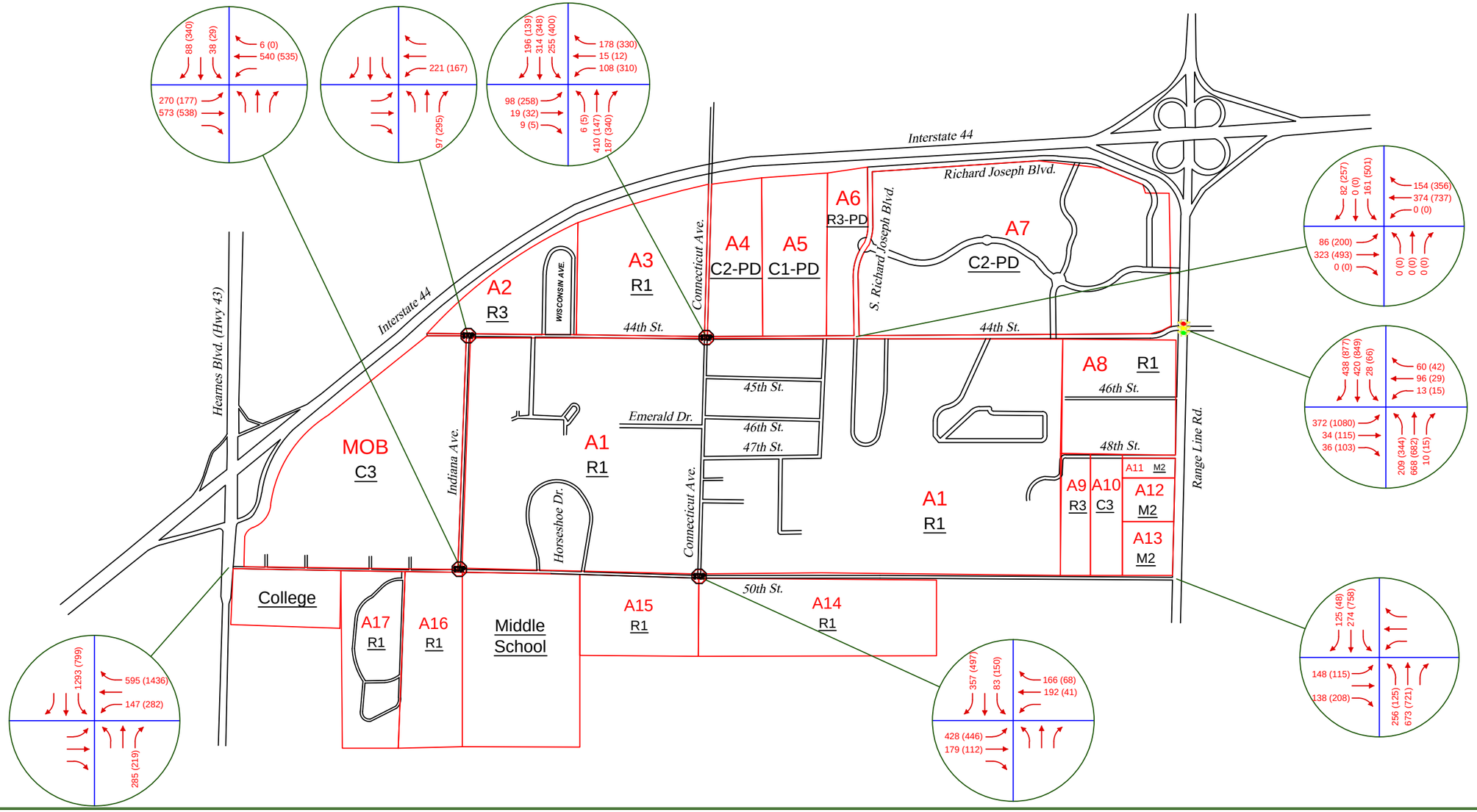
			Daily Traffic		AM Peak Hour		PM Peak Hour	
Roadway	From	To	Existing*	2025 Projections with the Development	Existing*	2025 Projections with the Development	Existing*	2025 Projections with the Development
Access A2	-	-	-	1,311	-	100	-	118
Access A3	-	-	-	411	-	14	-	37
Access A4	-	-	-	7,156	-	238	-	644
Access A5	-	-	-	9,844	-	356	-	886
S. Richard Joseph Blvd.	-	-	-	14,600	-	483	-	1,314
Access A7a	-	-	1,972	14,567	194	646	177	1,311
Access A7b	-	-	-	4,489	-	150	-	404
Access A9	-	-	-	4,078	-	135	-	367
Access A10	-	-	-	1,400	-	46	-	126
Access 15	-	-	-	411	-	14	-	37
Access A16	-	-	-	267	-	9	-	24
44th Street	Range Line	Access A7	1,867	28,311	234	1,185	168	2,548
44th Street	Access A7	S. Richard Joseph Blvd.	1,856	23,189	234	1,012	167	2,087
44th Street	S. Richard Joseph Blvd.	Access A5	1,856	18,744	234	865	167	1,687
44th Street	Access A5	Connecticut	1,856	15,833	234	762	167	1,425
44th Street	Connecticut	Access A2	556	5,011	62	343	50	451
44th Street	Access A2	Indiana	533	5,133	62	347	48	162
50th Street	Range Line	Access A10	2,467	5,511	280	667	222	496
50th Street	Access A10	Connecticut	2,467	4,089	280	619	222	368
50th Street	Connecticut	Access A15	2,389	12,178	327	1,156	215	1,096
50th Street	Access A15	Indiana	2,367	12,244	325	1,157	213	1,102
50th Street	Indiana	Access A16	2,389	17,667	312	1,471	215	1,590
50th Street	Access A16	Main Street	2,389	30,400	312	2,320	215	2,736
Main Street	South of	50th Street	711	5,567	93	432	64	501
Main Street	North of	50th Street	1,678	24,833	219	1,888	151	2,235
Connecticut	50th Street	44th Street	3,689	12,900	438	1,034	332	1,161
Connecticut	44th Street	Access A3/A4	4,933	18,022	584	1,451	444	1,622
Connecticut	Access A3/A4	Interstate 44	4,933	20,978	584	1,550	444	1,888
Range Line	48th Street	44th Street	8,533	22,311	656	1,356	768	2,008
Range Line	44th Street	Interstate 44	9,122	39,956	714	1,986	821	3,596
Range Line	South of	50th Street	8,889	20,133	746	1,341	800	1,812

Exhibit 13 illustrates the assignment of 2025 projections with development traffic as indicated in **Table 14** with the 50th Street Extension Alternative. These values were subsequently used to analyze the roadway capacity and level of service.

JOPLIN AREA TRANSPORTATION STUDY ORGANIZATION
SOUTH JOPLIN AREA TRANSPORTATION STUDY

EXHIBIT 13

PROJECTED 2025 TRAFFIC ASSIGNMENT WITH 50TH STREET EXTENSION



CJW

CJW PROJECT No. 1321

LEGEND

AM PEAK (PM PEAK)

STOP SIGN CONTROL

TURNING MOVEMENT

SIGNAL CONTROL

N

1000 0 1000

SCALE: 1" = 1000'

4.10 – 2025 Measures of Effectiveness with 50th Street Extension Alternative

A capacity analysis of the road system was conducted to analyze intersection operations during the AM and PM peak hour for the Projected 2025 condition with a 50th Street extension.

Table 18: 2025 AM and PM Peak Hour Level of Service (50th St. Extension Alternative)

INTERSECTION			# of	Traffic		AM Peak		PM Peak	
N/S		E/W	Lanes	Control	Queue	Delay (s)	LOS	Delay (s)	LOS
Connecticut Avenue	**at**	**44th Street**		**Signal**					
Eastbound Left			1		216	11.5	B	16.7	B
Eastbound Through			1		28	12.8	B	14.9	B
Eastbound Right			1		28	12.8	B	14.9	B
Westbound Left			1		141	11.7	B	20.0	B
Westbound Through			1		14	15.9	B	15.8	B
Westbound Right			1		53	4.9	A	5.2	A
Northbound Left			1		6	10.0	A	10.0	A
Northbound Through			1		285	140.4	F	30.6	C
Northbound Through / Right			1		285	140.4	F	30.6	C
Southbound Left			2		95	14.6	B	28.4	C
Southbound Through			1		107	12.6	B	16.5	B
Southbound Through / Right			1		107	12.6	B	16.5	B
Range Line Road	**at**	**44th Street**		**Signal**					
Eastbound Left			2		538	51.3	D	318.2	F
Eastbound Through/Right			1		101	16.2	B	22.6	C
Eastbound Right			1		37	16.2	B	22.6	C
Westbound left			1		19	51.5	D	50.4	D
Westbound Through/Right			1		59	52.2	D	19.8	B
Northbound Left			2		456	14.9	B	315.4	F
Northbound Through			1		242	17.8	B	23.7	C
Northbound Through/Right			1		242	17.8	B	23.7	C
Southbound Left			1		46	12.8	B	15.6	B
Southbound Through			2		315	22.2	C	27.0	C
Southbound Right			1		229	4.5	A	10.6	B
Connecticut Avenue	**at**	**50th Street**		**TWSC**					
Eastbound Left			2	Free	36	10.1	B	8.7	A
Eastbound Through			1	Free	0	0.0	A	0.0	A
Westbound Through			1	Free	0	0.0	A	0.0	A
Westbound Right			1	Free	0	0.0	A	0.0	A
Southbound Left			1	Stop	217	135.0	F	159.3	F
Southbound Right			1	Stop	79	13.1	B	12.4	B
Indiana Avenue	**at**	**50th Street**		**TWSC**					
Eastbound Left			1	Free	18	4.8	A	2.8	A
Eastbound Through			1	Free	18	6.5	A	4.5	A
Westbound Through / Right			1	Free	0	0.0	A	0.0	A
Southbound Left/Right			1	Stop	327	94.7	F	87.7	F
Range Line Road	**at**	**50th Street**		**Signal**					

Eastbound Left	1	115	31.3	**C**	35.7	**D**
Eastbound Through/Right	1	40	0.4	**A**	5.5	**A**
Northbound Left	2	35	7.5	**A**	7.5	**A**
Northbound Through	1	276	10.7	**B**	8.1	**A**
Southbound Through	1	446	22.2	**C**	16.9	**B**
Southbound Right	1	13	4.1	**A**	2.3	**A**

CHAPTER 5 – 2030 FUTURE CONDITIONS

5.1 – 2030 LAND USE, TRIP GENERATION & TRIP DISTRIBUTION

For the purpose of this study, it is anticipated that the projected land uses, trip generation and trip distribution from the Projected 2025 condition will be built out and will remain the same for the 2030 condition.

5.2 – 2030 TRAFFIC ASSIGNMENT

Using the traffic data collected, estimated generated trip ends from **Table 10,** and the assumed directional distribution of traffic from **Table 3, 4 and 11**, traffic projections were estimated on each of the impacted roadways. **Table 19** represents the two-way traffic during the AM peak hour and PM peak hour on each roadway segment. The 2013 traffic volumes were increased at an average annual rate of 2.0 percent per year for 17 years to account for additional growth.

Table 19: 2030 AM and PM Peak Hour Traffic Assignment

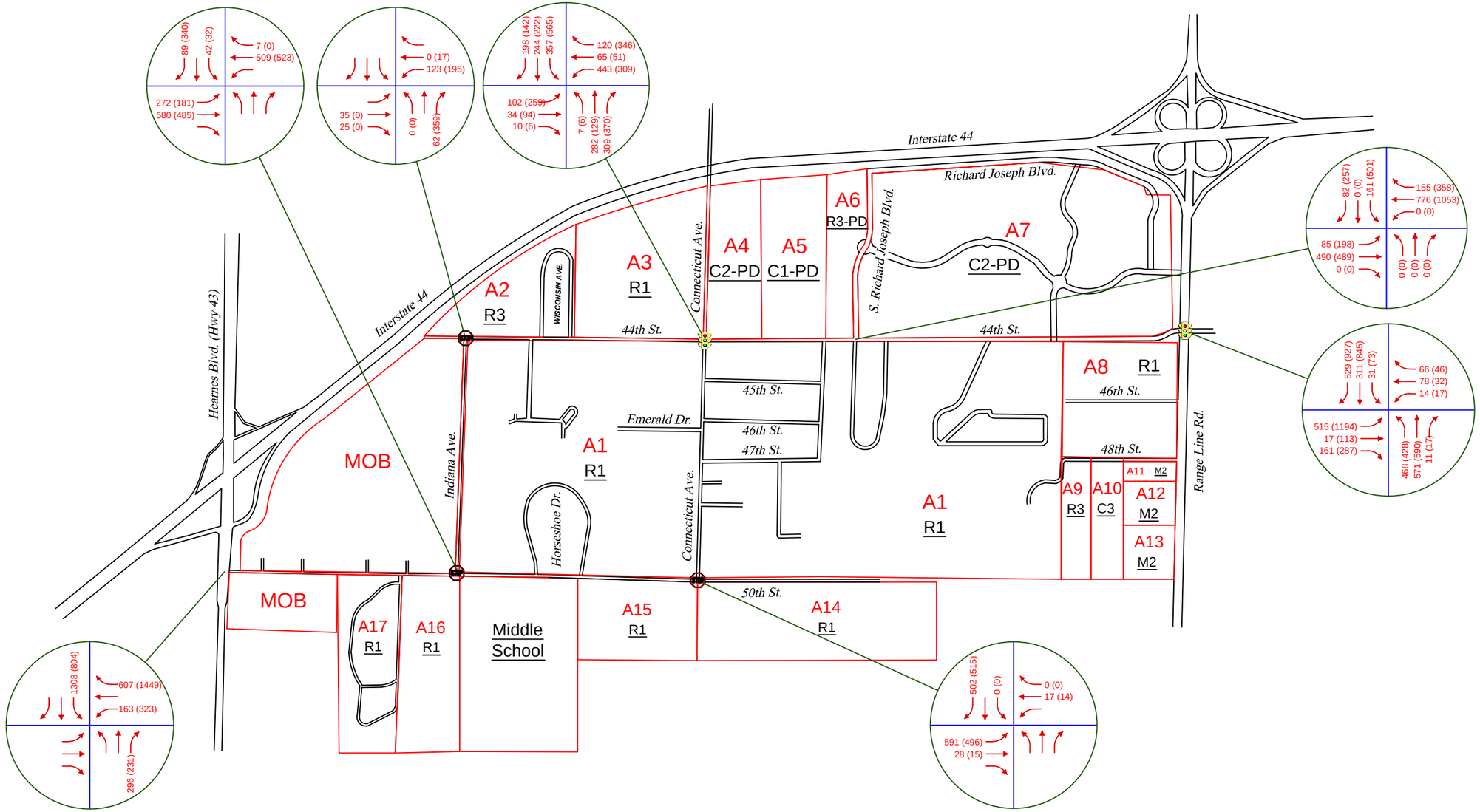
			Daily Traffic		AM Peak Hour		PM Peak Hour	
Roadway	From	To	Existing*	2030 Projections with the Development	Existing*	2030 Projections with the Development	Existing*	2030 Projections with the Development
Access A2	-	-	-	1,278	-	42	-	115
Access A3	-	-	-	411	-	14	-	37
Access A4	-	-	-	7,156	-	238	-	644
Access A5	-	-	-	9,844	-	356	-	886
S. Richard Joseph Blvd.	-	-	-	14,600	-	483	-	1,314
Access A7a	-	-	1,933	14,778	5	407	174	1,330
Access A7b	-	-	-	4,489	-	150	-	404
Access A9	-	-	-	5,478	-	182	-	493
Access 15	-	-	-	400	-	14	-	36
Access A16	-	-	-	267	-	9	-	24
School Entrance	-	-	-	9,156	-	824	-	-
44th Street	Range Line	Access A7a	4,389	33,122	437	1,768	395	2,981
44th Street	Access A7a	S. Richard Joseph Blvd.	3,544	26,678	432	1,582	319	2,401
44th Street	S. Richard Joseph Blvd.	Access A5	3,544	22,189	432	1,433	319	1,997
44th Street	Access A5	Connecticut	3,544	19,278	432	1,328	319	1,735
44th Street	Connecticut	Access A2	667	6,200	64	416	60	558
44th Street	Access A2	Indiana	667	6,344	64	420	60	571

50th Street	Access A15	Connecticut	3,611	12,644	325	1,138	213	1,040
50th Street	Access A15	School Entry	3,611	12,644	325	1,138	-	-
50th Street	Indiana	School Entry	3,611	12,644	325	1,138	-	-
50th Street	Access A16	Indiana	2,389	16,989	312	1,450	215	1,529
Main Street	South of	50th Street	717	6,156	94	459	65	554
Main Street	North of	50th Street	1,672	25,033	218	1,915	151	2,253
Connecticut	50th Street	44th Street	2,367	11,578	438	1,295	213	1,042
Connecticut	44th Street	Access A3/A4	4,800	18,478	424	1,303	432	1,663
Connecticut	Access A3/A4	Interstate 44	4,800	21,444	424	1,402	432	1,930
Range Line	48th Street	44th Street	8,889	24,267	746	1,536	800	2,184
Range Line	44th Street	Access A7b	8,844	40,833	672	2,023	796	3,675
Range Line	Access A7b	Interstate 44	8,844	40,444	672	2,033	796	3,640

Exhibit 14 illustrates the assignment of 2030 projections with development traffic as indicated in **Table 19** to the street system. These values were subsequently used to analyze the roadway capacity and level of service.

JOPLIN AREA TRANSPORTATION STUDY ORGANIZATION
SOUTH JOPLIN AREA TRANSPORTATION STUDY

EXHIBIT 14
PROJECTED 2030 TRAFFIC ASSIGNMENT
AM AND PM PEAK



CJW

CJW PROJECT No. 1321

LEGEND

AM PEAK (PM PEAK)

STOP SIGN CONTROL

TURNING MOVEMENT

SIGNAL CONTROL

N

1000 0 1000

SCALE: 1" = 1000'

5.3 – 2030 MEASURES OF EFFECTIVENESS

A capacity analysis of the roadway system was conducted to analyze intersection operations during the AM and PM peak hour for the Projected 2030 condition.

Table 20: AM and PM Peak Hour Level of Service (Projected 2030 Condition)

INTERSECTION		# of	Traffic		AM Peak		PM Peak	
N/S	E/W	Lanes	Control	Queue	Delay (s)	LOS	Delay (s)	LOS
Connecticut Avenue	**at 44th Street**		**Signal**					
Eastbound Left		1		201	32.1	C	101.5	F
Eastbound Through		1		23	32.3	C	27.9	C
Eastbound Right		1		23	32.3	C	27.9	C
Westbound Left		1		266	92.1	F	32.2	C
Westbound Through		1		59	29.5	C	34.2	C
Westbound Right		1		76	8.1	A	12.4	B
Northbound Left		1		18	41.9	D	42.8	D
Northbound Through		1		375	34.9	C	33.5	C
Northbound Through / Right		1		375	34.9	C	33.5	C
Southbound Left		2		272	44.8	D	37.7	D
Southbound Through		1		195	11.0	B	9.8	A
Southbound Through / Right		1		195	11.0	B	9.8	A
Range Line Road	**at 44th Street**		**Signal**					
Eastbound Left		2		727	52.8	D	159.1	F
Eastbound Through/Right		1		264	7.1	A	20.7	C
Eastbound Right		1		264	7.1	A	20.7	C
Westbound Left		1		37	60.4	E	57.5	E
Westbound Through/Right		1		68	43.1	D	23.2	C
Northbound Left		2		565	25.3	C	160.5	F
Northbound Through		1		245	19.4	B	29.0	C
Northbound Through/Right		1		245	19.4	B	29.0	C
Southbound Left		1		61	16.3	B	23.1	C
Southbound Through		2		515	34.3	C	101.4	F
Southbound Right		1		597	8.2	A	57.9	E
Connecticut Avenue	**at 50th Street**		**TWSC**					
Eastbound Left/Through		1	Free	38	8.5	A	8.2	A
Westbound Through/Right		1	Free	0	0.0	A	0.0	A
Southbound Left		1	Stop	79	11.9	B	12.1	B
Southbound Right		1	Stop	79	11.9	B	12.1	B
Indiana Avenue	**at 50th Street**		**TWSC**					
Eastbound Left		1	Free	18	4.7	A	2.7	A
Eastbound Through		1	Free	18	6.4	A	4.5	A
Westbound Through / Right		1	Free	0	0.0	A	0.0	A
Southbound Left/Right		1	Stop	324	102.7	F	84.9	F

5.4 – 2030 PROPOSED IMPROVEMENTS

For the new network, roadways were analyzed to determine the necessary improvements required for the Projected 2030 condition.

For the 2030 condition, an alternate route is applicable and could enhance the serviceability of the roadway network. 50th Street lies parallel with 44th Street and could provide access to Range Line Road, thus rerouting a portion of traffic attempting to access developments along 50th Street, Connecticut Avenue and Indiana Avenue away from 44th Street. An extension of 50th Street could potentially decrease traffic volumes on 44th Street and reduce some congestion. This alternative was analyzed for both the 2025 and 2030 condition.

5.5 – REROUTE OF EXISTING TRAFFIC FOR THE 50TH STREET EXTENSION ALTERNATIVE

For the purpose of this study it was assumed that the reroute of existing traffic would remain the same for the Projected 2030 condition as it was in the Projected 2025 condition.

5.6 –2030 TRIP DISTRIBUTION WITH 50TH STREET EXTENSION ALTERNATIVE

For the purpose of this study it was assumed that the 2030 trip distribution with 50th Street Extended would remain the same for the Projected 2030 condition as it was in the Projected 2025 condition.

5.7 –2030 TRAFFIC ASSIGNMENT WITH 50TH STREET EXTENSION ALTERNATIVE

Using the traffic data collected, estimated generated trip ends from **Table 10,** and the assumed directional distribution of traffic from **Table 14, 15, and 16** traffic projections were estimated for each of the impacted roadways with the 50th Street Extension Alternative. **Table 21** represents the two-way traffic during the AM peak hour and PM peak hour on each roadway segment. The 2013 traffic volumes were increased at an average annual rate of 2.0 percent per year for 17 years to account for additional growth in the study area.

Table 21: 2030 AM and PM Peak Hour Traffic Assignment with 50th Street Extension Alternative

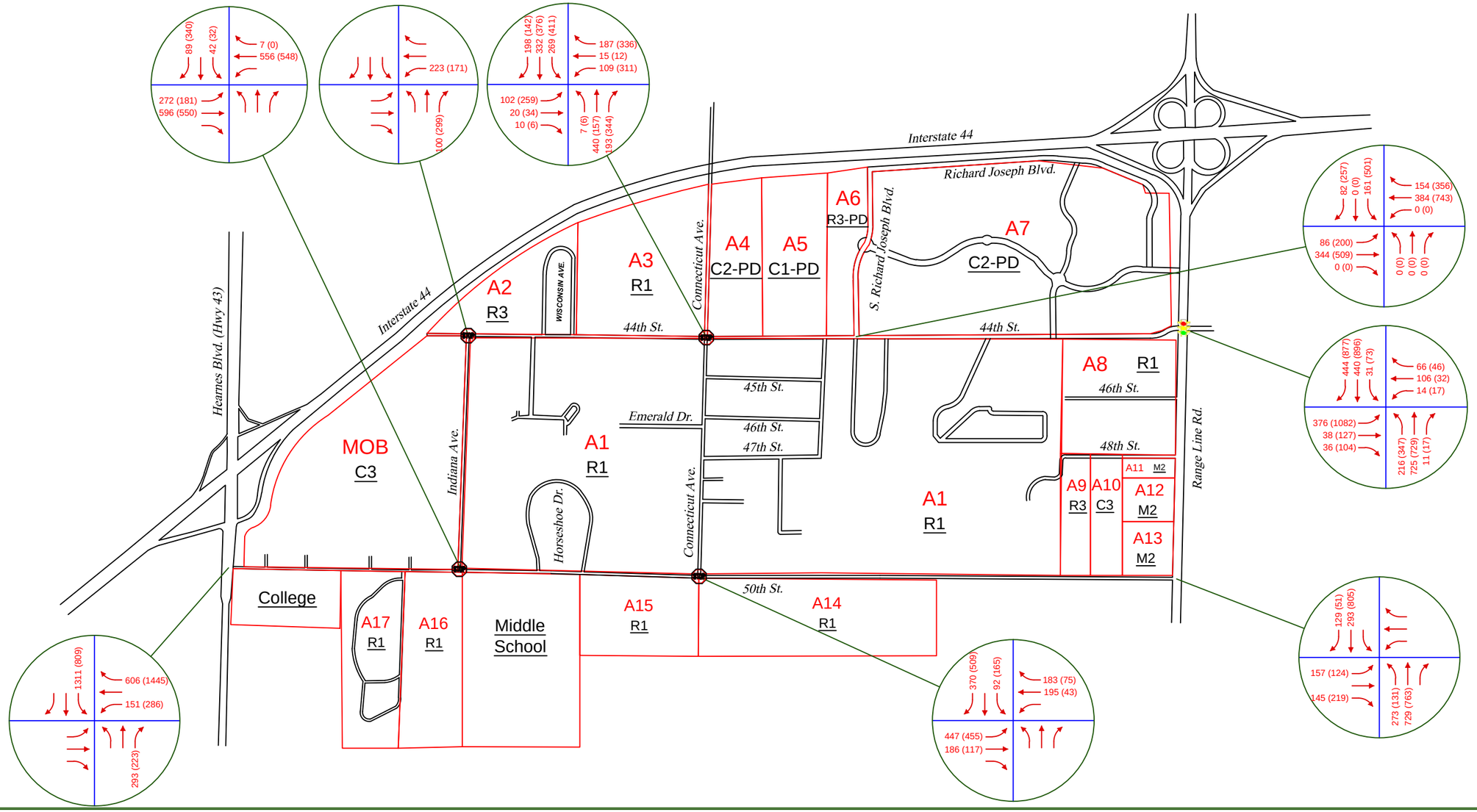
Roadway	From	To	Daily Traffic		AM Peak Hour		PM Peak Hour	
			Existing*	2030 Projections with the Development	Existing*	2030 Projections with the Development	Existing*	2030 Projections with the Development
Access A2	-	-	-	1,311	-	106	-	118
Access A3	-	-	-	411	-	14	-	37
Access A4	-	-	-	7,156	-	238	-	644
Access A5	-	-	-	9,844	-	356	-	886
S. Richard Joseph Blvd.	-	-	-	14,600	-	483	-	1,314
Access A7a	-	-	1,972	14,833	194	672	177	1,335
Access A7b			-	4,489	-	150	-	404
Access A9	-	-	-	4,078	-	135	-	367
Access A10	-	-	-	411	-	14	-	37
Access A15	-	-	-	1,400	-	46	-	126
Access A16	-	-	-	267	-	9	-	24
School Entrance	-	-	-	9,156	-	824	-	-
44th Street	Range Line	Access A7	1,867	28,544	234	1,216	168	2,569
44th Street	Access A7a	S. Richard Joseph Blvd.	1,856	23,433	234	1,043	167	2,109
44th Street	S. Richard Joseph Blvd.	Access A5	1,856	18,989	234	968	167	1,709
44th Street	Access A5	Connecticut	1,856	16,089	234	793	167	1,448
50th Street	Indiana	School Entry	3,633	12,678	327	1,141	-	-
50th Street	Access A15	School Entry	3,633	12,678	327	1,141	-	-
44th Street	Connecticut	Access A2	556	5,111	62	351	50	460
44th Street	Access A2	Indiana	533	5,222	62	355	50	470
50th Street	Range Line	Access A10	2,467	5,833	280	704	222	525
50th Street	Access A10	Connecticut	2,456	4,444	279	656	222	400
50th Street	Connecticut	Access A15	2,389	12,489	327	1,198	215	1,124
50th Street	Access A15	Indiana	2,367	12,556	325	1,201	215	1,130
50th Street	Indiana	Access A16	2,389	17,989	312	1,513	215	1,619
50th Street	Access A16	Main Street	2,389	30,700	312	2,361	215	2,763
Main Street	South of	50th Street	711	5,656	93	444	64	509
Main Street	North of	50th Street	1,678	25,044	219	1,917	151	2,254
Connecticut	50th Street	44th Street	3,689	13,378	424	1,402	332	1,204
Connecticut	44th Street	Access A3/A4	4,933	18,678	746	1,536	444	1,681
Connecticut	Access A3/A4	Interstate 44	4,933	21,633	672	2,023	444	1,947
Range Line	48th Street	44th Street	8,533	23,444	672	2,033	768	2,110
Range Line	44th Street	Interstate 44	9,122	41,144	456	106	821	3,703
Range Line	South of	50th Street	8,889	21,311	456	14	800	1,918

Exhibit 15 illustrates the assignment of Projected 2030 traffic as indicated in **Table 21** to the roadway network for the Projected 2030 analysis year with the 50th Street Extension Alternative. These values were subsequently used to analyze the roadway capacity and level of service.

JOPLIN AREA TRANSPORTATION STUDY ORGANIZATION
SOUTH JOPLIN AREA TRANSPORTATION STUDY

EXHIBIT 15

PROJECTED 2030 TRAFFIC ASSIGNMENT WITH 50TH STREET EXTENSION



CJW

CJW PROJECT No. 1321

LEGEND

AM PEAK (PM PEAK)

STOP SIGN CONTROL

TURNING MOVEMENT

SIGNAL CONTROL

N

1000 0 1000

SCALE: 1" = 1000'

5.8 – 2030 REVISED MEASURES OF EFFECTIVENESS WITH 50TH STREET EXTENSION ALTERNATIVE

A capacity analysis of the road system was conducted to analyze intersection operations during the AM and PM peak hour for the Projected 2030 condition with the 50th Street Extension Alternative.

Table 22: AM and PM Peak Hour Level of Service with 50th Street Extension

INTERSECTION		# of	Traffic		AM Peak		PM Peak	
N/S	E/W	Lanes	Control	Queue	Delay (s)	LOS	Delay (s)	LOS
Connecticut Avenue	**at 44th Street**		**Signal**					
Eastbound Left		1		116	11.6	B	16.8	B
Eastbound Through		1		30	12.6	B	14.5	B
Eastbound Right		1		30	12.6	B	14.5	B
Westbound Left		1		141	11.7	B	20.1	C
Westbound Through		1		14	15.9	B	15.8	B
Westbound Right		1		53	4.9	A	5.3	A
Northbound Left		1		7	10.0	A	10.0	A
Northbound Through		1		304	19.2	B	35.5	D
Northbound Through / Right		1		304	19.2	B	35.5	D
Southbound Left		2		100	15.2	B	30.7	C
Southbound Through		1		118	13.4	B	17.5	B
Southbound Through / Right		1		118	13.4	B	17.5	B
Range Line Road	**at 44th Street**		**Signal**					
Eastbound Left		2		644	49.7	D	126.2	F
Eastbound Through/Right		1		174	15.7	B	23.0	C
Eastbound Right		1		174	15.7	B	23.0	C
Westbound Left		1		37	51.6	D	57.5	E
Westbound Through/Right		1		71	50.4	D	30.6	C
Northbound Left		2		407	16.4	B	39.1	D
Northbound Through		1		316	20.1	C	26.0	C
Northbound Through/Right		1		316	20.1	C	26.0	C
Southbound Left		1		57	13.9	B	18.9	B
Southbound Through		2		523	24.7	C	81.5	F
Southbound Right		1		526	4.8	A	36.5	D
Connecticut Avenue	**at 50th Street**		**TWSC**					
Eastbound Left		2	Stop	-	70.6	F	72.6	F
Eastbound Through		1	Stop	-	13.2	B	10.9	B
Westbound Through		1	Stop	-	14.6	B	10.3	B
Westbound Right		1	Stop	-	12.3	B	10.1	B
Southbound Left		1	Stop	-	11.9	B	13.2	B
Southbound Right		1	Stop	-	25.8	D	47.4	E
Indiana Avenue	**at 50th Street**		**TWSC**					
Eastbound Left		1	Free	19	5.1	A	3.0	A
Eastbound Through		1	Free	0	6.8	A	4.6	A
Westbound Through / Right		1	Free	0	0.0	A	0.0	A
Southbound Left/Right		1	Stop	370	135.9	F	110.4	F

Range Line Road	**at 50th Street**		**Signal**					
Eastbound Left		1		123	41.5	**D**	43.1	**D**
Eastbound Through/Right		1		52	0.6	**A**	8.4	**A**
Northbound Left		2		37	5.8	**A**	7.1	**A**
Northbound Through		1		295	7.4	**A**	6.8	**A**
Southbound Through		1		519	11.4	**B**	16.8	**B**
Southbound Right		1		14	2.6	**A**	2.4	**A**

CHAPTER 6 – FINDINGS & RECOMMENDATIONS

- **Access Drive on Connecticut** – It is important that access points be strategically placed along primary routes throughout the study area. With the future access points still being determined access points were created that were acceptable to the current standards and practices. With that an access was anticipated to be located on Connecticut Avenue north of 44th Street that will not only serve the adjacent properties, but will provide relief for traffic exiting the future development along 44th Street from Richard Joseph to Range Line.

- **Right in / Right out Access on Range Line Road** – Range Line Road and 44th Street is a major intersection for the future development along 44th Street. It will require signal upgrades and will have to support a high volume of traffic generated. It is recommended that the full access along Range Line Road north of 44th Street be converted to a Right in / Right out access. This will allow for the traffic demand at the 44th Street and Range Line intersection to be reduced, thus reducing further infrastructure needs at the intersection than what is proposed in this study.

- **Roadway and Geometric Improvements 2015** – After analyzing the roadway network with the additional traffic added by changing land uses, it is recommended that the following roadway and geometric improvements be made to address capacity issues of the roadway infrastructure within the study area.

Table 23: 2015 Geometric and Roadway Improvements

LOCATION			Geometric Improvement
ROADWAY	From	To	
Connecticut	32nd Street	44th Street	Widen to 5 lane Section
44th St.	Connecticut	Range Line	Widen to 5 Lane Section
Range Line	44th	Southward	Widen to 5 Lane Section

INTERSECTION IMPROVEMENTS				
ROADWAY	At	Intersection Improvement	# of Lanes	Length
44th Street	**Connecticut**	**Signalized**		
Southbound		Left	2	220' / Continuous
Southbound		Through / Right	1	Continuous
Northbound		Left	1	140'
Northbound		Through / Right	1	Continuous
Eastbound		Left	1	160'

Eastbound		Through / Right	1	Continuous
Westbound		Left	1	240′
Westbound		Through	1	Continuous
Westbound		Right	1	Continuous
44th Street	**Connecticut**	**Signalized**		
Southbound		Left	1	120′
Southbound		Through	2	Continuous
Southbound		Right	1	120′
Northbound		Left	1	220′
Northbound		Through / Right	2	Continuous
Eastbound		Left	2	450′
Eastbound		Through / Right	1	Continuous
Westbound		Left	1	120′
Westbound		Through / Right	1	Continuous

The **Roadway Alignment Analysis Appendix** illustrates the proposed roadway geometrics based upon the 2015 geometrics shown in **Table 23**.

Geometric improvements for the roadways are based upon the ADT thresholds outlined in **Table 7** and then compared to the ADT calculated in the 2015 condition. Intersection geometrics were then set to provide adequate level of service for each intersection.

In reviewing the geometric considerations and demand on the roadway network for the 2015 condition a couple of observations were made on both the widening of Connecticut and the widening of 44th and Range Line. The widening of Connecticut would provide a relief and additional capacity for traffic demand in 2015. In its existing condition though, Connecticut would be pushed to near capacity when the hospital opens, but should still be able to handle the traffic demand. However once the additional land use changes along 44th Street occur the need for widening Connecticut will be imperative. Additionally when reviewing the additional improvements along 44th Street and Range Line Road it is found that the land use changes are the primary driver behind the need for the improvements. Therefore it is recommended to widen Connecticut Avenue first and foremost, providing congestion relief and traffic capacity in the north / south direction, while the improvements along 44th Street and Range Line Road are more predicated on the change in developing land uses along 44th Street.

Signal Warrants - The Manual of Uniform Traffic Control Devices, 2009 Edition (MUTCD) provides eight (8) warrants to be evaluated for a new traffic signal installation. A traffic signal should not be installed unless a minimum of one of these warrants is met. The MUTCD states in Section 4C.01 that "the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic signal" and recommends that engineering judgment be used in the evaluation of the warrants to ensure that a traffic signal will improve the overall safety and/or operation of the intersection.

The eight traffic signal warrants contained in the MUTCD are:

Warrant 1, Eight-Hour Vehicular Volume – This warrant has two conditions. The Minimum Vehicular Volume, Condition A, is intended for application where a large volume of intersecting traffic is the principal reason to consider installing a traffic signal. The Interruption of Continuous Traffic, Condition B, is intended for application where the traffic volume of a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

Warrant 2, Four-Hour Vehicular Volume – This warrant is intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Warrant 3, Peak Hour – This warrant is intended for use at a location where traffic conditions are such that for a minimum of one hour of an average day, the minor street suffers undue delay when entering or crossing the major street.

Warrant 4, Pedestrian Volume – This warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

Warrant 5, School Crossing – This warrant is intended for application where the fact that school children cross the major street is the principal reason to consider installing a traffic control signal.

Warrant 6, Coordinated Signal System – This warrant is used when progressive movement of traffic in a coordinated signal system sometimes necessitates installing traffic control signals at intersections where they would not otherwise be needed in order to maintain proper platooning of vehicles.

Warrant 7, Crash Experience – This warrant is intended for application where the severity and frequency of crashes are the principal reason to consider installing a traffic control signal.

Warrant 8, Roadway Network – This warrant is used at the intersection of two major routes where installing a traffic signal might encourage concentration and organization of traffic flow on a roadway network.

For the purposes of this study, one warrant was the focus; **Warrant 1** is the most applicable. A signal analysis for **Warrant 1** was performed for the 2015 calculations for the intersections of 44th Street and Connecticut Avenue utilizing the MUTCD, 2009 Edition.

The results of the signal **Warrant 1** analysis showed a need for a signal at Connecticut Avenue and 44th Street by meeting condition A **Warrant 1**. In addition, the analysis showed that condition B of **Warrant 1** is also met for the intersection of 44th Street and Connecticut Avenue**.** Per the MUTCD only one condition of **Warrant 1** needs to be satisfied to warrant a signal. Therefore a signal at this location would improve overall safety and operation of the intersection.

The addition of this signal would enhance the safety of the existing intersection by allowing traffic which does not currently have a protected movement to make a left turn southbound to eastbound.

- **Roadway and Geometric Improvements 2025** – After analyzing the roadway network with the additional traffic added by changing land uses, it is recommended that the following roadway and geometric improvements be made to address capacity issues of the roadway infrastructure within the study area.

Table 24: 2025 Geometric and Roadway Improvements

LOCATION			Geometric Improvement
ROADWAY	From	To	
Connecticut	32nd Street	44th Street	Widen to 5 lane Section
44th St.	Connecticut	Rangeline	Widen to 5 Lane Section
Rangeline	44th	Southward	Widen to 5 Lane Section

INTERSECTION IMPROVEMENTS				
ROADWAY	At	Intersection Improvement	# of Lanes	Length
44th Street	**Connecticut**	**Signalized**		
Southbound		Left	2	220’ / Continuous
Southbound		Through / Right	1	Continuous
Northbound		Left	1	140’
Northbound		Through / Right	1	Continuous
Eastbound		Left	1	160’
Eastbound		Through / Right	1	Continuous
Westbound		Left	1	240’
Westbound		Through	1	Continuous
Westbound		Right	1	Continuous
44th Street	**Connecticut**	**Signalized**		
Southbound		Left	1	120’
Southbound		Through	2	Continuous
Southbound		Right	1	120’
Northbound		Left	1	220’
Northbound		Through / Right	2	Continuous
Eastbound		Left	2	450’
Eastbound		Through / Right	1	Continuous
Westbound		Left	1	120’
Westbound		Through / Right	1	Continuous

The **Roadway Alignment Analysis Appendix** illustrates the proposed roadway geometrics based upon the 2025 geometrics shown in **Table 24**.

Geometric improvements for the roadways were based upon the ADT thresholds outlined in **Table 7**, and then compared to the ADT calculated in the 2025 condition. It was found that the additional land use changes from the hospital and from the school had a marginal effect on the need for additional roadway infrastructure; therefore the geometric improvement recommendations for the 2025 condition are the same as the 2015 condition.

One location that needed further review in the 2025 condition was 44th Street west of Range Line Road. The land use changes in the 2015 condition had pushed this section of roadway to near capacity. With the additional land use changes in 2025 an alternate route was analyzed, thus allowing some relief to this section of 44th Street and to the intersection of 44th Street and Range Line Road. This alternative includes the extension of 50th Street from its current terminus at Connecticut Avenue eastward to Range Line Road. This new connection would allow for a reduction of approximately 4000 vehicles per day from 44th Street. Furthermore it would help to reduce the demand on the northbound left at 44th Street and Range Line, which has capacity issues in the peak hours. The extension of 50th Street would need to be 2 lanes based upon projected land uses and demand along the corridor. In addition, a signalized intersection improvement would need to be made along Range Line Road and intersection improvements would need to be made at Connecticut.

The analysis shows a benefit in extending 50th Street in the 2025 condition. The extension of 50th Street would allow for a reduction in congestion and provide a relief route for 44th Street. In addition, it would provide a direct connection between Range Line Road and Main Street south of Interstate 44.

- **Roadway and Geometric Improvements 2030** – After analyzing the roadway network with the additional traffic added by changing land uses, it is recommended that the following roadway and geometric improvements be made to address capacity issues of the roadway infrastructure within the study area.

Table 25: 2030 Geometric and Roadway Improvements

LOCATION			Geometric Improvement
ROADWAY	From	To	
Connecticut	32nd Street	44th Street	Widen to 5 lane Section
44th St.	Connecticut	Rangeline	Widen to 5 Lane Section
Rangeline	44th	Southward	Widen to 5 Lane Section

INTERSECTION IMPROVEMENTS				
ROADWAY	At	Intersection Improvement	# of Lanes	Length
44th Street	**Connecticut**	**Signalized**		
Southbound		Left	2	220' / Continuous

Southbound		Through / Right	1	Continuous
Northbound		Left	1	140′
Northbound		Through / Right	1	Continuous
Eastbound		Left	1	160′
Eastbound		Through / Right	1	Continuous
Westbound		Left	1	240′
Westbound		Through	1	Continuous
Westbound		Right	1	Continuous
44th Street	**Connecticut**	**Signalized**		
Southbound		Left	1	120′
Southbound		Through	2	Continuous
Southbound		Right	1	120′
Northbound		Left	1	220′
Northbound		Through / Right	2	Continuous
Eastbound		Left	2	450′
Eastbound		Through / Right	1	Continuous
Westbound		Left	1	120′
Westbound		Through / Right	1	Continuous

The **Roadway Alignment Analysis Appendix** illustrates the proposed roadway geometrics based upon the 2030 geometrics shown in **Table 25**.

Geometric improvements for the roadways were based upon the ADT thresholds outlined in **Table 7**, and then compared to the ADT calculated in the 2030 condition. It was found that the additional land use changes from the hospital and from the school had a marginal effect on the need for additional roadway infrastructure; therefore the geometric improvement recommendations for the 2030 condition are the same as the 2015 condition.

The analysis shows a continued benefit in extending 50th Street in the 2030 condition. The extension of 50th Street would allow for a reduction in congestion and provide a relief route for 44th Street. In addition, it would provide a direct connection between Range Line Road and Main Street south of Interstate 44.

- **Vertical Roadway Alignment** – After analyzing the existing roadways, it was found that the vertical alignment along multiple roadways within the study area do not meet current design standards. In addition to the roadways identified for widening, 44th Street between Indiana and Connecticut, 50th Street between Indiana and Connecticut, and Connecticut between 50th and 44th Street would all benefit from improvements to their respective vertical alignments.

Conclusion – In summary, analysis of future land use changes in the study area and their respective effects on the roadway network indicates that Connecticut Avenue would need to be widened to five lanes from 32nd Street to 44th Street with intersection improvements at 44th

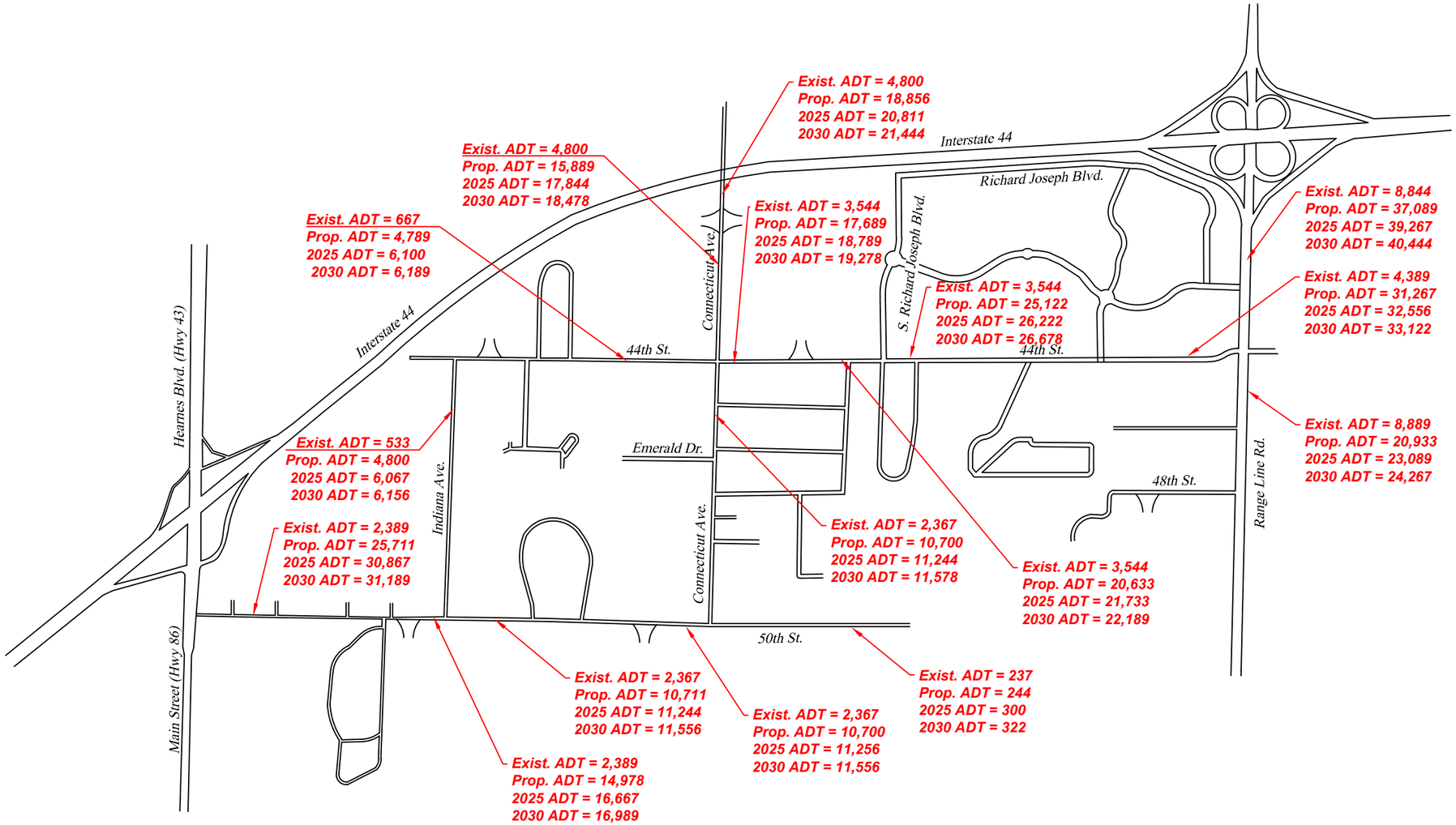
Street and Connecticut Avenue. Once the land use changes along 44th Street take place, 44th Street would need to be widened to 5 lanes from Connecticut Avenue to Range Line Road, and improvements would also be necessary at Range Line Road and 44th Street intersection with a widening to the south. Lastly, when reviewing the future 2030 full build out condition it was found there would be a need to provide relief to 44th Street by providing an alternate parallel route. The most logical means of providing this connection is the extension of 50th Street as a two lane road, which would also provide additional connectivity between Main Street and Range Line Road.

In addition, consideration should be given to improving the vertical alignment of 50th Street from Indiana Avenue to Connecticut Avenue, Connecticut Avenue from 44th Street to 50th Street, and 44th Street from Indiana Avenue to Connecticut Avenue. From a safety perspective it would be appropriate to improve the vertical alignment by rebuilding the roadways to current standards and practices, whereby providing the vehicular sight distance, curb and gutter, and sidewalk improvements.

SOUTH JOPLIN ROADWAY ANALYSIS
JOPLIN, MISSOURI

EXHIBIT 16

PROJECTED ADT FOR 2015, 2025 AND 2030 WITH PROPOSED LAND USES



CJW

Springfield Office:
Tel: 417.889.3400
Fax: 417.889.3402

www.GoCJW.com

CJW PROJECT No. 1321

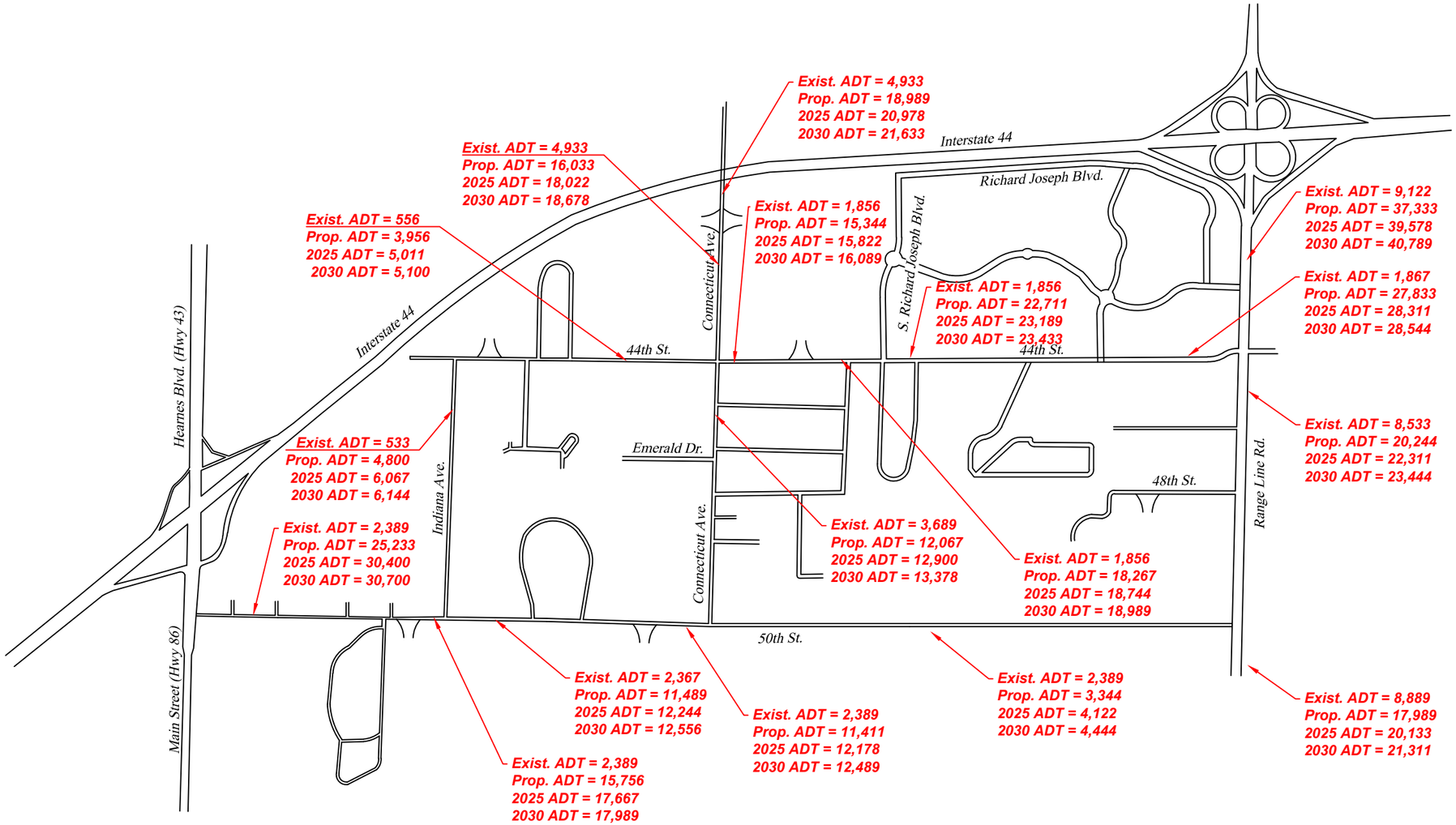
N

1000 0 1000

SCALE: 1" = 1000'

SOUTH JOPLIN ROADWAY ANALYSIS
JOPLIN, MISSOURI

EXHIBIT 17
PROJECTED ADT FOR 2015, 2025 AND 2030 WITH PROPOSED LAND USES AND 50TH STREET EXTENSION



CJW

Springfield Office:
Tel: 417.889.3400
Fax: 417.889.3402

www.GoCJW.com

CJW PROJECT No. 1321

N

1000 0 1000

SCALE: 1" = 1000'



JOPLIN AREA TRANSPORTATION
STUDY ORGANIZATION

SOUTH JOPLIN AREA

TRANSPORTATION STUDY

APPENDIX A – EXISTING TRAFFIC

July 8, 2013

PREPARED BY:

CJW

Intersection: Connecticut & 44th

N/S Street: Connecticut Avenue

E/W Street: 44th Street

Observer(s): Aaron W. & Jordan B.

	EB			WB			NB			SB		
Time	L	T	R	L	T	R	L	T	R	L	T	R
7:00-7:15	3	0	1	0	1	16	0	6	1	12	4	0
7:15-7:30	3	1	3	11	0	44	1	11	5	30	4	1
7:30-7:45	14	3	5	12	0	46	1	18	16	58	13	3
7:45-8:00	10	2	1	24	0	62	1	30	18	54	21	2
8:00-8:15	7	2	1	12	1	33	1	30	11	36	16	3
8:15-8:30	0	3	0	12	1	27	2	42	18	21	25	1
8:30-8:45	2	2	0	3	0	18	1	12	6	23	4	1
8:45-9:00	0	0	0	6	2	14	0	13	5	33	7	0
Peak Hour	31	10	7	60	2	168	5	120	63	169	75	9
Peak Hour Factor	0.55	0.83	0.35	0.63	0.50	0.68	0.63	0.71	0.88	0.73	0.75	0.75

Intersection: Rangeline & 44th

N/S Street: Rangeline Road

E/W Street: 44th Street

Observer(s): Aaron W. & Jordan B.

Time	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
7:15-7:30	12	3	8	2	5	11	26	49	1	2	21	3
7:30-7:45	21	1	10	2	20	16	76	108	4	3	31	13
7:45-8:00	23	1	23	3	23	15	59	116	2	11	33	9
8:00-8:15	20	5	16	2	9	8	33	68	0	3	26	5
8:15-8:30	21	5	12	3	4	8	18	66	2	5	33	10
8:30-8:45	13	3	10	1	1	8	28	84	0	10	29	10
8:45-9:00	12	2	13	3	7	4	22	67	4	2	31	6
Peak Hour	85	12	61	10	56	47	186	358	8	22	123	37
Peak Hour Factor	0.92	0.60	0.66	0.83	0.61	0.73	0.61	0.77	0.50	0.50	0.93	0.71

Intersection: Connecticut & 44th

N/S Street: Connecticut Avenue

E/W Street: 44th Street

Observer(s): Aaron W. & Jordan B.

	EB			WB			NB			SB		
Time	L	T	R	L	T	R	L	T	R	L	T	R
4:00-4:15	2	1	1	7	0	25	1	12	5	21	11	1
4:15-4:30	5	2	2	5	2	37	2	7	2	47	15	3
4:30-4:45	4	1	2	8	1	31	0	9	13	44	15	4
4:45-5:00	2	1	1	8	3	26	2	17	9	49	10	4
5:00-5:15	2	1	0	14	3	56	0	18	13	57	26	4
5:15-5:30	3	2	2	8	2	50	2	10	10	57	27	6
5:30-5:45	4	3	2	12	2	38	0	9	14	44	19	8
5:45-6:00	2	3	0	11	3	19	2	15	12	37	28	4
Peak Hour	11	9	4	45	10	163	4	52	49	195	100	22
Peak Hour Factor	0.69	0.75	0.50	0.80	0.83	0.73	0.50	0.72	0.88	0.86	0.89	0.69

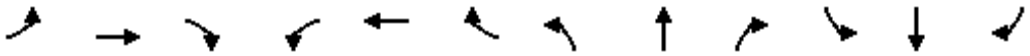
Intersection: Rangeline & 44th

N/S Street: Rangeline Road

E/W Street: 44th Street

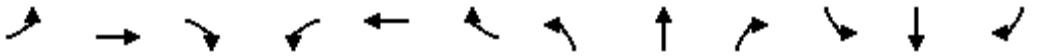
Observer(s): Aaron W. & Jordan B.

	EB			WB			NB			SB		
Time	L	T	R	L	T	R	L	T	R	L	T	R
4:00-4:15	15	5	26	0	2	2	23	37	4	7	66	9
4:15-4:30	15	8	14	1	1	4	16	47	0	23	102	10
4:30-4:45	19	5	36	4	5	4	15	52	3	18	81	11
4:45-5:00	11	5	33	4	8	5	9	44	7	13	71	11
5:00-5:15	34	50	13	4	7	5	19	65	5	15	90	8
5:15-5:30	12	15	31	3	5	11	17	53	1	15	80	7
5:30-5:45	22	6	32	3	6	6	22	57	4	11	76	9
5:45-6:00	16	10	34	2	5	11	10	90	2	11	87	5
Peak Hour	84	81	110	12	23	33	68	265	12	52	333	29
Peak Hour Factor	0.62	0.41	0.81	0.75	0.82	0.75	0.77	0.74	0.60	0.87	0.93	0.81



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980			0.901			0.955			0.995	
Flt Protected		0.969			0.987			0.999			0.968	
Satd. Flow (prot)	0	1769	0	0	1657	0	0	1777	0	0	1794	0
Flt Permitted		0.969			0.987			0.999			0.968	
Satd. Flow (perm)	0	1769	0	0	1657	0	0	1777	0	0	1794	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		150			110			287			140	
Travel Time (s)		3.4			2.5			6.5			3.2	
Volume (vph)	31	10	7	60	2	168	5	120	63	169	75	9
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)	34	11	8	65	2	183	5	130	68	184	82	10
Lane Group Flow (vph)	0	53	0	0	250	0	0	203	0	0	276	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		



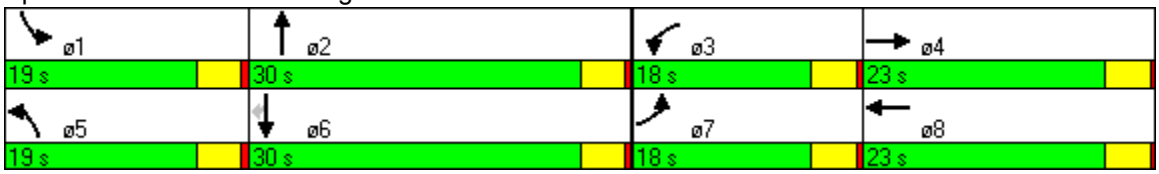
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.875			0.932			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1630	0	1770	1736	0	1770	3529	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1630	0	1770	1736	0	1770	3529	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		66			42			3				40
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		128			211			160			235	
Travel Time (s)		2.9			4.8			3.6			5.3	
Volume (vph)	85	12	61	10	56	47	186	358	8	22	123	37
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)	92	13	66	11	61	51	202	389	9	24	134	40
Lane Group Flow (vph)	92	79	0	11	112	0	202	398	0	24	134	40
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Minimum Split (s)	8.0	20.0		8.0	20.0		8.0	20.0		8.0	20.0	20.0
Total Split (s)	18.0	23.0	0.0	18.0	23.0	0.0	19.0	30.0	0.0	19.0	30.0	30.0
Total Split (%)	20.0%	25.6%	0.0%	20.0%	25.6%	0.0%	21.1%	33.3%	0.0%	21.1%	33.3%	33.3%
Maximum Green (s)	14.0	19.0		14.0	19.0		15.0	26.0		15.0	26.0	26.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	14.0	19.0		14.0	19.0		15.0	26.0		15.0	26.0	26.0
Actuated g/C Ratio	0.16	0.21		0.16	0.21		0.17	0.29		0.17	0.29	0.29
v/c Ratio	0.33	0.20		0.04	0.28		0.68	0.39		0.08	0.25	0.08
Control Delay	37.7	11.6		32.9	21.4		48.5	26.8		32.6	26.1	8.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	37.7	11.6		32.9	21.4		48.5	26.8		32.6	26.1	8.3
LOS	D	B		C	C		D	C		C	C	A
Approach Delay		25.6			22.4			34.1			23.3	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	47	6		5	33		109	94		12	58	0
Queue Length 95th (ft)	93	42		20	79		#200	135		34	105	23
Internal Link Dist (ft)		48			131			80			155	
Turn Bay Length (ft)												
Base Capacity (vph)	275	396		275	400		295	1022		295	538	486
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0

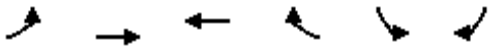
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.33	0.20		0.04	0.28		0.68	0.39		0.08	0.25	0.08

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 48 (53%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 29.5 Intersection LOS: C
Intersection Capacity Utilization 38.2% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

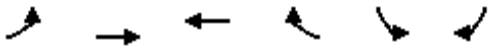
Splits and Phases: 5: Range Line Rd &





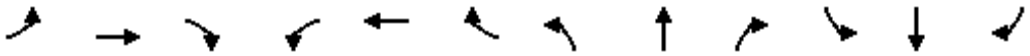
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.957				
Satd. Flow (prot)	0	1783	1863	0	1611	0
Flt Permitted		0.957				
Satd. Flow (perm)	0	1783	1863	0	1611	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		90	200		287	
Travel Time (s)		2.0	4.5		6.5	
Volume (vph)	110	12	20	0	0	183
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	13	22	0	0	199
Lane Group Flow (vph)	0	133	22	0	199	0
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.4%		ICU Level of Service A	
Analysis Period (min) 15			



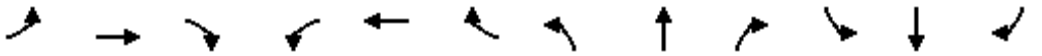
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.985	
Flt Protected		0.995			0.957	
Satd. Flow (prot)	0	1853	1853	0	1756	0
Flt Permitted		0.995			0.957	
Satd. Flow (perm)	0	1853	1853	0	1756	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		90	160		280	
Travel Time (s)		2.0	3.6		6.4	
Volume (vph)	18	173	117	5	30	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	188	127	5	33	4
Lane Group Flow (vph)	0	208	132	0	37	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.9%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979			0.899			0.937			0.991	
Flt Protected		0.977			0.990			0.998			0.970	
Satd. Flow (prot)	0	1782	0	0	1658	0	0	1742	0	0	1791	0
Flt Permitted		0.977			0.990			0.998			0.970	
Satd. Flow (perm)	0	1782	0	0	1658	0	0	1742	0	0	1791	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		150			110			287			140	
Travel Time (s)		3.4			2.5			6.5			3.2	
Volume (vph)	11	9	4	45	10	163	4	52	49	195	100	22
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)	12	10	4	49	11	177	4	57	53	212	109	24
Lane Group Flow (vph)	0	26	0	0	237	0	0	114	0	0	345	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.6%		ICU Level of Service A	
Analysis Period (min) 15			



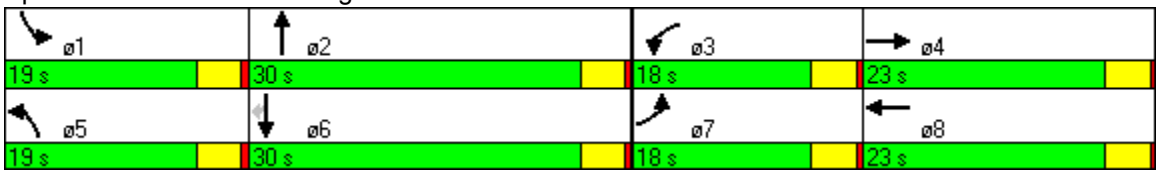
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.913			0.911			0.994				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1701	0	1770	1697	0	1770	3518	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1701	0	1770	1697	0	1770	3518	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		69			36			5				32
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		128			211			160			235	
Travel Time (s)		2.9			4.8			3.6			5.3	
Volume (vph)	84	81	110	12	23	33	68	265	12	52	333	29
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)	91	88	120	13	25	36	74	288	13	57	362	32
Lane Group Flow (vph)	91	208	0	13	61	0	74	301	0	57	362	32
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Minimum Split (s)	8.0	20.0		8.0	20.0		8.0	20.0		8.0	20.0	20.0
Total Split (s)	18.0	23.0	0.0	18.0	23.0	0.0	19.0	30.0	0.0	19.0	30.0	30.0
Total Split (%)	20.0%	25.6%	0.0%	20.0%	25.6%	0.0%	21.1%	33.3%	0.0%	21.1%	33.3%	33.3%
Maximum Green (s)	14.0	19.0		14.0	19.0		15.0	26.0		15.0	26.0	26.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	14.0	19.0		14.0	19.0		15.0	26.0		15.0	26.0	26.0
Actuated g/C Ratio	0.16	0.21		0.16	0.21		0.17	0.29		0.17	0.29	0.29
v/c Ratio	0.33	0.50		0.05	0.16		0.25	0.30		0.19	0.67	0.07
Control Delay	37.7	25.4		33.0	16.4		35.2	25.4		34.3	35.5	9.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	37.7	25.4		33.0	16.4		35.2	25.4		34.3	35.5	9.0
LOS	D	C		C	B		D	C		C	D	A
Approach Delay		29.2			19.4			27.4			33.5	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	47	68		6	12		37	68		28	181	0
Queue Length 95th (ft)	92	137		23	44		77	103		63	278	21
Internal Link Dist (ft)		48			131			80			155	
Turn Bay Length (ft)												
Base Capacity (vph)	275	414		275	387		295	1020		295	538	480
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0

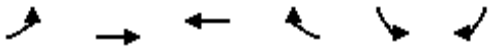
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.33	0.50		0.05	0.16		0.25	0.30		0.19	0.67	0.07

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 48 (53%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 29.6 Intersection LOS: C
Intersection Capacity Utilization 42.6% ICU Level of Service A
Analysis Period (min) 15

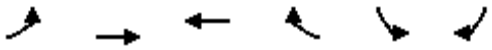
Splits and Phases: 5: Range Line Rd &





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.957				
Satd. Flow (prot)	0	1783	1863	0	1611	0
Flt Permitted		0.957				
Satd. Flow (perm)	0	1783	1863	0	1611	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		90	200		287	
Travel Time (s)		2.0	4.5		6.5	
Volume (vph)	93	10	11	0	0	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	101	11	12	0	0	108
Lane Group Flow (vph)	0	112	12	0	108	0
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.995	
Flt Protected		0.989			0.954	
Satd. Flow (prot)	0	1842	1863	0	1768	0
Flt Permitted		0.989			0.954	
Satd. Flow (perm)	0	1842	1863	0	1768	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		318	160		280	
Travel Time (s)		7.2	3.6		6.4	
Volume (vph)	24	87	103	0	23	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	95	112	0	25	1
Lane Group Flow (vph)	0	121	112	0	26	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.6%		ICU Level of Service A	
Analysis Period (min) 15			



JOPLIN AREA TRANSPORTATION
STUDY ORGANIZATION

SOUTH JOPLIN AREA

TRANSPORTATION STUDY

APPENDIX B – PROJECTED 2015 TRAFFIC CONDITIONS

July 8, 2013

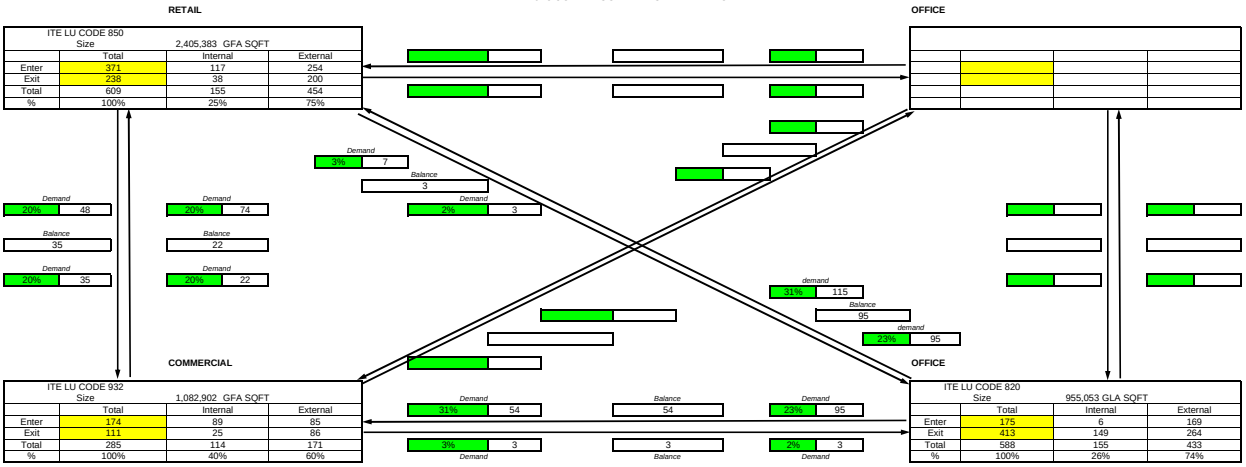
PREPARED BY:

CJW

TRIP GENERATION

LAND USE	ITE CODE	Size	Variable	24-Hour Trip Generation	24-HOUR WEEKDAY	AM PEAK HOUR RATE	AM % IN	AM % OUT	WEEKDAY AM PEAK ENTER	WEEKDAY AM PEAK EXIT	PM PEAK HOUR RATE	PM % IN	PM % OUT	WEEKDAY PM PEAK ENTER	WEEKDAY PM PEAK EXIT
Main Hospital*	610	261	Beds	11.81	3082	1.14	71%	29%	211	87	1.31	36%	64%	123	219
Medical Office Building*	720	250000	Sq. Ft	36.13	9,033	2.30	79%	21%	454	121	3.46	27%	73%	234	631
Rehabilitation Hospital*	610	30	Beds	11.81	354	1.14	71%	29%	24	10	1.31	36%	64%	14	25
Detached Medical Office Building'	720	100000	Sq. Ft	T=40.89(x) - 214.97	3,874	2.30	79%	21%	182	48	Ln(T)=0.88Ln(x) + 1.59	27%	73%	76	206
Behavioral Health Center Hospital*	610	41	Beds	11.81	484	1.14	71%	29%	33	14	1.31	36%	64%	19	35
Hospice Facility/nursing Home*	620	10000	Sq. Ft	7.58	76	0.55	71%	29%	4	2	0.74	52%	48%	4	4
* Trip generation, Land use and Intensity from Mercy Health Systems Replacement Hospital and Medical Campus Traffic Impact Study provided by the City.															
Total for Hospital					16,903				909	281				470	1,120
Zoning															
R-SF - Single Family Residential (R1)			Acres	48	0	4	25%	75%	0	0	5	64%	36%	0	0
R-HD - High Density Multi-Family Residential (R3)			Acres	240	0	18	16%	84%	0	0	22	67%	33%	0	0
O-2 - Medium Intensity Office (C1)			Acres	480	0	70	88%	12%	0	0	65	17%	83%	0	0
GR - General Retail District (C2)			Acres	720	0	16	61%	39%	0	0	67	49%	51%	0	0
GR - General Retail District (C3)			Acres	720	0	16	61%	39%	0	0	67	53%	47%	0	0
IC - Industrial Commercial (M2)			Acres	840	0	18	61%	39%	0	0	78	48%	52%	0	0
A1 - 44th, 50th, Connecticut, Indiana Access															
Single Family Residential (R1)	210	0.0	Acres	48	0	4	25%	75%	0	0	5	64%	36%	0	0
A2 - 44th Access, Connecticut Acces															
R-HD - High Density Multi-Family Residential (R3)	220	10.0	Acres	240	2,402	18	16%	84%	29	151	22	67%	33%	148	73
A3 - 44th, Connecticut Acces															
Single Family Residential (R1)	210	14.6	Acres	48	701	4	25%	75%	15	44	5	64%	36%	47	26
A4 - 44th, Connecticut Acces															
GR - General Retail District (C2)	820	193,842	Sq. Ft.	42.94	8,324	1	61%	39%	118	76	3.73	49%	51%	354	369
A5 - 44th Access															
O-2 - Medium Intensity Office (C1)	710	279873	Sq. Ft.	11	3,081	1.55	88%	12%	382	52	1.49	17%	83%	71	346
A6 - 44th, Richard Joseph Acces															
GR - General Retail District (C2)	820	35.14	Acres		15,590				237	152				703	732
A7 - 44th, Richard Joseph Acces															
GR - General Retail District (C2)	820	61.91	Acres		28,950				422	271				1,242	1,292
A8 - 44th, Rangeline, 48th Acces															
Single Family Residential (R1)	210	0.0	Acres	48	0	4	25%	75%	0	0	5	64%	36%	0	0
A9 - 48th Access															
R-HD - High Density Multi-Family Residential (R3)	220	12.4	Acres	240	2,976	18	16%	84%	36	187	22	67%	33%	183	90
A10 - 48th Access															
GR - General Retail District (C3)	820	8.2	Acres	720	5,904	16	61%	39%	80	51	67	53%	47%	291	258
A11 - 48th, Rangeline Acces															
IC - Industrial Commercial (M2)	120	0.0	Acres	840	0	18	61%	39%	0	0	78	48%	52%	0	0
A12 - Rangeline Acces															
IC - Industrial Commercial (M2)	120	0.0	Acres	840	0	18	61%	39%	0	0	78	48%	52%	0	0
A13 - Rangeline Acces															
IC - Industrial Commercial (M2)	120	0.0	Acres	840	0	18	61%	39%	0	0	78	48%	52%	0	0
A14 - 50th Access															
Single Family Residential (R1)	210	0.0	Acres	48	0	4	25%	75%	0	0	5	64%	36%	0	0
A15 - 50th Access															
Single Family Residential (R1)	210	10.0	Acres	48	480	4	25%	75%	10	30	5	64%	36%	32	18
A16 - 50th Access															
Single Family Residential (R1)	210	5.1	Acres	48	245	4	25%	75%	5	15	5	64%	36%	16	9
A17 - 50th Access															
Single Family Residential (R1)	210	0.0	Acres	48	0	4	25%	75%	0	0	5	64%	36%	0	0
Total for Land Uses					68,653				1,333	1,030				3,087	3,213
Total Land Use (20% Internal Capture					54,923				1,067	824				2,469	2,571

A.M. PEAK HOUR TRIP GENERATION
AND INTERNAL TRIP CAPTURE SUMMARY
2015 JOPLIN COMMERICIAL DEVELOPMENT



ITE LU CODE 850 — Size: 2,405,383 GFA SQFT

	Total	Internal	External
Enter	371	117	254
Exit	238	38	200
Total	609	155	454
%	100%	25%	75%

ITE LU CODE 932 — Size: 1,082,902 GFA SQFT

	Total	Internal	External
Enter	174	89	85
Exit	111	25	86
Total	285	114	171
%	100%	40%	60%

ITE LU CODE 820 — Size: 955,053 GLA SQFT

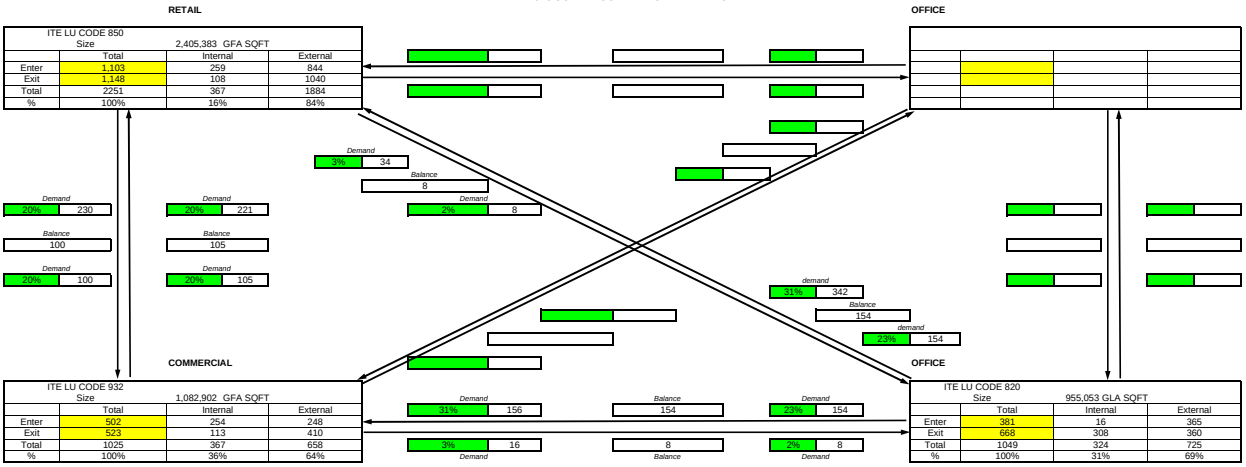
	Total	Internal	External
Enter	175	6	169
Exit	413	149	264
Total	588	155	433
%	100%	26%	74%

NET EXTERNAL TRIPS for MULTI-Use Development

	Supermarket	Bank	Restaurant	Shopping Centers	TOTAL
Enter	254	0	85	169	508
Exit	200	0	86	264	550
Total	454	0	171	433	1,058
Single-USE Trip Generation	609	0	285	588	1,482

Internal Capture 29%

P.M. PEAK HOUR TRIP GENERATION
AND INTERNAL TRIP CAPTURE SUMMARY
2015 JOPLIN COMMERICIAL DEVELOPMENT



NET EXTERNAL TRIPS for MULTI-Use Development

	Supermarket	Bank	Restaurant	Shopping Centers	TOTAL
Enter	844	0	248	365	1,457
Exit	1,040	0	410	360	1,810
Total	1,884	0	658	725	3,267
Single-USE Trip Generation	2,251	0	1,025	1,049	4,325

Internal Capture 24%

Signal Warrant Analysis

Warrant 1: Eight Hour Volume
PM Peak Hour Analysis - Connecticut Avenue / 44th Street

	NB	SB		
Connecticut Avenue	466	794	1,260	VPH
	WB	EB		
44th Street	674	273	674	VPH
PM Peak Hour	9%	of ADT		

Roadway	ADT	Factor to Obtain 8th Hour	8th Hour	Condition A 100%	Condition B 100%	Warrant Condition A	Warrant Condition B
Connecticut Avenue	14,000	0.06	840	500	750	**Met**	**Met**
44th Street	7,489	0.06	449	150	75	**Met**	**Met**

Warrant 1: Eight Hour Volume
PM Peak Hour Analysis - Connecticut Avenue / 50th Street

	WB	EB		
50th Street	11	471	482	VPH
	NB	SB		
Connecticut Avenue	0	481	481	VPH
PM Peak Hour	9%	of ADT		

Roadway	ADT	Factor to Obtain 8th Hour	8th Hour	Condition A 80%	Condition B 80%	Warrant Condition A	Warrant Condition B
50th Street	5,356	0.06	321	400	600	Not Met	Not Met
Connecticut Avenue	5,344	0.06	321	120	60	Met	Met

Signal Warrant Analysis

Preliminary Traffic Signal Warrant Analysis

Major Street:	Highway 66	**Minor Street:**	Access E2
Project:	Ortho TIA	**City/County:**	Galena
Year:	2014	**Alternative:**	

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8330	5830	2500	1750
2 or more	1	10000	7000	2500	1750
2 or more	2 or more	10000	7000	3330	2330
1	2 or more	8330	5830	3330	2330
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

	100 percent of standard warrants
X	70 percent of standard warrants[1]

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	2	7000	10444	Y
	Minor	1	1750	2011	
Case B	Major	2	11100	10444	N
	Minor	1	950	2011	

Analyst and Date:	Reviewer and Date:

[1] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

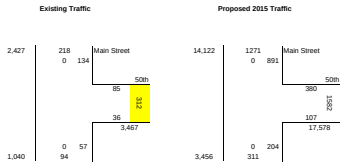
AM Peak Hour Calculation

N/S Street: Main Street
E/W Street: 50th

New Trips: In 1067, Out 824
New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL	134	1.04	139	10.85%	1067			116	70%	909			636	891	VEH/HR
SBT		1.04	0					0					0	0	VEH/HR
WBR	85	1.04	88	11.58%	824			95	70%	281			197	380	VEH/HR
WBL	36	1.04	38	5%	824			41	10%	281			28	107	VEH/HR
NBT		1.04	0					0					0	0	VEH/HR
NBR	57	1.04	60	5%	1067			53	10%	909			91	204	VEH/HR

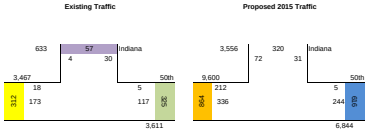


N/S Street: Indiana
E/W Street: 50th

New Trips: In 1067, Out 824
New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL	30	1.04	31					0					0	31	VEH/HR
SBR	4	1.04	4	1.5%	824			12	20%	281			56	72	VEH/HR
EBL	18	1.04	19	1.00%	1067			11	20%	909			182	212	VEH/HR
EBT	173	1.04	180	14.45%	1067	0.25%	824	156					0	336	VEH/HR
WBT	117	1.04	122	14.7%	824	0.1%	1067	122					0	244	VEH/HR
WBR	5	1.04	5					0					0	5	VEH/HR

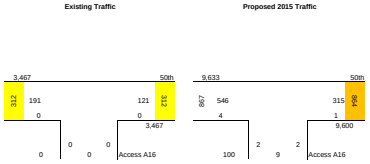


N/S Street: Access A16
E/W Street: 50th

New Trips: In 1067, Out 824
New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
EBT	191	1.04	199	15.45%	1067			165	20%	909			182	546	VEH/HR
EBR		1.04	0	0.4%	1067			4					0	4	VEH/HR
WBT	121	1.04	126	16.2%	824			133	20%	281			56	315	VEH/HR
WBL		1.04	0	0.1%	1067			1					0	1	VEH/HR
NBL		1.04	0	0.25%	824			2					0	2	VEH/HR
NBR		1.04	0	0.25%	824			2					0	2	VEH/HR

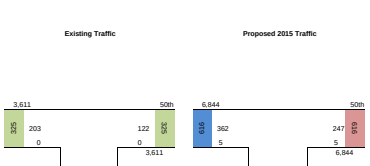


N/S Street: Access A15
E/W Street: 50th

New Trips: In 1067, Out 824
New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
EBT	203	1.04	211	14.0%	1067	0.25%	824	151					0	362	VEH/HR
EBR		1.04	0	0.5%	1067			5					0	5	VEH/HR
WBT	122	1.04	127	14.4%	824	0.1%	1067	120					0	247	VEH/HR
WBL		1.04	0	0.5%	1067			5					0	5	VEH/HR
NBL		1.04	0	0.25%	824			2					0	2	VEH/HR
NBR		1.04	0	0.25%	824			2					0	2	VEH/HR



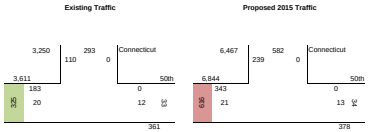
N/S Street: Connecticut
E/W Street: 50th

New Trips In: 1067 Out: 824

New Trips In: 909 Out: 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
SBL		1.04	0					0					0	0 VEH/HR
SBR	110	1.04	114	14.4%	824	0.6%	1067	125					0	239 VEH/HR
EBL	183	1.04	190	13.95%	1067	0.500%	824	153					0	343 VEH/HR
EBT	20	1.04	21					0					0	21 VEH/HR
WBT	12	1.04	13					0					0	13 VEH/HR
WBR		1.04	0					0					0	0 VEH/HR



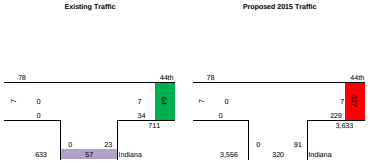
N/S Street: Indiana
E/W Street: 44th

New Trips In: 1067 Out: 824

New Trips In: 909 Out: 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
EBT		1.04	0					0					0	0 VEH/HR
EBR		1.04	0					0					0	0 VEH/HR
WBT	7	1.04	7					0					0	7 VEH/HR
WBL	34	1.04	35	1.50%	824			12	20%	909			182	229 VEH/HR
NBL		1.04	0					0					0	0 VEH/HR
NBR	23	1.04	24	1.00%	1067			11	20%	281			56	91 VEH/HR



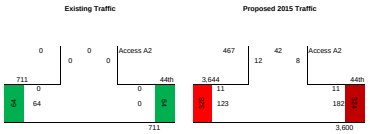
N/S Street: Access A2
E/W Street: 44th

New Trips In: 1067 Out: 824

New Trips In: 909 Out: 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
SBL		1.04	0	1.0%	824			8					0	8 VEH/HR
SBR		1.04	0	1.5%	824			12					0	12 VEH/HR
EBL		1.04	0	1.00%	1067			11					0	11 VEH/HR
EBT	64	1.04	67					0	20%	281			56	123 VEH/HR
WBT		1.04	0					0	20%	909			182	182 VEH/HR
WBR		1.04	0	1.00%	1067			11					0	11 VEH/HR



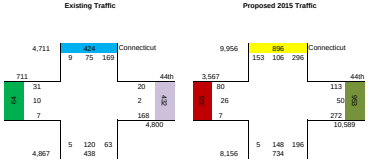
N/S Street: Connecticut
E/W Street: 44th

New Trips In: 1067 Out: 824

New Trips In: 909 Out: 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
SBL	169	1.04	176	2.1%	824	9.7%	1067	120					0	296 VEH/HR
SBR	9	1.04	9	0.750%	1067			8	15%	909			136	153 VEH/HR
SBT	75	1.04	78	2.6%	824	0.6%	1067	28					0	106 VEH/HR
EBL	31	1.04	32	0.75%	824			6	15%	281			42	80 VEH/HR
EBT	10	1.04	10	0.25%	824			2	5%	281			14	26 VEH/HR
EBR	7	1.04	7					0					0	7 VEH/HR
WBT	2	1.04	2	0.250%	1067			3	5%	909			45	50 VEH/HR
WBR	20	1.04	21	1.750%	1067	9.0%	824	92					0	113 VEH/HR
WBL	168	1.04	175	11.8%	824			97					0	272 VEH/HR
NBT	120	1.04	125	1.75%	1067	0.5%	824	23					0	148 VEH/HR
NBL	5	1.04	5					0					0	5 VEH/HR
NBR	63	1.04	66	12.2%	1067			130					0	196 VEH/HR



N/S Street: Connecticut
E/W Street: Access A3/Access A4

New Trips In: 1067 Out: 824

New Trips In: 909 Out: 281

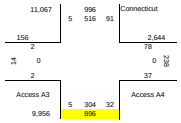
Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL		1.04	0	8.5%	1067			91					0	91	VEH/HR
SBR		1.04	0	0.500%	1067			5					0	5	VEH/HR
SBT	253	1.04	263	11.00%	1067			117	15%	909			136	516	VEH/HR
EBL		1.04	0	0.3%	824			2					0	2	VEH/HR
EBT		1.04	0					0					0	0	VEH/HR
EBR		1.04	0	0.2%	824			2					0	2	VEH/HR
WBT		1.04	0					0					0	0	VEH/HR
WBR		1.04	0	10%	824			78					0	78	VEH/HR
WBL		1.04	0	5%	824			37					0	37	VEH/HR
NBT	171	1.04	178	10.20%	824			84	15%	281			42	304	VEH/HR
NBL		1.04	0	0.500%	1067			5					0	5	VEH/HR
NBR		1.04	0	3.0%	1067			32					0	32	VEH/HR

Existing Traffic



Projected Traffic



N/S Street: Access A5
E/W Street: 44th

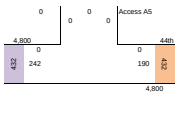
New Trips In: 1067 Out: 824

New Trips In: 909 Out: 281

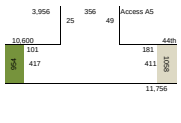
Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL		1.04	0	6.0%	824			49					0	49	VEH/HR
SBR		1.04	0	3.0%	824			25					0	25	VEH/HR
EBL		1.04	0	9.50%	1067			101					0	101	VEH/HR
EBT	242	1.04	252	2.35%	824	12.4%	1067	151	5%	281			14	417	VEH/HR
WBT	190	1.04	198	2.00%	1067	17.8%	824	168	5%	909			45	411	VEH/HR
WBR		1.04	0	17.0%	1067			181					0	181	VEH/HR

Existing Traffic



Projected Traffic



N/S Street: S. Richard Joseph
E/W Street: 44th

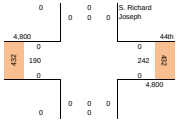
New Trips In: 1067 Out: 824

New Trips In: 909 Out: 281

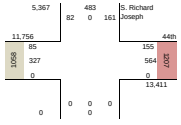
Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL		1.04	0	19.5%	824			161					0	161	VEH/HR
SBR		1.04	0	10.0%	824			82					0	82	VEH/HR
SBT		1.04	0					0					0	0	VEH/HR
EBL		1.04	0	8.0%	1067			85					0	85	VEH/HR
EBT	190	1.04	198	4.35%	1067	8.35%	824	115	5%	281			14	327	VEH/HR
EBR		1.04	0					0					0	0	VEH/HR
WBT	242	1.04	252	7.75%	824	19.0%	1067	267	5%	909			45	564	VEH/HR
WBR		1.04	0	14.5%	1067			155					0	155	VEH/HR
WBL		1.04	0					0					0	0	VEH/HR
NBT		1.04	0					0					0	0	VEH/HR
NBL		1.04	0					0					0	0	VEH/HR
NBR		1.04	0					0					0	0	VEH/HR

Existing Traffic



Proposed 2015 Traffic

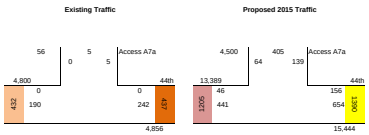


N/S Street: Access A7a
E/W Street: 44th

New Trips In: 1067
New Trips Out: 824
New Trips In: 909
New Trips Out: 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL	5	1.04	5	16%	824			134					0	139	VEH/HR
SBR		1.04	0	7.75%	824			64					0	64	VEH/HR
EBL		1.04	0	4.35%	1067			46					0	46	VEH/HR
EBT	190	1.04	198	27.85%	824			229	5%	281			14	441	VEH/HR
WBT	242	1.04	252	33.50%	1067			357	5%	909			45	654	VEH/HR
WBR		1.04	0	14.7%	1067			156					0	156	VEH/HR

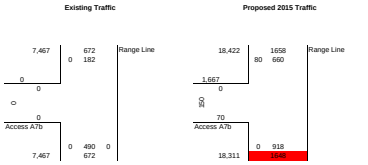


N/S Street: Range Line
E/W Street: Access A7b

New Trips In: 1067
New Trips Out: 824
New Trips In: 909
New Trips Out: 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBR		1.04	0	7.50%	1067			80					0	80	VEH/HR
SBT	182	1.04	189	41.7%	1067			444	3%	909			27	660	VEH/HR
EBL		1.04	0					0					0	0	VEH/HR
EBR		1.04	0	8.5%	824			70					0	70	VEH/HR
NBT	490	1.04	510	48.60%	824			400	3%	281			8	918	VEH/HR
NBL		1.04	0		1067			0					0	0	VEH/HR

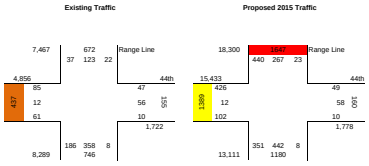


N/S Street: Range Line
E/W Street: 44th

New Trips In: 1067
New Trips Out: 824
New Trips In: 909
New Trips Out: 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL	22	1.04	23					0					0	23	VEH/HR
SBR	37	1.04	38	35.15%	1067			375	3%	909			27	440	VEH/HR
SBT	123	1.04	128	8.5%	824	6.5%	1067	139					0	267	VEH/HR
EBL	85	1.04	88	40.10%	824			330	3%	281			8	426	VEH/HR
EBT	12	1.04	12					0					0	12	VEH/HR
EBR	61	1.04	63	4%	824			33	2%	281			6	102	VEH/HR
WBT	56	1.04	58					0					0	58	VEH/HR
WBR	47	1.04	49					0					0	49	VEH/HR
WBL	10	1.04	10					0					0	10	VEH/HR
NBT	358	1.04	372	8.5%	824			70					0	442	VEH/HR
NBL	186	1.04	194	13%	1067			139					18	351	VEH/HR
NBR	8	1.04	8					0	2%	909			0	8	VEH/HR

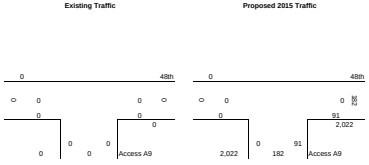


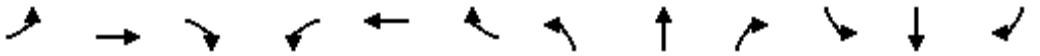
N/S Street: Access A9
E/W Street: 48th

New Trips In: 1067
New Trips Out: 824
New Trips In: 909
New Trips Out: 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
EBT		1.04	0					0					0	0	VEH/HR
EBR		1.04	0					0					0	0	VEH/HR
WBT		1.04	0					0					0	0	VEH/HR
WBL		1.04	0	8.5%	1067			91					0	91	VEH/HR
NBL		1.04	0					0					0	0	VEH/HR
NBR		1.04	0	11%	824			91					0	91	VEH/HR





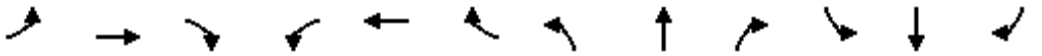
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.967				0.850		0.915			0.911	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1801	0	1770	1863	1583	1770	1704	0	3433	1697	0
Flt Permitted	0.722			0.587			0.950			0.950		
Satd. Flow (perm)	1345	1801	0	1093	1863	1583	1770	1704	0	3433	1697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				123		77			106	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1848			592			2545			950	
Travel Time (s)		42.0			13.5			57.8			21.6	
Volume (vph)	80	26	7	272	50	113	5	148	196	296	106	153
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)	87	28	8	296	54	123	5	161	213	322	115	166
Lane Group Flow (vph)	87	36	0	296	54	123	5	374	0	322	281	0
Turn Type	pm+pt			pm+pt		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8						
Detector Phases	7	4		3	8	8	5	2		1	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0		8.0	20.0	
Total Split (s)	10.0	20.0	0.0	17.0	27.0	27.0	8.0	32.0	0.0	21.0	45.0	0.0
Total Split (%)	11.1%	22.2%	0.0%	18.9%	30.0%	30.0%	8.9%	35.6%	0.0%	23.3%	50.0%	0.0%
Maximum Green (s)	6.0	16.0		13.0	23.0	23.0	4.0	28.0		17.0	41.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	9.1	7.3		15.8	10.6	10.6	4.8	22.8		10.9	32.9	
Actuated g/C Ratio	0.16	0.12		0.29	0.19	0.19	0.08	0.43		0.20	0.62	
v/c Ratio	0.32	0.15		0.64	0.15	0.30	0.03	0.48		0.47	0.26	
Control Delay	23.6	27.3		25.2	25.2	8.3	36.2	17.6		25.1	6.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	23.6	27.3		25.2	25.2	8.3	36.2	17.6		25.1	6.5	
LOS	C	C		C	C	A	D	B		C	A	
Approach Delay		24.7			20.8			17.9			16.4	
Approach LOS		C			C			B			B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	27	8		77	16	0	2	84		47	26	
Queue Length 95th (ft)	65	41		202	54	43	13	214		115	98	
Internal Link Dist (ft)		1768			512			2465			870	
Turn Bay Length (ft)												
Base Capacity (vph)	273	472		542	680	657	143	925		1033	1180	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.32	0.08		0.55	0.08	0.19	0.03	0.40		0.31	0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 52.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 60.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 7: 44th & Connecticut





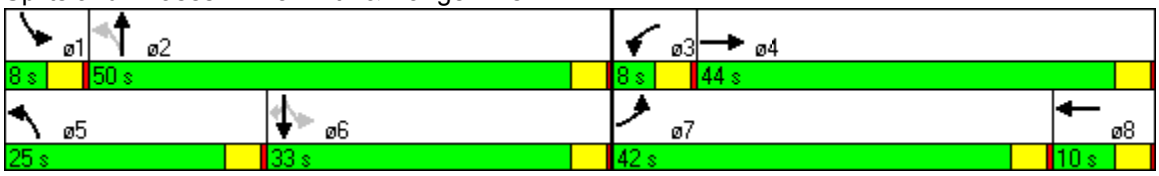
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.866			0.931			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1613	0	1770	1734	0	1770	3529	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.444			0.474		
Satd. Flow (perm)	3433	1613	0	1770	1734	0	827	3529	0	883	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		111			29			2				478
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1248			462			1481			969	
Travel Time (s)		28.4			10.5			33.7			22.0	
Volume (vph)	426	12	102	10	58	49	351	442	8	23	267	440
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)	463	13	111	11	63	53	382	480	9	25	290	478
Lane Group Flow (vph)	463	124	0	11	116	0	382	489	0	25	290	478
Turn Type	Prot			Prot			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		6
Detector Phases	7	4		3	8		5	2		1	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	10.0		8.0	20.0		8.0	20.0	20.0
Total Split (s)	42.0	44.0	0.0	8.0	10.0	0.0	25.0	50.0	0.0	8.0	33.0	33.0
Total Split (%)	38.2%	40.0%	0.0%	7.3%	9.1%	0.0%	22.7%	45.5%	0.0%	7.3%	30.0%	30.0%
Maximum Green (s)	38.0	40.0		4.0	6.0		21.0	46.0		4.0	29.0	29.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	18.9	34.7		4.0	13.3		65.7	59.5		50.2	44.2	44.2
Actuated g/C Ratio	0.17	0.32		0.04	0.12		0.60	0.54		0.46	0.40	0.40
v/c Ratio	0.78	0.21		0.17	0.49		0.59	0.26		0.06	0.20	0.52
Control Delay	53.1	7.0		57.6	40.4		16.8	15.9		13.3	24.7	5.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	53.1	7.0		57.6	40.4		16.8	15.9		13.3	24.7	5.1
LOS	D	A		E	D		B	B		B	C	A
Approach Delay		43.4			41.9			16.3			12.5	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	163	6		8	58		129	99		7	68	0
Queue Length 95th (ft)	206	47		27	112		236	161		22	125	85
Internal Link Dist (ft)		1168			382			1401			889	

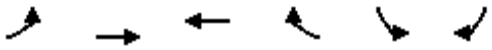
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)	1186	657		64	236		679	1911		452	1421	922
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.39	0.19		0.17	0.49		0.56	0.26		0.06	0.20	0.52

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 23.1 Intersection LOS: C
Intersection Capacity Utilization 62.7% ICU Level of Service B
Analysis Period (min) 15

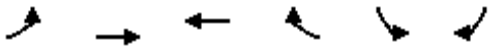
Splits and Phases: 25: 44th & Range Line





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.955				
Satd. Flow (prot)	0	1779	1863	0	1611	0
Flt Permitted		0.955				
Satd. Flow (perm)	0	1779	1863	0	1611	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1044	606		2545	
Travel Time (s)		23.7	13.8		57.8	
Volume (vph)	343	21	13	0	0	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	373	23	14	0	0	260
Lane Group Flow (vph)	0	396	14	0	260	0
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.998		0.906	
Flt Protected		0.981			0.985	
Satd. Flow (prot)	0	1827	1859	0	1662	0
Flt Permitted		0.981			0.985	
Satd. Flow (perm)	0	1827	1859	0	1662	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1104	1656		2570	
Travel Time (s)		25.1	37.6		58.4	
Volume (vph)	212	336	244	5	31	72
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	365	265	5	34	78
Lane Group Flow (vph)	0	595	270	0	112	0
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		

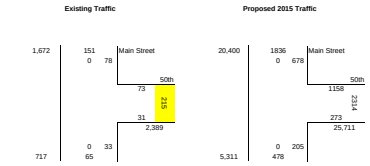
PM Peak Hour Calculation

N/S Street: Main Street
E/W Street: 50th

New Trips In: 2469
New Trips Out: 2571
New Hospital Trips In: 470
New Hospital Trips Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015
SBL	78	1.04	81	10.85%	2469			268	70%	470			329	678 VEH/HR
SBT		1.04	0					0					0	0 VEH/HR
WBR	73	1.04	76	11.58%	2571			298	70%	1120			784	1158 VEH/HR
WBL	31	1.04	32	5%	2571			129	10%	1120			112	273 VEH/HR
NBT		1.04	0					0					0	0 VEH/HR
NBR	33	1.04	35	5%	2469			123	10%	470			47	205 VEH/HR

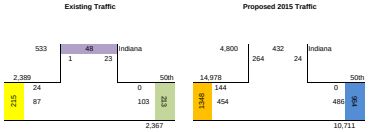


N/S Street: Indiana
E/W Street: 50th

New Trips In: 2469
New Trips Out: 2571
New Hospital Trips In: 470
New Hospital Trips Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015
SBL	23	1.04	24					0					0	24 VEH/HR
SBR	1	1.04	1	1.5%	2571			39	20%	1120			224	264 VEH/HR
EBL	24	1.04	25	1.00%	2469			25	20%	470			94	144 VEH/HR
EBT	87	1.04	91	14.45%	2469	0.25%	2571	363					0	454 VEH/HR
WBT	103	1.04	107	14.7%	2571	0.1%	2469	379					0	486 VEH/HR
WBR	0	1.04	0					0					0	0 VEH/HR

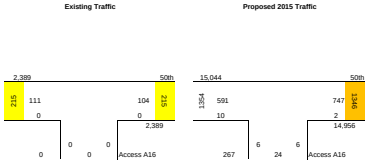


N/S Street: Access A16
E/W Street: 50th

New Trips In: 2469
New Trips Out: 2571
New Hospital Trips In: 470
New Hospital Trips Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015
EBT	111	1.04	115	15.45%	2469			382	20%	470			94	591 VEH/HR
EBR		1.04	0	0.4%	2469			10					0	10 VEH/HR
WBT	104	1.04	108	16.2%	2571			415	20%	1120			224	747 VEH/HR
WBL		1.04	0	0.1%	2469			2					0	2 VEH/HR
NBL		1.04	0	0.25%	2571			6					0	6 VEH/HR
NBR		1.04	0	0.25%	2571			6					0	6 VEH/HR

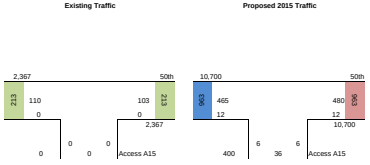


N/S Street: Access A15
E/W Street: 50th

New Trips In: 2469
New Trips Out: 2571
New Hospital Trips In: 470
New Hospital Trips Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015
EBT	110	1.04	114	14.0%	2469	0.25%	2571	351					0	465 VEH/HR
EBR		1.04	0	0.5%	2469			12					0	12 VEH/HR
WBT	103	1.04	107	14.4%	2571	0.1%	2469	373					0	480 VEH/HR
WBL		1.04	0	0.5%	2469			12					0	12 VEH/HR
NBL		1.04	0	0.25%	2571			6					0	6 VEH/HR
NBR		1.04	0	0.25%	2571			6					0	6 VEH/HR



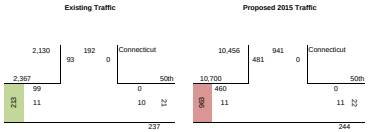
N/S Street: Connecticut
E/W Street: 50th

New Trips In: 2469 Out: 2571

New Trips In: 470 Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015
SBL		1.04	0					0					0	0 VEH/HR
SBR	93	1.04	96	14.4%	2571	0.6%	2469	385					0	481 VEH/HR
EBL	99	1.04	103	13.95%	2469	0.500%	2571	357					0	460 VEH/HR
EBT	11	1.04	11					0					0	11 VEH/HR
WBT	10	1.04	11					0					0	11 VEH/HR
WBR		1.04	0					0					0	0 VEH/HR



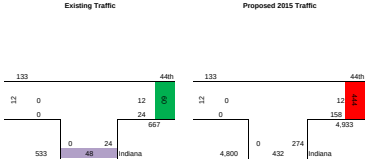
N/S Street: Indiana
E/W Street: 44th

New Trips In: 2469 Out: 2571

New Trips In: 470 Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015
EBT		1.04	0					0					0	0 VEH/HR
EBR		1.04	0					0					0	0 VEH/HR
WBT	12	1.04	12					0					0	12 VEH/HR
WBL	24	1.04	25	1.50%	2571			39	20%	470			94	158 VEH/HR
NBL		1.04	0					0					0	0 VEH/HR
NBR	24	1.04	25	1.00%	2469			25	20%	1120			224	274 VEH/HR



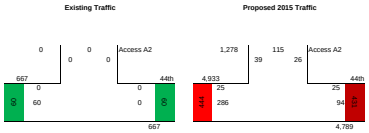
N/S Street: Access A2
E/W Street: 44th

New Trips In: 2469 Out: 2571

New Trips In: 470 Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015
SBL		1.04	0	1.0%	2571			26					0	26 VEH/HR
SBR		1.04	0	1.5%	2571			39					0	39 VEH/HR
EBL		1.04	0	1.00%	2469			25					0	25 VEH/HR
EBT	60	1.04	62					0	20%	1120			224	286 VEH/HR
WBT		1.04	0					0	20%	470			94	94 VEH/HR
WBR		1.04	0	1.00%	2469			25					0	25 VEH/HR



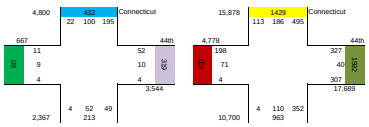
N/S Street: Connecticut
E/W Street: 44th

New Trips In: 2469 Out: 2571

New Trips In: 470 Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015
SBL	195	1.04	203	2.1%	2571	9.7%	2469	292					0	495 VEH/HR
SBR	22	1.04	23	0.75%	2469			19	15%	470			71	113 VEH/HR
SBT	100	1.04	104	2.6%	2571	0.6%	2469	82					0	186 VEH/HR
EBL	11	1.04	11	0.75%	2571			19	15%	1120			168	198 VEH/HR
EBT	9	1.04	9	0.25%	2571			6	5%	1120			56	71 VEH/HR
EBR	4	1.04	4					0					0	4 VEH/HR
WBT	10	1.04	10	0.250%	2469			6	5%	470			24	40 VEH/HR
WBR	52	1.04	54	1.75%	2469	9.0%	2571	273					0	327 VEH/HR
WBL	4	1.04	4	11.8%	2571			303					0	307 VEH/HR
NBT	52	1.04	54	1.75%	2469	0.5%	2571	56					0	110 VEH/HR
NBL	4	1.04	4					0					0	4 VEH/HR
NBR	49	1.04	51	12.2%	2469			301					0	352 VEH/HR

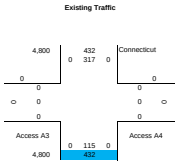


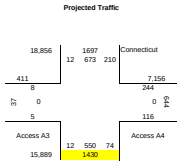
N/S Street: Connecticut
E/W Street: Access A3/Access A4

New Trips		New Trips	
In	2469	In	470
Out	2571	Out	1120

Growth Rate (GR): 2.00%
Years (n): 2

			A	NEW TRIPS				B	NEW HOSPITAL TRIPS				C	A + B + C
	(1)	(2) Growth factor	(1) x (2)	(1)	(2)	(3)	(4)	(1)+(2)+(3)+(4)	(1)	(2)	(3)	(4)	(1)+(2)+(3)+(4)	
Turn Movement	Existing Traffic	(1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2015
SBL		1.04	0	8.5%	2469			210					0	210 VEH/HR
SBR		1.04	0	0.500%	2469			12					0	12 VEH/HR
SBT	317	1.04	330	11.00%	2469			272	15%	470			71	673 VEH/HR
EBL		1.04	0	0.3%	2571			8					0	8 VEH/HR
EBT		1.04	0					0					0	0 VEH/HR
EBR		1.04	0	0.2%	2571			5					0	5 VEH/HR
WBT		1.04	0					0					0	0 VEH/HR
WBR		1.04	0	10%	2571			244					0	244 VEH/HR
WBL		1.04	0	5%	2571			116					0	116 VEH/HR
NBT	115	1.04	120	10.20%	2571			262	15%	1120			168	550 VEH/HR
NBL		1.04	0	0.500%	2469			12					0	12 VEH/HR
NBR		1.04	0	3.0%	2469			74					0	74 VEH/HR



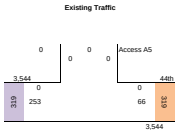


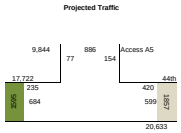
N/S Street: Access A5
E/W Street: 44th

New Trips		New Trips	
In	2469	In	470
Out	2571	Out	1120

Growth Rate (GR): 2.00%
Years (n): 2

			A	NEW TRIPS				B	NEW HOSPITAL TRIPS				C	A + B + C
	(1)	(2) Growth factor	(1) x (2)	(1)	(2)	(3)	(4)	(1)+(2)+(3)+(4)	(1)	(2)	(3)	(4)	(1)+(2)+(3)+(4)	
Turn Movement	Existing Traffic	(1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2015
SBL		1.04	0	6.0%	2571			154					0	154 VEH/HR
SBR		1.04	0	3.0%	2571			77					0	77 VEH/HR
EBL		1.04	0	9.50%	2469			235					0	235 VEH/HR
EBT	253	1.04	263	2.35%	2571	12.4%	2469	365	5%	1120			56	684 VEH/HR
WBT	66	1.04	69	2.00%	2469	17.8%	2571	506	5%	470			24	599 VEH/HR
WBR		1.04	0	17.0%	2469			420					0	420 VEH/HR





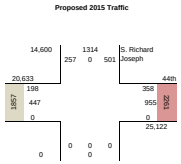
N/S Street: S. Richard Joseph
E/W Street: 44th

New Trips		New Trips	
In	2469	In	470
Out	2571	Out	1120

Growth Rate (GR): 2.00%
Years (n): 2

			A	NEW TRIPS				B	NEW HOSPITAL TRIPS				C	A + B + C
	(1)	(2) Growth factor	(1) x (2)	(1)	(2)	(3)	(4)	(1)+(2)+(3)+(4)	(1)	(2)	(3)	(4)	(1)+(2)+(3)+(4)	
Turn Movement	Existing Traffic	(1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2015
SBL		1.04	0	19.5%	2571			501					0	501 VEH/HR
SBR		1.04	0	10%	2571			257					0	257 VEH/HR
SBT		1.04	0					0					0	0 VEH/HR
EBL		1.04	0	8.0%	2469			198					0	198 VEH/HR
EBT	66	1.04	69	4.35%	2469	8.35%	2571	322	5%	1120			56	447 VEH/HR
EBR		1.04	0					0					0	0 VEH/HR
WBT	253	1.04	263	7.75%	2571	19.0%	2469	668	5%	470			24	955 VEH/HR
WBR		1.04	0	14.5%	2469			358					0	358 VEH/HR
WBL		1.04	0					0					0	0 VEH/HR
NBT		1.04	0					0					0	0 VEH/HR
NBL		1.04	0					0					0	0 VEH/HR
NBR		1.04	0					0					0	0 VEH/HR





N/S Street Access A7a
E/W Street 44th

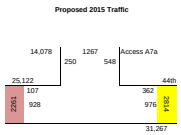
New Trips
In 2469
Out 2571

New Trips
In 470
Out 1120

Growth Rate (GR) 2.00%
Years (n) 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015	
SBL	125	1.04	130	16%	2571			418					0	548	VEH/HR
SBR	49	1.04	51	7.75%	2571			199					0	250	VEH/HR
EBL		1.04	0	4.35%	2469			107					0	107	VEH/HR
EBT	150	1.04	156	27.85%	2571			716	5%	1120			56	928	VEH/HR
WBT	120	1.04	125	33.50%	2469			827	5%	470			24	976	VEH/HR
WBR		1.04	0	14.7%	2469			362					0	362	VEH/HR





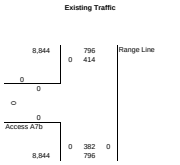
N/S Street Range Line
E/W Street Access A7b

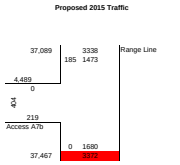
New Trips
In 2469
Out 2571

New Trips
In 470
Out 1120

Growth Rate (GR) 2.00%
Years (n) 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015	
SBR		1.04	0	7.50%	2469			185					0	185	VEH/HR
SBT	414	1.04	431	41.7%	2469			1028	3%	470			14	1473	VEH/HR
EBL		1.04	0					0					0	0	VEH/HR
EBR		1.04	0	8.5%	2571			219					0	219	VEH/HR
NBT	382	1.04	397	48.60%	2571			1249	3%	1120			34	1680	VEH/HR
NBL		1.04	0					0					0	0	VEH/HR





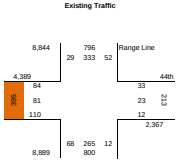
N/S Street Range Line
E/W Street 44th

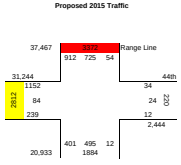
New Trips
In 2469
Out 2571

New Trips
In 470
Out 1120

Growth Rate (GR) 2.00%
Years (n) 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015	
SBL	52	1.04	54					0					0	54	VEH/HR
SBR	29	1.04	30	35.15%	2469			868	3%	470			14	912	VEH/HR
SBT	333	1.04	346	8.5%	2571	6.5%	2469	379					0	725	VEH/HR
EBL	84	1.04	87	40.1%	2571			1031	3%	1120			34	1152	VEH/HR
EBT	81	1.04	84					0					0	84	VEH/HR
EBR	110	1.04	114	4%	2571			103	2%	1120			22	239	VEH/HR
WBT	23	1.04	24					0					0	24	VEH/HR
WBR	33	1.04	34					0					0	34	VEH/HR
WBL	12	1.04	12					0					0	12	VEH/HR
NBT	265	1.04	276	8.5%	2571			219					0	495	VEH/HR
NBL	68	1.04	71	13%	2469			321	2%	470			9	401	VEH/HR
NBR	12	1.04	12					0					0	12	VEH/HR





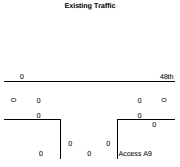
N/S Street Access A9
E/W Street 48th

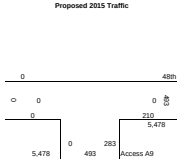
New Trips
In 2469
Out 2571

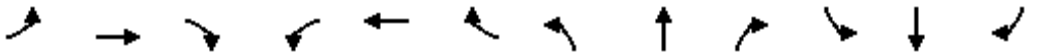
New Trips
In 470
Out 1120

Growth Rate (GR) 2.00%
Years (n) 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015	
EBT		1.04	0					0					0	0	VEH/HR
EBR		1.04	0					0					0	0	VEH/HR
WBT		1.04	0					0					0	0	VEH/HR
WBL		1.04	0	8.5%	2469			210					0	210	VEH/HR
NBL		1.04	0					0					0	0	VEH/HR
NBR		1.04	0	11%	2571			283					0	283	VEH/HR







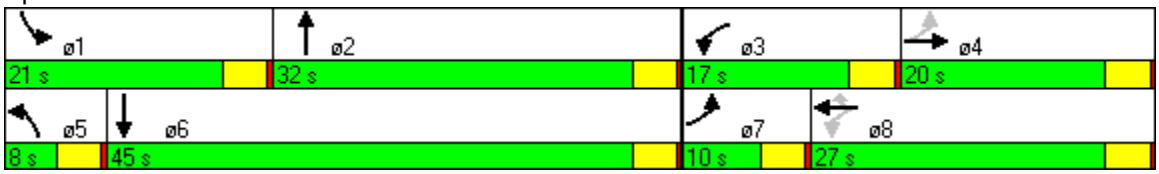
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.993				0.850		0.886			0.943	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1850	0	1770	1863	1583	1770	1650	0	3433	1757	0
Flt Permitted	0.729			0.563			0.950			0.950		
Satd. Flow (perm)	1358	1850	0	1049	1863	1583	1770	1650	0	3433	1757	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				355		185			45	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1848			592			2545			950	
Travel Time (s)		42.0			13.5			57.8			21.6	
Volume (vph)	198	71	4	307	40	327	4	110	352	495	186	113
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)	215	77	4	334	43	355	4	120	383	538	202	123
Lane Group Flow (vph)	215	81	0	334	43	355	4	503	0	538	325	0
Turn Type	pm+pt			pm+pt		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8						
Detector Phases	7	4		3	8	8	5	2		1	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0		8.0	20.0	
Total Split (s)	10.0	20.0	0.0	17.0	27.0	27.0	8.0	32.0	0.0	21.0	45.0	0.0
Total Split (%)	11.1%	22.2%	0.0%	18.9%	30.0%	30.0%	8.9%	35.6%	0.0%	23.3%	50.0%	0.0%
Maximum Green (s)	6.0	16.0		13.0	23.0	23.0	4.0	28.0		17.0	41.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	13.2	8.7		21.8	14.6	14.6	4.3	19.4		15.0	37.6	
Actuated g/C Ratio	0.18	0.12		0.31	0.21	0.21	0.06	0.28		0.22	0.54	
v/c Ratio	0.75	0.36		0.73	0.11	0.58	0.04	0.85		0.73	0.34	
Control Delay	41.2	36.4		32.7	27.0	7.8	41.2	30.3		35.2	10.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	41.2	36.4		32.7	27.0	7.8	41.2	30.3		35.2	10.3	
LOS	D	D		C	C	A	D	C		D	B	
Approach Delay		39.9			20.3			30.4			25.8	
Approach LOS		D			C			C			C	

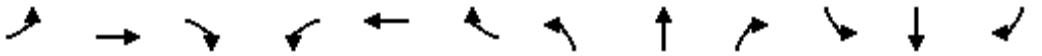
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	77	35		129	17	0	2	143		123	64	
Queue Length 95th (ft)	#157	80		#237	46	68	12	#289		#217	154	
Internal Link Dist (ft)		1768			512			2465			870	
Turn Bay Length (ft)												
Base Capacity (vph)	288	391		495	576	735	101	730		864	1042	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.75	0.21		0.67	0.07	0.48	0.04	0.69		0.62	0.31	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 69.6
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 26.8 Intersection LOS: C
Intersection Capacity Utilization 75.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: 44th & Connecticut





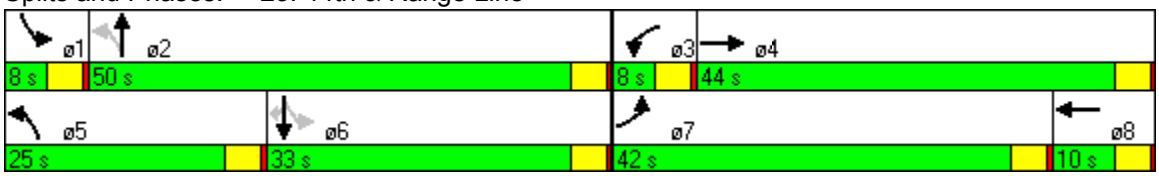
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.889			0.912			0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1656	0	1770	1699	0	1770	3525	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.121			0.446		
Satd. Flow (perm)	3433	1656	0	1770	1699	0	225	3525	0	831	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		147			37			3				739
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1248			462			1481			969	
Travel Time (s)		28.4			10.5			33.7			22.0	
Volume (vph)	1152	84	239	12	24	34	401	495	12	54	725	912
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)	1252	91	260	13	26	37	436	538	13	59	788	991
Lane Group Flow (vph)	1252	351	0	13	63	0	436	551	0	59	788	991
Turn Type	Prot			Prot			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		6
Detector Phases	7	4		3	8		5	2		1	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	10.0		8.0	20.0		8.0	20.0	20.0
Total Split (s)	42.0	44.0	0.0	8.0	10.0	0.0	25.0	50.0	0.0	8.0	33.0	33.0
Total Split (%)	38.2%	40.0%	0.0%	7.3%	9.1%	0.0%	22.7%	45.5%	0.0%	7.3%	30.0%	30.0%
Maximum Green (s)	38.0	40.0		4.0	6.0		21.0	46.0		4.0	29.0	29.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	38.0	42.7		4.0	5.8		56.1	49.6		33.4	29.0	29.0
Actuated g/C Ratio	0.35	0.39		0.04	0.05		0.51	0.45		0.30	0.26	0.26
v/c Ratio	1.06	0.48		0.20	0.50		0.99	0.35		0.20	0.84	1.03
Control Delay	77.8	16.7		58.9	40.0		74.0	21.4		18.7	48.1	48.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	77.8	16.7		58.9	40.0		74.0	21.4		18.7	48.1	48.4
LOS	E	B		E	D		E	C		B	D	D
Approach Delay		64.4			43.2			44.6			47.3	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	~500	93		9	18		~293	137		21	277	~337
Queue Length 95th (ft)	#633	195		30	62		#494	182		44	#362	#587
Internal Link Dist (ft)		1168			382			1401			889	

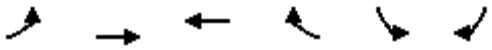
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)	1186	739		64	128		439	1591		289	933	962
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.06	0.47		0.20	0.49		0.99	0.35		0.20	0.84	1.03

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 52.7 Intersection LOS: D
Intersection Capacity Utilization 92.0% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

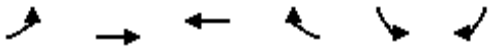
Splits and Phases: 25: 44th & Range Line





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.953				
Satd. Flow (prot)	0	1775	1863	0	1611	0
Flt Permitted		0.953				
Satd. Flow (perm)	0	1775	1863	0	1611	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1044	606		2545	
Travel Time (s)		23.7	13.8		57.8	
Volume (vph)	460	11	11	0	0	481
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	500	12	12	0	0	523
Lane Group Flow (vph)	0	512	12	0	523	0
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.876	
Flt Protected		0.988			0.996	
Satd. Flow (prot)	0	1840	1863	0	1625	0
Flt Permitted		0.988			0.996	
Satd. Flow (perm)	0	1840	1863	0	1625	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1104	1656		2570	
Travel Time (s)		25.1	37.6		58.4	
Volume (vph)	144	454	486	0	24	264
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	493	528	0	26	287
Lane Group Flow (vph)	0	650	528	0	313	0
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

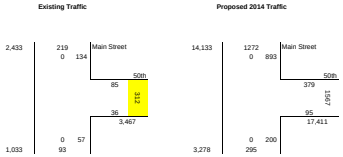
2014 AM Peak Hour Calculation with 50th Street Extension

N/S Street: Main Street
E/W Street: 50th

New Trips: In 1067, Out 824
New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL	134	1.04	139	11.05%	1067			118	70%	909			636	893	VEH/HR
SBT		1.04	0					0					0	0	VEH/HR
WBR	85	1.04	88	11.42%	824			94	70%	281			197	379	VEH/HR
WBL	36	1.04	37	3.6%	824			30	10%	281			28	95	VEH/HR
NBT		1.04	0					0					0	0	VEH/HR
NBR	57	1.04	59	4.7%	1067			50	10%	909			91	200	VEH/HR



N/S Street: Indiana
E/W Street: 50th

New Trips: In 1067, Out 824
New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL	30	1.04	31					0					0	31	VEH/HR
SBR	4	1.04	4	1.5%	824			12	20%	281			56	72	VEH/HR
EBL	18	1.04	19	1%	1067			11	20%	909			182	212	VEH/HR
EBT	173	1.04	180	14.65%	1067	0.25%	824	158	4%	281			11	349	VEH/HR
WBT	117	1.04	122	14.67%	824	0.1%	1067	122	4%	909			36	280	VEH/HR
WBR	5	1.04	5					0					0	5	VEH/HR



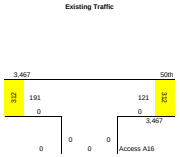


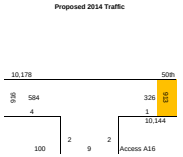
N/S Street: Access A16
E/W Street: 50th

New Trips: In 1067, Out 824
New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
EBT	191	1.04	199	15.65%	1067			167	24%	909			218	584	VEH/HR
EBR		1.04	0	0.4%	1067			4					0	4	VEH/HR
WBT	121	1.04	126	16.2%	824			133	24%	281			67	326	VEH/HR
WBL		1.04	0	0.1%	1067			1					0	1	VEH/HR
NBL		1.04	0	0.25%	824			2					0	2	VEH/HR
NBR		1.04	0	0.25%	824			2					0	2	VEH/HR





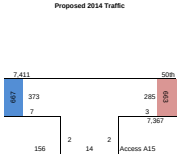
N/S Street: Access A15
E/W Street: 50th

New Trips: In 1067, Out 824
New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
EBT	203	1.04	211	13.95%	1067	0.25%	824	151	4%	281			11	373	VEH/HR
EBR		1.04	0	0.7%	1067			7					0	7	VEH/HR
WBT	124	1.04	129	14.5%	824	0.1%	1067	120	4%	909			36	285	VEH/HR
WBL		1.04	0	0.3%	1067			3					0	3	VEH/HR
NBL		1.04	0	0.22%	824			2					0	2	VEH/HR
NBR		1.04	0	0.28%	824			2					0	2	VEH/HR





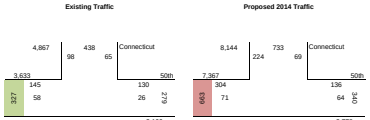
N/S Street: Connecticut
E/W Street: 50th

New Trips: In 1067, Out 824

New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL	65	1.04	68	0.10%	824			1					0	69	VEH/HR
SBR	98	1.04	102	14.5%	824	0.3%	1067	122					0	224	VEH/HR
EBL	145	1.04	151	13.95%	1067	0.48%	824	153					0	304	VEH/HR
EBT	58	1.04	60	0.05%	824			0	4%	281			11	71	VEH/HR
WBT	26	1.04	27	0.1%	1067			1	4%	909			36	64	VEH/HR
WBR	130	1.04	135	0.05%	1067			1					0	136	VEH/HR



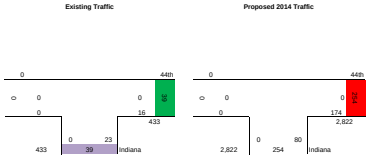
N/S Street: Indiana
E/W Street: 44th

New Trips: In 1067, Out 824

New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
EBT		1.04	0					0					0	0	VEH/HR
EBR		1.04	0					0					0	0	VEH/HR
WBT		1.04	0					0					0	0	VEH/HR
WBL	16	1.04	17	1.50%	824			12	16%	909			145	174	VEH/HR
NBL		1.04	0					0					0	0	VEH/HR
NBR	23	1.04	24	1.00%	1067			11	16%	281			45	80	VEH/HR



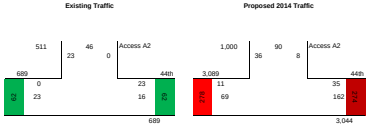
N/S Street: Access A2
E/W Street: 44th

New Trips: In 1067, Out 824

New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL		1.04	0	1.0%	824			8					0	8	VEH/HR
SBR	23	1.04	24	1.5%	824			12					0	36	VEH/HR
EBL		1.04	0	1%	1067			11					0	11	VEH/HR
EBT	23	1.04	24					0	16%	281			45	69	VEH/HR
WBT	16	1.04	17					0	16%	909			145	162	VEH/HR
WBR	23	1.04	24	1%	1067			11					0	35	VEH/HR



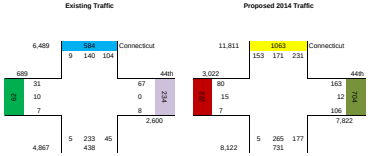
N/S Street: Connecticut
E/W Street: 44th

New Trips: In 1067, Out 824

New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL	104	1.04	108	2.1%	824	10.0%	1067	123					0	231	VEH/HR
SBR	9	1.04	9	0.750%	1067			8	15%	909			136	153	VEH/HR
SBT	140	1.04	146	2.6%	824	0.3%	1067	25					0	171	VEH/HR
EBL	31	1.04	32	0.75%	824			6	15%	281			42	80	VEH/HR
EBT	10	1.04	10	0.25%	824			2	1%	281			3	15	VEH/HR
EBR	7	1.04	7					0					0	7	VEH/HR
WBT	0	1.04	0	0.250%	1067			3	1%	909			9	12	VEH/HR
WBR	67	1.04	70	1.750%	1067	9.0%	824	93					0	163	VEH/HR
WBL	8	1.04	8	11.9%	824			98					0	106	VEH/HR
NBT	233	1.04	242	1.75%	1067	0.48%	824	23					0	265	VEH/HR
NBL	5	1.04	5					0					0	5	VEH/HR
NBR	45	1.04	47	12.2%	1067			130					0	177	VEH/HR



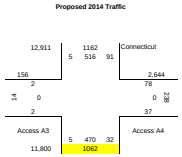
N/S Street: Connecticut
E/W Street: Access A3/Access A4

New Trips: In 1067 / Out 824
New Hospital Trips: In 909 / Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL		1.04	0	8.5%	1067			91					0	91	VEH/HR
SBR		1.04	0	0.500%	1067			5					0	5	VEH/HR
SBT	253	1.04	263	11.00%	1067			117	15%	909			136	516	VEH/HR
EBL		1.04	0	0.3%	824			2					0	2	VEH/HR
EBT		1.04	0					0					0	0	VEH/HR
EBR		1.04	0	0.2%	824			2					0	2	VEH/HR
WBT		1.04	0					0					0	0	VEH/HR
WBR		1.04	0	10%	824			78					0	78	VEH/HR
WBL		1.04	0	4.5%	824			37					0	37	VEH/HR
NBT	331	1.04	344	10.20%	824			84	15%	281			42	470	VEH/HR
NBL		1.04	0	0.500%	1067			5					0	5	VEH/HR
NBR		1.04	0	3.0%	1067			32					0	32	VEH/HR



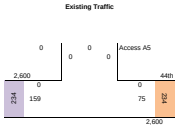


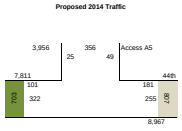
N/S Street: Access A5
E/W Street: 44th

New Trips: In 1067 / Out 824
New Hospital Trips: In 909 / Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL		1.04	0	6.0%	824			49					0	49	VEH/HR
SBR		1.04	0	3.0%	824			25					0	25	VEH/HR
EBL		1.04	0	9.50%	1067			101					0	101	VEH/HR
EBT	159	1.04	165	2.35%	824	12.7%	1067	154	1%	281			3	322	VEH/HR
WBT	75	1.04	78	2.00%	1067	17.8%	824	168	1%	909			9	255	VEH/HR
WBR		1.04	0	17.0%	1067			181					0	181	VEH/HR



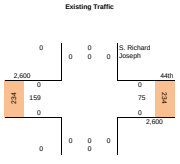


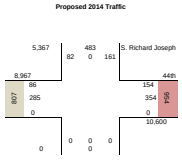
N/S Street: S. Richard Joseph
E/W Street: 44th

New Trips: In 1067 / Out 824
New Hospital Trips: In 909 / Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL		1.04	0	19.5%	824			161					0	161	VEH/HR
SBR		1.04	0	10.0%	824			82					0	82	VEH/HR
SBT		1.04	0					0					0	0	VEH/HR
EBL		1.04	0	8.1%	1067			86					0	86	VEH/HR
EBT	159	1.04	165	4.55%	1067	8.35%	824	117	1%	281			3	285	VEH/HR
EBR		1.04	0					0					0	0	VEH/HR
WBT	75	1.04	78	7.82%	824	19.00%	1067	267	1%	909			9	354	VEH/HR
WBR		1.04	0	14.4%	1067			154					0	154	VEH/HR
WBL		1.04	0					0					0	0	VEH/HR
NBT		1.04	0					0					0	0	VEH/HR
NBL		1.04	0					0					0	0	VEH/HR
NBR		1.04	0					0					0	0	VEH/HR





N/S Street: Access A7a
E/W Street: 44th

New Trips: In 1067, Out 824
New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
SBL		1.04	0	16.18%	824			133					0	133 VEH/HR
SBR	87	1.04	90	7.82%	824			64					0	154 VEH/HR
EBL	62	1.04	65	4.55%	1067			49					0	114 VEH/HR
EBT	73	1.04	76	27.85%	824			229	1%	281			3	308 VEH/HR
WBT	12	1.04	12	33.40%	1067			356	1%	909			9	377 VEH/HR
WBR	45	1.04	47	14.5%	1067			154					0	201 VEH/HR

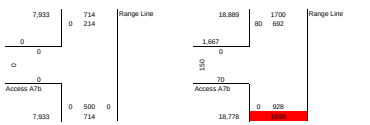


N/S Street: Range Line
E/W Street: Access A7b

New Trips: In 1067, Out 824
New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
SBR		1.04	0	7.50%	1067			80					0	80 VEH/HR
SBT	214	1.04	223	41.45%	1067			442	3%	909			27	692 VEH/HR
EBL		1.04	0					0					0	0 VEH/HR
EBR		1.04	0	8.5%	824			70					0	70 VEH/HR
NBT	500	1.04	520	48.58%	824			400	3%	281			8	928 VEH/HR
NBL		1.04	0					0					0	0 VEH/HR

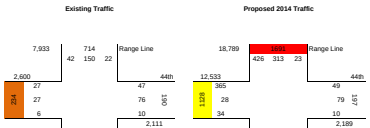


N/S Street: Range Line
E/W Street: 44th

New Trips: In 1067, Out 824
New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
SBL	22	1.04	23					0					0	23 VEH/HR
SBR	42	1.04	44	34.95%	1067			373	1%	909			9	426 VEH/HR
SBT	150	1.04	156	8.5%	824	6.5%	1067	139	2%	909			18	313 VEH/HR
EBL	27	1.04	28	40.58%	824			334	1%	281			3	365 VEH/HR
EBT	27	1.04	28					0					0	28 VEH/HR
EBR	6	1.04	6	3.5%	824			28					0	34 VEH/HR
WBT	76	1.04	79					0					0	79 VEH/HR
WBR	47	1.04	49					0					0	49 VEH/HR
WBL	10	1.04	10					0					0	10 VEH/HR
NBT	426	1.04	443	8.0%	824			66	2%	281			6	515 VEH/HR
NBL	56	1.04	58	12.90%	1067			138					0	196 VEH/HR
NBR	8	1.04	8					0					0	8 VEH/HR

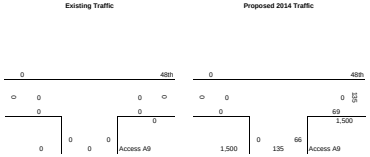


N/S Street: Access A9
E/W Street: 48th

New Trips: In 1067, Out 824
New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
EBT		1.04	0					0					0	0 VEH/HR
EBR		1.04	0					0					0	0 VEH/HR
WBT		1.04	0					0					0	0 VEH/HR
WBL		1.04	0	6.5%	1067			69					0	69 VEH/HR
NBL		1.04	0					0					0	0 VEH/HR
NBR		1.04	0	8%	824			66					0	66 VEH/HR



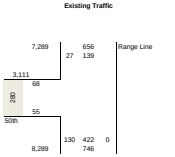
N/S Street: Range Line
E/W Street: 50th

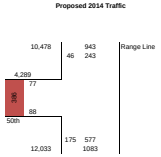
New Trips: In 1067, Out 824

New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBR	27	1.04	28		1067			0	2%	909			18	46	VEH/HR
SBT	139	1.04	145	12%	824			98					0	243	VEH/HR
EBL	68	1.04	71					0	2%	281			6	77	VEH/HR
EBR	55	1.04	57	3.05%	824			25	2%	281			6	88	VEH/HR
NBT	422	1.04	439	12.9%	1067			138					0	577	VEH/HR
NBL	130	1.04	135	2.1%	1067			22	2%	909			18	175	VEH/HR





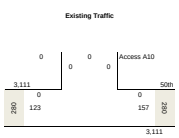
N/S Street: Access A10
E/W Street: 50th

New Trips: In 1067, Out 824

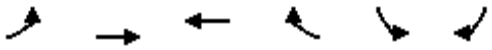
New Hospital Trips: In 909, Out 281

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL		1.04	0	3.0%	824			25					0	25	VEH/HR
SBR		1.04	0		824			0					0	0	VEH/HR
EBL		1.04	0		1067			0					0	0	VEH/HR
EBT	123	1.04	128	0.05%	824			0	4%	281			11	139	VEH/HR
WBT	157	1.04	163	0.10%	1067			1	4%	909			36	200	VEH/HR
WBR		1.04	0	2.0%	1067			21					0	21	VEH/HR

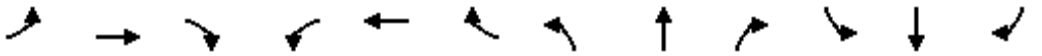






Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			100	0	0
Storage Lanes	0			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.998		0.906	
Flt Protected		0.981			0.985	
Satd. Flow (prot)	0	1827	1859	0	1662	0
Flt Permitted		0.981			0.985	
Satd. Flow (perm)	0	1827	1859	0	1662	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1104	1656		2570	
Travel Time (s)		25.1	37.6		58.4	
Volume (vph)	212	349	280	5	31	72
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	379	304	5	34	78
Lane Group Flow (vph)	0	609	309	0	112	0
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.3%		ICU Level of Service B	
Analysis Period (min) 15			

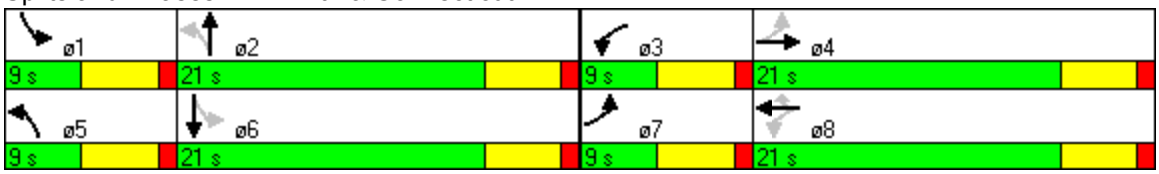


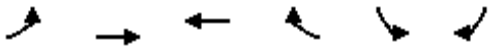
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	100		0	150		0	150		0
Storage Lanes	1		0	1		1	1		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95
Frt		0.950				0.850		0.940			0.929	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1770	0	1770	1863	1583	1770	1751	0	3433	3288	0
Flt Permitted	0.749			0.742			0.511			0.235		
Satd. Flow (perm)	1395	1770	0	1382	1863	1583	952	1751	0	849	3288	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				177		56			166	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1848			882			2545			950	
Travel Time (s)		42.0			20.0			57.8			21.6	
Volume (vph)	80	15	7	106	12	163	5	265	177	231	171	153
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)	87	16	8	115	13	177	5	288	192	251	186	166
Lane Group Flow (vph)	87	24	0	115	13	177	5	480	0	251	352	0
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	9.0	21.0		9.0	21.0	21.0	9.0	21.0		9.0	21.0	
Total Split (s)	9.0	21.0	0.0	9.0	21.0	21.0	9.0	21.0	0.0	9.0	21.0	0.0
Total Split (%)	15.0%	35.0%	0.0%	15.0%	35.0%	35.0%	15.0%	35.0%	0.0%	15.0%	35.0%	0.0%
Maximum Green (s)	4.0	16.0		4.0	16.0	16.0	4.0	16.0		4.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	22.0	17.0		22.0	17.0	17.0	22.0	17.0		22.0	17.0	
Actuated g/C Ratio	0.37	0.28		0.37	0.28	0.28	0.37	0.28		0.37	0.28	
v/c Ratio	0.16	0.05		0.21	0.02	0.31	0.01	0.90		0.48	0.33	
Control Delay	11.2	13.0		11.6	15.8	4.9	10.0	41.4		13.8	9.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	11.2	13.0		11.6	15.8	4.9	10.0	41.4		13.8	9.8	
LOS	B	B		B	B	A	A	D		B	A	
Approach Delay		11.6			7.9			41.1			11.5	
Approach LOS		B			A			D			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	

Actuated Cycle Length: 60
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 20.3 Intersection LOS: C
Intersection Capacity Utilization 53.9% ICU Level of Service A
Analysis Period (min) 15

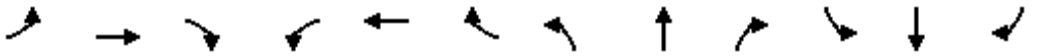
Splits and Phases: 7: 44th & Connecticut





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	100	0
Storage Lanes	1			1	1	1
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1583	1770	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1044	4436		2545	
Travel Time (s)		23.7	100.8		57.8	
Volume (vph)	304	71	64	136	69	224
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	330	77	70	148	75	243
Lane Group Flow (vph)	330	77	70	148	75	243
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.0%		ICU Level of Service A	
Analysis Period (min) 15			

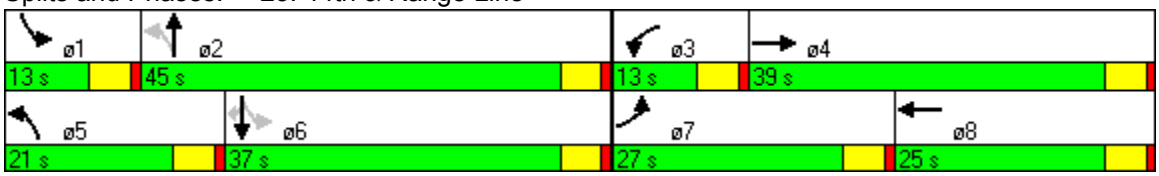


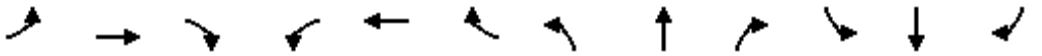
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	125		0	125		200
Storage Lanes	2		0	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.917			0.943			0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1708	0	1770	1757	0	1770	3532	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.422			0.415		
Satd. Flow (perm)	3433	1708	0	1770	1757	0	786	3532	0	773	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			25			2				463
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1248			462			1481			919	
Travel Time (s)		28.4			10.5			33.7			20.9	
Volume (vph)	365	28	34	10	79	49	196	515	8	23	313	426
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)	397	30	37	11	86	53	213	560	9	25	340	463
Lane Group Flow (vph)	397	67	0	11	139	0	213	569	0	25	340	463
Turn Type	Prot			Prot			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		6
Detector Phases	7	4		3	8		5	2		1	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	21.0		9.0	21.0		9.0	21.0		9.0	21.0	21.0
Total Split (s)	27.0	39.0	0.0	13.0	25.0	0.0	21.0	45.0	0.0	13.0	37.0	37.0
Total Split (%)	24.5%	35.5%	0.0%	11.8%	22.7%	0.0%	19.1%	40.9%	0.0%	11.8%	33.6%	33.6%
Maximum Green (s)	22.0	34.0		8.0	20.0		16.0	40.0		8.0	32.0	32.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	18.5	33.3		7.2	13.3		66.2	59.2		56.6	49.3	49.3
Actuated g/C Ratio	0.17	0.30		0.07	0.12		0.60	0.54		0.51	0.45	0.45
v/c Ratio	0.69	0.12		0.10	0.59		0.36	0.30		0.05	0.21	0.48
Control Delay	49.1	14.6		49.7	47.3		13.2	16.8		12.2	21.3	4.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	49.1	14.6		49.7	47.3		13.2	16.8		12.2	21.3	4.4
LOS	D	B		D	D		B	B		B	C	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		44.2			47.5			15.8			11.6	
Approach LOS		D			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 54.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 25: 44th & Range Line

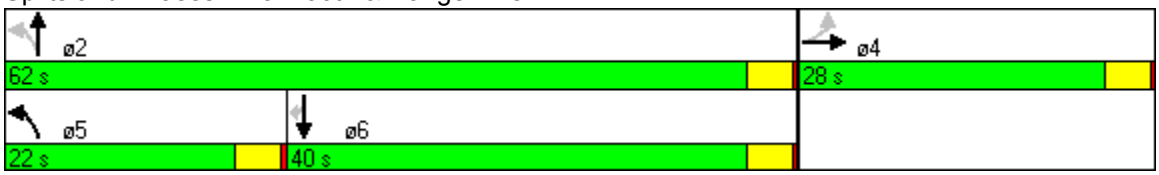




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50					50	50			50	50
Trailing Detector (ft)	0	0					0	0			0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	1583	0	0	0	0	1770	1863	0	0	1863	1583
Flt Permitted	0.950						0.458					
Satd. Flow (perm)	1770	1583	0	0	0	0	853	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		675										50
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		766			1704			1272			1058	
Travel Time (s)		17.4			38.7			28.9			24.0	
Volume (vph)	77	0	88	0	0	0	175	577	0	0	243	46
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)	84	0	96	0	0	0	190	627	0	0	264	50
Lane Group Flow (vph)	84	96	0	0	0	0	190	627	0	0	264	50
Turn Type	Perm						pm+pt					Perm
Protected Phases		4					5	2			6	
Permitted Phases	4						2					6
Detector Phases	4	4					5	2			6	6
Minimum Initial (s)	4.0	4.0					4.0	4.0			4.0	4.0
Minimum Split (s)	20.0	20.0					8.0	20.0			20.0	20.0
Total Split (s)	28.0	28.0	0.0	0.0	0.0	0.0	22.0	62.0	0.0	0.0	40.0	40.0
Total Split (%)	31.1%	31.1%	0.0%	0.0%	0.0%	0.0%	24.4%	68.9%	0.0%	0.0%	44.4%	44.4%
Maximum Green (s)	24.0	24.0					18.0	58.0			36.0	36.0
Yellow Time (s)	3.5	3.5					3.5	3.5			3.5	3.5
All-Red Time (s)	0.5	0.5					0.5	0.5			0.5	0.5
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	3.0
Recall Mode	None	None					None	Max			Max	Max
Walk Time (s)	5.0	5.0						5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0						0			0	0
Act Effct Green (s)	9.1	9.1					62.1	62.8			50.4	50.4
Actuated g/C Ratio	0.11	0.11					0.80	0.81			0.65	0.65
v/c Ratio	0.42	0.12					0.24	0.41			0.22	0.05
Control Delay	36.7	0.3					3.1	3.9			7.3	2.5
Queue Delay	0.0	0.0					0.0	0.0			0.0	0.0
Total Delay	36.7	0.3					3.1	3.9			7.3	2.5
LOS	D	A					A	A			A	A
Approach Delay		17.3						3.7			6.5	
Approach LOS		B						A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 77.3			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 42.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 34: 50th & Range Line



2014 PM Peak Hour Calculation with 50th Street Extension

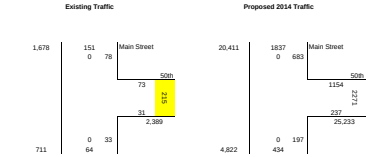
N/S Street: Main Street
E/W Street: 50th

New Trips — In: 2469 — Out: 2571

New Hospital Trips — In: 470 — Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL	78	1.04	81	11.05%	2469			273	70%	470			329	683	VEH/HR
SBT		1.04	0					0					0	0	VEH/HR
WBR	73	1.04	76	11.42%	2571			294	70%	1120			784	1154	VEH/HR
WBL	31	1.04	32	3.6%	2571			93	10%	1120			112	237	VEH/HR
NBT		1.04	0					0					0	0	VEH/HR
NBR	33	1.04	34	4.7%	2469			116	10%	470			47	197	VEH/HR



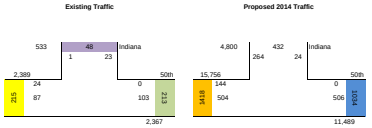
N/S Street: Indiana
E/W Street: 50th

New Trips — In: 2469 — Out: 2571

New Trips — In: 470 — Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL	23	1.04	24					0					0	24	VEH/HR
SBR	1	1.04	1	1.5%	2571			39	20%	1120			224	264	VEH/HR
EBL	24	1.04	25	1%	2469			25	20%	470			94	144	VEH/HR
EBT	87	1.04	91	14.65%	2469	0.25%	2571	368	4%	1120			45	504	VEH/HR
WBT	103	1.04	107	14.67%	2571	0.1%	2469	380	4%	470			19	506	VEH/HR
WBR		1.04	0					0					0	0	VEH/HR



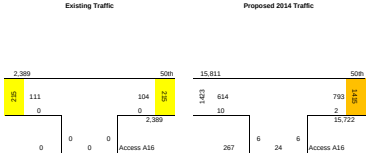
N/S Street: Access A16
E/W Street: 50th

New Trips — In: 2469 — Out: 2571

New Trips — In: 470 — Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
EBT	111	1.04	115	15.65%	2469			386	24%	470			113	614	VEH/HR
EBR		1.04	0	0.4%	2469			10					0	10	VEH/HR
WBT	104	1.04	108	16.2%	2571			416	24%	1120			269	793	VEH/HR
WBL		1.04	0	0.1%	2469			2					0	2	VEH/HR
NBL		1.04	0	0.25%	2571			6					0	6	VEH/HR
NBR		1.04	0	0.25%	2571			6					0	6	VEH/HR



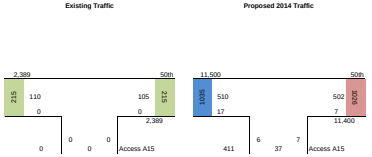
N/S Street: Access A15
E/W Street: 50th

New Trips — In: 2469 — Out: 2571

New Trips — In: 470 — Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
EBT	110	1.04	114	13.95%	2469	0.25%	2571	351	4%	1120			45	510	VEH/HR
EBR		1.04	0	0.7%	2469			17					0	17	VEH/HR
WBT	105	1.04	109	14.5%	2571	0.1%	2469	374	4%	470			19	502	VEH/HR
WBL		1.04	0	0.3%	2469			7					0	7	VEH/HR
NBL		1.04	0	0.22%	2571			6					0	6	VEH/HR
NBR		1.04	0	0.28%	2571			7					0	7	VEH/HR



N/S Street: Connecticut
E/W Street: 50th

New Trips In: 2469 Out: 2571
New Trips In: 470 Out: 1120

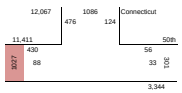
Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
SBL	116	1.04	121	0.10%	2571			3					0	124 VEH/HR
SBR	93	1.04	97	14.5%	2571	0.3%	2469	379					0	476 VEH/HR
EBL	70	1.04	73	13.95%	2469	0.48%	2571	357					0	430 VEH/HR
EBT	40	1.04	42	0.05%	2571			1	4%	1120			45	88 VEH/HR
WBT	12	1.04	12	0.1%	2469			2	4%	470			19	33 VEH/HR
WBR	53	1.04	55	0.05%	2469			1					0	56 VEH/HR

Existing Traffic



Proposed 2014 Traffic



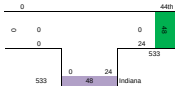
N/S Street: Indiana
E/W Street: 44th

New Trips In: 2469 Out: 2571
New Trips In: 470 Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
EBT		1.04	0					0					0	0 VEH/HR
EBR		1.04	0					0					0	0 VEH/HR
WBT		1.04	0					0					0	0 VEH/HR
WBL	24	1.04	25	1.50%	2571			39	16%	470			75	139 VEH/HR
NBL		1.04	0					0					0	0 VEH/HR
NBR	24	1.04	25	1.00%	2469			25	16%	1120			179	229 VEH/HR

Existing Traffic



Proposed 2014 Traffic



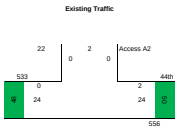
N/S Street: Access A2
E/W Street: 44th

New Trips In: 2469 Out: 2571
New Trips In: 470 Out: 1120

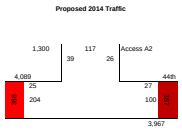
Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
SBL		1.04	0	1.0%	2571			26					0	26 VEH/HR
SBR		1.04	0	1.5%	2571			39					0	39 VEH/HR
EBL		1.04	0	1%	2469			25					0	25 VEH/HR
EBT	24	1.04	25					0	16%	1120			179	204 VEH/HR
WBT	24	1.04	25					0	16%	470			75	100 VEH/HR
WBR	2	1.04	2	1%	2469			25					0	27 VEH/HR

Existing Traffic



Proposed 2014 Traffic



N/S Street: Connecticut
E/W Street: 44th

New Trips In: 2469 Out: 2571
New Trips In: 470 Out: 1120

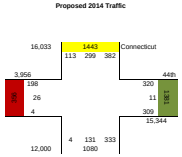
Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
SBL	79	1.04	82	2.1%	2571	10.0%	2469	300					0	382 VEH/HR
SBR	22	1.04	23	0.750%	2469			19	15%	470			71	113 VEH/HR
SBT	216	1.04	225	2.6%	2571	0.3%	2469	74					0	299 VEH/HR
EBL	11	1.04	11	0.75%	2571			19	15%	1120			168	198 VEH/HR
EBT	9	1.04	9	0.25%	2571			6	1%	1120			11	26 VEH/HR
EBR	4	1.04	4					0					0	4 VEH/HR
WBT	0	1.04	0	0.250%	2469			6	1%	470			5	11 VEH/HR
WBR	44	1.04	46	1.750%	2469	9.0%	2571	274					0	320 VEH/HR
WBL	4	1.04	4	11.9%	2571			305					0	309 VEH/HR
NBT	72	1.04	75	1.75%	2469	0.48%	2571	56					0	131 VEH/HR
NBL	4	1.04	4					0					0	4 VEH/HR
NBR	31	1.04	32	12.2%	2469			301					0	333 VEH/HR

Existing Traffic



Proposed 2014 Traffic



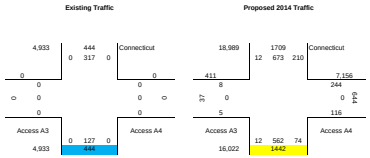
N/S Street: Connecticut
E/W Street: Access A3/Access A4

New Trips In: 2469
New Trips Out: 2571

New Trips In: 470
New Trips Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL		1.04	0	8.5%	2469			210					0	210	VEH/HR
SBR		1.04	0	0.500%	2469			12					0	12	VEH/HR
SBT	317	1.04	330	11.00%	2469			272	15%	470			71	673	VEH/HR
EBL		1.04	0	0.3%	2571			8					0	8	VEH/HR
EBT		1.04	0					0					0	0	VEH/HR
EBR		1.04	0	0.2%	2571			5					0	5	VEH/HR
WBT		1.04	0					0					0	0	VEH/HR
WBR		1.04	0	10%	2571			244					0	244	VEH/HR
WBL		1.04	0	4.5%	2571			116					0	116	VEH/HR
NBT	127	1.04	132	10.20%	2571			262	15%	1120			168	562	VEH/HR
NBL		1.04	0	0.500%	2469			12					0	12	VEH/HR
NBR		1.04	0	3.0%	2469			74					0	74	VEH/HR



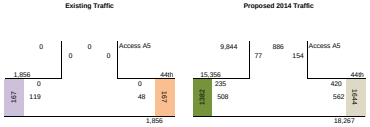
N/S Street: Access A5
E/W Street: 44th

New Trips In: 2469
New Trips Out: 2571

New Trips In: 470
New Trips Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL		1.04	0	6.0%	2571			154					0	154	VEH/HR
SBR		1.04	0	3.0%	2571			77					0	77	VEH/HR
EBL		1.04	0	9.50%	2469			235					0	235	VEH/HR
EBT	119	1.04	124	2.35%	2571	12.7%	2469	373	1%	1120			11	508	VEH/HR
WBT	48	1.04	50	2.00%	2469	17.8%	2571	507	1%	470			5	562	VEH/HR
WBR		1.04	0	17.0%	2469			420					0	420	VEH/HR



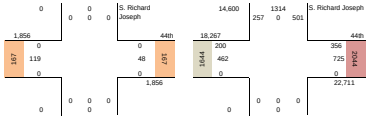
N/S Street: S. Richard Joseph
E/W Street: 44th

New Trips In: 2469
New Trips Out: 2571

New Trips In: 470
New Trips Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL		1.04	0	19.5%	2571			501					0	501	VEH/HR
SBR		1.04	0	10.0%	2571			257					0	257	VEH/HR
SBT		1.04	0					0					0	0	VEH/HR
EBL		1.04	0	8.1%	2469			200					0	200	VEH/HR
EBT	119	1.04	124	4.55%	2469	8.35%	2571	327	1%	1120			11	462	VEH/HR
EBR		1.04	0					0					0	0	VEH/HR
WBT	48	1.04	50	7.82%	2571	19.00%	2469	670	1%	470			5	725	VEH/HR
WBR		1.04	0	14.4%	2469			356					0	356	VEH/HR
WBL		1.04	0					0					0	0	VEH/HR
NBT		1.04	0					0					0	0	VEH/HR
NBL		1.04	0					0					0	0	VEH/HR
NBR		1.04	0					0					0	0	VEH/HR



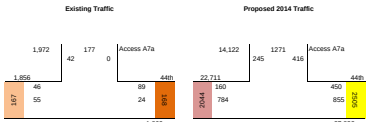
N/S Street: Access A7a
E/W Street: 44th

New Trips In: 2469 Out: 2571

New Trips In: 470 Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
SBL		1.04	0	16.18%	2571			416					0	416 VEH/HR
SBR	42	1.04	44	7.82%	2571			201					0	245 VEH/HR
EBL	46	1.04	48	4.55%	2469			112					0	160 VEH/HR
EBT	55	1.04	57	27.85%	2571			716	1%	1120			11	784 VEH/HR
WBT	24	1.04	25	33.40%	2469			825	1%	470			5	855 VEH/HR
WBR	89	1.04	93	14.5%	2469			357					0	450 VEH/HR



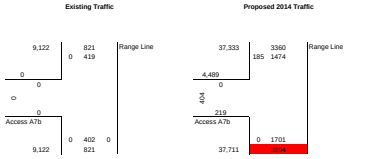
N/S Street: Range Line
E/W Street: Access A7b

New Trips In: 2469 Out: 2571

New Trips In: 470 Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
SBR		1.04	0	7.50%	2469			185					0	185 VEH/HR
SBT	419	1.04	436	41.45%	2469			1024	3%	470			14	1474 VEH/HR
EBL		1.04	0					0					0	0 VEH/HR
EBR		1.04	0	8.5%	2571			219					0	219 VEH/HR
NBT	402	1.04	418	48.58%	2571			1249	3%	1120			34	1701 VEH/HR
NBL		1.04	0					0					0	0 VEH/HR



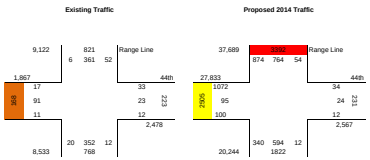
N/S Street: Range Line
E/W Street: 44th

New Trips In: 2469 Out: 2571

New Trips In: 470 Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
SBL	52	1.04	54					0					0	54 VEH/HR
SBR	6	1.04	6	34.95%	2469			863	1%	470			5	874 VEH/HR
SBT	361	1.04	376	8.5%	2571	6.5%	2469	379	2%	470			9	764 VEH/HR
EBL	17	1.04	18	40.58%	2571			1043	1%	1120			11	1072 VEH/HR
EBT	91	1.04	95					0					0	95 VEH/HR
EBR	11	1.04	11	3.5%	2571			89					0	100 VEH/HR
WBT	23	1.04	24					0					0	24 VEH/HR
WBR	33	1.04	34					0					0	34 VEH/HR
WBL	12	1.04	12					0					0	12 VEH/HR
NBT	352	1.04	366	8.0%	2571			206	2%	1120			22	594 VEH/HR
NBL	20	1.04	21	12.90%	2469			319					0	340 VEH/HR
NBR	12	1.04	12					0					0	12 VEH/HR



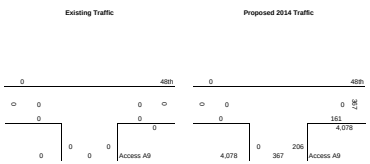
N/S Street: Access A9
E/W Street: 48th

New Trips In: 2469 Out: 2571

New Trips In: 470 Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014
EBT		1.04	0					0					0	0 VEH/HR
EBR		1.04	0					0					0	0 VEH/HR
WBT		1.04	0					0					0	0 VEH/HR
WBL		1.04	0	6.5%	2469			161					0	161 VEH/HR
NBL		1.04	0					0					0	0 VEH/HR
NBR		1.04	0	8%	2571			206					0	206 VEH/HR



N/S Street: Range Line
E/W Street: 50th

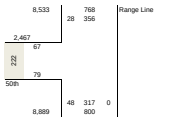
New Trips In: 2469
New Trips Out: 2571

New Trips In: 470
New Trips Out: 1120

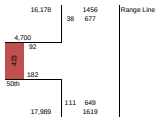
Growth Rate (GR): 2.00%
Years (n): 2

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBR	28	1.04	29		2469			0	2%	470			9	38	VEH/HR
SBT	356	1.04	370	12%	2571			307					0	677	VEH/HR
EBL	67	1.04	70					0	2%	1120			22	92	VEH/HR
EBR	79	1.04	82	3.05%	2571			78	2%	1120			22	182	VEH/HR
NBT	317	1.04	330	12.9%	2469			319					0	649	VEH/HR
NBL	48	1.04	50	2.1%	2469			52	2%	470			9	111	VEH/HR

Existing Traffic



Proposed 2014 Traffic



N/S Street: Access A10
E/W Street: 50th

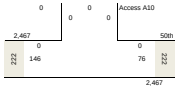
New Trips In: 2469
New Trips Out: 2571

New Trips In: 470
New Trips Out: 1120

Growth Rate (GR): 2.00%
Years (n): 2

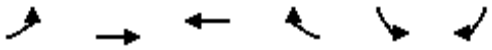
Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2014	
SBL		1.04	0	3.0%	2571			77					0	77	VEH/HR
SBR		1.04	0		2571			0					0	0	VEH/HR
EBL		1.04	0		2469			0					0	0	VEH/HR
EBT	146	1.04	152	0.05%	2571			1	4%	1120			45	198	VEH/HR
WBT	76	1.04	79	0.10%	2469			2	4%	470			19	100	VEH/HR
WBR		1.04	0	2.0%	2469			49					0	49	VEH/HR

Existing Traffic



Proposed 2014 Traffic





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.876	
Flt Protected	0.950				0.996	
Satd. Flow (prot)	1770	1863	1863	0	1625	0
Flt Permitted	0.950				0.996	
Satd. Flow (perm)	1770	1863	1863	0	1625	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1104	1656		2570	
Travel Time (s)		25.1	37.6		58.4	
Volume (vph)	144	504	506	0	24	264
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	548	550	0	26	287
Lane Group Flow (vph)	157	548	550	0	313	0
Sign Control		Free	Free		Stop	

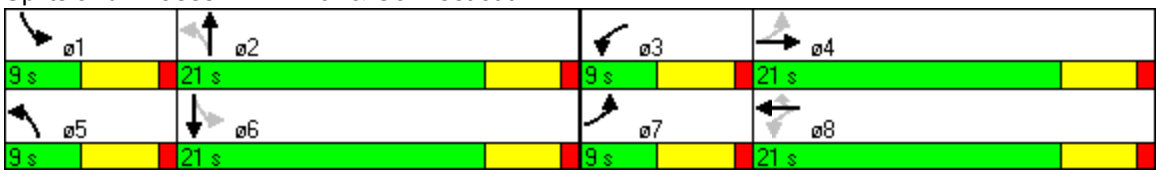
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.3%		ICU Level of Service B	
Analysis Period (min) 15			

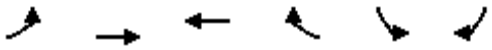
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	100		0	150		0	200		0
Storage Lanes	1		0	1		1	1		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95
Frt		0.981				0.850		0.892			0.959	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1827	0	1770	1863	1583	1770	1662	0	3433	3394	0
Flt Permitted	0.750			0.736			0.421			0.235		
Satd. Flow (perm)	1397	1827	0	1371	1863	1583	784	1662	0	849	3394	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				348		213			91	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1848			882			2545			950	
Travel Time (s)		42.0			20.0			57.8			21.6	
Volume (vph)	198	26	4	309	11	320	4	131	333	382	299	113
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)	215	28	4	336	12	348	4	142	362	415	325	123
Lane Group Flow (vph)	215	32	0	336	12	348	4	504	0	415	448	0
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	9.0	21.0		9.0	21.0	21.0	9.0	21.0		9.0	21.0	
Total Split (s)	9.0	21.0	0.0	9.0	21.0	21.0	9.0	21.0	0.0	9.0	21.0	0.0
Total Split (%)	15.0%	35.0%	0.0%	15.0%	35.0%	35.0%	15.0%	35.0%	0.0%	15.0%	35.0%	0.0%
Maximum Green (s)	4.0	16.0		4.0	16.0	16.0	4.0	16.0		4.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	22.0	17.0		22.0	17.0	17.0	22.0	17.0		22.0	17.0	
Actuated g/C Ratio	0.37	0.28		0.37	0.28	0.28	0.37	0.28		0.37	0.28	
v/c Ratio	0.40	0.06		0.63	0.02	0.50	0.01	0.81		0.79	0.44	
Control Delay	14.3	14.8		19.8	15.7	5.2	10.0	24.0		25.4	15.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	14.3	14.8		19.8	15.7	5.2	10.0	24.0		25.4	15.4	
LOS	B	B		B	B	A	A	C		C	B	
Approach Delay		14.4			12.4			23.9			20.2	
Approach LOS		B			B			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	

Actuated Cycle Length: 60
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 18.0 Intersection LOS: B
Intersection Capacity Utilization 72.1% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 7: 44th & Connecticut





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	100	0
Storage Lanes	1			1	1	1
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1583	1770	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1044	4426		2545	
Travel Time (s)		23.7	100.6		57.8	
Volume (vph)	430	88	33	56	124	476
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	467	96	36	61	135	517
Lane Group Flow (vph)	467	96	36	61	135	517
Sign Control		Stop	Stop		Stop	

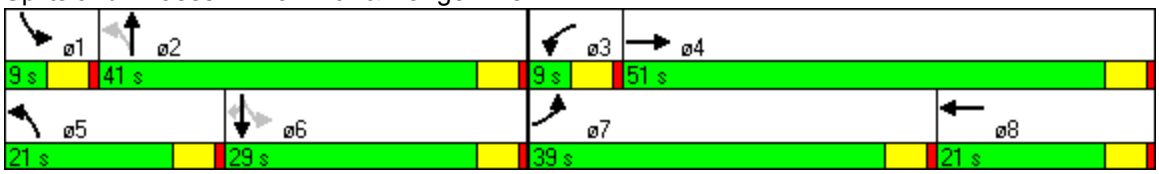
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.0%		ICU Level of Service A	
Analysis Period (min) 15			

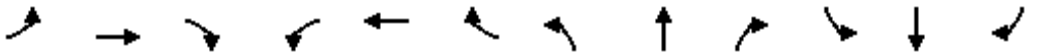
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	100		0	200		0	125		200
Storage Lanes	2		0	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.923			0.912			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1719	0	1770	1699	0	1770	3529	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.138			0.378		
Satd. Flow (perm)	3433	1719	0	1770	1699	0	257	3529	0	704	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		60			37			2				829
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1248			462			1481			1810	
Travel Time (s)		28.4			10.5			33.7			41.1	
Volume (vph)	1072	95	100	12	24	34	340	594	12	54	764	874
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)	1165	103	109	13	26	37	370	646	13	59	830	950
Lane Group Flow (vph)	1165	212	0	13	63	0	370	659	0	59	830	950
Turn Type	Prot			Prot			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		6
Minimum Split (s)	9.0	21.0		9.0	21.0		9.0	21.0		9.0	21.0	21.0
Total Split (s)	39.0	51.0	0.0	9.0	21.0	0.0	21.0	41.0	0.0	9.0	29.0	29.0
Total Split (%)	35.5%	46.4%	0.0%	8.2%	19.1%	0.0%	19.1%	37.3%	0.0%	8.2%	26.4%	26.4%
Maximum Green (s)	34.0	46.0		4.0	16.0		16.0	36.0		4.0	24.0	24.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	35.0	47.0		5.0	17.0		46.0	37.0		30.0	25.0	25.0
Actuated g/C Ratio	0.32	0.43		0.05	0.15		0.42	0.34		0.27	0.23	0.23
v/c Ratio	1.07	0.28		0.16	0.21		1.09	0.55		0.25	1.03	0.95
Control Delay	83.7	15.5		55.2	22.7		103.4	31.8		23.3	82.5	25.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	83.7	15.5		55.2	22.7		103.4	31.8		23.3	82.5	25.7
LOS	F	B		E	C		F	C		C	F	C
Approach Delay		73.2			28.2			57.6			51.2	
Approach LOS		E			C			E			D	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	

Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Pretimed
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 59.3 Intersection LOS: E
Intersection Capacity Utilization 87.2% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 25: 44th & Range Line





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	0		0
Storage Lanes	1		0	0		0	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	1583	0	0	0	0	1770	1863	0	0	1863	1583
Flt Permitted	0.950						0.197					
Satd. Flow (perm)	1770	1583	0	0	0	0	367	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		309										41
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		773			1116			1272			1058	
Travel Time (s)		17.6			25.4			28.9			24.0	
Volume (vph)	92	0	182	0	0	0	111	649	0	0	677	38
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)	100	0	198	0	0	0	121	705	0	0	736	41
Lane Group Flow (vph)	100	198	0	0	0	0	121	705	0	0	736	41
Turn Type	Perm						pm+pt					Perm
Protected Phases		4					5	2			6	
Permitted Phases	4						2					6
Minimum Split (s)	21.0	21.0					9.0	21.0			21.0	21.0
Total Split (s)	23.0	23.0	0.0	0.0	0.0	0.0	12.0	67.0	0.0	0.0	55.0	55.0
Total Split (%)	25.6%	25.6%	0.0%	0.0%	0.0%	0.0%	13.3%	74.4%	0.0%	0.0%	61.1%	61.1%
Maximum Green (s)	18.0	18.0					7.0	62.0			50.0	50.0
Yellow Time (s)	4.0	4.0					4.0	4.0			4.0	4.0
All-Red Time (s)	1.0	1.0					1.0	1.0			1.0	1.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Walk Time (s)	5.0	5.0						5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0						0			0	0
Act Effct Green (s)	19.0	19.0					63.0	63.0			51.0	51.0
Actuated g/C Ratio	0.21	0.21					0.70	0.70			0.57	0.57
v/c Ratio	0.27	0.34					0.32	0.54			0.70	0.04
Control Delay	32.0	1.7					6.6	8.4			18.4	3.0
Queue Delay	0.0	0.0					0.0	0.0			0.0	0.0
Total Delay	32.0	1.7					6.6	8.4			18.4	3.0
LOS	C	A					A	A			B	A
Approach Delay		11.9						8.1			17.6	
Approach LOS		B						A			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	

Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 12.6 Intersection LOS: B
Intersection Capacity Utilization 63.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 34: 50th & Range Line



JOPLIN AREA TRANSPORTATION
STUDY ORGANIZATION

SOUTH JOPLIN AREA TRANSPORTATION STUDY

APPENDIX C – PROJECTED 2025 TRAFFIC CONDITIONS

July 8, 2013

PREPARED BY:

CJW

2025 & 2030 TRIP GENERATION

LAND USE	ITE CODE	Size	Variable	24-Hour Trip Generation	24-HOUR WEEKDAY	AM PEAK HOUR RATE	AM % IN	AM % OUT	WEEKDAY AM PEAK ENTER	WEEKDAY AM PEAK EXIT	PM PEAK HOUR RATE	PM % IN	PM % OUT	WEEKDAY PM PEAK ENTER	WEEKDAY PM PEAK EXIT
Main Hospital*	610	261	Beds	11.81	3082	1.14	71%	29%	211	87	1.31	36%	64%	123	219
Medical Office Building*	720	250000	Sq. Ft	36.13	9,033	2.30	79%	21%	454	121	3.46	27%	73%	234	631
Rehabilitation Hospital*	610	30	Beds	11.81	354	1.14	71%	29%	24	10	1.31	36%	64%	14	25
Detached Medical Office Building'	720	100000	Sq. Ft	T=40.89(x) - 214.97	3,874	2.30	79%	21%	182	48	Ln(T)=0.88Ln(x) + 1.59	27%	73%	76	206
Behavioral Health Center Hospital*	610	41	Beds	11.81	484	1.14	71%	29%	33	14	1.31	36%	64%	19	35
Hospice Facility/nursing Home*	620	10000	Sq. Ft	7.58	76	0.55	71%	29%	4	2	0.74	52%	48%	4	4
Medical Office Building*	720	50000	Sq. Ft	36.13	1,807	2.30	79%	21%	91	24	3.46	27%	73%	47	126
Medical Office Building*	720	100000	Sq. Ft	36.13	3,613	2.30	79%	21%	182	48	3.46	27%	73%	93	253
* Trip generation, Land use and Intensity from Mercy Health Systems Replacement Hospital and Medical Campus Traffic Impact Study provided by the City.															
Total for Hospital					22,323				1,181	354				610	1,499
School Improvements at 50th Street School		1500	Students	1.62	2430	0.54	55%	45%	446	365					
Total for School					2,430				446	365				0	0
Zoning															
R-SF - Single Family Residential (R1)			Acres	48	0	4	25%	75%	0	0	5	64%	36%	0	0
R-HD - High Density Multi-Family Residential (R3)			Acres	240	0	18	16%	84%	0	0	22	67%	33%	0	0
O-2 - Medium Intensity Office (C1)			Acres	480	0	70	88%	12%	0	0	65	17%	83%	0	0
GR - General Retail District (C2)			Acres	720	0	16	61%	39%	0	0	67	49%	51%	0	0
GR - General Retail District (C3)			Acres	720	0	16	61%	39%	0	0	67	53%	47%	0	0
IC - Industrial Commercial (M2)			Acres	840	0	18	61%	39%	0	0	78	48%	52%	0	0
A1 - 44th, 50th, Connecticut, Indiana Access															
Single Family Residential (R1)	210	0.0	Acres	48	0	4	25%	75%	0	0	5	64%	36%	0	0
A2 - 44th Access, Connecticut Access															
R-HD - High Density Multi-Family Residential (R3)	220	10.0	Acres	240	2,402	18	16%	84%	29	151	22	67%	33%	148	73
A3 - 44th, Connecticut Access															
Single Family Residential (R1)	210	14.6	Acres	48	701	4	25%	75%	15	44	5	64%	36%	47	26
A4 - 44th, Connecticut Access															
GR - General Retail District (C2)	820	193,842	Sq. Ft.	42.94	8,324	1	61%	39%	118	76	3.73	49%	51%	354	369
A5 - 44th Access															
O-2 - Medium Intensity Office (C1)	710	279873	Sq. Ft.	11	3,081	1.55	88%	12%	382	52	1.49	17%	83%	71	346
A6 - 44th, Richard Joseph Access															
GR - General Retail District (C2)	820	35.14	Acres		15,590				237	152				703	732
A7 - 44th, Richard Joseph Access															
GR - General Retail District (C2)	820	61.91	Acres		28,950				422	271				1,242	1,292
A8 - 44th, Rangeline, 48th Access															
Single Family Residential (R1)	210	0.0	Acres	48	0	4	25%	75%	0	0	5	64%	36%	0	0
A9 - 48th Access															
R-HD - High Density Multi-Family Residential (R3)	220	12.4	Acres	240	2,976	18	16%	84%	36	187	22	67%	33%	183	90
A10 - 48th Access															
GR - General Retail District (C3)	820	8.2	Acres	720	5,904	16	61%	39%	80	51	67	53%	47%	291	258
A11 - 48th, Rangeline Access															
IC - Industrial Commercial (M2)	120	0.0	Acres	840	0	18	61%	39%	0	0	78	48%	52%	0	0
A12 - Rangeline Access															
IC - Industrial Commercial (M2)	120	0.0	Acres	840	0	18	61%	39%	0	0	78	48%	52%	0	0
A13 - Rangeline Access															
IC - Industrial Commercial (M2)	120	0.0	Acres	840	0	18	61%	39%	0	0	78	48%	52%	0	0
A14 - 50th Access															
Single Family Residential (R1)	210	0.0	Acres	48	0	4	25%	75%	0	0	5	64%	36%	0	0
A15 - 50th Access															
Single Family Residential (R1)	210	10.0	Acres	48	480	4	25%	75%	10	30	5	64%	36%	32	18
A16 - 50th Access															
Single Family Residential (R1)	210	5.1	Acres	48	245	4	25%	75%	5	15	5	64%	36%	16	9
A17 - 50th Access															
Single Family Residential (R1)	210	0.0	Acres	48	0	4	25%	75%	0	0	5	64%	36%	0	0
Total for Land Uses					68,653				1,333	1,030				3,087	3,213
Total Land Use (20% Internal Capture)					54,923				1,067	824				2,469	2,571

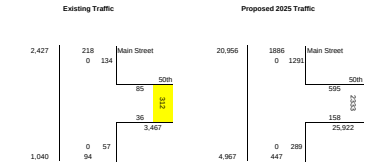
2025 AM Peak Hour Calculation

N/S Street: Main Street
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBL	134	1.27	170	10.85%	1067			116	70%	1181			827	40%	446			178	1291	VEH/HR
SBT		1.27	0					0					0					0	0	VEH/HR
WBR	85	1.27	107	11.58%	824			95	70%	354			247	40%	365			146	595	VEH/HR
WBL	36	1.27	46	5%	824			41	10%	354			35	10%	365			36	158	VEH/HR
NBT		1.27	0					0					0					0	0	VEH/HR
NBR	57	1.27	73	5%	1067			53	10%	1181			118	10%	446			45	289	VEH/HR

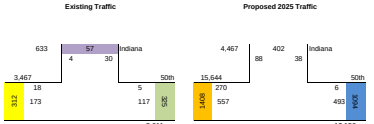


N/S Street: Indiana
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBL	30	1.27	38					0					0					0	38	VEH/HR
SBR	4	1.27	5	1.5%	824			12	20%	354			71					0	88	VEH/HR
EBL	18	1.27	23	1.00%	1067			11	20%	1181			236					0	270	VEH/HR
EBT	173	1.27	219	14.45%	1067	0.25%	824	156					0	50%	365			182	557	VEH/HR
WBT	117	1.27	148	14.7%	824	0.1%	1067	122					0	50%	446			223	493	VEH/HR
WBR	5	1.27	6					0					0					0	6	VEH/HR

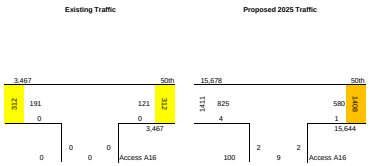


N/S Street: Access A16
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
EBT	191	1.27	242	15.45%	1067			165	20%	1181			236	50%	365			182	825	VEH/HR
EBR		1.27	0	0.4%	1067			4					0					0	4	VEH/HR
WBT	121	1.27	153	16.2%	824			133	20%	354			71	50%	446			223	580	VEH/HR
WBL		1.27	0	0.1%	1067			1					0					0	1	VEH/HR
NBL		1.27	0	0.25%	824			2					0					0	2	VEH/HR
NBR		1.27	0	0.25%	824			2					0					0	2	VEH/HR

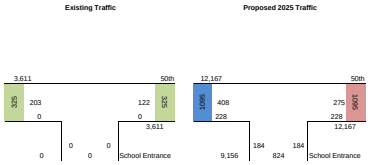


N/S Street: School Entrance
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
EBT	203	1.27	257	14.0%	1067	0.25%	824	151					0					0	408	VEH/HR
EBR		1.27	0	0.5%	1067			5					0	50%	446			223	228	VEH/HR
WBT	122	1.27	155	14.4%	824	0.1%	1067	120					0					0	275	VEH/HR
WBL		1.27	0	0.5%	1067			5					0	50%	446			223	228	VEH/HR
NBL		1.27	0	0.25%	824			2					0	50%	365			182	184	VEH/HR
NBR		1.27	0	0.25%	824			2					0	50%	365			182	184	VEH/HR

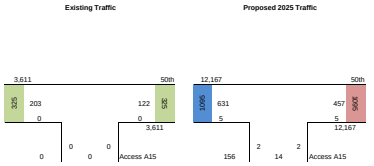


N/S Street: Access A15
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
EBT	203	1.27	257	14.0%	1067	0.25%	824	151					0	50%	446			223	631	VEH/HR
EBR		1.27	0	0.5%	1067			5					0					0	5	VEH/HR
WBT	122	1.27	155	14.4%	824	0.1%	1067	120					0	50%	365			182	457	VEH/HR
WBL		1.27	0	0.5%	1067			5					0					0	5	VEH/HR
NBL		1.27	0	0.25%	824			2					0					0	2	VEH/HR
NBR		1.27	0	0.25%	824			2					0					0	2	VEH/HR

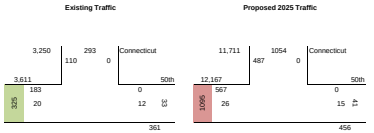


N/S Street: Connecticut
E/W Street: 50th

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 12

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D	A + B + C + D
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Projected Turn Movement for 2025
SBL		1.27	0					0					0					0	0 VEH/HR
SBR	110	1.27	139	14.4%	824	0.6%	1067	125					0	50%	446			223	487 VEH/HR
EBL	183	1.27	232	13.95%	1067	0.500%	824	153					0	50%	365			182	567 VEH/HR
EBT	20	1.27	26					0					0					0	26 VEH/HR
WBT	12	1.27	15					0					0					0	15 VEH/HR
WBR		1.27	0					0					0					0	0 VEH/HR

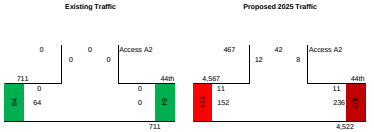


N/S Street: Access A2
E/W Street: 44th

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 12

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D	A + B + C + D
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Projected Turn Movement for 2025
SBL		1.27	0	1.0%	824			8					0					0	8 VEH/HR
SBR		1.27	0	1.5%	824			12					0					0	12 VEH/HR
EBL		1.27	0	1.00%	1067			11					0					0	11 VEH/HR
EBT	64	1.27	81					0	20%	354			71					0	152 VEH/HR
WBT		1.27	0					0	20%	1181			236					0	236 VEH/HR
WBR		1.27	0	1.00%	1067			11					0					0	11 VEH/HR

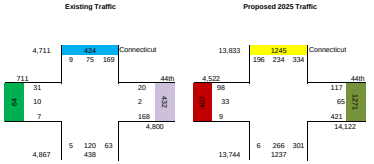


N/S Street: Connecticut
E/W Street: 44th

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 12

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D	A + B + C + D
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Projected Turn Movement for 2025
SBL	169	1.27	214	2.1%	824	9.7%	1067	120					0					0	334 VEH/HR
SBR	9	1.27	11	0.750%	1067			8	15%	1181			177					0	196 VEH/HR
SBT	75	1.27	95	2.6%	824	0.6%	1067	28					0	25%	446			111	234 VEH/HR
EBL	31	1.27	39	0.75%	824			6	15%	354			53					0	98 VEH/HR
EBT	10	1.27	13	0.25%	824			2	5%	354			18					0	33 VEH/HR
EBR	7	1.27	9					0					0					0	9 VEH/HR
WBT	2	1.27	3	0.250%	1067			3	5%	1181			59					0	65 VEH/HR
WBR	20	1.27	25	1.750%	1067	9.0%	824	92					0					0	117 VEH/HR
WBL	168	1.27	213	11.8%	824			97					0	25%	446			111	421 VEH/HR
NBT	120	1.27	152	1.75%	1067	0.5%	824	23					0	25%	365			91	266 VEH/HR
NBL	5	1.27	6					0					0					0	6 VEH/HR
NBR	63	1.27	80	12.2%	1067			130					0	25%	365			91	301 VEH/HR

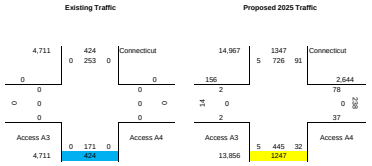


N/S Street: Connecticut
E/W Street: Access A3/Access A4

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 12

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B (1)+(2)+(3)+(4)	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C (1)+(2)+(3)+(4)	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D (1)+(2)+(3)+(4)	A + B + C + D	
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2025	
SBL		1.27	0	8.5%	1067			91					0					0	91	VEH/HR
SBR		1.27	0	0.500%	1067			5					0					0	5	VEH/HR
SBT	253	1.27	321	11.00%	1067			117	15%	1181			177	25%	446			111	726	VEH/HR
EBL		1.27	0	0.3%	824			2					0					0	2	VEH/HR
EBT		1.27	0					0					0					0	0	VEH/HR
EBR		1.27	0	0.2%	824			2					0					0	2	VEH/HR
WBT		1.27	0					0					0					0	0	VEH/HR
WBR		1.27	0	10%	824			78					0					0	78	VEH/HR
WBL		1.27	0	5%	824			37					0					0	37	VEH/HR
NBT	171	1.27	217	10.20%	824			84	15%	354			53	25%	365			91	445	VEH/HR
NBL		1.27	0	0.500%	1067			5					0					0	5	VEH/HR
NBR		1.27	0	3.0%	1067			32					0					0	32	VEH/HR



N/S Street: Access A5
E/W Street: 44th

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 12

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B (1)+(2)+(3)+(4)	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C (1)+(2)+(3)+(4)	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D (1)+(2)+(3)+(4)	A + B + C + D	
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2025	
SBL		1.27	0	6.0%	824			49					0					0	49	VEH/HR
SBR		1.27	0	3.0%	824			25					0					0	25	VEH/HR
EBL		1.27	0	9.50%	1067			101					0					0	101	VEH/HR
EBT	242	1.27	307	2.35%	824	12.4%	1067	151	5%	354			18	25%	365			91	567	VEH/HR
WBT	190	1.27	241	2.00%	1067	17.8%	824	168	5%	1181			59	25%	446			111	579	VEH/HR
WBR		1.27	0	17.0%	1067			181					0					0	181	VEH/HR

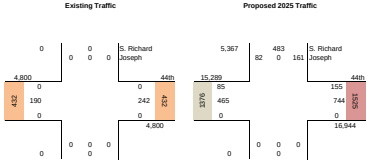


N/S Street: S. Richard Joseph
E/W Street: 44th

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 12

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B (1)+(2)+(3)+(4)	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C (1)+(2)+(3)+(4)	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D (1)+(2)+(3)+(4)	A + B + C + D	
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2025	
SBL		1.27	0	19.5%	824			161					0					0	161	VEH/HR
SBR		1.27	0	10.0%	824			82					0					0	82	VEH/HR
SBT		1.27	0					0					0					0	0	VEH/HR
EBL		1.27	0	8.0%	1067			85					0					0	85	VEH/HR
EBT	190	1.27	241	4.35%	1067	8.35%	824	115	5%	354			18	25%	365			91	465	VEH/HR
EBR		1.27	0					0					0					0	0	VEH/HR
WBT	242	1.27	307	7.75%	824	19.0%	1067	267	5%	1181			59	25%	446			111	744	VEH/HR
WBR		1.27	0	14.5%	1067			155					0					0	155	VEH/HR
WBL		1.27	0					0					0					0	0	VEH/HR
NBT		1.27	0					0					0					0	0	VEH/HR
NBL		1.27	0					0					0					0	0	VEH/HR
NBR		1.27	0					0					0					0	0	VEH/HR

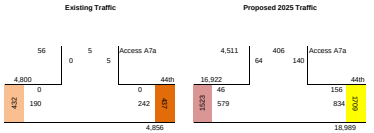


N/S Street: Access A7a
E/W Street: 44th

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 12

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D	A + B + C + D
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2025
SBL	5	1.27	6	16%	824			134					0					0	140 VEH/HR
SBR		1.27	0	7.75%	824			64					0					0	64 VEH/HR
EBL		1.27	0	4.35%	1067			46					0					0	46 VEH/HR
EBT	190	1.27	241	27.85%	824			229	5%	354			18	25%	365			91	579 VEH/HR
WBT	242	1.27	307	33.50%	1067			357	5%	1181			59	25%	446			111	834 VEH/HR
WBR		1.27	0	14.7%	1067			156					0					0	156 VEH/HR

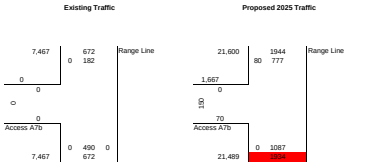


N/S Street: Range Line
E/W Street: Access A7b

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 12

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D	A + B + C + D
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2025
SBR		1.27	0	7.50%	1067			80					0					0	80 VEH/HR
SBT	182	1.27	231	41.7%	1067			444	3%	1181			35	15%	446			67	777 VEH/HR
EBL		1.27	0					0					0					0	0 VEH/HR
EBR		1.27	0	8.5%	824			70					0					0	70 VEH/HR
NBT	490	1.27	621	48.60%	824			400	3%	354			11	15%	365			55	1087 VEH/HR
NBL		1.27	0		1067			0					0					0	0 VEH/HR

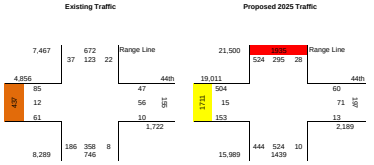


N/S Street: Range Line
E/W Street: 44th

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 12

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D	A + B + C + D
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2025
SBL	22	1.27	28					0					0					0	28 VEH/HR
SBR	37	1.27	47	35.15%	1067			375	3%	1181			35	15%	446			67	524 VEH/HR
SBT	123	1.27	156	8.5%	824	6.5%	1067	139					0					0	295 VEH/HR
EBL	85	1.27	108	40.10%	824			330	3%	354			11	15%	365			55	504 VEH/HR
EBT	12	1.27	15					0					0					0	15 VEH/HR
EBR	61	1.27	77	4%	824			33	2%	354			7	10%	365			36	153 VEH/HR
WBT	56	1.27	71					0					0					0	71 VEH/HR
WBR	47	1.27	60					0					0					0	60 VEH/HR
WBL	10	1.27	13					0					0					0	13 VEH/HR
NBT	358	1.27	454	8.5%	824			70					0					0	524 VEH/HR
NBL	186	1.27	236	13%	1067			139	2%	1181			24	10%	446			45	444 VEH/HR
NBR	8	1.27	10					0					0					0	10 VEH/HR

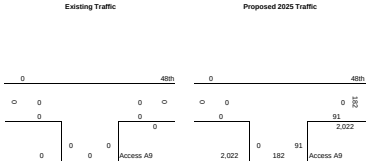


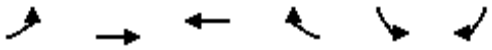
N/S Street: Access A9
E/W Street: 48th

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 12

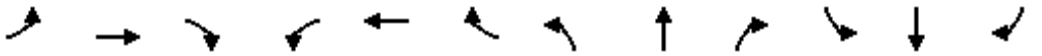
	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D	A + B + C + D
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2025
EBT		1.27	0					0					0					0	0 VEH/HR
EBR		1.27	0					0					0					0	0 VEH/HR
WBT		1.27	0					0					0					0	0 VEH/HR
WBL		1.27	0	8.5%	1067			91					0					0	91 VEH/HR
NBL		1.27	0					0					0					0	0 VEH/HR
NBR		1.27	0	11%	824			91					0					0	91 VEH/HR





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.954				
Satd. Flow (prot)	0	1777	1863	0	1611	0
Flt Permitted		0.954				
Satd. Flow (perm)	0	1777	1863	0	1611	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1044	606		2545	
Travel Time (s)		23.7	13.8		57.8	
Volume (vph)	567	26	15	0	0	487
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	616	28	16	0	0	529
Lane Group Flow (vph)	0	644	16	0	529	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 76.3%		ICU Level of Service D	
Analysis Period (min) 15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.967				0.850		0.920			0.932	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1801	0	1770	1863	1583	1770	1714	0	3433	1736	0
Flt Permitted	0.711			0.582			0.950			0.950		
Satd. Flow (perm)	1324	1801	0	1084	1863	1583	1770	1714	0	3433	1736	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				127		73			60	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1848			592			2545			950	
Travel Time (s)		42.0			13.5			57.8			21.6	
Volume (vph)	98	33	9	421	65	117	6	266	301	334	234	196
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)	107	36	10	458	71	127	7	289	327	363	254	213
Lane Group Flow (vph)	107	46	0	458	71	127	7	616	0	363	467	0
Turn Type	pm+pt			pm+pt		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8						
Detector Phases	7	4		3	8	8	5	2		1	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0		8.0	20.0	
Total Split (s)	10.0	20.0	0.0	18.0	28.0	28.0	8.0	38.0	0.0	14.0	44.0	0.0
Total Split (%)	11.1%	22.2%	0.0%	20.0%	31.1%	31.1%	8.9%	42.2%	0.0%	15.6%	48.9%	0.0%
Maximum Green (s)	6.0	16.0		14.0	24.0	24.0	4.0	34.0		10.0	40.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	10.4	7.1		21.5	13.9	13.9	4.1	28.0		10.3	41.1	
Actuated g/C Ratio	0.14	0.09		0.30	0.19	0.19	0.05	0.39		0.14	0.57	
v/c Ratio	0.48	0.26		0.98	0.20	0.31	0.08	0.87		0.74	0.46	
Control Delay	30.2	32.1		66.1	29.0	8.1	41.3	33.1		43.6	11.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	30.2	32.1		66.1	29.0	8.1	41.3	33.1		43.6	11.0	
LOS	C	C		E	C	A	D	C		D	B	
Approach Delay		30.8			50.9			33.2			25.3	
Approach LOS		C			D			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	40	17		~218	31	0	3	237		94	101	
Queue Length 95th (ft)	77	48		#424	66	43	17	#447		#174	230	
Internal Link Dist (ft)		1768			512			2465			870	
Turn Bay Length (ft)												
Base Capacity (vph)	225	350		467	554	560	92	794		492	1040	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.48	0.13		0.98	0.13	0.23	0.08	0.78		0.74	0.45	

Intersection Summary

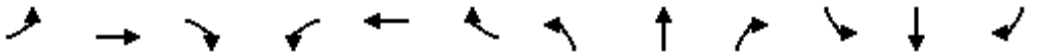
Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 72.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 35.2 Intersection LOS: D
Intersection Capacity Utilization 81.9% ICU Level of Service D
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: 44th & Connecticut



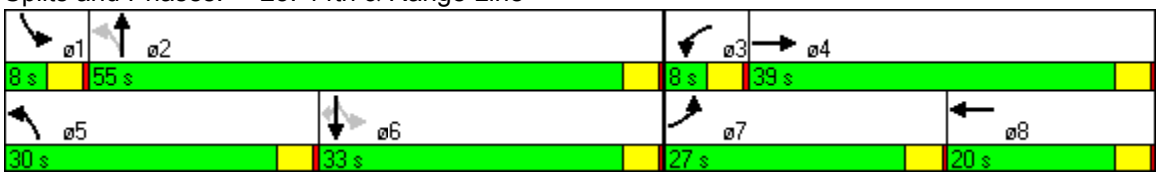


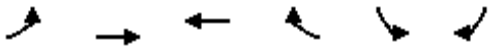
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.863			0.931			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1608	0	1770	1734	0	1770	3529	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.416			0.433		
Satd. Flow (perm)	3433	1608	0	1770	1734	0	775	3529	0	807	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		166			32			2				570
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1248			462			1481			876	
Travel Time (s)		28.4			10.5			33.7			19.9	
Volume (vph)	504	15	153	13	71	60	444	524	10	28	295	524
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)	548	16	166	14	77	65	483	570	11	30	321	570
Lane Group Flow (vph)	548	182	0	14	142	0	483	581	0	30	321	570
Turn Type	Prot			Prot			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		6
Minimum Split (s)	8.0	20.0		8.0	20.0		8.0	20.0		8.0	20.0	20.0
Total Split (s)	27.0	39.0	0.0	8.0	20.0	0.0	30.0	55.0	0.0	8.0	33.0	33.0
Total Split (%)	24.5%	35.5%	0.0%	7.3%	18.2%	0.0%	27.3%	50.0%	0.0%	7.3%	30.0%	30.0%
Maximum Green (s)	23.0	35.0		4.0	16.0		26.0	51.0		4.0	29.0	29.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	23.0	35.0		4.0	16.0		59.0	51.0		33.0	29.0	29.0
Actuated g/C Ratio	0.21	0.32		0.04	0.15		0.54	0.46		0.30	0.26	0.26
v/c Ratio	0.76	0.29		0.22	0.51		0.74	0.35		0.11	0.34	0.68
Control Delay	48.9	6.8		59.6	40.4		24.3	19.6		16.2	34.1	7.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	48.9	6.8		59.6	40.4		24.3	19.6		16.2	34.1	7.5
LOS	D	A		E	D		C	B		B	C	A
Approach Delay		38.4			42.1			21.8			17.0	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	189	8		10	72		208	134		10	96	0
Queue Length 95th (ft)	251	58		31	137		299	176		24	138	96
Internal Link Dist (ft)		1168			382			1401			796	
Turn Bay Length (ft)												
Base Capacity (vph)	718	625		64	280		651	1637		277	933	837
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.76	0.29		0.22	0.51		0.74	0.35		0.11	0.34	0.68

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 48 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Pretimed			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 25.6		Intersection LOS: C	
Intersection Capacity Utilization 74.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 25: 44th & Range Line





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.998		0.905	
Flt Protected		0.984			0.985	
Satd. Flow (prot)	0	1833	1859	0	1660	0
Flt Permitted		0.984			0.985	
Satd. Flow (perm)	0	1833	1859	0	1660	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1104	1656		2570	
Travel Time (s)		25.1	37.6		58.4	
Volume (vph)	270	557	493	6	38	88
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	293	605	536	7	41	96
Lane Group Flow (vph)	0	898	543	0	137	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 88.1%		ICU Level of Service E	
Analysis Period (min) 15			

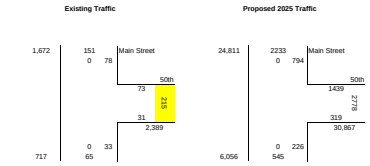
2025 PM Peak Hour Calculation

N/S Street: Main Street
E/W Street: 50th

New Trips: In 2469, Out 2571
New Hospital Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL	78	1.27	99	10.85%	2469			268	70%	610			427	794	VEH/HR
SBT		1.27	0					0					0	0	VEH/HR
WBR	73	1.27	92	11.58%	2571			298	70%	1499			1049	1439	VEH/HR
WBL	31	1.27	40	5%	2571			129	10%	1499			150	319	VEH/HR
NBT		1.27	0					0					0	0	VEH/HR
NBR	33	1.27	42	5%	2469			123	10%	610			61	226	VEH/HR

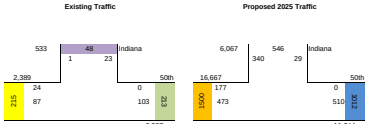


N/S Street: Indiana
E/W Street: 50th

New Trips: In 2469, Out 2571
New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL	23	1.27	29					0					0	29	VEH/HR
SBR	1	1.27	1	1.5%	2571			39	20%	1499			300	340	VEH/HR
EBL	24	1.27	30	1.00%	2469			25	20%	610			122	177	VEH/HR
EBT	87	1.27	110	14.45%	2469	0.25%	2571	363					0	473	VEH/HR
WBT	103	1.27	131	14.7%	2571	0.1%	2469	379					0	510	VEH/HR
WBR	0	1.27	0					0					0	0	VEH/HR

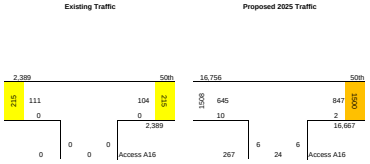


N/S Street: Access A16
E/W Street: 50th

New Trips: In 2469, Out 2571
New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
EBT	111	1.27	141	15.45%	2469			382	20%	610			122	645	VEH/HR
EBR		1.27	0	0.4%	2469			10					0	10	VEH/HR
WBT	104	1.27	132	16.2%	2571			415	20%	1499			300	847	VEH/HR
WBL		1.27	0	0.1%	2469			2					0	2	VEH/HR
NBL		1.27	0	0.25%	2571			6					0	6	VEH/HR
NBR		1.27	0	0.25%	2571			6					0	6	VEH/HR

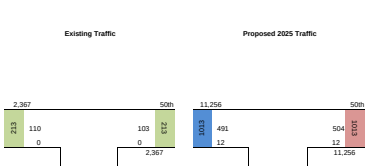


N/S Street: Access A15
E/W Street: 50th

New Trips: In 2469, Out 2571
New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
EBT	110	1.27	140	14.0%	2469	0.25%	2571	351					0	491	VEH/HR
EBR		1.27	0	0.5%	2469			12					0	12	VEH/HR
WBT	103	1.27	131	14.4%	2571	0.1%	2469	373					0	504	VEH/HR
WBL		1.27	0	0.5%	2469			12					0	12	VEH/HR
NBL		1.27	0	0.25%	2571			6					0	6	VEH/HR
NBR		1.27	0	0.25%	2571			6					0	6	VEH/HR



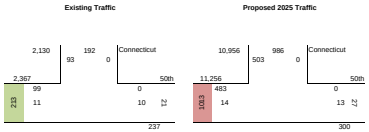
N/S Street: Connecticut
E/W Street: 50th

	New Trips	
	In	Out
	2469	2571

	New Trips	
	In	Out
	610	1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL		1.27	0					0					0	0	VEH/HR
SBR	93	1.27	118	14.4%	2571	0.6%	2469	385					0	503	VEH/HR
EBL	99	1.27	126	13.95%	2469	0.500%	2571	357					0	483	VEH/HR
EBT	11	1.27	14					0					0	14	VEH/HR
WBT	10	1.27	13					0					0	13	VEH/HR
WBR		1.27	0					0					0	0	VEH/HR



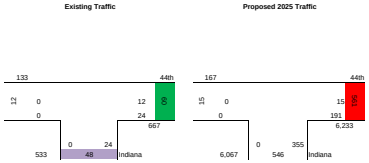
N/S Street: Indiana
E/W Street: 44th

	New Trips	
	In	Out
	2469	2571

	New Trips	
	In	Out
	610	1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
EBT		1.27	0					0					0	0	VEH/HR
EBR		1.27	0					0					0	0	VEH/HR
WBT	12	1.27	15					0					0	15	VEH/HR
WBL	24	1.27	30	1.50%	2571			39	20%	610			122	191	VEH/HR
NBL		1.27	0					0					0	0	VEH/HR
NBR	24	1.27	30	1.00%	2469			25	20%	1499			300	355	VEH/HR



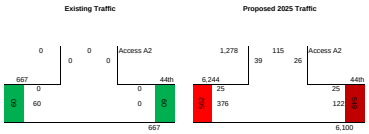
N/S Street: Access A2
E/W Street: 44th

	New Trips	
	In	Out
	2469	2571

	New Trips	
	In	Out
	610	1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL		1.27	0	1.0%	2571			26					0	26	VEH/HR
SBR		1.27	0	1.5%	2571			39					0	39	VEH/HR
EBL		1.27	0	1.00%	2469			25					0	25	VEH/HR
EBT	60	1.27	76					0	20%	1499			300	376	VEH/HR
WBT		1.27	0					0	20%	610			122	122	VEH/HR
WBR		1.27	0	1.00%	2469			25					0	25	VEH/HR



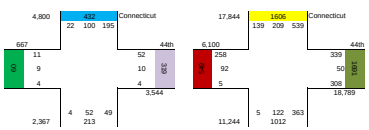
N/S Street: Connecticut
E/W Street: 44th

	New Trips	
	In	Out
	2469	2571

	New Trips	
	In	Out
	610	1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL	195	1.27	247	2.1%	2571	9.7%	2469	292					0	539	VEH/HR
SBR	22	1.27	28	0.75%	2469			19	15%	610			92	139	VEH/HR
SBT	100	1.27	127	2.6%	2571	0.6%	2469	82					0	209	VEH/HR
EBL	11	1.27	14	0.75%	2571			19	15%	1499			225	258	VEH/HR
EBT	9	1.27	11	0.25%	2571			6	5%	1499			75	92	VEH/HR
EBR	4	1.27	5					0					0	5	VEH/HR
WBT	10	1.27	13	0.250%	2469			6	5%	610			31	50	VEH/HR
WBR	52	1.27	66	1.75%	2469	9.0%	2571	273					0	339	VEH/HR
WBL	4	1.27	5	11.9%	2571			303					0	308	VEH/HR
NBT	52	1.27	66	1.75%	2469	0.5%	2571	56					0	122	VEH/HR
NBL	4	1.27	5					0					0	5	VEH/HR
NBR	49	1.27	62	12.2%	2469			301					0	363	VEH/HR



N/S Street: Connecticut
E/W Street: Access A3/Access A4

New Trips	
In	2469
Out	2571

New Trips	
In	610
Out	1499

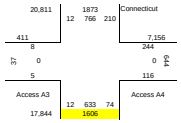
Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL		1.27	0	8.5%	2469			210					0	210	VEH/HR
SBR		1.27	0	0.500%	2469			12					0	12	VEH/HR
SBT	317	1.27	402	11.00%	2469			272	15%	610			92	766	VEH/HR
EBL		1.27	0	0.3%	2571			8					0	8	VEH/HR
EBT		1.27	0					0					0	0	VEH/HR
EBR		1.27	0	0.2%	2571			5					0	5	VEH/HR
WBT		1.27	0					0					0	0	VEH/HR
WBR		1.27	0	10%	2571			244					0	244	VEH/HR
WBL		1.27	0	5%	2571			116					0	116	VEH/HR
NBT	115	1.27	146	10.20%	2571			262	15%	1499			225	633	VEH/HR
NBL		1.27	0	0.500%	2469			12					0	12	VEH/HR
NBR		1.27	0	3.0%	2469			74					0	74	VEH/HR

Existing Traffic



Proposed 2025 Traffic



N/S Street: Access A5
E/W Street: 44th

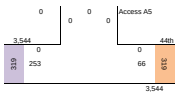
New Trips	
In	2469
Out	2571

New Trips	
In	610
Out	1499

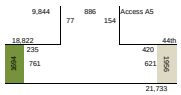
Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL		1.27	0	6.0%	2571			154					0	154	VEH/HR
SBR		1.27	0	3.0%	2571			77					0	77	VEH/HR
EBL		1.27	0	9.50%	2469			235					0	235	VEH/HR
EBT	253	1.27	321	2.35%	2571	12.4%	2469	365	5%	1499			75	761	VEH/HR
WBT	66	1.27	84	2.00%	2469	17.8%	2571	506	5%	610			31	621	VEH/HR
WBR		1.27	0	17.0%	2469			420					0	420	VEH/HR

Existing Traffic



Proposed 2025 Traffic



N/S Street: S. Richard Joseph
E/W Street: 44th

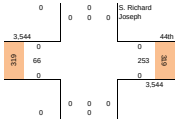
New Trips	
In	2469
Out	2571

New Trips	
In	610
Out	1499

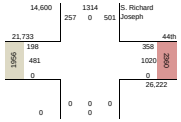
Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL		1.27	0	19.5%	2571			501					0	501	VEH/HR
SBR		1.27	0	10%	2571			257					0	257	VEH/HR
SBT		1.27	0					0					0	0	VEH/HR
EBL		1.27	0	8.0%	2469			198					0	198	VEH/HR
EBT	66	1.27	84	4.35%	2469	8.35%	2571	322	5%	1499			75	481	VEH/HR
EBR		1.27	0					0					0	0	VEH/HR
WBT	253	1.27	321	7.75%	2571	19.0%	2469	668	5%	610			31	1020	VEH/HR
WBR		1.27	0	14.5%	2469			358					0	358	VEH/HR
WBL		1.27	0					0					0	0	VEH/HR
NBT		1.27	0					0					0	0	VEH/HR
NBL		1.27	0					0					0	0	VEH/HR
NBR		1.27	0					0					0	0	VEH/HR

Existing Traffic



Proposed 2025 Traffic



N/S Street Access A7a
E/W Street 44th

New Trips
In 2469
Out 2571

New Trips
In 610
Out 1499

Growth Rate (GR) 2.00%
Years (n) 12

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025
SBL	125	1.27	159	16%	2571			418					0	577 VEH/HR
SBR	49	1.27	62	7.75%	2571			199					0	261 VEH/HR
EBL		1.27	0	4.35%	2469			107					0	107 VEH/HR
EBT	150	1.27	190	27.85%	2571			716	5%	1499			75	981 VEH/HR
WBT	120	1.27	152	33.50%	2469			827	5%	610			31	1010 VEH/HR
WBR		1.27	0	14.7%	2469			362					0	362 VEH/HR



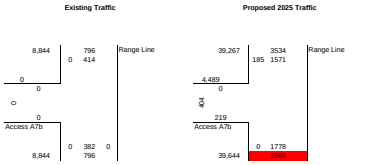
N/S Street Range Line
E/W Street Access A7b

New Trips
In 2469
Out 2571

New Trips
In 610
Out 1499

Growth Rate (GR) 2.00%
Years (n) 12

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025
SBR		1.27	0	7.50%	2469			185					0	185 VEH/HR
SBT	414	1.27	525	41.7%	2469			1028	3%	610			18	1571 VEH/HR
EBL		1.27	0					0					0	0 VEH/HR
EBR		1.27	0	8.5%	2571			219					0	219 VEH/HR
NBT	382	1.27	484	48.60%	2571			1249	3%	1499			45	1778 VEH/HR
NBL		1.27	0					0					0	0 VEH/HR



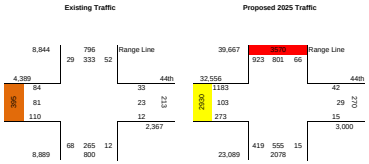
N/S Street Range Line
E/W Street 44th

New Trips
In 2469
Out 2571

New Trips
In 610
Out 1499

Growth Rate (GR) 2.00%
Years (n) 12

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025
SBL	52	1.27	66					0					0	66 VEH/HR
SBR	29	1.27	37	35.15%	2469			868	3%	610			18	923 VEH/HR
SBT	333	1.27	422	8.5%	2571	6.5%	2469	379					0	801 VEH/HR
EBL	84	1.27	107	40.1%	2571			1031	3%	1499			45	1183 VEH/HR
EBT	81	1.27	103					0					0	103 VEH/HR
EBR	110	1.27	140	4%	2571			103	2%	1499			30	273 VEH/HR
WBT	23	1.27	29					0					0	29 VEH/HR
WBR	33	1.27	42					0					0	42 VEH/HR
WBL	12	1.27	15					0					0	15 VEH/HR
NBT	265	1.27	336	8.5%	2571			219					0	555 VEH/HR
NBL	68	1.27	86	13%	2469			321					12	419 VEH/HR
NBR	12	1.27	15					0					0	15 VEH/HR



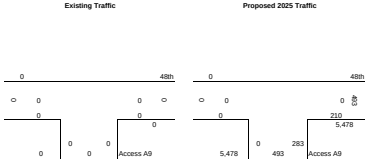
N/S Street Access A9
E/W Street 48th

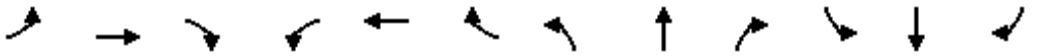
New Trips
In 2469
Out 2571

New Trips
In 610
Out 1499

Growth Rate (GR) 2.00%
Years (n) 12

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025
EBT		1.27	0					0					0	0 VEH/HR
EBR		1.27	0					0					0	0 VEH/HR
WBT		1.27	0					0					0	0 VEH/HR
WBL		1.27	0	8.5%	2469			210					0	210 VEH/HR
NBL		1.27	0					0					0	0 VEH/HR
NBR		1.27	0	11%	2571			283					0	283 VEH/HR





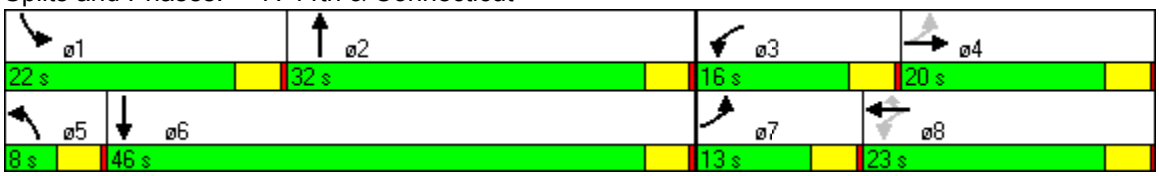
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.993				0.850		0.888			0.940	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1850	0	1770	1863	1583	1770	1654	0	3433	1751	0
Flt Permitted	0.722			0.559			0.950			0.950		
Satd. Flow (perm)	1345	1850	0	1041	1863	1583	1770	1654	0	3433	1751	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				368		172			50	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1848			592			2545			950	
Travel Time (s)		42.0			13.5			57.8			21.6	
Volume (vph)	258	92	5	308	50	339	5	122	363	539	209	139
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)	280	100	5	335	54	368	5	133	395	586	227	151
Lane Group Flow (vph)	280	105	0	335	54	368	5	528	0	586	378	0
Turn Type	pm+pt			pm+pt		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8						
Detector Phases	7	4		3	8	8	5	2		1	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0		8.0	20.0	
Total Split (s)	13.0	20.0	0.0	16.0	23.0	23.0	8.0	32.0	0.0	22.0	46.0	0.0
Total Split (%)	14.4%	22.2%	0.0%	17.8%	25.6%	25.6%	8.9%	35.6%	0.0%	24.4%	51.1%	0.0%
Maximum Green (s)	9.0	16.0		12.0	19.0	19.0	4.0	28.0		18.0	42.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	19.9	10.2		26.6	12.5	12.5	5.6	31.0		19.7	52.7	
Actuated g/C Ratio	0.22	0.11		0.30	0.14	0.14	0.06	0.34		0.22	0.59	
v/c Ratio	0.80	0.50		0.78	0.21	0.69	0.05	0.77		0.78	0.36	
Control Delay	47.1	44.2		41.4	34.4	11.0	40.6	27.8		41.3	10.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	47.1	44.2		41.4	34.4	11.0	40.6	27.8		41.3	10.7	
LOS	D	D		D	C	B	D	C		D	B	
Approach Delay		46.3			26.1			27.9			29.3	
Approach LOS		D			C			C			C	

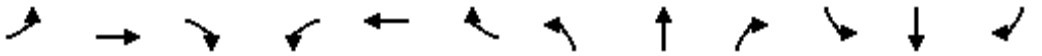
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	133	56		165	27	0	3	186		157	81	
Queue Length 95th (ft)	#212	102		#269	58	75	14	#374		#223	193	
Internal Link Dist (ft)		1768			512			2465			870	
Turn Bay Length (ft)												
Base Capacity (vph)	348	331		430	393	625	110	682		768	1046	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.80	0.32		0.78	0.14	0.59	0.05	0.77		0.76	0.36	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 30.6 Intersection LOS: C
Intersection Capacity Utilization 77.9% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: 44th & Connecticut





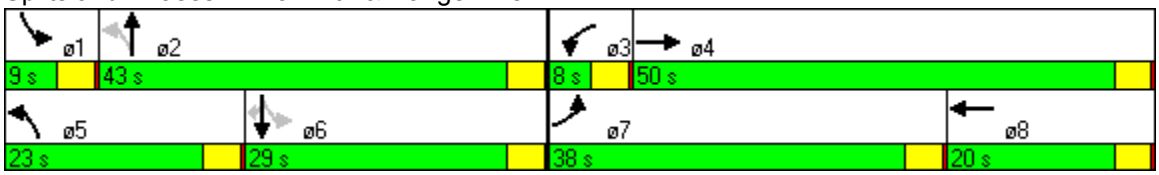
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.891			0.912			0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1660	0	1770	1699	0	1770	3525	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.138			0.417		
Satd. Flow (perm)	3433	1660	0	1770	1699	0	257	3525	0	777	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		149			46			3				768
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1248			462			1481			869	
Travel Time (s)		28.4			10.5			33.7			19.8	
Volume (vph)	1183	103	273	15	29	42	419	555	15	66	801	923
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)	1286	112	297	16	32	46	455	603	16	72	871	1003
Lane Group Flow (vph)	1286	409	0	16	78	0	455	619	0	72	871	1003
Turn Type	Prot			Prot			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		6
Minimum Split (s)	8.0	20.0		8.0	20.0		8.0	20.0		8.0	20.0	20.0
Total Split (s)	38.0	50.0	0.0	8.0	20.0	0.0	23.0	43.0	0.0	9.0	29.0	29.0
Total Split (%)	34.5%	45.5%	0.0%	7.3%	18.2%	0.0%	20.9%	39.1%	0.0%	8.2%	26.4%	26.4%
Maximum Green (s)	34.0	46.0		4.0	16.0		19.0	39.0		5.0	25.0	25.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	34.0	46.0		4.0	16.0		48.0	39.0		30.0	25.0	25.0
Actuated g/C Ratio	0.31	0.42		0.04	0.15		0.44	0.35		0.27	0.23	0.23
v/c Ratio	1.21	0.52		0.25	0.27		1.22	0.49		0.28	1.08	1.05
Control Delay	138.8	17.3		61.1	23.1		150.0	29.3		22.9	97.5	54.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	138.8	17.3		61.1	23.1		150.0	29.3		22.9	97.5	54.9
LOS	F	B		E	C		F	C		C	F	D
Approach Delay		109.5			29.6			80.4			72.8	
Approach LOS		F			C			F			E	
Queue Length 50th (ft)	~573	131		11	20		~346	177		29	~363	~323
Queue Length 95th (ft)	#706	223		35	64		#548	232		58	#490	#575
Internal Link Dist (ft)		1168			382			1401			789	
Turn Bay Length (ft)												
Base Capacity (vph)	1061	781		64	286		373	1252		257	804	953
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0

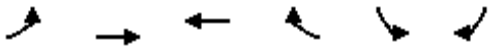
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.21	0.52		0.25	0.27		1.22	0.49		0.28	1.08	1.05

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 48 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Pretimed
Maximum v/c Ratio: 1.22
Intersection Signal Delay: 86.6 Intersection LOS: F
Intersection Capacity Utilization 95.8% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

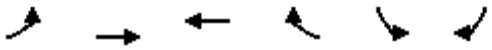
Splits and Phases: 25: 44th & Range Line





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.954				
Satd. Flow (prot)	0	1777	1863	0	1611	0
Flt Permitted		0.954				
Satd. Flow (perm)	0	1777	1863	0	1611	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1044	606		2545	
Travel Time (s)		23.7	13.8		57.8	
Volume (vph)	483	14	13	0	0	503
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	525	15	14	0	0	547
Lane Group Flow (vph)	0	540	14	0	547	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.876	
Flt Protected		0.987			0.996	
Satd. Flow (prot)	0	1839	1863	0	1625	0
Flt Permitted		0.987			0.996	
Satd. Flow (perm)	0	1839	1863	0	1625	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1104	1656		2570	
Travel Time (s)		25.1	37.6		58.4	
Volume (vph)	177	473	510	0	29	340
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	192	514	554	0	32	370
Lane Group Flow (vph)	0	706	554	0	402	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 94.1%		ICU Level of Service F	
Analysis Period (min) 15			

2025 AM Peak Hour Calculation with 50th Street Extension

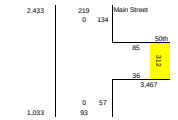
N/S Street: Main Street
E/W Street: 50th

New Trips: In 1067, Out 824
New Hospital Trips: In 1181, Out 354
New School Trips: In 446, Out 365

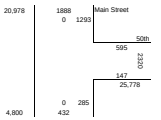
Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025
SBL	134	1.27	170	11.05%	1067			118	70%	1181			827	40%	446			178	1293 VEH/HR
SBT	0	1.27	0					0					0					0	0 VEH/HR
WBR	85	1.27	108	11.42%	824			94	70%	354			247	40%	365			146	595 VEH/HR
WBL	36	1.27	46	3.6%	824			30	10%	354			35	10%	365			36	147 VEH/HR
NBT	0	1.27	0					0					0					0	0 VEH/HR
NBR	57	1.27	72	4.7%	1067			50	10%	1181			118	10%	446			45	285 VEH/HR

Existing Traffic



Proposed 2025 Traffic



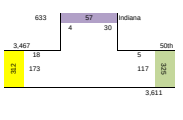
N/S Street: Indiana
E/W Street: 50th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025
SBL	30	1.27	38					0					0					0	38 VEH/HR
SBR	4	1.27	5	1.5%	824			12	20%	354			71					0	88 VEH/HR
EBL	18	1.27	23	1%	1067			11	20%	1181			236					0	270 VEH/HR
EBT	173	1.27	219	14.65%	1067	0.25%	824	158	4%	354			14	50%	365			182	573 VEH/HR
WBT	117	1.27	148	14.67%	824	0.1%	1067	122	4%	1181			47	50%	446			223	540 VEH/HR
WBR	5	1.27	6					0					0					0	6 VEH/HR

Existing Traffic



Proposed 2025 Traffic



N/S Street: Access A16
E/W Street: 50th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

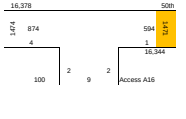
Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025
EBT	191	1.27	242	15.65%	1067			167	24%	1181			283	50%	365			182	874 VEH/HR
EBR	0	1.27	0	0.4%	1067			4					0					0	4 VEH/HR
WBT	121	1.27	153	16.2%	824			133	24%	354			85	50%	446			223	594 VEH/HR
WBL	0	1.27	0	0.1%	1067			1					0					0	1 VEH/HR
NBL	0	1.27	0	0.25%	824			2					0					0	2 VEH/HR
NBR	0	1.27	0	0.25%	824			2					0					0	2 VEH/HR

Existing Traffic



Proposed 2025 Traffic



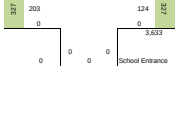
N/S Street: School Entrance
E/W Street: 50th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

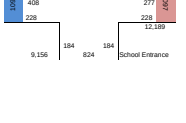
Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Traffic	(2) factor	A (1) x (2) Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement
EBT	203	1.27	257	14.0%	1067	0.25%	824	151					0					0	408 VEH/HR
EBR		1.27	0	0.5%	1067			5					0	50%	446			223	228 VEH/HR
WBT	124	1.27	157	14.4%	824	0.1%	1067	120					0					0	277 VEH/HR
WBL		1.27	0	0.5%	1067			5					0	50%	446			223	228 VEH/HR
NBL		1.27	0	0.25%	824			2					0	50%	365			182	184 VEH/HR
NBR		1.27	0	0.25%	824			2					0	50%	365			182	184 VEH/HR

Existing Traffic



Proposed 2025 Traffic



N/S Street: Access A15
E/W Street: 50th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

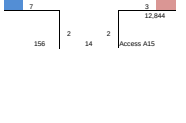
Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025
EBT	203	1.27	257	13.95%	1067	0.25%	824	151	4%	354			14	50%	446			223	645 VEH/HR
EBR	0	1.27	0	0.7%	1067			7					0					0	7 VEH/HR
WBT	124	1.27	157	14.5%	824	0.1%	1067	120	4%	1181			47	50%	365			182	506 VEH/HR
WBL	0	1.27	0	0.3%	1067			3					0					0	3 VEH/HR
NBL	0	1.27	0	0.22%	824			2					0					0	2 VEH/HR
NBR	0	1.27	0	0.28%	824			2					0					0	2 VEH/HR

Existing Traffic



Proposed 2025 Traffic

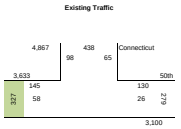


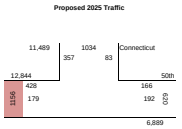
N/S Street: Connecticut
E/W Street: 50th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025
SBL	65	1.27	82	0.10%	824			1					0					0	83 VEH/HR
SBR	98	1.27	124	14.5%	824	0.3%	1067	122					0	25%	446			111	357 VEH/HR
EBL	145	1.27	184	13.95%	1067	0.48%	824	153					0	25%	365			91	428 VEH/HR
EBT	58	1.27	74	0.05%	824			0	4%	354			14	25%	365			91	179 VEH/HR
WBT	26	1.27	33	0.1%	1067			1	4%	1181			47	25%	446			111	192 VEH/HR
WBR	130	1.27	165	0.05%	1067			1					0					0	166 VEH/HR



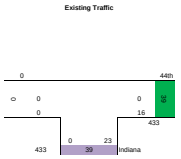


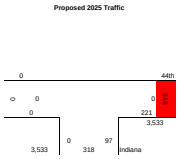
N/S Street: Indiana
E/W Street: 44th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025
EBT	0	1.27	0					0					0					0	0 VEH/HR
EBR	0	1.27	0					0					0					0	0 VEH/HR
WBT	0	1.27	0					0					0					0	0 VEH/HR
WBL	16	1.27	20	1.50%	824			12	16%	1181			189					0	221 VEH/HR
NBL	0	1.27	0					0					0					0	0 VEH/HR
NBR	23	1.27	29	1.00%	1067			11	16%	354			57					0	97 VEH/HR



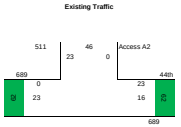


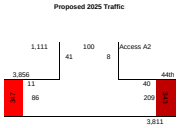
N/S Street: Access A2
E/W Street: 44th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025
SBL	0	1.27	0	1.0%	824			8					0					0	8 VEH/HR
SBR	23	1.27	29	1.5%	824			12					0					0	41 VEH/HR
EBL	0	1.27	0	1%	1067			11					0					0	11 VEH/HR
EBT	23	1.27	29					0	16%	354			57					0	86 VEH/HR
WBT	16	1.27	20					0	16%	1181			189					0	209 VEH/HR
WBR	23	1.27	29	1%	1067			11					0					0	40 VEH/HR



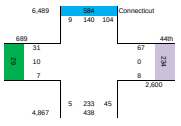


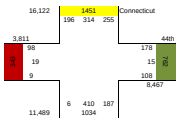
N/S Street: Connecticut
E/W Street: 44th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025
SBL	104	1.27	132	2.1%	824	10.0%	1067	123					0					0	255 VEH/HR
SBR	9	1.27	11	0.750%	1067			8	15%	1181			177					0	196 VEH/HR
SBT	140	1.27	178	2.6%	824	0.3%	1067	25					0	25%	446			111	314 VEH/HR
EBL	31	1.27	39	0.75%	824			6	15%	354			53					0	98 VEH/HR
EBT	10	1.27	13	0.25%	824			2	1%	354			4					0	19 VEH/HR
EBR	7	1.27	9					0					0					0	9 VEH/HR
WBT	0	1.27	0	0.250%	1067			3	1%	1181			12					0	15 VEH/HR
WBR	67	1.27	85	1.750%	1067	9.0%	824	93					0					0	178 VEH/HR
WBL	8	1.27	10	11.9%	824			98					0					0	108 VEH/HR
NBT	233	1.27	296	1.75%	1067	0.48%	824	23					0	25%	365			91	410 VEH/HR
NBL	5	1.27	6					0					0					0	6 VEH/HR
NBR	45	1.27	57	12.2%	1067			130					0					0	187 VEH/HR





N/S Street: Connecticut
E/W Street: Access A3/Access A4

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

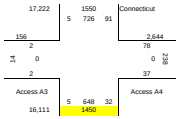
Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBL	0	1.27	0	8.5%	1067			91					0					0	91	VEH/HR
SBR	0	1.27	0	0.500%	1067			5					0					0	5	VEH/HR
SBT	253	1.27	321	11.00%	1067			117	15%	1181			177	25%	446			111	726	VEH/HR
EBL	0	1.27	0	0.3%	824			2					0					0	2	VEH/HR
EBT	0	1.27	0					0					0					0	0	VEH/HR
EBR	0	1.27	0	0.2%	824			2					0					0	2	VEH/HR
WBT	0	1.27	0					0					0					0	0	VEH/HR
WBR	0	1.27	0	10%	824			78					0					0	78	VEH/HR
WBL	0	1.27	0	4.5%	824			37					0					0	37	VEH/HR
NBT	331	1.27	420	10.20%	824			84	15%	354			53	25%	365			91	648	VEH/HR
NBL	0	1.27	0	0.500%	1067			5					0					0	5	VEH/HR
NBR	0	1.27	0	3.0%	1067			32					0					0	32	VEH/HR

Existing Traffic



Proposed 2025 Traffic



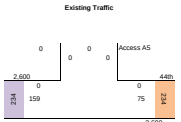
N/S Street: Access A5
E/W Street: 44th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

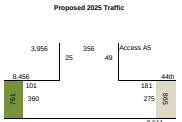
Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBL	0	1.27	0	6.0%	824			49					0					0	49	VEH/HR
SBR	0	1.27	0	3.0%	824			25					0					0	25	VEH/HR
EBL	0	1.27	0	9.50%	1067			101					0					0	101	VEH/HR
EBT	159	1.27	202	2.35%	824	12.7%	1067	154	1%	354			4					0	360	VEH/HR
WBT	75	1.27	95	2.00%	1067	17.8%	824	168	1%	1181			12					0	275	VEH/HR
WBR	0	1.27	0	17.0%	1067			181					0					0	181	VEH/HR

Existing Traffic



Proposed 2025 Traffic



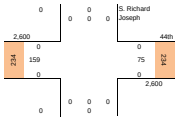
N/S Street: S. Richard Joseph
E/W Street: 44th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

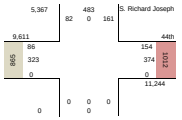
Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBL	0	1.27	0	19.5%	824			161					0					0	161	VEH/HR
SBR	0	1.27	0	10.0%	824			82					0					0	82	VEH/HR
SBT	0	1.27	0					0					0					0	0	VEH/HR
EBL	0	1.27	0	8.1%	1067			86					0					0	86	VEH/HR
EBT	159	1.27	202	4.55%	1067	8.35%	824	117	1%	354			4					0	323	VEH/HR
EBR	0	1.27	0					0					0					0	0	VEH/HR
WBT	75	1.27	95	7.82%	824	19.00%	1067	267	1%	1181			12					0	374	VEH/HR
WBR	0	1.27	0	14.4%	1067			154					0					0	154	VEH/HR
WBL	0	1.27	0					0					0					0	0	VEH/HR
NBT	0	1.27	0					0					0					0	0	VEH/HR
NBL	0	1.27	0					0					0					0	0	VEH/HR
NBR	0	1.27	0					0					0					0	0	VEH/HR

Existing Traffic



Proposed 2025 Traffic

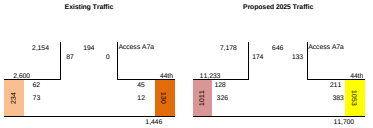


N/S Street: Access A7a
E/W Street: 44th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(1) IN/ OUT	(2) Dist.	(2) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(1) IN/ OUT	(2) Dist.	(2) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(1) IN/ OUT	(2) Dist.	(2) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBL	0	1.27	0	16.18%	824			133					0					0	133	VEH/HR
SBR	87	1.27	110	7.82%	824			64					0					0	174	VEH/HR
EBL	62	1.27	79	4.55%	1067			49					0					0	128	VEH/HR
EBT	73	1.27	93	27.85%	824			229	1%	354			4					0	326	VEH/HR
WBT	12	1.27	15	33.40%	1067			356	1%	1181			12					0	383	VEH/HR
WBR	45	1.27	57	14.5%	1067			154					0					0	211	VEH/HR

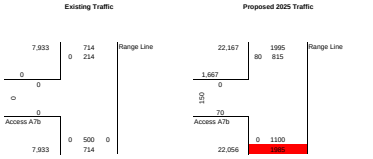


N/S Street: Range Line
E/W Street: Access A7b

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(1) IN/ OUT	(2) Dist.	(2) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(1) IN/ OUT	(2) Dist.	(2) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(1) IN/ OUT	(2) Dist.	(2) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBR	0	1.27	0	7.50%	1067			80					0					0	80	VEH/HR
SBT	214	1.27	271	41.45%	1067			442	3%	1181			35	15%	446			67	815	VEH/HR
EBL	0	1.27	0					0					0					0	0	VEH/HR
EBR	0	1.27	0	8.5%	824			70					0					0	70	VEH/HR
NBT	500	1.27	634	48.58%	824			400	3%	354			11	15%	365			55	1100	VEH/HR
NBL	0	1.27	0					0					0					0	0	VEH/HR

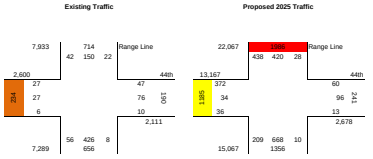


N/S Street: Range Line
E/W Street: 44th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(1) IN/ OUT	(2) Dist.	(2) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(1) IN/ OUT	(2) Dist.	(2) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(1) IN/ OUT	(2) Dist.	(2) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBL	22	1.27	28					0					0					0	28	VEH/HR
SBR	42	1.27	53	34.95%	1067			373	1%	1181			12					0	438	VEH/HR
SBT	150	1.27	190	8.5%	824	6.5%	1067	139	2%	1181			24	15%	446			67	420	VEH/HR
EBL	27	1.27	34	40.58%	824			334	1%	354			4					0	372	VEH/HR
EBT	27	1.27	34					0					0					0	34	VEH/HR
EBR	6	1.27	8	3.5%	824			28					0					0	36	VEH/HR
WBT	76	1.27	96					0					0					0	96	VEH/HR
WBR	47	1.27	60					0					0					0	60	VEH/HR
WBL	10	1.27	13					0					0					0	13	VEH/HR
NBT	426	1.27	540	8.0%	824			66	2%	354			7	15%	365			55	668	VEH/HR
NBL	56	1.27	71	12.90%	1067			138					0					0	209	VEH/HR
NBR	8	1.27	10					0					0					0	10	VEH/HR

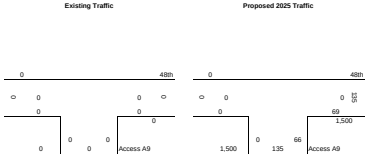


N/S Street: Access A9
E/W Street: 48th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(1) IN/ OUT	(2) Dist.	(2) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(1) IN/ OUT	(2) Dist.	(2) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(1) IN/ OUT	(2) Dist.	(2) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
EBT	0	1.27	0					0					0					0	0	VEH/HR
EBR	0	1.27	0					0					0					0	0	VEH/HR
WBT	0	1.27	0					0					0					0	0	VEH/HR
WBL	0	1.27	0	6.5%	1067			69					0					0	69	VEH/HR
NBL	0	1.27	0					0					0					0	0	VEH/HR
NBR	0	1.27	0	8%	824			66					0					0	66	VEH/HR

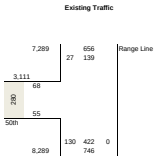


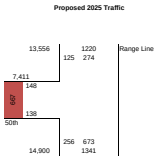
N/S Street: Range Line
E/W Street: 50th

New Trips — In: 1067 — Out: 824
New Trips — In: 1181 — Out: 354
New School Trips — In: 446 — Out: 365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBR	27	1.27	34		1067			0	2%	1181			24	15%	446			67	125	VEH/HR
SBT	139	1.27	176	12%	824			98					0					0	274	VEH/HR
EBL	68	1.27	86					0	2%	354			7	15%	365			55	148	VEH/HR
EBR	55	1.27	70	3.05%	824			25	2%	354			7	10%	365			36	138	VEH/HR
NBT	422	1.27	535	12.9%	1067			138					0					0	673	VEH/HR
NBL	130	1.27	165	2.1%	1067			22	2%	1181			24	10%	446			45	256	VEH/HR



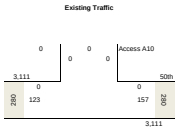


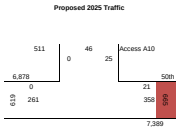
N/S Street: Access A10
E/W Street: 50th

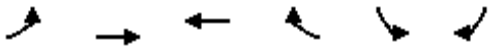
New Trips — In: 1067 — Out: 824
New Trips — In: 1181 — Out: 354
New School Trips — In: 446 — Out: 365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBL	0	1.27	0	3.0%	824			25					0					0	25	VEH/HR
SBR	0	1.27	0		824			0					0					0	0	VEH/HR
EBL	0	1.27	0		1067			0					0					0	0	VEH/HR
EBT	123	1.27	156	0.05%	824			0	4%	354			14	25%	365			91	261	VEH/HR
WBT	157	1.27	199	0.10%	1067			1	4%	1181			47	25%	446			111	358	VEH/HR
WBR	0	1.27	0	2.0%	1067			21					0					0	21	VEH/HR

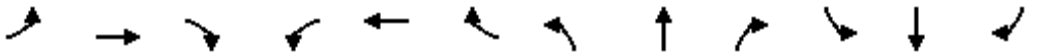






Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			100	0	0
Storage Lanes	0			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.998		0.905	
Flt Protected		0.984			0.985	
Satd. Flow (prot)	0	1833	1859	0	1660	0
Flt Permitted		0.984			0.985	
Satd. Flow (perm)	0	1833	1859	0	1660	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1104	1656		2570	
Travel Time (s)		25.1	37.6		58.4	
Volume (vph)	270	573	540	6	38	88
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	293	623	587	7	41	96
Lane Group Flow (vph)	0	916	594	0	137	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 91.4%		ICU Level of Service F	
Analysis Period (min) 15			

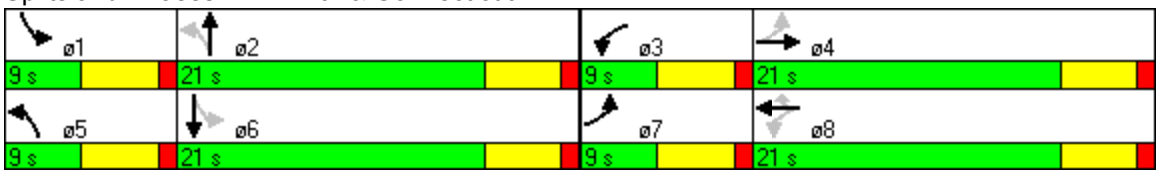


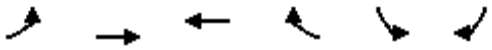
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	100		0	150		0	150		0
Storage Lanes	1		0	1		1	1		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95
Frt		0.952				0.850		0.953			0.942	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1773	0	1770	1863	1583	1770	1775	0	3433	3334	0
Flt Permitted	0.747			0.737			0.332			0.235		
Satd. Flow (perm)	1391	1773	0	1373	1863	1583	618	1775	0	849	3334	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				193		38			213	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1848			882			2545			950	
Travel Time (s)		42.0			20.0			57.8			21.6	
Volume (vph)	98	19	9	108	15	178	6	410	187	255	314	196
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)	107	21	10	117	16	193	7	446	203	277	341	213
Lane Group Flow (vph)	107	31	0	117	16	193	7	649	0	277	554	0
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	9.0	21.0		9.0	21.0	21.0	9.0	21.0		9.0	21.0	
Total Split (s)	9.0	21.0	0.0	9.0	21.0	21.0	9.0	21.0	0.0	9.0	21.0	0.0
Total Split (%)	15.0%	35.0%	0.0%	15.0%	35.0%	35.0%	15.0%	35.0%	0.0%	15.0%	35.0%	0.0%
Maximum Green (s)	4.0	16.0		4.0	16.0	16.0	4.0	16.0		4.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	22.0	17.0		22.0	17.0	17.0	22.0	17.0		22.0	17.0	
Actuated g/C Ratio	0.37	0.28		0.37	0.28	0.28	0.37	0.28		0.37	0.28	
v/c Ratio	0.20	0.06		0.22	0.03	0.33	0.02	1.22		0.53	0.51	
Control Delay	11.5	12.8		11.7	15.9	4.9	10.0	140.4		14.6	12.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	11.5	12.8		11.7	15.9	4.9	10.0	140.4		14.6	12.6	
LOS	B	B		B	B	A	A	F		B	B	
Approach Delay		11.8			7.9			139.0			13.3	
Approach LOS		B			A			F			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	

Actuated Cycle Length: 60
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Pretimed
Maximum v/c Ratio: 1.22
Intersection Signal Delay: 54.5 Intersection LOS: D
Intersection Capacity Utilization 62.9% ICU Level of Service B
Analysis Period (min) 15

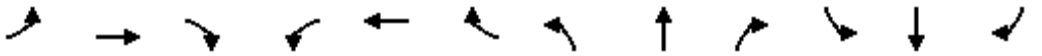
Splits and Phases: 7: 44th & Connecticut





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			1	1	1
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1583	1770	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1044	4436		2545	
Travel Time (s)		23.7	100.8		57.8	
Volume (vph)	428	179	192	166	83	357
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	465	195	209	180	90	388
Lane Group Flow (vph)	465	195	209	180	90	388
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.4%		ICU Level of Service A	
Analysis Period (min) 15			

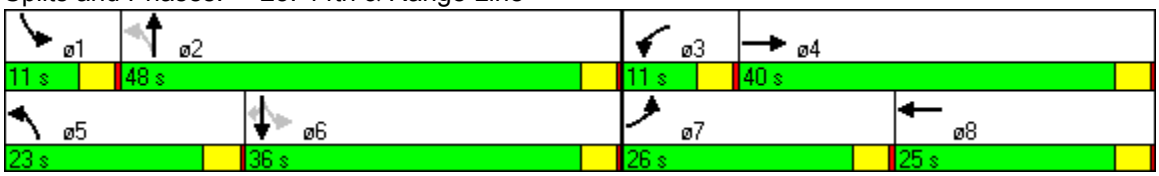


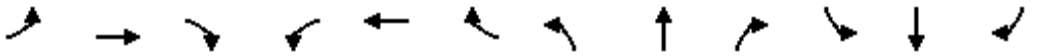
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	125		0	125		200
Storage Lanes	2		0	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.923			0.942			0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1719	0	1770	1755	0	1770	3532	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.325			0.347		
Satd. Flow (perm)	3433	1719	0	1770	1755	0	605	3532	0	646	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			25			2				476
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1248			462			1481			849	
Travel Time (s)		28.4			10.5			33.7			19.3	
Volume (vph)	372	34	36	13	96	60	209	668	10	28	420	438
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)	404	37	39	14	104	65	227	726	11	30	457	476
Lane Group Flow (vph)	404	76	0	14	169	0	227	737	0	30	457	476
Turn Type	Prot			Prot			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		6
Detector Phases	7	4		3	8		5	2		1	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0		8.0	20.0		8.0	20.0	20.0
Total Split (s)	26.0	40.0	0.0	11.0	25.0	0.0	23.0	48.0	0.0	11.0	36.0	36.0
Total Split (%)	23.6%	36.4%	0.0%	10.0%	22.7%	0.0%	20.9%	43.6%	0.0%	10.0%	32.7%	32.7%
Maximum Green (s)	22.0	36.0		7.0	21.0		19.0	44.0		7.0	32.0	32.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	C-Min
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	17.8	31.4		6.4	14.2		66.0	59.5		55.9	49.5	49.5
Actuated g/C Ratio	0.16	0.29		0.06	0.13		0.60	0.54		0.51	0.45	0.45
v/c Ratio	0.73	0.15		0.13	0.68		0.46	0.39		0.08	0.29	0.49
Control Delay	51.3	16.2		51.5	52.2		14.9	17.8		12.8	22.2	4.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	51.3	16.2		51.5	52.2		14.9	17.8		12.8	22.2	4.5
LOS	D	B		D	D		B	B		B	C	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		45.8			52.1			17.2			13.2	
Approach LOS		D			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 23.4		Intersection LOS: C	
Intersection Capacity Utilization 57.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 25: 44th & Range Line



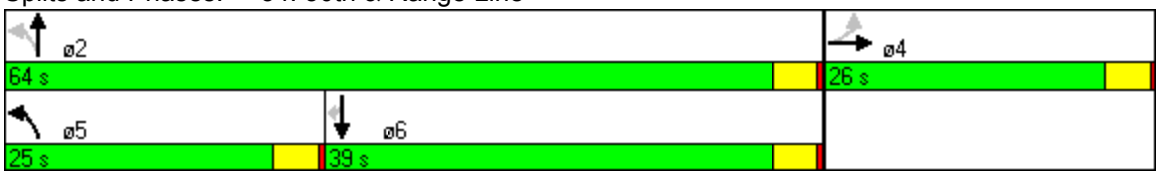


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	1583	0	0	0	0	1770	1863	0	0	1863	1583
Flt Permitted	0.950						0.416					
Satd. Flow (perm)	1770	1583	0	0	0	0	775	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		663										136
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		766			1704			1272			1058	
Travel Time (s)		17.4			38.7			28.9			24.0	
Volume (vph)	148	0	138	0	0	0	256	673	0	0	274	125
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)	161	0	150	0	0	0	278	732	0	0	298	136
Lane Group Flow (vph)	161	150	0	0	0	0	278	732	0	0	298	136
Turn Type	Perm						pm+pt					Perm
Protected Phases		4					5	2			6	
Permitted Phases	4						2					6
Minimum Split (s)	20.0	20.0					8.0	20.0			20.0	20.0
Total Split (s)	26.0	26.0	0.0	0.0	0.0	0.0	25.0	64.0	0.0	0.0	39.0	39.0
Total Split (%)	28.9%	28.9%	0.0%	0.0%	0.0%	0.0%	27.8%	71.1%	0.0%	0.0%	43.3%	43.3%
Maximum Green (s)	22.0	22.0					21.0	60.0			35.0	35.0
Yellow Time (s)	3.5	3.5					3.5	3.5			3.5	3.5
All-Red Time (s)	0.5	0.5					0.5	0.5			0.5	0.5
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Walk Time (s)	5.0	5.0						5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0						0			0	0
Act Effct Green (s)	22.0	22.0					60.0	60.0			35.0	35.0
Actuated g/C Ratio	0.24	0.24					0.67	0.67			0.39	0.39
v/c Ratio	0.37	0.17					0.37	0.59			0.41	0.19
Control Delay	31.3	0.4					7.5	10.7			22.2	4.1
Queue Delay	0.0	0.0					0.0	0.0			0.0	0.0
Total Delay	31.3	0.4					7.5	10.7			22.2	4.1
LOS	C	A					A	B			C	A
Approach Delay		16.4						9.8			16.5	
Approach LOS		B						A			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	

Natural Cycle: 55
Control Type: Pretimed
Maximum v/c Ratio: 0.59
Intersection Signal Delay: 12.6 Intersection LOS: B
Intersection Capacity Utilization 50.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 34: 50th & Range Line



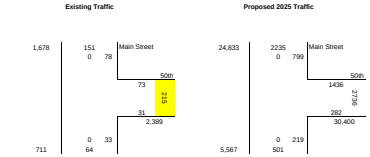
2025 PM Peak Hour Calculation with 50th Street Extension

N/S Street: Main Street
E/W Street: 50th

New Trips: In 2469, Out 2571
New Hospital Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL	78	1.27	99	11.05%	2469			273	70%	610			427	799	VEH/HR
SBT		1.27	0					0					0	0	VEH/HR
WBR	73	1.27	93	11.42%	2571			294	70%	1499			1049	1436	VEH/HR
WBL	31	1.27	39	3.6%	2571			93	10%	1499			150	282	VEH/HR
NBT		1.27	0					0					0	0	VEH/HR
NBR	33	1.27	42	4.7%	2469			116	10%	610			61	219	VEH/HR

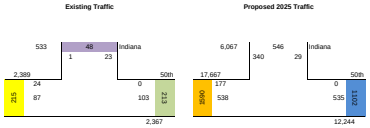


N/S Street: Indiana
E/W Street: 50th

New Trips: In 2469, Out 2571
New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL	23	1.27	29					0					0	29	VEH/HR
SBR	1	1.27	1	1.5%	2571			39	20%	1499			300	340	VEH/HR
EBL	24	1.27	30	1%	2469			25	20%	610			122	177	VEH/HR
EBT	87	1.27	110	14.65%	2469	0.25%	2571	368	4%	1499			60	538	VEH/HR
WBT	103	1.27	131	14.67%	2571	0.1%	2469	380	4%	610			24	535	VEH/HR
WBR		1.27	0					0					0	0	VEH/HR

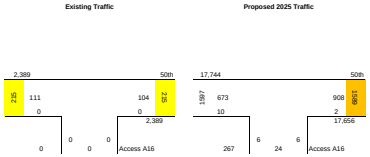


N/S Street: Access A16
E/W Street: 50th

New Trips: In 2469, Out 2571
New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
EBT	111	1.27	141	15.65%	2469			386	24%	610			146	673	VEH/HR
EBR		1.27	0	0.4%	2469			10					0	10	VEH/HR
WBT	104	1.27	132	16.2%	2571			416	24%	1499			360	908	VEH/HR
WBL		1.27	0	0.1%	2469			2					0	2	VEH/HR
NBL		1.27	0	0.25%	2571			6					0	6	VEH/HR
NBR		1.27	0	0.25%	2571			6					0	6	VEH/HR

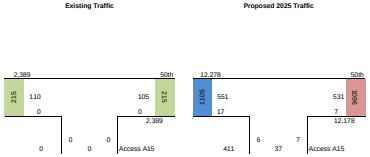


N/S Street: Access A15
E/W Street: 50th

New Trips: In 2469, Out 2571
New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
EBT	110	1.27	140	13.95%	2469	0.25%	2571	351	4%	1499			60	551	VEH/HR
EBR		1.27	0	0.7%	2469			17					0	17	VEH/HR
WBT	105	1.27	133	14.5%	2571	0.1%	2469	374	4%	610			24	531	VEH/HR
WBL		1.27	0	0.3%	2469			7					0	7	VEH/HR
NBL		1.27	0	0.22%	2571			6					0	6	VEH/HR
NBR		1.27	0	0.28%	2571			7					0	7	VEH/HR

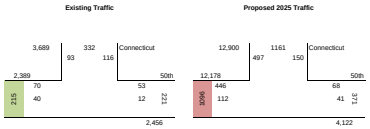


N/S Street: Connecticut
E/W Street: 50th

New Trips In: 2469
New Trips Out: 2571
New Trips In: 610
New Trips Out: 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	NEW TRIPS (2) IN/ OUT	NEW TRIPS (3) Dist.	NEW TRIPS (4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	NEW HOSPITAL TRIPS (2) IN/ OUT	NEW HOSPITAL TRIPS (3) Dist.	NEW HOSPITAL TRIPS (4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL	116	1.27	147	0.10%	2571			3					0	150	VEH/HR
SBR	93	1.27	118	14.5%	2571			379					0	497	VEH/HR
EBL	70	1.27	89	13.95%	2469	0.48%	2571	357					0	446	VEH/HR
EBT	40	1.27	51	0.05%	2571			1	4%	1499			60	112	VEH/HR
WBT	12	1.27	15	0.1%	2469			2	4%	610			24	41	VEH/HR
WBR	53	1.27	67	0.05%	2469			1					0	68	VEH/HR

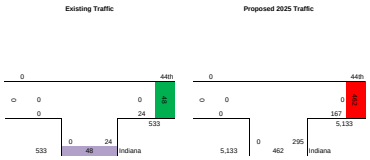


N/S Street: Indiana
E/W Street: 44th

New Trips In: 2469
New Trips Out: 2571
New Trips In: 610
New Trips Out: 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	NEW TRIPS (2) IN/ OUT	NEW TRIPS (3) Dist.	NEW TRIPS (4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	NEW HOSPITAL TRIPS (2) IN/ OUT	NEW HOSPITAL TRIPS (3) Dist.	NEW HOSPITAL TRIPS (4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
EBT		1.27	0					0					0	0	VEH/HR
EBR		1.27	0					0					0	0	VEH/HR
WBT		1.27	0					0					0	0	VEH/HR
WBL	24	1.27	30	1.50%	2571			39	16%	610			98	167	VEH/HR
NBL		1.27	0					0					0	0	VEH/HR
NBR	24	1.27	30	1.00%	2469			25	16%	1499			240	295	VEH/HR

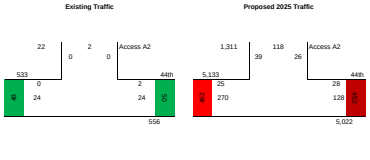


N/S Street: Access A2
E/W Street: 44th

New Trips In: 2469
New Trips Out: 2571
New Trips In: 610
New Trips Out: 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	NEW TRIPS (2) IN/ OUT	NEW TRIPS (3) Dist.	NEW TRIPS (4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	NEW HOSPITAL TRIPS (2) IN/ OUT	NEW HOSPITAL TRIPS (3) Dist.	NEW HOSPITAL TRIPS (4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL		1.27	0	1.0%	2571			26					0	26	VEH/HR
SBR		1.27	0	1.5%	2571			39					0	39	VEH/HR
EBL		1.27	0	1%	2469			25					0	25	VEH/HR
EBT	24	1.27	30					0	16%	1499			240	270	VEH/HR
WBT	24	1.27	30					0	16%	610			98	128	VEH/HR
WBR	2	1.27	3	1%	2469			25					0	28	VEH/HR

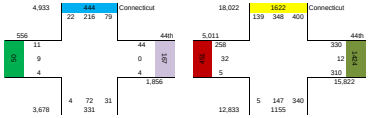


N/S Street: Connecticut
E/W Street: 44th

New Trips In: 2469
New Trips Out: 2571
New Trips In: 610
New Trips Out: 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	NEW TRIPS (2) IN/ OUT	NEW TRIPS (3) Dist.	NEW TRIPS (4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	NEW HOSPITAL TRIPS (2) IN/ OUT	NEW HOSPITAL TRIPS (3) Dist.	NEW HOSPITAL TRIPS (4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL	79	1.27	100	2.1%	2571	10.0%	2469	300					0	400	VEH/HR
SBR	22	1.27	28	0.750%	2469			19	15%	610			92	139	VEH/HR
SBT	216	1.27	274	2.6%	2571	0.3%	2469	74					0	348	VEH/HR
EBL	11	1.27	14	0.75%	2571			19	15%	1499			225	258	VEH/HR
EBT	9	1.27	11	0.25%	2571			6	1%	1499			15	32	VEH/HR
EBR	4	1.27	5					0					0	5	VEH/HR
WBT	0	1.27	0	0.250%	2469			6	1%	610			6	12	VEH/HR
WBR	44	1.27	56	1.750%	2469	9.0%	2571	274					0	330	VEH/HR
WBL	4	1.27	5	11.9%	2571			305					0	310	VEH/HR
NBT	72	1.27	91	1.75%	2469	0.48%	2571	56					0	147	VEH/HR
NBL	4	1.27	5					0					0	5	VEH/HR
NBR	31	1.27	39	12.2%	2469			301					0	340	VEH/HR



N/S Street Connecticut
E/W Street Access A3/Access A4

New Trips
In 2469
Out 2571

New Trips
In 610
Out 1499

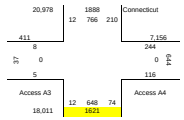
Growth Rate (GR) 2.00%
Years (n) 12

Turn Movement	(1) Existing Traffic	(2) growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL		1.27	0	8.5%	2469			210					0	210	VEH/HR
SBR		1.27	0	0.500%	2469			12					0	12	VEH/HR
SBT	317	1.27	402	11.00%	2469			272	15%	610			92	766	VEH/HR
EBL		1.27	0	0.3%	2571			8					0	8	VEH/HR
EBT		1.27	0					0					0	0	VEH/HR
EBR		1.27	0	0.2%	2571			5					0	5	VEH/HR
WBT		1.27	0					0					0	0	VEH/HR
WBR		1.27	0	10%	2571			244					0	244	VEH/HR
WBL		1.27	0	4.5%	2571			116					0	116	VEH/HR
NBT	127	1.27	161	10.20%	2571			262	15%	1499			225	648	VEH/HR
NBL		1.27	0	0.500%	2469			12					0	12	VEH/HR
NBR		1.27	0	3.0%	2469			74					0	74	VEH/HR

Existing Traffic



Proposed 2025 Traffic



N/S Street Access A5
E/W Street 44th

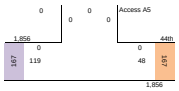
New Trips
In 2469
Out 2571

New Trips
In 610
Out 1499

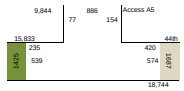
Growth Rate (GR) 2.00%
Years (n) 12

Turn Movement	(1) Existing Traffic	(2) growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL		1.27	0	6.0%	2571			154					0	154	VEH/HR
SBR		1.27	0	3.0%	2571			77					0	77	VEH/HR
EBL		1.27	0	9.50%	2469			235					0	235	VEH/HR
EBT	119	1.27	151	2.35%	2571	12.7%	2469	373	1%	1499			15	539	VEH/HR
WBT	48	1.27	61	2.00%	2469	17.8%	2571	507	1%	610			6	574	VEH/HR
WBR		1.27	0	17.0%	2469			420					0	420	VEH/HR

Existing Traffic



Proposed 2025 Traffic



N/S Street S. Richard Joseph
E/W Street 44th

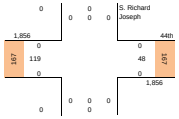
New Trips
In 2469
Out 2571

New Trips
In 610
Out 1499

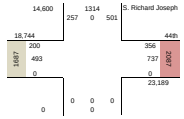
Growth Rate (GR) 2.00%
Years (n) 12

Turn Movement	(1) Existing Traffic	(2) growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL		1.27	0	19.5%	2571			501					0	501	VEH/HR
SBR		1.27	0	10.0%	2571			257					0	257	VEH/HR
SBT		1.27	0					0					0	0	VEH/HR
EBL		1.27	0	8.1%	2469			200					0	200	VEH/HR
EBT	119	1.27	151	4.55%	2469	8.35%	2571	327	1%	1499			15	493	VEH/HR
EBR		1.27	0					0					0	0	VEH/HR
WBT	48	1.27	61	7.82%	2571	19.00%	2469	670	1%	610			6	737	VEH/HR
WBR		1.27	0	14.4%	2469			356					0	356	VEH/HR
WBL		1.27	0					0					0	0	VEH/HR
NBT		1.27	0					0					0	0	VEH/HR
NBL		1.27	0					0					0	0	VEH/HR
NBR		1.27	0					0					0	0	VEH/HR

Existing Traffic



Proposed 2025 Traffic



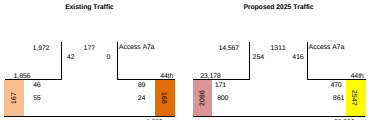
N/S Street: Access A7a
E/W Street: 44th

New Trips: In 2469, Out 2571

New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL		1.27	0	16.18%	2571			416					0	416	VEH/HR
SBR	42	1.27	53	7.82%	2571			201					0	254	VEH/HR
EBL	46	1.27	59	4.55%	2469			112					0	171	VEH/HR
EBT	55	1.27	69	27.85%	2571			716	1%	1499			15	800	VEH/HR
WBT	24	1.27	30	33.40%	2469			825	1%	610			6	861	VEH/HR
WBR	89	1.27	113	14.5%	2469			357					0	470	VEH/HR



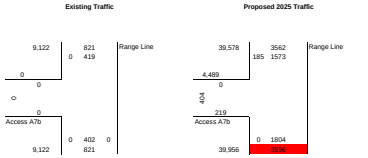
N/S Street: Range Line
E/W Street: Access A7b

New Trips: In 2469, Out 2571

New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBR		1.27	0	7.50%	2469			185					0	185	VEH/HR
SBT	419	1.27	531	41.45%	2469			1024	3%	610			18	1573	VEH/HR
EBL		1.27	0					0					0	0	VEH/HR
EBR		1.27	0	8.5%	2571			219					0	219	VEH/HR
NBT	402	1.27	510	48.58%	2571			1249	3%	1499			45	1804	VEH/HR
NBL		1.27	0					0					0	0	VEH/HR



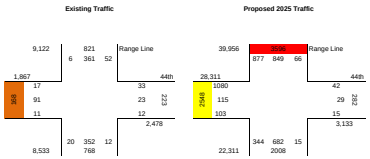
N/S Street: Range Line
E/W Street: 44th

New Trips: In 2469, Out 2571

New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL	52	1.27	66					0					0	66	VEH/HR
SBR	6	1.27	8	34.95%	2469			863	1%	610			6	877	VEH/HR
SBT	361	1.27	458	8.5%	2571	6.5%	2469	379	2%	610			12	849	VEH/HR
EBL	17	1.27	22	40.58%	2571			1043	1%	1499			15	1080	VEH/HR
EBT	91	1.27	115					0					0	115	VEH/HR
EBR	11	1.27	14	3.5%	2571			89					0	103	VEH/HR
WBT	23	1.27	29					0					0	29	VEH/HR
WBR	33	1.27	42					0					0	42	VEH/HR
WBL	12	1.27	15					0					0	15	VEH/HR
NBT	352	1.27	446	8.0%	2571			206	2%	1499			30	682	VEH/HR
NBL	20	1.27	25	12.90%	2469			319					0	344	VEH/HR
NBR	12	1.27	15					0					0	15	VEH/HR



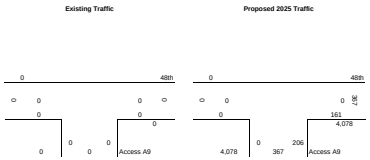
N/S Street: Access A9
E/W Street: 48th

New Trips: In 2469, Out 2571

New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
EBT		1.27	0					0					0	0	VEH/HR
EBR		1.27	0					0					0	0	VEH/HR
WBT		1.27	0					0					0	0	VEH/HR
WBL		1.27	0	6.5%	2469			161					0	161	VEH/HR
NBL		1.27	0					0					0	0	VEH/HR
NBR		1.27	0	8%	2571			206					0	206	VEH/HR



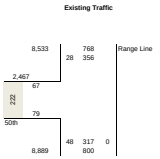
N/S Street: Range Line
E/W Street: 50th

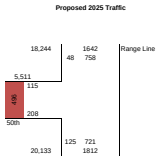
New Trips In: 2469
New Trips Out: 2571

New Trips In: 610
New Trips Out: 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBR	28	1.27	36		2469			0	2%	610			12	48	VEH/HR
SBT	356	1.27	451	12%	2571			307					0	758	VEH/HR
EBL	67	1.27	85					0	2%	1499			30	115	VEH/HR
EBR	79	1.27	100	3.05%	2571			78	2%	1499			30	208	VEH/HR
NBT	317	1.27	402	12.9%	2469			319					0	721	VEH/HR
NBL	48	1.27	61	2.1%	2469			52	2%	610			12	125	VEH/HR





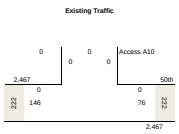
N/S Street: Access A10
E/W Street: 50th

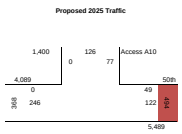
New Trips In: 2469
New Trips Out: 2571

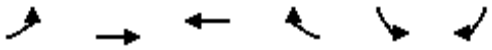
New Trips In: 610
New Trips Out: 1499

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2025	
SBL		1.27	0	3.0%	2571			77					0	77	VEH/HR
SBR		1.27	0		2571			0					0	0	VEH/HR
EBL		1.27	0		2469			0					0	0	VEH/HR
EBT	146	1.27	185	0.05%	2571			1	4%	1499			60	246	VEH/HR
WBT	76	1.27	96	0.10%	2469			2	4%	610			24	122	VEH/HR
WBR		1.27	0	2.0%	2469			49					0	49	VEH/HR







Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	0			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.876	
Flt Protected		0.988			0.996	
Satd. Flow (prot)	0	1840	1863	0	1625	0
Flt Permitted		0.988			0.996	
Satd. Flow (perm)	0	1840	1863	0	1625	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1104	1656		2570	
Travel Time (s)		25.1	37.6		58.4	
Volume (vph)	177	538	535	0	29	340
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	192	585	582	0	32	370
Lane Group Flow (vph)	0	777	582	0	402	0
Sign Control		Free	Free		Stop	

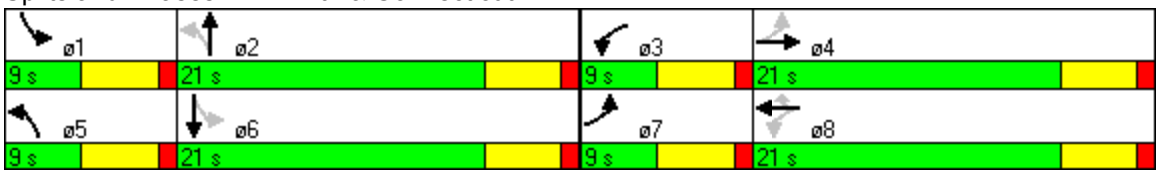
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 98.9%		ICU Level of Service F	
Analysis Period (min) 15			

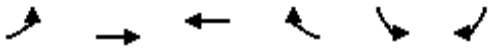
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	100		0	150		0	200		0
Storage Lanes	1		0	1		1	1		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95
Frt		0.981				0.850		0.895			0.957	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1827	0	1770	1863	1583	1770	1667	0	3433	3387	0
Flt Permitted	0.749			0.731			0.352			0.235		
Satd. Flow (perm)	1395	1827	0	1362	1863	1583	656	1667	0	849	3387	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				359		194			100	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1848			882			2545			950	
Travel Time (s)		42.0			20.0			57.8			21.6	
Volume (vph)	258	32	5	310	12	330	5	147	340	400	348	139
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)	280	35	5	337	13	359	5	160	370	435	378	151
Lane Group Flow (vph)	280	40	0	337	13	359	5	530	0	435	529	0
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	9.0	21.0		9.0	21.0	21.0	9.0	21.0		9.0	21.0	
Total Split (s)	9.0	21.0	0.0	9.0	21.0	21.0	9.0	21.0	0.0	9.0	21.0	0.0
Total Split (%)	15.0%	35.0%	0.0%	15.0%	35.0%	35.0%	15.0%	35.0%	0.0%	15.0%	35.0%	0.0%
Maximum Green (s)	4.0	16.0		4.0	16.0	16.0	4.0	16.0		4.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	22.0	17.0		22.0	17.0	17.0	22.0	17.0		22.0	17.0	
Actuated g/C Ratio	0.37	0.28		0.37	0.28	0.28	0.37	0.28		0.37	0.28	
v/c Ratio	0.52	0.08		0.63	0.02	0.51	0.02	0.87		0.83	0.51	
Control Delay	16.7	14.9		20.0	15.8	5.2	10.0	30.6		28.4	16.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.7	14.9		20.0	15.8	5.2	10.0	30.6		28.4	16.5	
LOS	B	B		B	B	A	A	C		C	B	
Approach Delay		16.5			12.4			30.4			21.9	
Approach LOS		B			B			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	

Actuated Cycle Length: 60
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Pretimed
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 20.4 Intersection LOS: C
Intersection Capacity Utilization 73.9% ICU Level of Service D
Analysis Period (min) 15

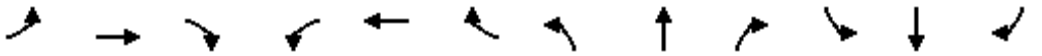
Splits and Phases: 7: 44th & Connecticut





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			1	1	1
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1583	1770	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1044	4426		2545	
Travel Time (s)		23.7	100.6		57.8	
Volume (vph)	446	112	41	68	150	497
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	485	122	45	74	163	540
Lane Group Flow (vph)	485	122	45	74	163	540
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.4%		ICU Level of Service A	
Analysis Period (min) 15			

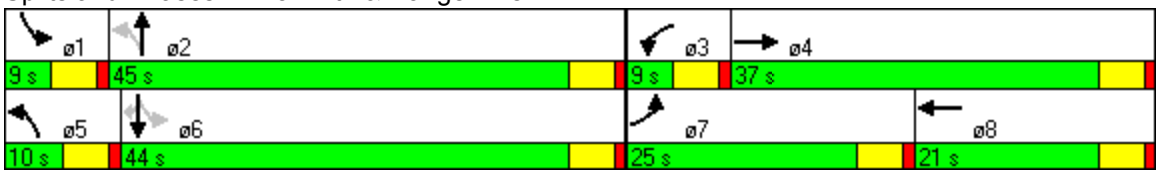


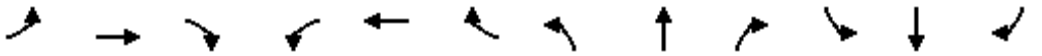
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	100		0	200		0	125		200
Storage Lanes	2		0	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.929			0.912			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1730	0	1770	1699	0	1770	3529	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.165			0.257		
Satd. Flow (perm)	3433	1730	0	1770	1699	0	307	3529	0	479	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48			46			3				863
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1248			462			1481			879	
Travel Time (s)		28.4			10.5			33.7			20.0	
Volume (vph)	1080	115	103	15	29	42	344	682	15	66	849	877
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)	1174	125	112	16	32	46	374	741	16	72	923	953
Lane Group Flow (vph)	1174	237	0	16	78	0	374	757	0	72	923	953
Turn Type	Prot			Prot			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		6
Minimum Split (s)	9.0	21.0		9.0	21.0		9.0	21.0		9.0	21.0	21.0
Total Split (s)	25.0	37.0	0.0	9.0	21.0	0.0	10.0	45.0	0.0	9.0	44.0	44.0
Total Split (%)	25.0%	37.0%	0.0%	9.0%	21.0%	0.0%	10.0%	45.0%	0.0%	9.0%	44.0%	44.0%
Maximum Green (s)	20.0	32.0		4.0	16.0		5.0	40.0		4.0	39.0	39.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	21.0	33.0		5.0	17.0		47.0	41.0		45.0	40.0	40.0
Actuated g/C Ratio	0.21	0.33		0.05	0.17		0.47	0.41		0.45	0.40	0.40
v/c Ratio	1.63	0.39		0.18	0.24		1.61	0.52		0.26	0.65	0.83
Control Delay	318.2	22.6		50.4	19.8		315.4	23.7		15.6	27.0	10.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	318.2	22.6		50.4	19.8		315.4	23.7		15.6	27.0	10.6
LOS	F	C		D	B		F	C		B	C	B
Approach Delay		268.5			25.0			120.1			18.5	
Approach LOS		F			C			F			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 100	

Actuated Cycle Length: 100
Offset: 3 (3%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 130
Control Type: Pretimed
Maximum v/c Ratio: 1.63
Intersection Signal Delay: 120.7 Intersection LOS: F
Intersection Capacity Utilization 90.0% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 25: 44th & Range Line





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	0		0
Storage Lanes	1		0	0		0	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	1583	0	0	0	0	1770	1863	0	0	1863	1583
Flt Permitted	0.950						0.177					
Satd. Flow (perm)	1770	1583	0	0	0	0	330	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		263										52
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		773			1116			1272			1058	
Travel Time (s)		17.6			25.4			28.9			24.0	
Volume (vph)	115	0	208	0	0	0	125	721	0	0	758	48
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)	125	0	226	0	0	0	136	784	0	0	824	52
Lane Group Flow (vph)	125	226	0	0	0	0	136	784	0	0	824	52
Turn Type	Perm						pm+pt					Perm
Protected Phases		4					5	2			6	
Permitted Phases	4						2					6
Minimum Split (s)	21.0	21.0					9.0	21.0			21.0	21.0
Total Split (s)	21.0	21.0	0.0	0.0	0.0	0.0	10.0	69.0	0.0	0.0	59.0	59.0
Total Split (%)	23.3%	23.3%	0.0%	0.0%	0.0%	0.0%	11.1%	76.7%	0.0%	0.0%	65.6%	65.6%
Maximum Green (s)	16.0	16.0					5.0	64.0			54.0	54.0
Yellow Time (s)	4.0	4.0					4.0	4.0			4.0	4.0
All-Red Time (s)	1.0	1.0					1.0	1.0			1.0	1.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Walk Time (s)	5.0	5.0						5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0						0			0	0
Act Effct Green (s)	17.0	17.0					65.0	65.0			55.0	55.0
Actuated g/C Ratio	0.19	0.19					0.72	0.72			0.61	0.61
v/c Ratio	0.37	0.44					0.41	0.58			0.72	0.05
Control Delay	35.7	5.5					7.5	8.1			16.9	2.3
Queue Delay	0.0	0.0					0.0	0.0			0.0	0.0
Total Delay	35.7	5.5					7.5	8.1			16.9	2.3
LOS	D	A					A	A			B	A
Approach Delay		16.2						8.0			16.0	
Approach LOS		B						A			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	

Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 65
Control Type: Pretimed
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 12.6 Intersection LOS: B
Intersection Capacity Utilization 69.7% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 34: 50th & Range Line





JOPLIN AREA TRANSPORTATION
STUDY ORGANIZATION

SOUTH JOPLIN AREA

TRANSPORTATION STUDY

APPENDIX D – PROJECTED 2030 TRAFFIC CONDITIONS

July 8, 2013

PREPARED BY:

CJW

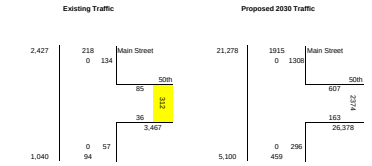
2030 AM Peak Hour Calculation

N/S Street: Main Street
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2030	
SBL	134	1.40	187	10.85%	1067			116	70%	1181			827	40%	446			178	1308	VEH/HR
SBT		1.40	0					0					0					0	0	VEH/HR
WBR	85	1.40	119	11.58%	824			95	70%	354			247	40%	365			146	607	VEH/HR
WBL	36	1.40	51	5%	824			41	10%	354			35	10%	365			36	163	VEH/HR
NBT		1.40	0					0					0					0	0	VEH/HR
NBR	57	1.40	80	5%	1067			53	10%	1181			118	10%	446			45	296	VEH/HR

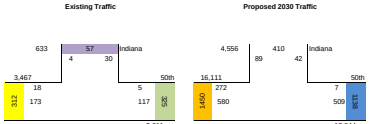


N/S Street: Indiana
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2030	
SBL	30	1.40	42					0					0					0	42	VEH/HR
SBR	4	1.40	6	1.5%	824			12	20%	354			71					0	89	VEH/HR
EBL	18	1.40	25	1.00%	1067			11	20%	1181			236					0	272	VEH/HR
EBT	173	1.40	242	14.45%	1067	0.25%	824	156					0	50%	365			182	580	VEH/HR
WBT	117	1.40	164	14.7%	824	0.1%	1067	122					0	50%	446			223	509	VEH/HR
WBR	5	1.40	7					0					0					0	7	VEH/HR

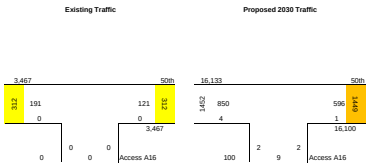


N/S Street: Access A16
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2030	
EBT	191	1.40	267	15.45%	1067			165	20%	1181			236	50%	365			182	850	VEH/HR
EBR		1.40	0	0.4%	1067			4					0					0	4	VEH/HR
WBT	121	1.40	169	16.2%	824			133	20%	354			71	50%	446			223	596	VEH/HR
WBL		1.40	0	0.1%	1067			1					0					0	1	VEH/HR
NBL		1.40	0	0.25%	824			2					0					0	2	VEH/HR
NBR		1.40	0	0.25%	824			2					0					0	2	VEH/HR

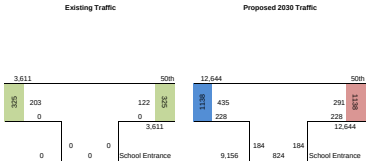


N/S Street: School Entrance
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2030	
EBT	203	1.40	284	14.0%	1067	0.25%	824	151					0					0	435	VEH/HR
EBR		1.40	0	0.5%	1067			5					0	50%	446			223	228	VEH/HR
WBT	122	1.40	171	14.4%	824	0.1%	1067	120					0					0	291	VEH/HR
WBL		1.40	0	0.5%	1067			5					0	50%	446			223	228	VEH/HR
NBL		1.40	0	0.25%	824			2					0	50%	365			182	184	VEH/HR
NBR		1.40	0	0.25%	824			2					0	50%	365			182	184	VEH/HR

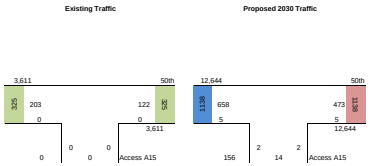


N/S Street: Access A15
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2030	
EBT	203	1.40	284	14.0%	1067	0.25%	824	151					0	50%	446			223	658	VEH/HR
EBR		1.40	0	0.5%	1067			5					0					0	5	VEH/HR
WBT	122	1.40	171	14.4%	824	0.1%	1067	120					0	50%	365			182	473	VEH/HR
WBL		1.40	0	0.5%	1067			5					0					0	5	VEH/HR
NBL		1.40	0	0.25%	824			2					0					0	2	VEH/HR
NBR		1.40	0	0.25%	824			2					0					0	2	VEH/HR

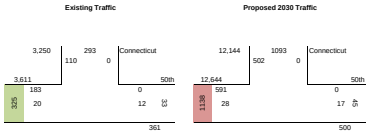


N/S Street: Connecticut
E/W Street: 50th

New Trips: In 1067, Out 824
New Hospital Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2030	
SBL		1.40	0					0					0					0	0	VEH/HR
SBR	110	1.40	154	14.4%	824	0.6%	1067	125					0	50%	446			223	502	VEH/HR
EBL	183	1.40	256	13.95%	1067	0.500%	824	153					0	50%	365			182	591	VEH/HR
EBT	20	1.40	28					0					0					0	28	VEH/HR
WBT	12	1.40	17					0					0					0	17	VEH/HR
WBR		1.40	0					0					0					0	0	VEH/HR

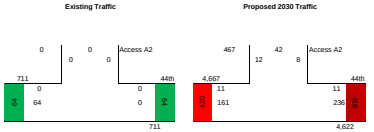


N/S Street: Access A2
E/W Street: 44th

New Trips: In 1067, Out 824
New Hospital Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2030	
SBL		1.40	0	1.0%	824			8					0					0	8	VEH/HR
SBR		1.40	0	1.5%	824			12					0					0	12	VEH/HR
EBL		1.40	0	1.00%	1067			11					0					0	11	VEH/HR
EBT	64	1.40	90					0	20%	354			71					0	161	VEH/HR
WBT		1.40	0					0	20%	1181			236					0	236	VEH/HR
WBR		1.40	0	1.00%	1067			11					0					0	11	VEH/HR

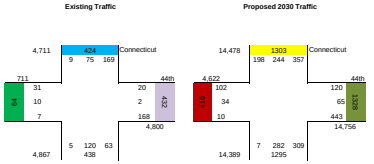


N/S Street: Connecticut
E/W Street: 44th

New Trips: In 1067, Out 824
New Hospital Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2030	
SBL	169	1.40	237	2.1%	824	9.7%	1067	120					0					0	357	VEH/HR
SBR	9	1.40	13	0.750%	1067			8	15%	1181			177					0	198	VEH/HR
SBT	75	1.40	105	2.6%	824	0.6%	1067	28					0	25%	446			111	244	VEH/HR
EBL	31	1.40	43	0.75%	824			6	15%	354			53					0	102	VEH/HR
EBT	10	1.40	14	0.25%	824			2	5%	354			18					0	34	VEH/HR
EBR	7	1.40	10					0					0					0	10	VEH/HR
WBT	2	1.40	3	0.250%	1067			3	5%	1181			59					0	65	VEH/HR
WBR	20	1.40	28	1.750%	1067	9.0%	824	92					0					0	120	VEH/HR
WBL	168	1.40	235	11.8%	824			97					0	25%	446			111	443	VEH/HR
NBT	120	1.40	168	1.75%	1067	0.5%	824	23					0	25%	365			91	282	VEH/HR
NBL	5	1.40	7					0					0					0	7	VEH/HR
NBR	63	1.40	88	12.2%	1067			130					0	25%	365			91	309	VEH/HR

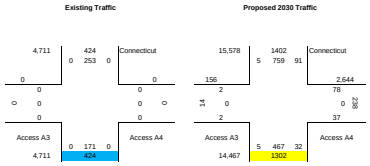


N/S Street: Connecticut
E/W Street: Access A3/Access A4

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 17

	(1)	(2) Growth factor	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B (1)+(2)+(3)+(4)	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C (1)+(2)+(3)+(4)	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D (1)+(2)+(3)+(4)	A + B + C + D
Turn Movement	Existing Traffic	$(1+GR)^n$	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2030
SBL		1.40	0	8.5%	1067			91					0					0	91 VEH/HR
SBR		1.40	0	0.500%	1067			5					0					0	5 VEH/HR
SBT	253	1.40	354	11.00%	1067			117	15%	1181			177	25%	446			111	759 VEH/HR
EBL		1.40	0	0.3%	824			2					0					0	2 VEH/HR
EBT		1.40	0					0					0					0	0 VEH/HR
EBR		1.40	0	0.2%	824			2					0					0	2 VEH/HR
WBT		1.40	0					0					0					0	0 VEH/HR
WBR		1.40	0	10%	824			78					0					0	78 VEH/HR
WBL		1.40	0	5%	824			37					0					0	37 VEH/HR
NBT	171	1.40	239	10.20%	824			84	15%	354			53	25%	365			91	467 VEH/HR
NBL		1.40	0	0.500%	1067			5					0					0	5 VEH/HR
NBR		1.40	0	3.0%	1067			32					0					0	32 VEH/HR



N/S Street: Access A5
E/W Street: 44th

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 17

	(1)	(2) Growth factor	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B (1)+(2)+(3)+(4)	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C (1)+(2)+(3)+(4)	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D (1)+(2)+(3)+(4)	A + B + C + D
Turn Movement	Existing Traffic	$(1+GR)^n$	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2030
SBL		1.40	0	6.0%	824			49					0					0	49 VEH/HR
SBR		1.40	0	3.0%	824			25					0					0	25 VEH/HR
EBL		1.40	0	9.50%	1067			101					0					0	101 VEH/HR
EBT	242	1.40	339	2.35%	824	12.4%	1067	151	5%	354			18	25%	365			91	599 VEH/HR
WBT	190	1.40	266	2.00%	1067	17.8%	824	168	5%	1181			59	25%	446			111	604 VEH/HR
WBR		1.40	0	17.0%	1067			181					0					0	181 VEH/HR

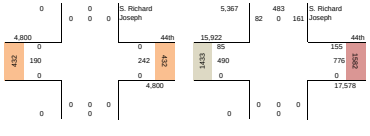


N/S Street: S. Richard Joseph
E/W Street: 44th

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 17

	(1)	(2) Growth factor	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B (1)+(2)+(3)+(4)	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C (1)+(2)+(3)+(4)	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D (1)+(2)+(3)+(4)	A + B + C + D
Turn Movement	Existing Traffic	$(1+GR)^n$	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2030
SBL		1.40	0	19.5%	824			161					0					0	161 VEH/HR
SBR		1.40	0	10.0%	824			82					0					0	82 VEH/HR
SBT		1.40	0					0					0					0	0 VEH/HR
EBL		1.40	0	8.0%	1067			85					0					0	85 VEH/HR
EBT	190	1.40	266	4.35%	1067	8.35%	824	115	5%	354			18	25%	365			91	490 VEH/HR
EBR		1.40	0					0					0					0	0 VEH/HR
WBT	242	1.40	339	7.75%	824	19.0%	1067	267	5%	1181			59	25%	446			111	776 VEH/HR
WBR		1.40	0	14.5%	1067			155					0					0	155 VEH/HR
WBL		1.40	0					0					0					0	0 VEH/HR
NBT		1.40	0					0					0					0	0 VEH/HR
NBL		1.40	0					0					0					0	0 VEH/HR
NBR		1.40	0					0					0					0	0 VEH/HR



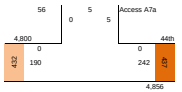
N/S Street: Access A7a
E/W Street: 44th

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 17

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D	A + B + C + D
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2030
SBL	5	1.40	7	16%	824			134					0					0	141 VEH/HR
SBR		1.40	0	7.75%	824			64					0					0	64 VEH/HR
EBL		1.40	0	4.35%	1067			46					0					0	46 VEH/HR
EBT	190	1.40	266	27.85%	824			229	5%	354			18	25%	365			91	604 VEH/HR
WBT	242	1.40	339	33.50%	1067			357	5%	1181			59	25%	446			111	866 VEH/HR
WBR		1.40	0	14.7%	1067			156					0					0	156 VEH/HR

Existing Traffic



Proposed 2030 Traffic



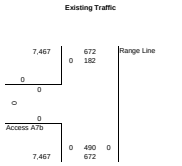
N/S Street: Range Line
E/W Street: Access A7b

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

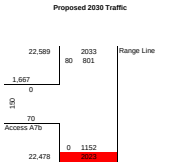
Growth Rate (GR): 2.00%
Years (n): 17

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D	A + B + C + D
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2030
SBR		1.40	0	7.50%	1067			80					0					0	80 VEH/HR
SBT	182	1.40	255	41.7%	1067			444	3%	1181			35	15%	446			67	801 VEH/HR
EBL		1.40	0					0					0					0	0 VEH/HR
EBR		1.40	0	8.5%	824			70					0					0	70 VEH/HR
NBT	490	1.40	686	48.60%	824			400	3%	354			11	15%	365			55	1152 VEH/HR
NBL		1.40	0		1067			0					0					0	0 VEH/HR

Existing Traffic



Proposed 2030 Traffic



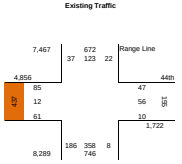
N/S Street: Range Line
E/W Street: 44th

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

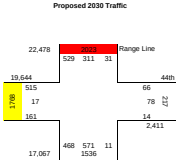
Growth Rate (GR): 2.00%
Years (n): 17

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D	A + B + C + D
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2030
SBL	22	1.40	31					0					0					0	31 VEH/HR
SBR	37	1.40	52	35.15%	1067			375	3%	1181			35	15%	446			67	529 VEH/HR
SBT	123	1.40	172	8.5%	824	6.5%	1067	139					0					0	311 VEH/HR
EBL	85	1.40	119	40.10%	824			330	3%	354			11	15%	365			55	515 VEH/HR
EBT	12	1.40	17					0					0					0	17 VEH/HR
EBR	61	1.40	85	4%	824			33	2%	354			7	10%	365			36	161 VEH/HR
WBT	56	1.40	78					0					0					0	78 VEH/HR
WBR	47	1.40	66					0					0					0	66 VEH/HR
WBL	10	1.40	14					0					0					0	14 VEH/HR
NBT	358	1.40	501	8.5%	824			70					0					0	571 VEH/HR
NBL	186	1.40	260	13%	1067			139	2%	1181			24	10%	446			45	468 VEH/HR
NBR	8	1.40	11					0					0					0	11 VEH/HR

Existing Traffic



Proposed 2030 Traffic



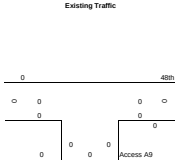
N/S Street: Access A9
E/W Street: 48th

New Trips		New Hospital Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

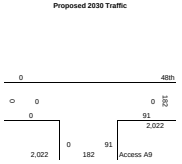
Growth Rate (GR): 2.00%
Years (n): 17

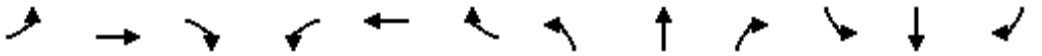
	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C	NEW SCHOOL TRIPS (1)	(2)	(3)	(4)	D	A + B + C + D
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	Trips IN/OUT	Projected Turn Movement for 2030
EBT		1.40	0					0					0					0	0 VEH/HR
EBR		1.40	0					0					0					0	0 VEH/HR
WBT		1.40	0					0					0					0	0 VEH/HR
WBL		1.40	0	8.5%	1067			91					0					0	91 VEH/HR
NBL		1.40	0					0					0					0	0 VEH/HR
NBR		1.40	0	11%	824			91					0					0	91 VEH/HR

Existing Traffic



Proposed 2030 Traffic





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.966				0.850		0.922			0.933	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1799	0	1770	1863	1583	1770	1717	0	3433	1738	0
Flt Permitted	0.711			0.581			0.950			0.950		
Satd. Flow (perm)	1324	1799	0	1082	1863	1583	1770	1717	0	3433	1738	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				130		69			58	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1848			592			2545			950	
Travel Time (s)		42.0			13.5			57.8			21.6	
Volume (vph)	102	34	10	443	65	120	7	282	309	357	244	198
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)	111	37	11	482	71	130	8	307	336	388	265	215
Lane Group Flow (vph)	111	48	0	482	71	130	8	643	0	388	480	0
Turn Type	pm+pt			pm+pt		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8						
Detector Phases	7	4		3	8	8	5	2		1	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0		8.0	20.0	
Total Split (s)	10.0	20.0	0.0	18.0	28.0	28.0	8.0	37.0	0.0	15.0	44.0	0.0
Total Split (%)	11.1%	22.2%	0.0%	20.0%	31.1%	31.1%	8.9%	41.1%	0.0%	16.7%	48.9%	0.0%
Maximum Green (s)	6.0	16.0		14.0	24.0	24.0	4.0	33.0		11.0	40.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	10.6	7.2		21.6	14.0	14.0	4.1	30.1		11.0	43.8	
Actuated g/C Ratio	0.14	0.09		0.29	0.19	0.19	0.05	0.40		0.15	0.58	
v/c Ratio	0.51	0.27		1.08	0.20	0.32	0.09	0.88		0.77	0.46	
Control Delay	32.1	32.3		92.1	29.5	8.1	41.9	34.9		44.8	11.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	32.1	32.3		92.1	29.5	8.1	41.9	34.9		44.8	11.0	
LOS	C	C		F	C	A	D	C		D	B	
Approach Delay		32.2			69.6			35.0			26.1	
Approach LOS		C			E			D			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	41	18		~250	31	0	4	264		100	107	
Queue Length 95th (ft)	80	50		#455	66	44	18	#494		#179	240	
Internal Link Dist (ft)		1768			512			2465			870	
Turn Bay Length (ft)												
Base Capacity (vph)	219	339		448	532	545	88	772		512	1048	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.51	0.14		1.08	0.13	0.24	0.09	0.83		0.76	0.46	

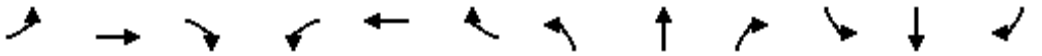
Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 75
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 41.6 Intersection LOS: D
Intersection Capacity Utilization 85.1% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: 44th & Connecticut



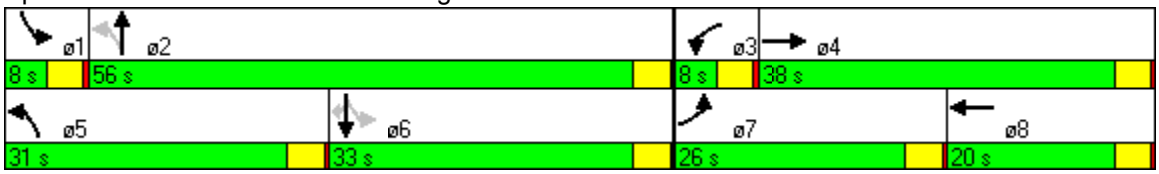


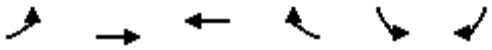
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.864			0.931			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1609	0	1770	1734	0	1770	3529	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.401			0.412		
Satd. Flow (perm)	3433	1609	0	1770	1734	0	747	3529	0	767	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		175			32			2				562
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1248			462			1481			919	
Travel Time (s)		28.4			10.5			33.7			20.9	
Volume (vph)	515	17	161	14	78	66	468	571	11	31	311	529
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)	560	18	175	15	85	72	509	621	12	34	338	575
Lane Group Flow (vph)	560	193	0	15	157	0	509	633	0	34	338	575
Turn Type	Prot			Prot			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		6
Minimum Split (s)	8.0	20.0		8.0	20.0		8.0	20.0		8.0	20.0	20.0
Total Split (s)	26.0	38.0	0.0	8.0	20.0	0.0	31.0	56.0	0.0	8.0	33.0	33.0
Total Split (%)	23.6%	34.5%	0.0%	7.3%	18.2%	0.0%	28.2%	50.9%	0.0%	7.3%	30.0%	30.0%
Maximum Green (s)	22.0	34.0		4.0	16.0		27.0	52.0		4.0	29.0	29.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	22.0	34.0		4.0	16.0		60.0	52.0		33.0	29.0	29.0
Actuated g/C Ratio	0.20	0.31		0.04	0.15		0.55	0.47		0.30	0.26	0.26
v/c Ratio	0.82	0.31		0.23	0.56		0.77	0.38		0.13	0.36	0.69
Control Delay	52.8	7.1		60.4	43.1		25.3	19.4		16.3	34.3	8.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	52.8	7.1		60.4	43.1		25.3	19.4		16.3	34.3	8.2
LOS	D	A		E	D		C	B		B	C	A
Approach Delay		41.1			44.6			22.0			17.8	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	196	9		11	83		218	146		11	102	7
Queue Length 95th (ft)	#274	61		33	152		314	190		26	145	109
Internal Link Dist (ft)		1168			382			1401			839	
Turn Bay Length (ft)												
Base Capacity (vph)	687	618		64	280		659	1669		267	933	831
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.82	0.31		0.23	0.56		0.77	0.38		0.13	0.36	0.69

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 48 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Pretimed			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 26.8		Intersection LOS: C	
Intersection Capacity Utilization 76.8%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

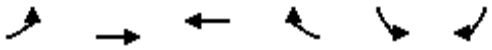
Splits and Phases: 25: 44th & Range Line





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.954				
Satd. Flow (prot)	0	1777	1863	0	1611	0
Flt Permitted		0.954				
Satd. Flow (perm)	0	1777	1863	0	1611	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1044	606		2545	
Travel Time (s)		23.7	13.8		57.8	
Volume (vph)	591	28	17	0	0	502
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	642	30	18	0	0	546
Lane Group Flow (vph)	0	672	18	0	546	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.998		0.908	
Flt Protected		0.984			0.984	
Satd. Flow (prot)	0	1833	1859	0	1664	0
Flt Permitted		0.984			0.984	
Satd. Flow (perm)	0	1833	1859	0	1664	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1104	1656		2570	
Travel Time (s)		25.1	37.6		58.4	
Volume (vph)	272	580	509	7	42	89
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	296	630	553	8	46	97
Lane Group Flow (vph)	0	926	561	0	143	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 90.6%		ICU Level of Service E	
Analysis Period (min) 15			

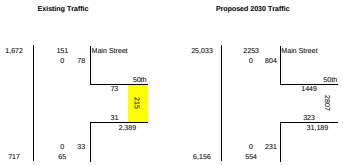
PM Peak Hour Calculation

N/S Street: Main Street
E/W Street: 50th

New Trips: In 2469, Out 2571
New Hospital Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015	
SBL	78	1.40	109	10.85%	2469			268	70%	610			427	804	VEH/HR
SBT		1.40	0					0					0	0	VEH/HR
WBR	73	1.40	102	11.58%	2571			298	70%	1499			1049	1449	VEH/HR
WBL	31	1.40	44	5%	2571			129	10%	1499			150	323	VEH/HR
NBT		1.40	0					0					0	0	VEH/HR
NBR	33	1.40	47	5%	2469			123	10%	610			61	231	VEH/HR

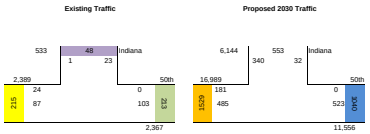


N/S Street: Indiana
E/W Street: 50th

New Trips: In 2469, Out 2571
New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015	
SBL	23	1.40	32					0					0	32	VEH/HR
SBR	1	1.40	1	1.5%	2571			39	20%	1499			300	340	VEH/HR
EBL	24	1.40	34	1.00%	2469			25	20%	610			122	181	VEH/HR
EBT	87	1.40	122	14.45%	2469	0.25%	2571	363					0	485	VEH/HR
WBT	103	1.40	144	14.7%	2571	0.1%	2469	379					0	523	VEH/HR
WBR	0	1.40	0					0					0	0	VEH/HR

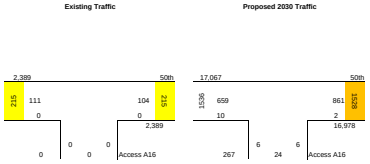


N/S Street: Access A16
E/W Street: 50th

New Trips: In 2469, Out 2571
New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015	
EBT	111	1.40	155	15.45%	2469			382	20%	610			122	659	VEH/HR
EBR		1.40	0	0.4%	2469			10					0	10	VEH/HR
WBT	104	1.40	146	16.2%	2571			415	20%	1499			300	861	VEH/HR
WBL		1.40	0	0.1%	2469			2					0	2	VEH/HR
NBL		1.40	0	0.25%	2571			6					0	6	VEH/HR
NBR		1.40	0	0.25%	2571			6					0	6	VEH/HR

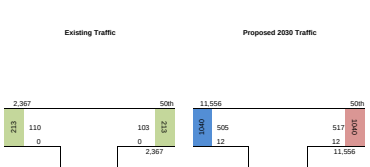


N/S Street: Access A15
E/W Street: 50th

New Trips: In 2469, Out 2571
New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015	
EBT	110	1.40	154	14.0%	2469	0.25%	2571	351					0	505	VEH/HR
EBR		1.40	0	0.5%	2469			12					0	12	VEH/HR
WBT	103	1.40	144	14.4%	2571	0.1%	2469	373					0	517	VEH/HR
WBL		1.40	0	0.5%	2469			12					0	12	VEH/HR
NBL		1.40	0	0.25%	2571			6					0	6	VEH/HR
NBR		1.40	0	0.25%	2571			6					0	6	VEH/HR



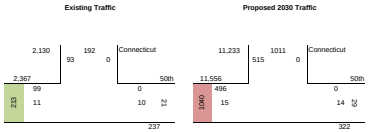
N/S Street: Connecticut
E/W Street: 50th

New Trips: In 2469, Out 2571

New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015
SBL		1.40	0					0					0	0 VEH/HR
SBR	93	1.40	130	14.4%	2571	0.6%	2469	385					0	515 VEH/HR
EBL	99	1.40	139	13.95%	2469	0.500%	2571	357					0	496 VEH/HR
EBT	11	1.40	15					0					0	15 VEH/HR
WBT	10	1.40	14					0					0	14 VEH/HR
WBR		1.40	0					0					0	0 VEH/HR



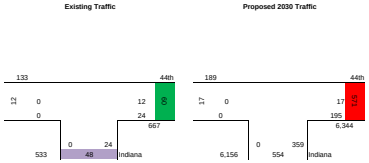
N/S Street: Indiana
E/W Street: 44th

New Trips: In 2469, Out 2571

New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015
EBT		1.40	0					0					0	0 VEH/HR
EBR		1.40	0					0					0	0 VEH/HR
WBT	12	1.40	17					0					0	17 VEH/HR
WBL	24	1.40	34	1.50%	2571			39	20%	610			122	195 VEH/HR
NBL		1.40	0					0					0	0 VEH/HR
NBR	24	1.40	34	1.00%	2469			25	20%	1499			300	359 VEH/HR



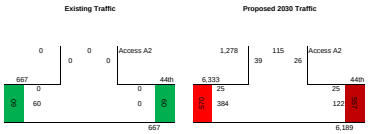
N/S Street: Access A2
E/W Street: 44th

New Trips: In 2469, Out 2571

New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015
SBL		1.40	0	1.0%	2571			26					0	26 VEH/HR
SBR		1.40	0	1.5%	2571			39					0	39 VEH/HR
EBL		1.40	0	1.00%	2469			25					0	25 VEH/HR
EBT	60	1.40	84					0	20%	1499			300	384 VEH/HR
WBT		1.40	0					0	20%	610			122	122 VEH/HR
WBR		1.40	0	1.00%	2469			25					0	25 VEH/HR



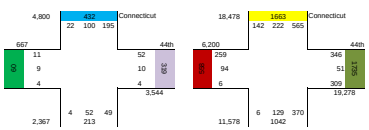
N/S Street: Connecticut
E/W Street: 44th

New Trips: In 2469, Out 2571

New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015
SBL	195	1.40	273	2.1%	2571	9.7%	2469	292					0	565 VEH/HR
SBR	22	1.40	31	0.75%	2469			19	15%	610			92	142 VEH/HR
SBT	100	1.40	140	2.6%	2571	0.6%	2469	82					0	222 VEH/HR
EBL	11	1.40	15	0.75%	2571			19	15%	1499			225	259 VEH/HR
EBT	9	1.40	13	0.25%	2571			6	5%	1499			75	94 VEH/HR
EBR	4	1.40	6					0					0	6 VEH/HR
WBT	10	1.40	14	0.250%	2469			6	5%	610			31	51 VEH/HR
WBR	52	1.40	73	1.75%	2469	9.0%	2571	273					0	346 VEH/HR
WBL	4	1.40	6	11.8%	2571			303					0	309 VEH/HR
NBT	52	1.40	73	1.75%	2469	0.5%	2571	56					0	129 VEH/HR
NBL	4	1.40	6					0					0	6 VEH/HR
NBR	49	1.40	69	12.2%	2469			301					0	370 VEH/HR



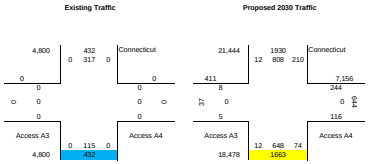
N/S Street: Connecticut
E/W Street: Access A3/Access A4

New Trips	
In	2469
Out	2571

New Trips	
In	610
Out	1499

Growth Rate (GR): 2.00%
Years (n): 17

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C	A + B + C
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Projected Turn Movement for 2015
SBL		1.40	0	8.5%	2469			210					0	210 VEH/HR
SBR		1.40	0	0.500%	2469			12					0	12 VEH/HR
SBT	317	1.40	444	11.00%	2469			272	15%	610			92	808 VEH/HR
EBL		1.40	0	0.3%	2571			8					0	8 VEH/HR
EBT		1.40	0					0					0	0 VEH/HR
EBR		1.40	0	0.2%	2571			5					0	5 VEH/HR
WBT		1.40	0					0					0	0 VEH/HR
WBR		1.40	0	10%	2571			244					0	244 VEH/HR
WBL		1.40	0	5%	2571			116					0	116 VEH/HR
NBT	115	1.40	161	10.20%	2571			262	15%	1499			225	648 VEH/HR
NBL		1.40	0	0.500%	2469			12					0	12 VEH/HR
NBR		1.40	0	3.0%	2469			74					0	74 VEH/HR



N/S Street: Access A5
E/W Street: 44th

New Trips	
In	2469
Out	2571

New Trips	
In	610
Out	1499

Growth Rate (GR): 2.00%
Years (n): 17

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C	A + B + C
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Projected Turn Movement for 2015
SBL		1.40	0	6.0%	2571			154					0	154 VEH/HR
SBR		1.40	0	3.0%	2571			77					0	77 VEH/HR
EBL		1.40	0	9.50%	2469			235					0	235 VEH/HR
EBT	253	1.40	354	2.35%	2571	12.4%	2469	365	5%	1499			75	794 VEH/HR
WBT	66	1.40	92	2.00%	2469	17.8%	2571	506	5%	610			31	629 VEH/HR
WBR		1.40	0	17.0%	2469			420					0	420 VEH/HR



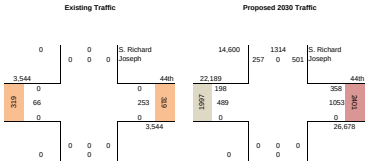
N/S Street: S. Richard Joseph
E/W Street: 44th

New Trips	
In	2469
Out	2571

New Trips	
In	610
Out	1499

Growth Rate (GR): 2.00%
Years (n): 17

	(1)	(2)	A (1) x (2)	NEW TRIPS (1)	(2)	(3)	(4)	B	NEW HOSPITAL TRIPS (1)	(2)	(3)	(4)	C	A + B + C
Turn Movement	Existing Traffic	Growth factor (1+GR)^n	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT	(1)+(2)+(3)+(4) Trips IN/OUT	Projected Turn Movement for 2015
SBL		1.40	0	19.5%	2571			501					0	501 VEH/HR
SBR		1.40	0	10%	2571			257					0	257 VEH/HR
SBT		1.40	0					0					0	0 VEH/HR
EBL		1.40	0	8.0%	2469			198					0	198 VEH/HR
EBT	66	1.40	92	4.35%	2469	8.35%	2571	322	5%	1499			75	489 VEH/HR
EBR		1.40	0					0					0	0 VEH/HR
WBT	253	1.40	354	7.75%	2571	19.0%	2469	668	5%	610			31	1053 VEH/HR
WBR		1.40	0	14.5%	2469			358					0	358 VEH/HR
WBL		1.40	0					0					0	0 VEH/HR
NBT		1.40	0					0					0	0 VEH/HR
NBL		1.40	0					0					0	0 VEH/HR
NBR		1.40	0					0					0	0 VEH/HR



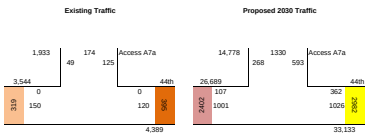
N/S Street: Access A7a
E/W Street: 44th

New Trips In: 2469
New Trips Out: 2571

New Trips In: 610
New Trips Out: 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015	
SBL	125	1.40	175	16%	2571			418					0	593	VEH/HR
SBR	49	1.40	69	7.75%	2571			199					0	268	VEH/HR
EBL		1.40	0	4.35%	2469			107					0	107	VEH/HR
EBT	150	1.40	210	27.85%	2571			716	5%	1499			75	1001	VEH/HR
WBT	120	1.40	168	33.50%	2469			827	5%	610			31	1026	VEH/HR
WBR		1.40	0	14.7%	2469			362					0	362	VEH/HR



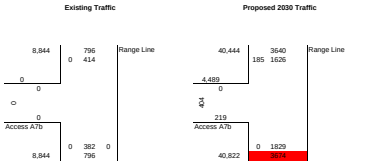
N/S Street: Range Line
E/W Street: Access A7b

New Trips In: 2469
New Trips Out: 2571

New Trips In: 610
New Trips Out: 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015	
SBR		1.40	0	7.50%	2469			185					0	185	VEH/HR
SBT	414	1.40	580	41.7%	2469			1028	3%	610			18	1626	VEH/HR
EBL		1.40	0					0					0	0	VEH/HR
EBR		1.40	0	8.5%	2571			219					0	219	VEH/HR
NBT	382	1.40	535	48.60%	2571			1249	3%	1499			45	1829	VEH/HR
NBL		1.40	0					0					0	0	VEH/HR



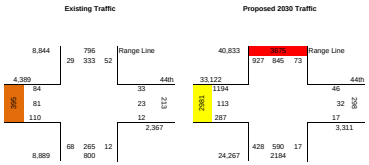
N/S Street: Range Line
E/W Street: 44th

New Trips In: 2469
New Trips Out: 2571

New Trips In: 610
New Trips Out: 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015	
SBL	52	1.40	73					0					0	73	VEH/HR
SBR	29	1.40	41	35.15%	2469			868	3%	610			18	927	VEH/HR
SBT	333	1.40	466	8.5%	2571	6.5%	2469	379					0	845	VEH/HR
EBL	84	1.40	118	40.1%	2571			1031	3%	1499			45	1194	VEH/HR
EBT	81	1.40	113					0					0	113	VEH/HR
EBR	110	1.40	154	4%	2571			103	2%	1499			30	287	VEH/HR
WBT	23	1.40	32					0					0	32	VEH/HR
WBR	33	1.40	46					0					0	46	VEH/HR
WBL	12	1.40	17					0					0	17	VEH/HR
NBT	265	1.40	371	8.5%	2571			219					0	590	VEH/HR
NBL	68	1.40	95	13%	2469			321	2%	610			12	428	VEH/HR
NBR	12	1.40	17					0					0	17	VEH/HR



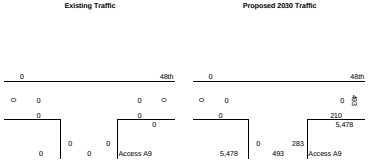
N/S Street: Access A9
E/W Street: 48th

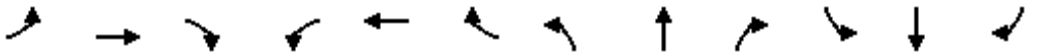
New Trips In: 2469
New Trips Out: 2571

New Trips In: 610
New Trips Out: 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2015	
EBT		1.40	0					0					0	0	VEH/HR
EBR		1.40	0					0					0	0	VEH/HR
WBT		1.40	0					0					0	0	VEH/HR
WBL		1.40	0	8.5%	2469			210					0	210	VEH/HR
NBL		1.40	0					0					0	0	VEH/HR
NBR		1.40	0	11%	2571			283					0	283	VEH/HR





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.938				0.850		0.889			0.942	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1747	0	1770	1863	1583	1770	1656	0	3433	1755	0
Flt Permitted	0.721			0.702			0.950			0.950		
Satd. Flow (perm)	1343	1747	0	1308	1863	1583	1770	1656	0	3433	1755	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				376		172			50	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1848			592			2545			950	
Travel Time (s)		42.0			13.5			57.8			21.6	
Volume (vph)	259	9	6	309	51	346	6	129	370	565	222	142
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)	282	10	7	336	55	376	7	140	402	614	241	154
Lane Group Flow (vph)	282	17	0	336	55	376	7	542	0	614	395	0
Turn Type	pm+pt			pm+pt		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8						
Detector Phases	7	4		3	8	8	5	2		1	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0		8.0	20.0	
Total Split (s)	13.0	20.0	0.0	14.0	21.0	21.0	8.0	34.0	0.0	22.0	48.0	0.0
Total Split (%)	14.4%	22.2%	0.0%	15.6%	23.3%	23.3%	8.9%	37.8%	0.0%	24.4%	53.3%	0.0%
Maximum Green (s)	9.0	16.0		10.0	17.0	17.0	4.0	30.0		18.0	44.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	11.8	7.8		21.8	9.0	9.0	4.1	22.0		16.6	41.4	
Actuated g/C Ratio	0.16	0.10		0.30	0.12	0.12	0.05	0.30		0.23	0.56	
v/c Ratio	1.05	0.10		0.66	0.24	0.72	0.08	0.88		0.79	0.39	
Control Delay	101.5	27.9		32.2	34.2	12.4	42.8	33.5		37.7	9.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	101.5	27.9		32.2	34.2	12.4	42.8	33.5		37.7	9.8	
LOS	F	C		C	C	B	D	C		D	A	
Approach Delay		97.4			22.6			33.6			26.8	
Approach LOS		F			C			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	~174	4		139	24	0	3	160		136	68	
Queue Length 95th (ft)	201	23		#266	59	76	18	#375		#272	195	
Internal Link Dist (ft)		1768			512			2465			870	
Turn Bay Length (ft)												
Base Capacity (vph)	272	323		509	397	634	91	728		844	1066	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	1.04	0.05		0.66	0.14	0.59	0.08	0.74		0.73	0.37	

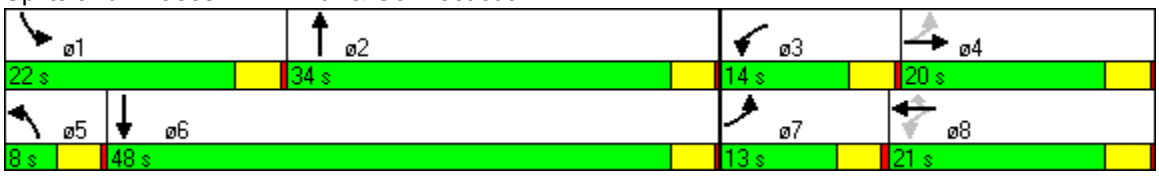
Intersection Summary

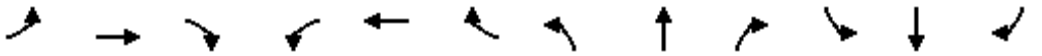
Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 73.3
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 35.0 Intersection LOS: D
Intersection Capacity Utilization 79.5% ICU Level of Service D
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: 44th & Connecticut





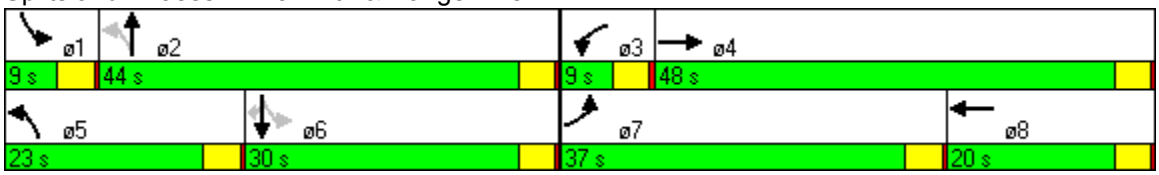
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.892			0.912			0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1662	0	1770	1699	0	1770	3525	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.133			0.401		
Satd. Flow (perm)	3433	1662	0	1770	1699	0	248	3525	0	747	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		138			50			3				756
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1248			462			1481			849	
Travel Time (s)		28.4			10.5			33.7			19.3	
Volume (vph)	1194	113	287	17	32	46	428	590	17	73	845	927
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)	1298	123	312	18	35	50	465	641	18	79	918	1008
Lane Group Flow (vph)	1298	435	0	18	85	0	465	659	0	79	918	1008
Turn Type	Prot			Prot			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		6
Minimum Split (s)	8.0	20.0		8.0	20.0		8.0	20.0		8.0	20.0	20.0
Total Split (s)	37.0	48.0	0.0	9.0	20.0	0.0	23.0	44.0	0.0	9.0	30.0	30.0
Total Split (%)	33.6%	43.6%	0.0%	8.2%	18.2%	0.0%	20.9%	40.0%	0.0%	8.2%	27.3%	27.3%
Maximum Green (s)	33.0	44.0		5.0	16.0		19.0	40.0		5.0	26.0	26.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	33.0	44.0		5.0	16.0		49.0	40.0		31.0	26.0	26.0
Actuated g/C Ratio	0.30	0.40		0.05	0.15		0.45	0.36		0.28	0.24	0.24
v/c Ratio	1.26	0.58		0.23	0.29		1.25	0.51		0.31	1.10	1.06
Control Delay	159.1	20.7		57.5	23.2		160.5	29.0		23.1	101.4	57.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	159.1	20.7		57.5	23.2		160.5	29.0		23.1	101.4	57.9
LOS	F	C		E	C		F	C		C	F	E
Approach Delay		124.4			29.2			83.4			76.4	
Approach LOS		F			C			F			E	
Queue Length 50th (ft)	~594	160		13	22		~361	188		32	~387	~345
Queue Length 95th (ft)	#727	264		37	68		#565	245		61	#515	#597
Internal Link Dist (ft)		1168			382			1401			769	
Turn Bay Length (ft)												
Base Capacity (vph)	1030	748		80	290		373	1284		257	836	951
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0

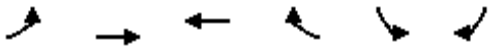
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.26	0.58		0.23	0.29		1.25	0.51		0.31	1.10	1.06

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 48 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Pretimed
Maximum v/c Ratio: 1.26
Intersection Signal Delay: 93.8 Intersection LOS: F
Intersection Capacity Utilization 97.8% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

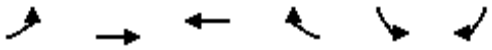
Splits and Phases: 25: 44th & Range Line





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.954				
Satd. Flow (prot)	0	1777	1863	0	1611	0
Flt Permitted		0.954				
Satd. Flow (perm)	0	1777	1863	0	1611	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1044	606		2545	
Travel Time (s)		23.7	13.8		57.8	
Volume (vph)	496	15	14	0	0	515
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	539	16	15	0	0	560
Lane Group Flow (vph)	0	555	15	0	560	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.5%		ICU Level of Service D	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.877	
Flt Protected		0.987			0.996	
Satd. Flow (prot)	0	1839	1863	0	1627	0
Flt Permitted		0.987			0.996	
Satd. Flow (perm)	0	1839	1863	0	1627	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1104	1656		2570	
Travel Time (s)		25.1	37.6		58.4	
Volume (vph)	181	485	523	0	32	340
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	527	568	0	35	370
Lane Group Flow (vph)	0	724	568	0	405	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 95.8%		ICU Level of Service F	
Analysis Period (min) 15			

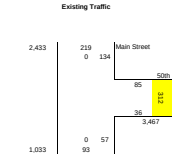
2030 AM Peak Hour Calculation with 50th Street Extension

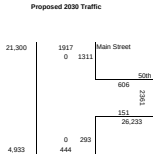
N/S Street: Main Street
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2030	
SBL	134	1.40	188	11.05%	1067			118	70%	1181			827	40%	446			178	1311	VEH/HR
SBT	0	1.40	0					0					0					0	0	VEH/HR
WBR	85	1.40	119	11.42%	824			94	70%	354			247	40%	365			146	606	VEH/HR
WBL	36	1.40	50	3.6%	824			30	10%	354			35	10%	365			36	151	VEH/HR
NBT	0	1.40	0					0					0					0	0	VEH/HR
NBR	57	1.40	80	4.7%	1067			50	10%	1181			118	10%	446			45	293	VEH/HR





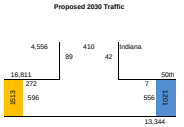
N/S Street: Indiana
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBL	30	1.40	42					0					0					0	42	VEH/HR
SBR	4	1.40	6	1.5%	824			12	20%	354			71					0	89	VEH/HR
EBL	18	1.40	25	1%	1067			11	20%	1181			236					0	272	VEH/HR
EBT	173	1.40	242	14.65%	1067	0.25%	824	158	4%	354			14	50%	365			182	596	VEH/HR
WBT	117	1.40	164	14.67%	824	0.1%	1067	122	4%	1181			47	50%	446			223	556	VEH/HR
WBR	5	1.40	7					0					0					0	7	VEH/HR





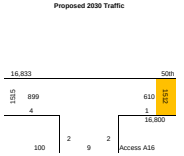
N/S Street: Access A16
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
EBT	191	1.40	267	15.65%	1067			167	24%	1181			283	50%	365			182	899	VEH/HR
EBR	0	1.40	0	0.4%	1067			4					0					0	4	VEH/HR
WBT	121	1.40	169	16.2%	824			133	24%	354			85	50%	446			223	610	VEH/HR
WBL	0	1.40	0	0.1%	1067			1					0					0	1	VEH/HR
NBL	0	1.40	0	0.25%	824			2					0					0	2	VEH/HR
NBR	0	1.40	0	0.25%	824			2					0					0	2	VEH/HR



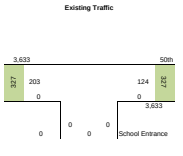


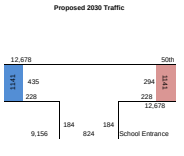
N/S Street: School Entrance
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 12

Turn Movement	(1) Traffic	(2) factor	A (1) x (2) Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement	
EBT	203	1.40	284	14.0%	1067	0.25%	824	151					0					0	435	VEH/HR
EBR		1.40	0	0.5%	1067			5					0	50%	446			223	228	VEH/HR
WBT	124	1.40	174	14.4%	824	0.1%	1067	120					0					0	294	VEH/HR
WBL		1.40	0	0.5%	1067			5					0	50%	446			223	228	VEH/HR
NBL		1.40	0	0.25%	824			2					0	50%	365			182	184	VEH/HR
NBR		1.40	0	0.25%	824			2					0	50%	365			182	184	VEH/HR



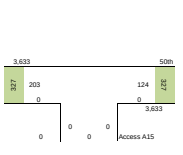


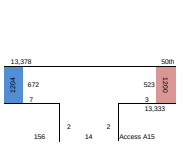
N/S Street: Access A15
E/W Street: 50th

	New Trips	New Hospital Trips	New School Trips
In	1067	1181	446
Out	824	354	365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
EBT	203	1.40	284	13.95%	1067	0.25%	824	151	4%	354			14	50%	446			223	672	VEH/HR
EBR	0	1.40	0	0.7%	1067			7					0					0	7	VEH/HR
WBT	124	1.40	174	14.5%	824	0.1%	1067	120	4%	1181			47	50%	365			182	523	VEH/HR
WBL	0	1.40	0	0.3%	1067			3					0					0	3	VEH/HR
NBL	0	1.40	0	0.22%	824			2					0					0	2	VEH/HR
NBR	0	1.40	0	0.28%	824			2					0					0	2	VEH/HR



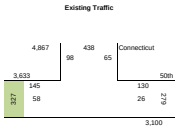


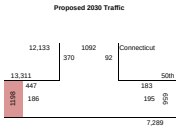
N/S Street: Connecticut
E/W Street: 50th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025
SBL	65	1.40	91	0.10%	824			1					0					0	92 VEH/HR
SBR	98	1.40	137	14.5%	824	0.3%	1067	122					0	25%	446			111	370 VEH/HR
EBL	145	1.40	203	13.95%	1067	0.48%	824	153					0	25%	365			91	447 VEH/HR
EBT	58	1.40	81	0.05%	824			0	4%	354			14	25%	365			91	186 VEH/HR
WBT	26	1.40	36	0.1%	1067			1	4%	1181			47	25%	446			111	195 VEH/HR
WBR	130	1.40	182	0.05%	1067			1					0					0	183 VEH/HR



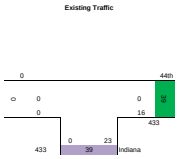


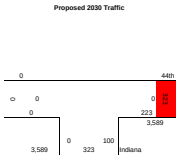
N/S Street: Indiana
E/W Street: 44th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025
EBT	0	1.40	0					0					0					0	0 VEH/HR
EBR	0	1.40	0					0					0					0	0 VEH/HR
WBT	0	1.40	0					0					0					0	0 VEH/HR
WBL	16	1.40	22	1.50%	824			12	16%	1181			189					0	223 VEH/HR
NBL	0	1.40	0					0					0					0	0 VEH/HR
NBR	23	1.40	32	1.00%	1067			11	16%	354			57					0	100 VEH/HR



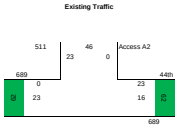


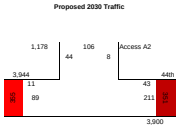
N/S Street: Access A2
E/W Street: 44th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025
SBL	0	1.40	0	1.0%	824			8					0					0	8 VEH/HR
SBR	23	1.40	32	1.5%	824			12					0					0	44 VEH/HR
EBL	0	1.40	0	1%	1067			11					0					0	11 VEH/HR
EBT	23	1.40	32					0	16%	354			57					0	89 VEH/HR
WBT	16	1.40	22					0	16%	1181			189					0	211 VEH/HR
WBR	23	1.40	32	1%	1067			11					0					0	43 VEH/HR



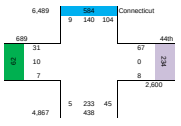


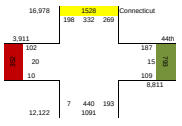
N/S Street: Connecticut
E/W Street: 44th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025
SBL	104	1.40	146	2.1%	824	10.0%	1067	123					0					0	269 VEH/HR
SBR	9	1.40	13	0.750%	1067			8	15%	1181			177					0	198 VEH/HR
SBT	140	1.40	196	2.6%	824	0.3%	1067	25					0	25%	446			111	332 VEH/HR
EBL	31	1.40	43	0.75%	824			6	15%	354			53					0	102 VEH/HR
EBT	10	1.40	14	0.25%	824			2	1%	354			4					0	20 VEH/HR
EBR	7	1.40	10					0					0					0	10 VEH/HR
WBT	0	1.40	0	0.250%	1067			3	1%	1181			12					0	15 VEH/HR
WBR	67	1.40	94	1.750%	1067	9.0%	824	93					0					0	187 VEH/HR
WBL	8	1.40	11	11.9%	824			98					0					0	109 VEH/HR
NBT	233	1.40	326	1.75%	1067	0.48%	824	23					0	25%	365			91	440 VEH/HR
NBL	5	1.40	7					0					0					0	7 VEH/HR
NBR	45	1.40	63	12.2%	1067			130					0					0	193 VEH/HR



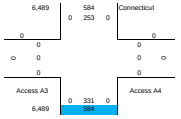


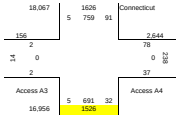
N/S Street: Connecticut
E/W Street: Access A3/Access A4

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	NEW TRIPS (2) IN/ OUT	NEW TRIPS (3) Dist.	NEW TRIPS (4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	NEW HOSPITAL TRIPS (2) IN/ OUT	NEW HOSPITAL TRIPS (3) Dist.	NEW HOSPITAL TRIPS (4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	NEW SCHOOL TRIPS (2) IN/ OUT	NEW SCHOOL TRIPS (3) Dist.	NEW SCHOOL TRIPS (4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBL	0	1.40	0	8.5%	1067			91					0					0	91	VEH/HR
SBR	0	1.40	0	0.500%	1067			5					0					0	5	VEH/HR
SBT	253	1.40	354	11.00%	1067			117	15%	1181			177	25%	446			111	759	VEH/HR
EBL	0	1.40	0	0.3%	824			2					0					0	2	VEH/HR
EBT	0	1.40	0					0					0					0	0	VEH/HR
EBR	0	1.40	0	0.2%	824			2					0					0	2	VEH/HR
WBT	0	1.40	0					0					0					0	0	VEH/HR
WBR	0	1.40	0	10%	824			78					0					0	78	VEH/HR
WBL	0	1.40	0	4.5%	824			37					0					0	37	VEH/HR
NBT	331	1.40	463	10.20%	824			84	15%	354			53	25%	365			91	691	VEH/HR
NBL	0	1.40	0	0.500%	1067			5					0					0	5	VEH/HR
NBR	0	1.40	0	3.0%	1067			32					0					0	32	VEH/HR



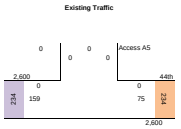


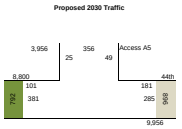
N/S Street: Access A5
E/W Street: 44th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	NEW TRIPS (2) IN/ OUT	NEW TRIPS (3) Dist.	NEW TRIPS (4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	NEW HOSPITAL TRIPS (2) IN/ OUT	NEW HOSPITAL TRIPS (3) Dist.	NEW HOSPITAL TRIPS (4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	NEW SCHOOL TRIPS (2) IN/ OUT	NEW SCHOOL TRIPS (3) Dist.	NEW SCHOOL TRIPS (4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBL	0	1.40	0	6.0%	824			49					0					0	49	VEH/HR
SBR	0	1.40	0	3.0%	824			25					0					0	25	VEH/HR
EBL	0	1.40	0	9.50%	1067			101					0					0	101	VEH/HR
EBT	159	1.40	223	2.35%	824	12.7%	1067	154	1%	354			4					0	381	VEH/HR
WBT	75	1.40	105	2.00%	1067	17.8%	824	168	1%	1181			12					0	285	VEH/HR
WBR	0	1.40	0	17.0%	1067			181					0					0	181	VEH/HR



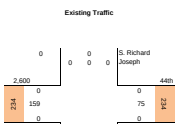


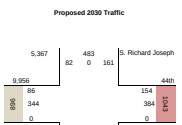
N/S Street: S. Richard Joseph
E/W Street: 44th

New Trips: In 1067, Out 824
New Trips: In 1181, Out 354
New School Trips: In 446, Out 365

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	NEW TRIPS (2) IN/ OUT	NEW TRIPS (3) Dist.	NEW TRIPS (4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	NEW HOSPITAL TRIPS (2) IN/ OUT	NEW HOSPITAL TRIPS (3) Dist.	NEW HOSPITAL TRIPS (4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	NEW SCHOOL TRIPS (1) Dist.	NEW SCHOOL TRIPS (2) IN/ OUT	NEW SCHOOL TRIPS (3) Dist.	NEW SCHOOL TRIPS (4) IN/ OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBL	0	1.40	0	19.5%	824			161					0					0	161	VEH/HR
SBR	0	1.40	0	10.0%	824			82					0					0	82	VEH/HR
SBT	0	1.40	0					0					0					0	0	VEH/HR
EBL	0	1.40	0	8.1%	1067			86					0					0	86	VEH/HR
EBT	159	1.40	223	4.55%	1067	8.35%	824	117	1%	354			4					0	344	VEH/HR
EBR	0	1.40	0					0					0					0	0	VEH/HR
WBT	75	1.40	105	7.82%	824	19.00%	1067	267	1%	1181			12					0	384	VEH/HR
WBR	0	1.40	0	14.4%	1067			154					0					0	154	VEH/HR
WBL	0	1.40	0					0					0					0	0	VEH/HR
NBT	0	1.40	0					0					0					0	0	VEH/HR
NBL	0	1.40	0					0					0					0	0	VEH/HR
NBR	0	1.40	0					0					0					0	0	VEH/HR





N/S Street: Access A7a
E/W Street: 44th

Growth Rate (GR): 2.00%
Years (n): 17

	New Trips		New Trips		New School Trips	
In	1067	In	1181	In	446	
Out	824	Out	354	Out	365	

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(1) IN/OUT	(2) Dist.	(2) IN/OUT	(3) Dist.	(3) IN/OUT	(4) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBL	0	1.40	0	16.18%	824							133	0	0	133	VEH/HR
SBR	87	1.40	122	7.82%	824							64	0	0	186	VEH/HR
EBL	62	1.40	87	4.55%	1067							49	0	0	136	VEH/HR
EBT	73	1.40	102	27.85%	824							229	4	0	335	VEH/HR
WBT	12	1.40	17	33.40%	1067							356	12	0	385	VEH/HR
WBR	45	1.40	63	14.5%	1067							154	0	0	217	VEH/HR

	New Trips		New Trips		New School Trips	
In	1067	In	1181	In	446	
Out	824	Out	354	Out	365	

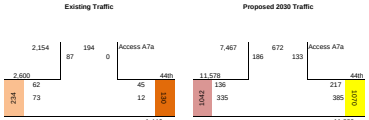
Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(1) IN/OUT	(2) Dist.	(2) IN/OUT	(3) Dist.	(3) IN/OUT	(4) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBR	0	1.40	0	7.50%	1067							80	0	0	80	VEH/HR
SBT	214	1.40	300	41.45%	1067							442	35	67	844	VEH/HR
EBL	0	1.40	0									0	0	0	0	VEH/HR
EBR	0	1.40	0	8.5%	824							70	0	0	70	VEH/HR
NBT	500	1.40	700	48.58%	824							400	11	55	1166	VEH/HR
NBL	0	1.40	0									0	0	0	0	VEH/HR

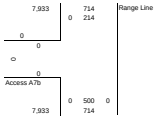
	New Trips		New Trips		New School Trips	
In	1067	In	1181	In	446	
Out	824	Out	354	Out	365	

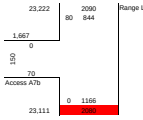
Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(1) IN/OUT	(2) Dist.	(2) IN/OUT	(3) Dist.	(3) IN/OUT	(4) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
SBL	22	1.40	31									0	0	0	31	VEH/HR
SBR	42	1.40	59	34.95%	1067							373	12	0	444	VEH/HR
SBT	150	1.40	210	8.5%	824	6.5%	1067					139	24	67	440	VEH/HR
EBL	27	1.40	38	40.58%	824							334	4	0	376	VEH/HR
EBT	27	1.40	38									0	0	0	38	VEH/HR
EBR	6	1.40	8	3.5%	824							28	0	0	36	VEH/HR
WBT	76	1.40	106									0	0	0	106	VEH/HR
WBR	47	1.40	66									0	0	0	66	VEH/HR
WBL	10	1.40	14									0	0	0	14	VEH/HR
NBT	426	1.40	597	8.0%	824							66	7	55	725	VEH/HR
NBL	56	1.40	78	12.90%	1067							138	0	0	216	VEH/HR
NBR	8	1.40	11									0	0	0	11	VEH/HR

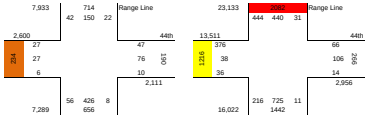
	New Trips		New Trips		New School Trips	
In	1067	In	1181	In	446	
Out	824	Out	354	Out	365	

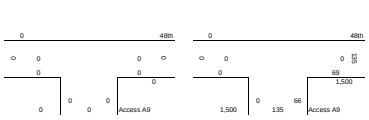
Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(1) IN/OUT	(2) Dist.	(2) IN/OUT	(3) Dist.	(3) IN/OUT	(4) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	D (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C + D Projected Turn Movement for 2025	
EBT	0	1.40	0									0	0	0	0	VEH/HR
EBR	0	1.40	0									0	0	0	0	VEH/HR
WBT	0	1.40	0									0	0	0	0	VEH/HR
WBL	0	1.40	0	6.5%	1067							69	0	0	69	VEH/HR
NBL	0	1.40	0									0	0	0	0	VEH/HR
NBR	0	1.40	0	8%	824							66	0	0	66	VEH/HR









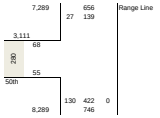


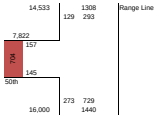
N/S Street: Range Line
E/W Street: 50th

New Trips		New Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 17

	(1)	(2) Growth factor	A (1) x (2)	NEW TRIPS (1)		(2)	(3)	(4)	B (1)+(2)+(3)+(4)	NEW HOSPITAL TRIPS (1)		(2)	(3)	(4)	C (1)+(2)+(3)+(4)	NEW SCHOOL TRIPS (1)		(2)	(3)	(4)	D (1)+(2)+(3)+(4)	A + B + C + D	
Turn Movement	Existing Traffic	$(1+GR)^n$	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT		Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT		Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT		Trips IN/OUT	Projected Turn Movement for 2025	
SBR	27	1.40	38		1067				0	2%	1181				24	15%	446				67	129	VEH/HR
SBT	139	1.40	195	12%	824				98						0						0	293	VEH/HR
EBL	68	1.40	95						0	2%	354				7	15%	365				55	157	VEH/HR
EBR	55	1.40	77	3.05%	824				25	2%	354				7	10%	365				36	145	VEH/HR
NBT	422	1.40	591	12.9%	1067				138						0						0	729	VEH/HR
NBL	130	1.40	182	2.1%	1067				22	2%	1181				24	10%	446				45	273	VEH/HR





N/S Street: Access A10
E/W Street: 50th

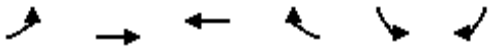
New Trips		New Trips		New School Trips	
In	1067	In	1181	In	446
Out	824	Out	354	Out	365

Growth Rate (GR): 2.00%
Years (n): 17

	(1)	(2) Growth factor	A (1) x (2)	NEW TRIPS (1)		(2)	(3)	(4)	B (1)+(2)+(3)+(4)	NEW HOSPITAL TRIPS (1)		(2)	(3)	(4)	C (1)+(2)+(3)+(4)	NEW SCHOOL TRIPS (1)		(2)	(3)	(4)	D (1)+(2)+(3)+(4)	A + B + C + D	
Turn Movement	Existing Traffic	$(1+GR)^n$	Projected Traffic	Dist.	IN/ OUT	Dist.	IN/ OUT		Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT		Trips IN/OUT	Dist.	IN/ OUT	Dist.	IN/ OUT		Trips IN/OUT	Projected Turn Movement for 2025	
SBL	0	1.40	0	3.0%	824				25						0						0	25	VEH/HR
SBR	0	1.40	0		824				0						0						0	0	VEH/HR
EBL	0	1.40	0		1067				0						0						0	0	VEH/HR
EBT	123	1.40	172	0.05%	824				0	4%	354				14	25%	365				91	277	VEH/HR
WBT	157	1.40	220	0.10%	1067				1	4%	1181				47	25%	446				111	379	VEH/HR
WBR	0	1.40	0	2.0%	1067				21						0						0	21	VEH/HR

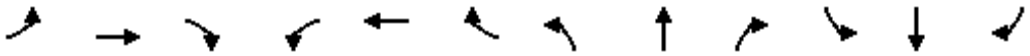






Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			100	0	0
Storage Lanes	0			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.998		0.908	
Flt Protected		0.985			0.984	
Satd. Flow (prot)	0	1835	1859	0	1664	0
Flt Permitted		0.985			0.984	
Satd. Flow (perm)	0	1835	1859	0	1664	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1104	1656		2570	
Travel Time (s)		25.1	37.6		58.4	
Volume (vph)	272	596	556	7	42	89
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	296	648	604	8	46	97
Lane Group Flow (vph)	0	944	612	0	143	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 93.9%		ICU Level of Service F	
Analysis Period (min) 15			

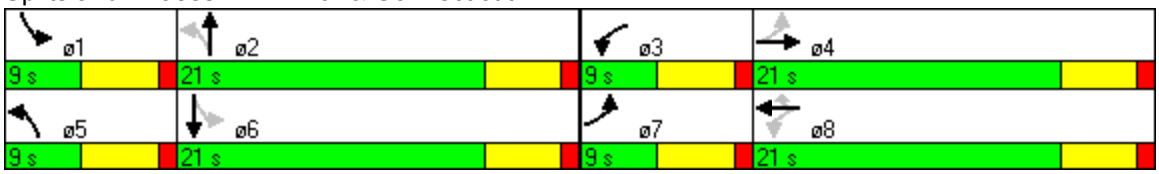


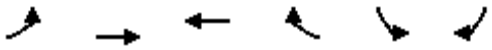
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	100		0	150		0	150		0
Storage Lanes	1		0	1		1	1		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95
Frt		0.950				0.850		0.954			0.944	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1770	0	1770	1863	1583	1770	3376	0	3433	3341	0
Flt Permitted	0.747			0.736			0.315			0.235		
Satd. Flow (perm)	1391	1770	0	1371	1863	1583	587	3376	0	849	3341	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				203		116			205	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1848			882			2545			950	
Travel Time (s)		42.0			20.0			57.8			21.6	
Volume (vph)	102	20	10	109	15	187	7	440	193	269	332	198
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)	111	22	11	118	16	203	8	478	210	292	361	215
Lane Group Flow (vph)	111	33	0	118	16	203	8	688	0	292	576	0
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	9.0	21.0		9.0	21.0	21.0	9.0	21.0		9.0	21.0	
Total Split (s)	9.0	21.0	0.0	9.0	21.0	21.0	9.0	21.0	0.0	9.0	21.0	0.0
Total Split (%)	15.0%	35.0%	0.0%	15.0%	35.0%	35.0%	15.0%	35.0%	0.0%	15.0%	35.0%	0.0%
Maximum Green (s)	4.0	16.0		4.0	16.0	16.0	4.0	16.0		4.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	22.0	17.0		22.0	17.0	17.0	22.0	17.0		22.0	17.0	
Actuated g/C Ratio	0.37	0.28		0.37	0.28	0.28	0.37	0.28		0.37	0.28	
v/c Ratio	0.20	0.06		0.22	0.03	0.34	0.03	0.66		0.55	0.53	
Control Delay	11.6	12.6		11.7	15.9	4.9	10.0	19.2		15.2	13.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	11.6	12.6		11.7	15.9	4.9	10.0	19.2		15.2	13.4	
LOS	B	B		B	B	A	A	B		B	B	
Approach Delay		11.8			7.8			19.1			14.0	
Approach LOS		B			A			B			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	

Actuated Cycle Length: 60
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 14.6 Intersection LOS: B
Intersection Capacity Utilization 48.7% ICU Level of Service A
Analysis Period (min) 15

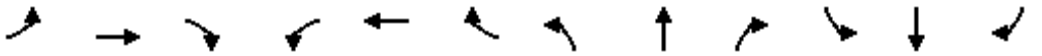
Splits and Phases: 7: 44th & Connecticut





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			1	1	1
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1583	1770	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1044	4436		2545	
Travel Time (s)		23.7	100.8		57.8	
Volume (vph)	447	186	195	183	92	370
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	486	202	212	199	100	402
Lane Group Flow (vph)	486	202	212	199	100	402
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.1%		ICU Level of Service A	
Analysis Period (min) 15			

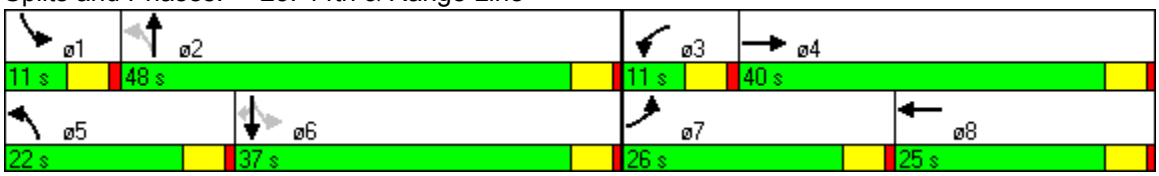


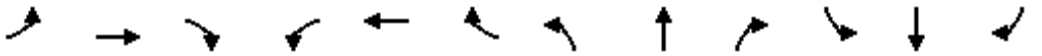
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	125		0	125		200
Storage Lanes	2		0	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.927			0.942			0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1727	0	1770	1755	0	1770	3532	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.317			0.295		
Satd. Flow (perm)	3433	1727	0	1770	1755	0	590	3532	0	550	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			25			2				483
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1248			462			1481			909	
Travel Time (s)		28.4			10.5			33.7			20.7	
Volume (vph)	376	38	36	14	106	66	216	725	11	31	440	444
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)	409	41	39	15	115	72	235	788	12	34	478	483
Lane Group Flow (vph)	409	80	0	15	187	0	235	800	0	34	478	483
Turn Type	Prot			Prot			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		6
Detector Phases	7	4		3	8		5	2		1	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	21.0		9.0	21.0		9.0	21.0		9.0	21.0	21.0
Total Split (s)	26.0	40.0	0.0	11.0	25.0	0.0	22.0	48.0	0.0	11.0	37.0	37.0
Total Split (%)	23.6%	36.4%	0.0%	10.0%	22.7%	0.0%	20.0%	43.6%	0.0%	10.0%	33.6%	33.6%
Maximum Green (s)	21.0	35.0		6.0	20.0		17.0	43.0		6.0	32.0	32.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	18.6	34.2		6.8	16.0		63.4	56.5		52.8	45.7	45.7
Actuated g/C Ratio	0.17	0.31		0.06	0.15		0.58	0.51		0.48	0.42	0.42
v/c Ratio	0.70	0.14		0.14	0.68		0.48	0.44		0.10	0.33	0.51
Control Delay	49.7	15.7		51.6	50.4		16.4	20.1		13.9	24.7	4.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	49.7	15.7		51.6	50.4		16.4	20.1		13.9	24.7	4.8
LOS	D	B		D	D		B	C		B	C	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		44.2			50.5			19.2			14.7	
Approach LOS		D			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 24.4		Intersection LOS: C	
Intersection Capacity Utilization 59.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 25: 44th & Range Line

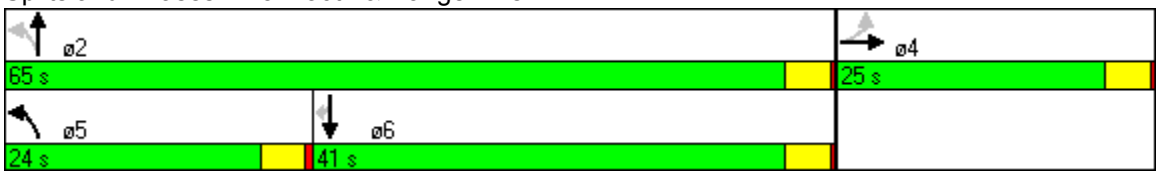




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50					50	50			50	50
Trailing Detector (ft)	0	0					0	0			0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	1583	0	0	0	0	1770	1863	0	0	1863	1583
Flt Permitted	0.950						0.410					
Satd. Flow (perm)	1770	1583	0	0	0	0	764	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		644										140
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		766			1704			1272			1058	
Travel Time (s)		17.4			38.7			28.9			24.0	
Volume (vph)	157	0	145	0	0	0	273	729	0	0	293	129
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)	171	0	158	0	0	0	297	792	0	0	318	140
Lane Group Flow (vph)	171	158	0	0	0	0	297	792	0	0	318	140
Turn Type	Perm						pm+pt					Perm
Protected Phases		4					5	2			6	
Permitted Phases	4						2					6
Detector Phases	4	4					5	2			6	6
Minimum Initial (s)	4.0	4.0					4.0	4.0			4.0	4.0
Minimum Split (s)	20.0	20.0					8.0	20.0			20.0	20.0
Total Split (s)	25.0	25.0	0.0	0.0	0.0	0.0	24.0	65.0	0.0	0.0	41.0	41.0
Total Split (%)	27.8%	27.8%	0.0%	0.0%	0.0%	0.0%	26.7%	72.2%	0.0%	0.0%	45.6%	45.6%
Maximum Green (s)	21.0	21.0					20.0	61.0			37.0	37.0
Yellow Time (s)	3.5	3.5					3.5	3.5			3.5	3.5
All-Red Time (s)	0.5	0.5					0.5	0.5			0.5	0.5
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	3.0
Recall Mode	None	None					None	Max			Max	Max
Walk Time (s)	5.0	5.0						5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0						0			0	0
Act Effct Green (s)	13.1	13.1					61.1	61.1			47.1	47.1
Actuated g/C Ratio	0.16	0.16					0.74	0.74			0.57	0.57
v/c Ratio	0.61	0.20					0.43	0.57			0.30	0.14
Control Delay	41.5	0.6					5.8	7.4			11.4	2.6
Queue Delay	0.0	0.0					0.0	0.0			0.0	0.0
Total Delay	41.5	0.6					5.8	7.4			11.4	2.6
LOS	D	A					A	A			B	A
Approach Delay		21.9						6.9			8.7	
Approach LOS		C						A			A	

Intersection Summary		
Area Type:	Other	
Cycle Length: 90		
Actuated Cycle Length: 82.2		
Natural Cycle: 60		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.61		
Intersection Signal Delay: 10.0		Intersection LOS: A
Intersection Capacity Utilization 54.0%		ICU Level of Service A
Analysis Period (min) 15		

Splits and Phases: 34: 50th & Range Line



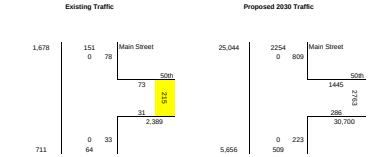
2030 PM Peak Hour Calculation with 50th Street Extension

N/S Street: Main Street
E/W Street: 50th

New Trips In: 2469 Out: 2571
New Hospital Trips In: 610 Out: 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030	
SBL	78	1.40	109	11.05%	2469			273	70%	610			427	809	VEH/HR
SBT		1.40	0					0					0	0	VEH/HR
WBR	73	1.40	102	11.42%	2571			294	70%	1499			1049	1445	VEH/HR
WBL	31	1.40	43	3.6%	2571			93	10%	1499			150	286	VEH/HR
NBT		1.40	0					0					0	0	VEH/HR
NBR	33	1.40	46	4.7%	2469			116	10%	610			61	223	VEH/HR

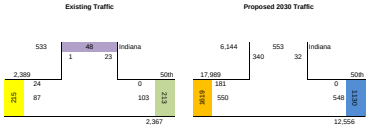


N/S Street: Indiana
E/W Street: 50th

New Trips In: 2469 Out: 2571
New Trips In: 610 Out: 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030	
SBL	23	1.40	32					0					0	32	VEH/HR
SBR	1	1.40	1	1.5%	2571			39	20%	1499			300	340	VEH/HR
EBL	24	1.40	34	1%	2469			25	20%	610			122	181	VEH/HR
EBT	87	1.40	122	14.65%	2469	0.25%	2571	368	4%	1499			60	550	VEH/HR
WBT	103	1.40	144	14.67%	2571	0.1%	2469	380	4%	610			24	548	VEH/HR
WBR		1.40	0					0					0	0	VEH/HR

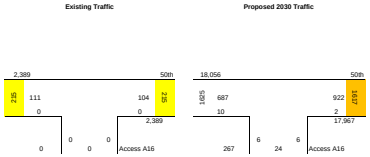


N/S Street: Access A16
E/W Street: 50th

New Trips In: 2469 Out: 2571
New Trips In: 610 Out: 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030	
EBT	111	1.40	155	15.65%	2469			386	24%	610			146	687	VEH/HR
EBR		1.40	0	0.4%	2469			10					0	10	VEH/HR
WBT	104	1.40	146	16.2%	2571			416	24%	1499			360	922	VEH/HR
WBL		1.40	0	0.1%	2469			2					0	2	VEH/HR
NBL		1.40	0	0.25%	2571			6					0	6	VEH/HR
NBR		1.40	0	0.25%	2571			6					0	6	VEH/HR

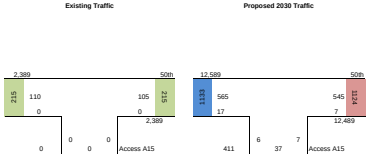


N/S Street: Access A15
E/W Street: 50th

New Trips In: 2469 Out: 2571
New Trips In: 610 Out: 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/OUT	(3) Dist.	(4) IN/OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030	
EBT	110	1.40	154	13.95%	2469	0.25%	2571	351	4%	1499			60	565	VEH/HR
EBR		1.40	0	0.7%	2469			17					0	17	VEH/HR
WBT	105	1.40	147	14.5%	2571	0.1%	2469	374	4%	610			24	545	VEH/HR
WBL		1.40	0	0.3%	2469			7					0	7	VEH/HR
NBL		1.40	0	0.22%	2571			6					0	6	VEH/HR
NBR		1.40	0	0.28%	2571			7					0	7	VEH/HR



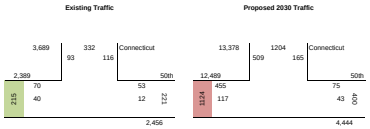
N/S Street: Connecticut
E/W Street: 50th

New Trips In: 2469 Out: 2571

New Trips In: 610 Out: 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030
SBL	116	1.40	162	0.10%	2571			3					0	165 VEH/HR
SBR	93	1.40	130	14.5%	2571			379					0	509 VEH/HR
EBL	70	1.40	98	13.95%	2469	0.48%	2571	357					0	455 VEH/HR
EBT	40	1.40	56	0.05%	2571			1	4%	1499			60	117 VEH/HR
WBT	12	1.40	17	0.1%	2469			2	4%	610			24	43 VEH/HR
WBR	53	1.40	74	0.05%	2469			1					0	75 VEH/HR



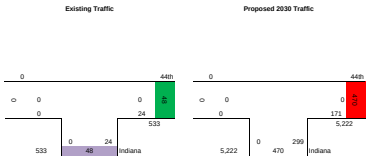
N/S Street: Indiana
E/W Street: 44th

New Trips In: 2469 Out: 2571

New Trips In: 610 Out: 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030
EBT		1.40	0					0					0	0 VEH/HR
EBR		1.40	0					0					0	0 VEH/HR
WBT		1.40	0					0					0	0 VEH/HR
WBL	24	1.40	34	1.50%	2571			39	16%	610			98	171 VEH/HR
NBL		1.40	0					0					0	0 VEH/HR
NBR	24	1.40	34	1.00%	2469			25	16%	1499			240	299 VEH/HR



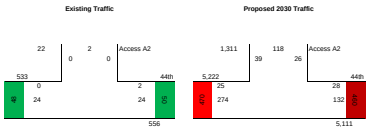
N/S Street: Access A2
E/W Street: 44th

New Trips In: 2469 Out: 2571

New Trips In: 610 Out: 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030
SBL		1.40	0	1.0%	2571			26					0	26 VEH/HR
SBR		1.40	0	1.5%	2571			39					0	39 VEH/HR
EBL		1.40	0	1%	2469			25					0	25 VEH/HR
EBT	24	1.40	34					0	16%	1499			240	274 VEH/HR
WBT	24	1.40	34					0	16%	610			98	132 VEH/HR
WBR	2	1.40	3	1%	2469			25					0	28 VEH/HR



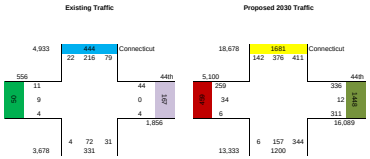
N/S Street: Connecticut
E/W Street: 44th

New Trips In: 2469 Out: 2571

New Trips In: 610 Out: 1499

Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor (1+GR)^n	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030
SBL	79	1.40	111	2.1%	2571	10.0%	2469	300					0	411 VEH/HR
SBR	22	1.40	31	0.750%	2469			19	15%	610			92	142 VEH/HR
SBT	216	1.40	302	2.6%	2571	0.3%	2469	74					0	376 VEH/HR
EBL	11	1.40	15	0.75%	2571			19	15%	1499			225	259 VEH/HR
EBT	9	1.40	13	0.25%	2571			6	1%	1499			15	34 VEH/HR
EBR	4	1.40	6					0					0	6 VEH/HR
WBT	0	1.40	0	0.250%	2469			6	1%	610			6	12 VEH/HR
WBR	44	1.40	62	1.750%	2469	9.0%	2571	274					0	336 VEH/HR
WBL	4	1.40	6	11.9%	2571			305					0	311 VEH/HR
NBT	72	1.40	101	1.75%	2469	0.48%	2571	56					0	157 VEH/HR
NBL	4	1.40	6					0					0	6 VEH/HR
NBR	31	1.40	43	12.2%	2469			301					0	344 VEH/HR



N/S Street Connecticut
E/W Street Access A3/Access A4

New Trips
In 2469
Out 2571

New Trips
In 610
Out 1499

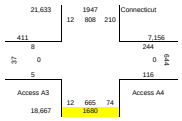
Growth Rate (GR) 2.00%
Years (n) 17

Turn Movement	(1) Existing Traffic	(2) growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030	
SBL		1.40	0	8.5%	2469			210					0	210	VEH/HR
SBR		1.40	0	0.500%	2469			12					0	12	VEH/HR
SBT	317	1.40	444	11.00%	2469			272	15%	610			92	808	VEH/HR
EBL		1.40	0	0.3%	2571			8					0	8	VEH/HR
EBT		1.40	0					0					0	0	VEH/HR
EBR		1.40	0	0.2%	2571			5					0	5	VEH/HR
WBT		1.40	0					0					0	0	VEH/HR
WBR		1.40	0	10%	2571			244					0	244	VEH/HR
WBL		1.40	0	4.5%	2571			116					0	116	VEH/HR
NBT	127	1.40	178	10.20%	2571			262	15%	1499			225	665	VEH/HR
NBL		1.40	0	0.500%	2469			12					0	12	VEH/HR
NBR		1.40	0	3.0%	2469			74					0	74	VEH/HR

Existing Traffic



Proposed 2030 Traffic



N/S Street Access A5
E/W Street 44th

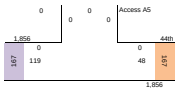
New Trips
In 2469
Out 2571

New Trips
In 610
Out 1499

Growth Rate (GR) 2.00%
Years (n) 17

Turn Movement	(1) Existing Traffic	(2) growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030	
SBL		1.40	0	6.0%	2571			154					0	154	VEH/HR
SBR		1.40	0	3.0%	2571			77					0	77	VEH/HR
EBL		1.40	0	9.50%	2469			235					0	235	VEH/HR
EBT	119	1.40	167	2.35%	2571	12.7%	2469	373	1%	1499			15	555	VEH/HR
WBT	48	1.40	67	2.00%	2469	17.8%	2571	507	1%	610			6	580	VEH/HR
WBR		1.40	0	17.0%	2469			420					0	420	VEH/HR

Existing Traffic



Proposed 2030 Traffic



N/S Street S. Richard Joseph
E/W Street 44th

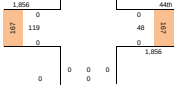
New Trips
In 2469
Out 2571

New Trips
In 610
Out 1499

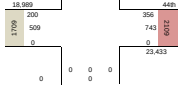
Growth Rate (GR) 2.00%
Years (n) 17

Turn Movement	(1) Existing Traffic	(2) growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030	
SBL		1.40	0	19.5%	2571			501					0	501	VEH/HR
SBR		1.40	0	10.0%	2571			257					0	257	VEH/HR
SBT		1.40	0					0					0	0	VEH/HR
EBL		1.40	0	8.1%	2469			200					0	200	VEH/HR
EBT	119	1.40	167	4.55%	2469	8.35%	2571	327	1%	1499			15	509	VEH/HR
EBR		1.40	0					0					0	0	VEH/HR
WBT	48	1.40	67	7.82%	2571	19.00%	2469	670	1%	610			6	743	VEH/HR
WBR		1.40	0	14.4%	2469			356					0	356	VEH/HR
WBL		1.40	0					0					0	0	VEH/HR
NBT		1.40	0					0					0	0	VEH/HR
NBL		1.40	0					0					0	0	VEH/HR
NBR		1.40	0					0					0	0	VEH/HR

Existing Traffic



Proposed 2030 Traffic



N/S Street Access A7a
E/W Street 44th

New Trips
In 2469
Out 2571

New Trips
In 610
Out 1499

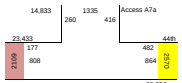
Growth Rate (GR) 2.00%
Years (n) 17

Turn Movement	(1) Existing Traffic	(2) growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030	
SBL		1.40	0	16.18%	2571			416					0	416	VEH/HR
SBR	42	1.40	59	7.82%	2571			201					0	260	VEH/HR
EBL	46	1.40	65	4.55%	2469			112					0	177	VEH/HR
EBT	55	1.40	77	27.85%	2571			716	1%	1499			15	808	VEH/HR
WBT	24	1.40	33	33.40%	2469			825	1%	610			6	864	VEH/HR
WBR	89	1.40	125	14.5%	2469			357					0	482	VEH/HR

Existing Traffic



Proposed 2030 Traffic



N/S Street Range Line
E/W Street Access A7b

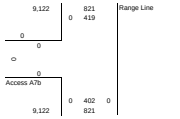
New Trips
In 2469
Out 2571

New Trips
In 610
Out 1499

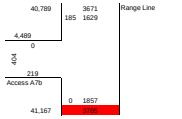
Growth Rate (GR) 2.00%
Years (n) 17

Turn Movement	(1) Existing Traffic	(2) growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030	
SBR		1.40	0	7.50%	2469			185					0	185	VEH/HR
SBT	419	1.40	587	41.45%	2469			1024	3%	610			18	1629	VEH/HR
EBL		1.40	0					0					0	0	VEH/HR
EBR		1.40	0	8.5%	2571			219					0	219	VEH/HR
NBT	402	1.40	563	48.58%	2571			1249	3%	1499			45	1857	VEH/HR
NBL		1.40	0					0					0	0	VEH/HR

Existing Traffic



Proposed 2030 Traffic



N/S Street Range Line
E/W Street 44th

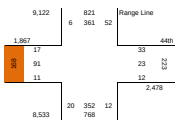
New Trips
In 2469
Out 2571

New Trips
In 610
Out 1499

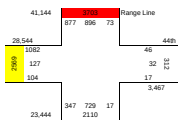
Growth Rate (GR) 2.00%
Years (n) 17

Turn Movement	(1) Existing Traffic	(2) growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030	
SBL	52	1.40	73					0					0	73	VEH/HR
SBR	6	1.40	8	34.95%	2469			863	1%	610			6	877	VEH/HR
SBT	361	1.40	505	8.5%	2571	6.5%	2469	379	2%	610			12	896	VEH/HR
EBL	17	1.40	24	40.58%	2571			1043	1%	1499			15	1082	VEH/HR
EBT	91	1.40	127					0					0	127	VEH/HR
EBR	11	1.40	15	3.5%	2571			89					0	104	VEH/HR
WBT	23	1.40	32					0					0	32	VEH/HR
WBR	33	1.40	46					0					0	46	VEH/HR
WBL	12	1.40	17					0					0	17	VEH/HR
NBT	352	1.40	493	8.0%	2571			206	2%	1499			30	729	VEH/HR
NBL	20	1.40	28	12.90%	2469			319					0	347	VEH/HR
NBR	12	1.40	17					0					0	17	VEH/HR

Existing Traffic



Proposed 2030 Traffic



N/S Street Access A9
E/W Street 48th

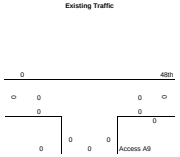
New Trips
In 2469
Out 2571

New Trips
In 610
Out 1499

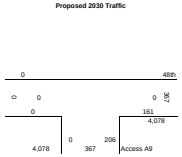
Growth Rate (GR) 2.00%
Years (n) 17

Turn Movement	(1) Existing Traffic	(2) growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030	
EBT		1.40	0					0					0	0	VEH/HR
EBR		1.40	0					0					0	0	VEH/HR
WBT		1.40	0					0					0	0	VEH/HR
WBL		1.40	0	6.5%	2469			161					0	161	VEH/HR
NBL		1.40	0					0					0	0	VEH/HR
NBR		1.40	0	8%	2571			206					0	206	VEH/HR

Existing Traffic



Proposed 2030 Traffic



N/S Street: Range Line
E/W Street: 50th

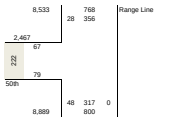
New Trips: In 2469, Out 2571

New Trips: In 610, Out 1499

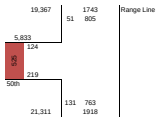
Growth Rate (GR): 2.00%
Years (n): 17

Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030	
SBR	28	1.40	39		2469			0	2%	610			12	51	VEH/HR
SBT	356	1.40	498	12%	2571			307					0	805	VEH/HR
EBL	67	1.40	94					0	2%	1499			30	124	VEH/HR
EBR	79	1.40	111	3.05%	2571			78	2%	1499			30	219	VEH/HR
NBT	317	1.40	444	12.9%	2469			319					0	763	VEH/HR
NBL	48	1.40	67	2.1%	2469			52	2%	610			12	131	VEH/HR

Existing Traffic



Proposed 2030 Traffic



N/S Street: Access A10
E/W Street: 50th

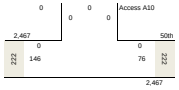
New Trips: In 2469, Out 2571

New Trips: In 610, Out 1499

Growth Rate (GR): 2.00%
Years (n): 17

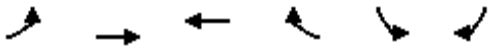
Turn Movement	(1) Existing Traffic	(2) Growth factor $(1+GR)^n$	A (1) x (2) Projected Traffic	NEW TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	B (1)+(2)+(3)+(4) Trips IN/OUT	NEW HOSPITAL TRIPS (1) Dist.	(2) IN/ OUT	(3) Dist.	(4) IN/ OUT	C (1)+(2)+(3)+(4) Trips IN/OUT	A + B + C Projected Turn Movement for 2030	
SBL		1.40	0	3.0%	2571			77					0	77	VEH/HR
SBR		1.40	0		2571			0					0	0	VEH/HR
EBL		1.40	0		2469			0					0	0	VEH/HR
EBT	146	1.40	204	0.05%	2571			1	4%	1499			60	265	VEH/HR
WBT	76	1.40	106	0.10%	2469			2	4%	610			24	132	VEH/HR
WBR		1.40	0	2.0%	2469			49					0	49	VEH/HR

Existing Traffic



Proposed 2030 Traffic





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	0			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.877	
Flt Protected		0.988			0.996	
Satd. Flow (prot)	0	1840	1863	0	1627	0
Flt Permitted		0.988			0.996	
Satd. Flow (perm)	0	1840	1863	0	1627	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1104	1656		2570	
Travel Time (s)		25.1	37.6		58.4	
Volume (vph)	181	550	548	0	32	340
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	598	596	0	35	370
Lane Group Flow (vph)	0	795	596	0	405	0
Sign Control		Free	Free		Stop	

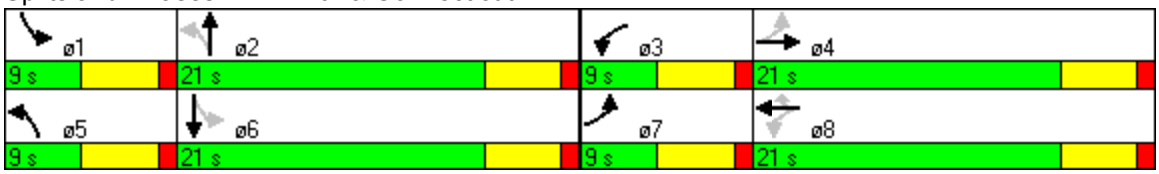
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	15		

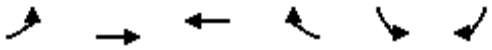
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	100		0	150		0	200		0
Storage Lanes	1		0	1		1	1		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95
Frt		0.976				0.850		0.897			0.959	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1818	0	1770	1863	1583	1770	1671	0	3433	3394	0
Flt Permitted	0.749			0.728			0.325			0.235		
Satd. Flow (perm)	1395	1818	0	1356	1863	1583	605	1671	0	849	3394	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				365		183			91	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1848			882			2545			950	
Travel Time (s)		42.0			20.0			57.8			21.6	
Volume (vph)	259	34	6	311	12	336	6	157	344	411	376	142
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)	282	37	7	338	13	365	7	171	374	447	409	154
Lane Group Flow (vph)	282	44	0	338	13	365	7	545	0	447	563	0
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	9.0	21.0		9.0	21.0	21.0	9.0	21.0		9.0	21.0	
Total Split (s)	9.0	21.0	0.0	9.0	21.0	21.0	9.0	21.0	0.0	9.0	21.0	0.0
Total Split (%)	15.0%	35.0%	0.0%	15.0%	35.0%	35.0%	15.0%	35.0%	0.0%	15.0%	35.0%	0.0%
Maximum Green (s)	4.0	16.0		4.0	16.0	16.0	4.0	16.0		4.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0			0	0		0			0	
Act Effct Green (s)	22.0	17.0		22.0	17.0	17.0	22.0	17.0		22.0	17.0	
Actuated g/C Ratio	0.37	0.28		0.37	0.28	0.28	0.37	0.28		0.37	0.28	
v/c Ratio	0.52	0.08		0.64	0.02	0.51	0.02	0.90		0.85	0.55	
Control Delay	16.8	14.5		20.1	15.8	5.3	10.0	35.5		30.7	17.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.8	14.5		20.1	15.8	5.3	10.0	35.5		30.7	17.5	
LOS	B	B		C	B	A	A	D		C	B	
Approach Delay		16.5			12.4			35.2			23.3	
Approach LOS		B			B			D			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	

Actuated Cycle Length: 60
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Pretimed
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 22.0 Intersection LOS: C
Intersection Capacity Utilization 75.0% ICU Level of Service D
Analysis Period (min) 15

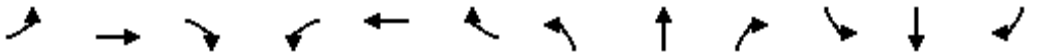
Splits and Phases: 7: 44th & Connecticut





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			1	1	1
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1583	1770	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1044	4426		2545	
Travel Time (s)		23.7	100.6		57.8	
Volume (vph)	455	117	43	75	165	509
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	495	127	47	82	179	553
Lane Group Flow (vph)	495	127	47	82	179	553
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.7%		ICU Level of Service A	
Analysis Period (min) 15			

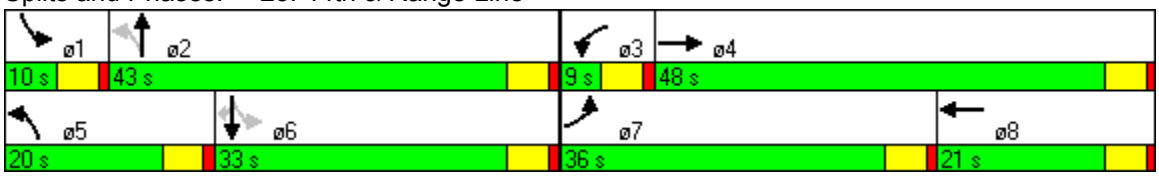


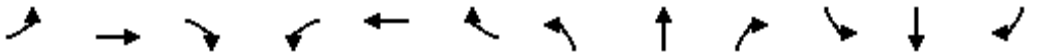
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	100		0	200		0	125		200
Storage Lanes	2		0	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.932			0.912			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1736	0	1770	1699	0	1770	3529	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.121			0.250		
Satd. Flow (perm)	3433	1736	0	1770	1699	0	225	3529	0	466	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45			50			2				743
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1248			462			1481			809	
Travel Time (s)		28.4			10.5			33.7			18.4	
Volume (vph)	1082	127	104	17	32	46	347	729	17	73	896	877
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)	1176	138	113	18	35	50	377	792	18	79	974	953
Lane Group Flow (vph)	1176	251	0	18	85	0	377	810	0	79	974	953
Turn Type	Prot			Prot			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		6
Detector Phases	7	4		3	8		5	2		1	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	21.0		9.0	21.0		9.0	21.0		9.0	21.0	21.0
Total Split (s)	36.0	48.0	0.0	9.0	21.0	0.0	20.0	43.0	0.0	10.0	33.0	33.0
Total Split (%)	32.7%	43.6%	0.0%	8.2%	19.1%	0.0%	18.2%	39.1%	0.0%	9.1%	30.0%	30.0%
Maximum Green (s)	31.0	43.0		4.0	16.0		15.0	38.0		5.0	28.0	28.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)		5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	32.0	39.4		5.0	9.1		59.0	48.5		37.7	29.0	29.0
Actuated g/C Ratio	0.29	0.36		0.05	0.08		0.54	0.44		0.34	0.26	0.26
v/c Ratio	1.18	0.39		0.23	0.46		0.78	0.52		0.30	1.04	0.99
Control Delay	126.2	23.0		57.5	30.6		39.1	26.0		18.9	81.5	36.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	126.2	23.0		57.5	30.6		39.1	26.0		18.9	81.5	36.5
LOS	F	C		E	C		D	C		B	F	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		108.0			35.3			30.1			57.6	
Approach LOS		F			D			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 3 (3%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 65.5		Intersection LOS: E	
Intersection Capacity Utilization 91.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 25: 44th & Range Line



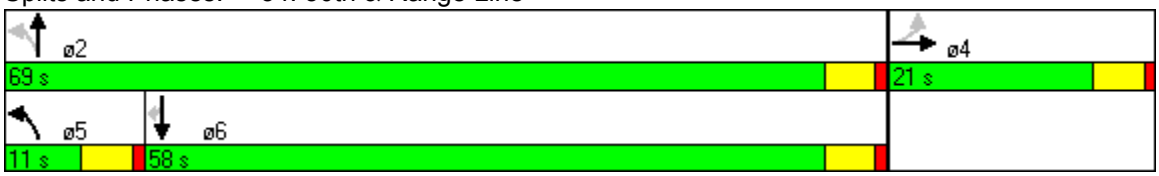


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	0		0
Storage Lanes	1		0	0		0	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50					50	50			50	50
Trailing Detector (ft)	0	0					0	0			0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	1583	0	0	0	0	1770	1863	0	0	1863	1583
Flt Permitted	0.950						0.140					
Satd. Flow (perm)	1770	1583	0	0	0	0	261	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		255										55
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		773			1116			1272			1058	
Travel Time (s)		17.6			25.4			28.9			24.0	
Volume (vph)	124	0	219	0	0	0	131	763	0	0	805	51
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)	135	0	238	0	0	0	142	829	0	0	875	55
Lane Group Flow (vph)	135	238	0	0	0	0	142	829	0	0	875	55
Turn Type	Perm						pm+pt					Perm
Protected Phases		4					5	2			6	
Permitted Phases	4						2					6
Detector Phases	4	4					5	2			6	6
Minimum Initial (s)	4.0	4.0					4.0	4.0			4.0	4.0
Minimum Split (s)	21.0	21.0					9.0	21.0			21.0	21.0
Total Split (s)	21.0	21.0	0.0	0.0	0.0	0.0	11.0	69.0	0.0	0.0	58.0	58.0
Total Split (%)	23.3%	23.3%	0.0%	0.0%	0.0%	0.0%	12.2%	76.7%	0.0%	0.0%	64.4%	64.4%
Maximum Green (s)	16.0	16.0					6.0	64.0			53.0	53.0
Yellow Time (s)	4.0	4.0					4.0	4.0			4.0	4.0
All-Red Time (s)	1.0	1.0					1.0	1.0			1.0	1.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	3.0
Recall Mode	None	None					None	C-Max			C-Max	C-Max
Walk Time (s)	5.0	5.0						5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0						11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0						0			0	0
Act Effct Green (s)	12.8	12.8					69.2	69.2			57.4	57.4
Actuated g/C Ratio	0.14	0.14					0.77	0.77			0.64	0.64
v/c Ratio	0.54	0.54					0.43	0.58			0.74	0.05
Control Delay	43.1	8.4					7.1	6.8			16.8	2.4
Queue Delay	0.0	0.0					0.0	0.0			0.0	0.0
Total Delay	43.1	8.4					7.1	6.8			16.8	2.4
LOS	D	A					A	A			B	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		21.0						6.9			15.9	
Approach LOS		C						A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 12.9		Intersection LOS: B	
Intersection Capacity Utilization 73.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 34: 50th & Range Line



JOPLIN AREA TRANSPORTATION
STUDY ORGANIZATION

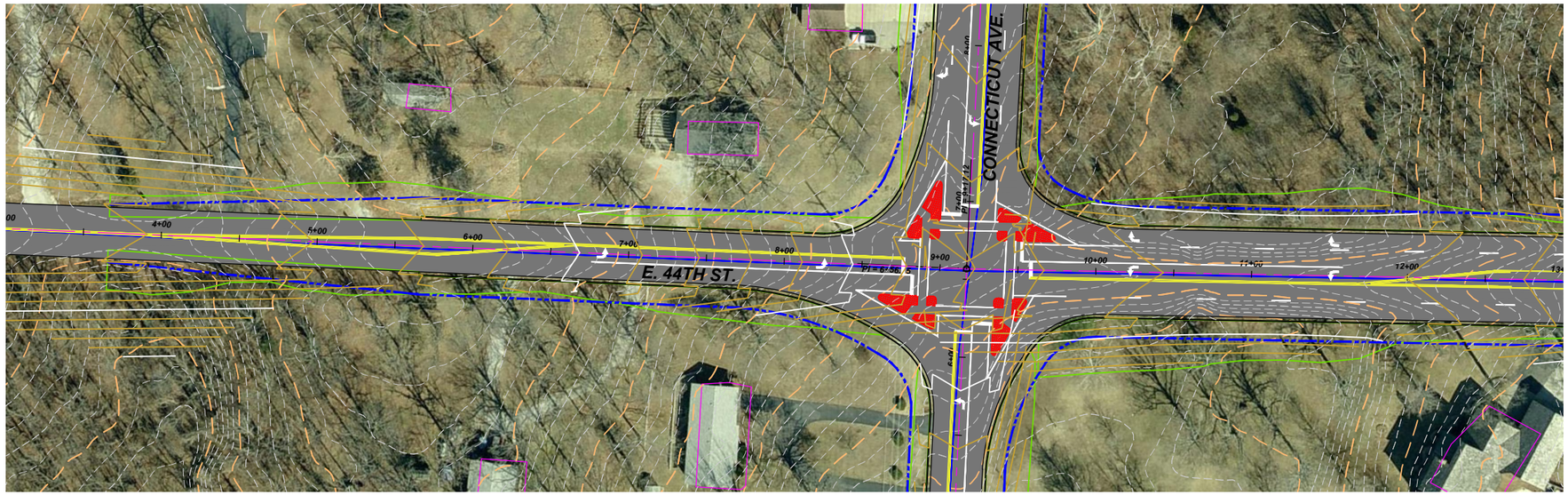
SOUTH JOPLIN AREA TRANSPORTATION STUDY

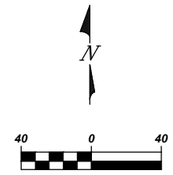
APPENDIX E – ROADWAY ALIGNMENT ANALYSIS & COST ESTIMATION

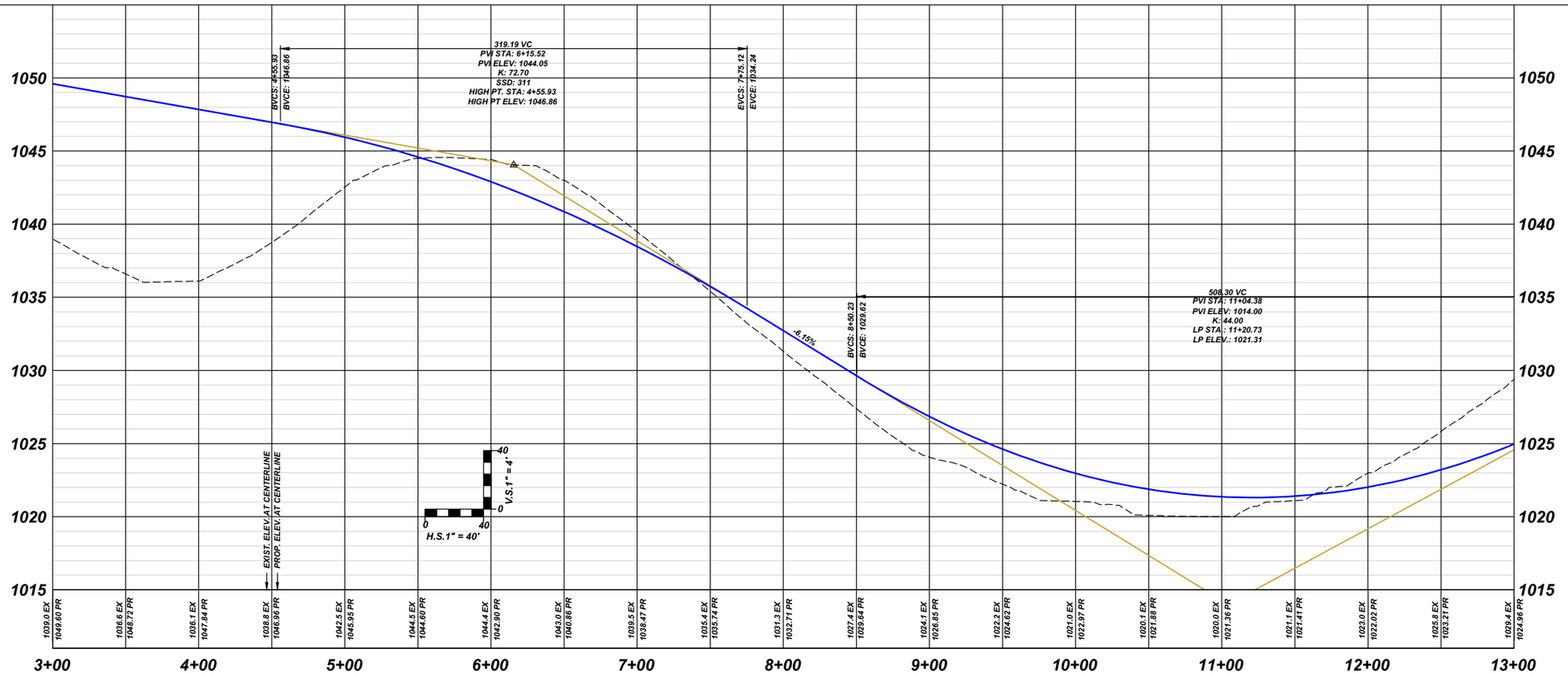
July 8, 2013

PREPARED BY:

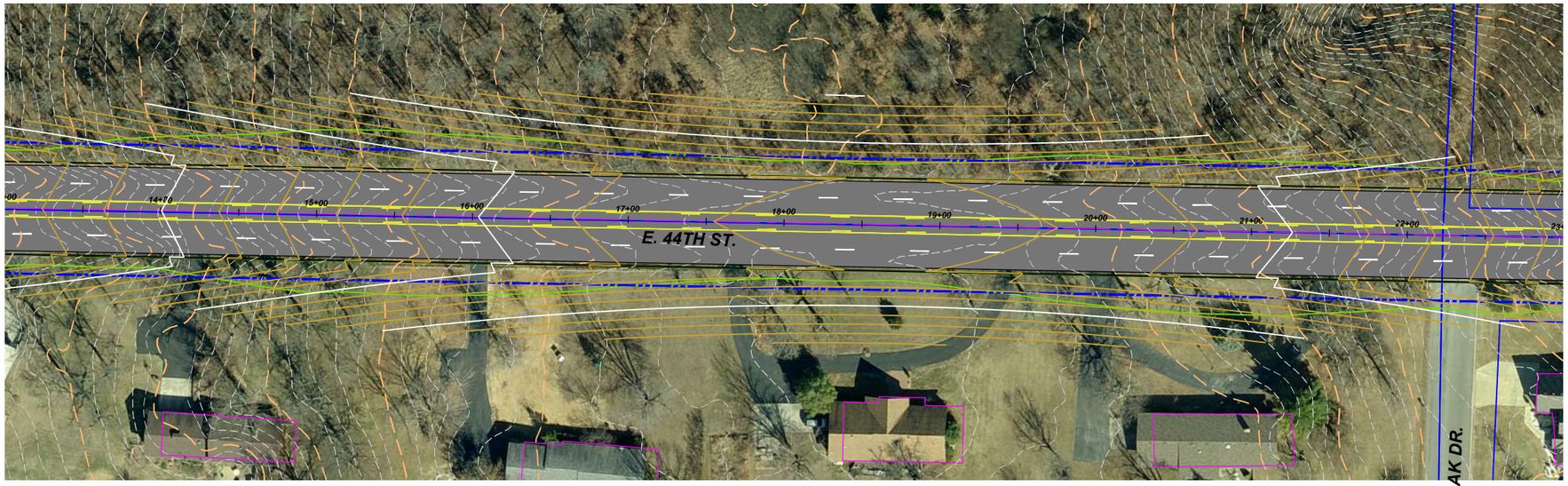
CJW



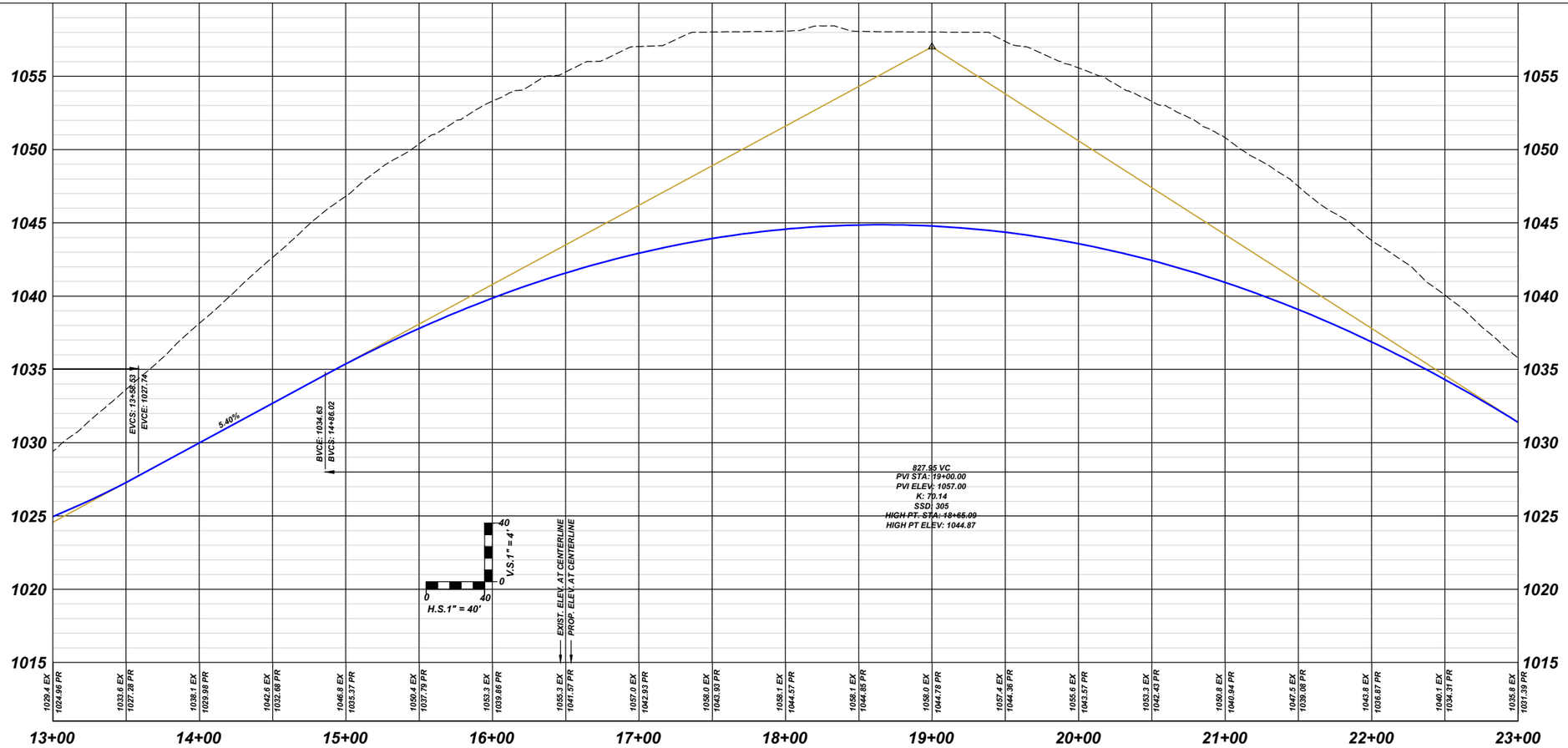




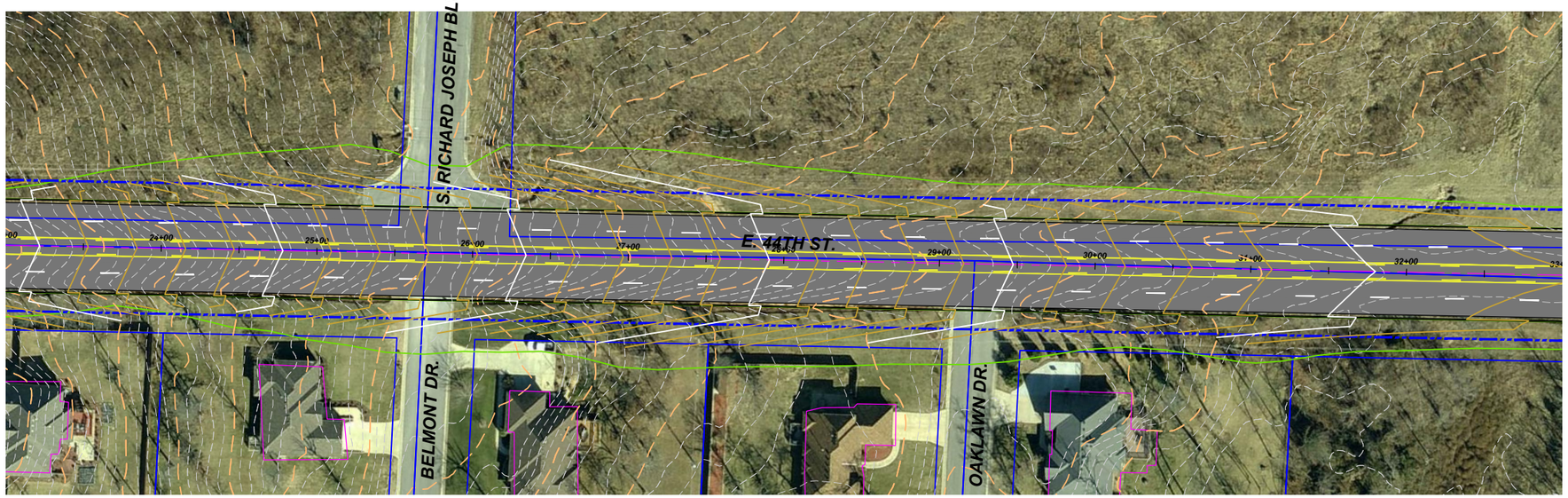
Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

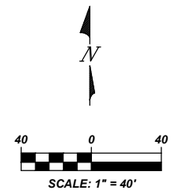


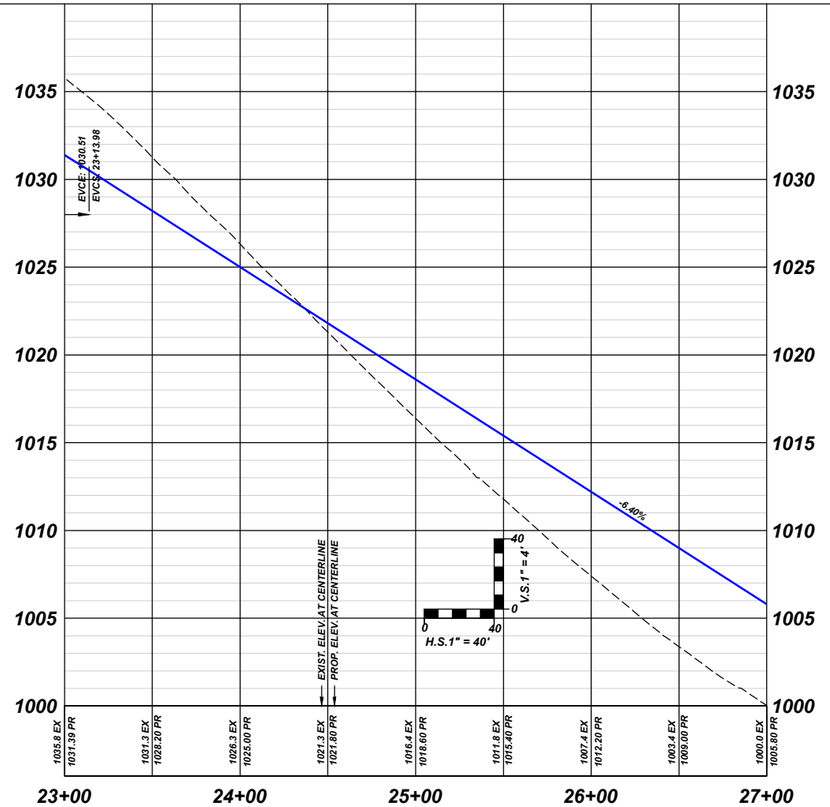


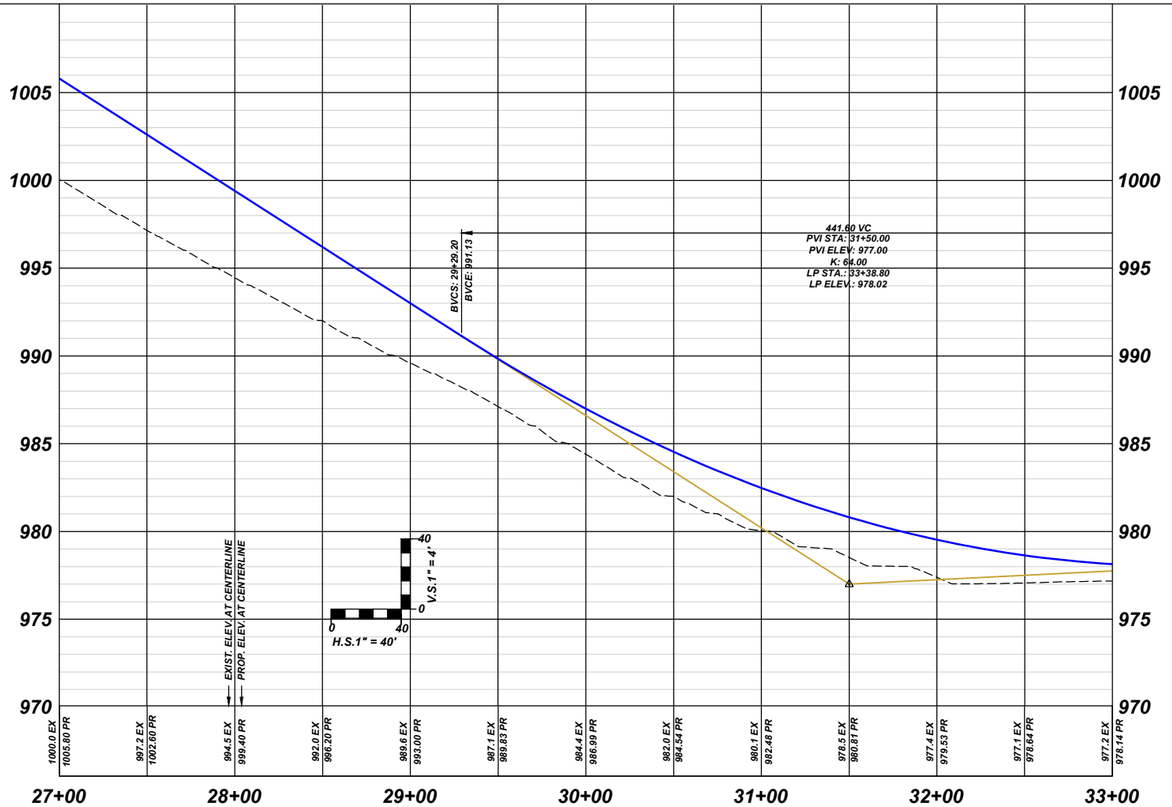


Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

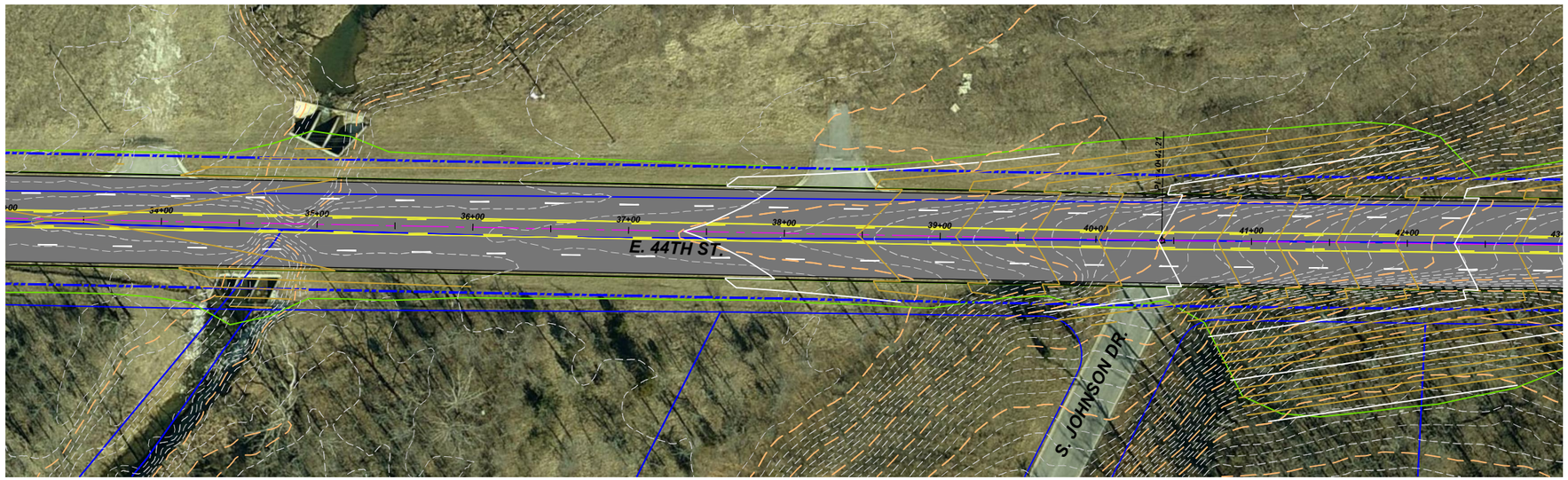


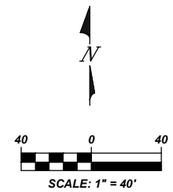


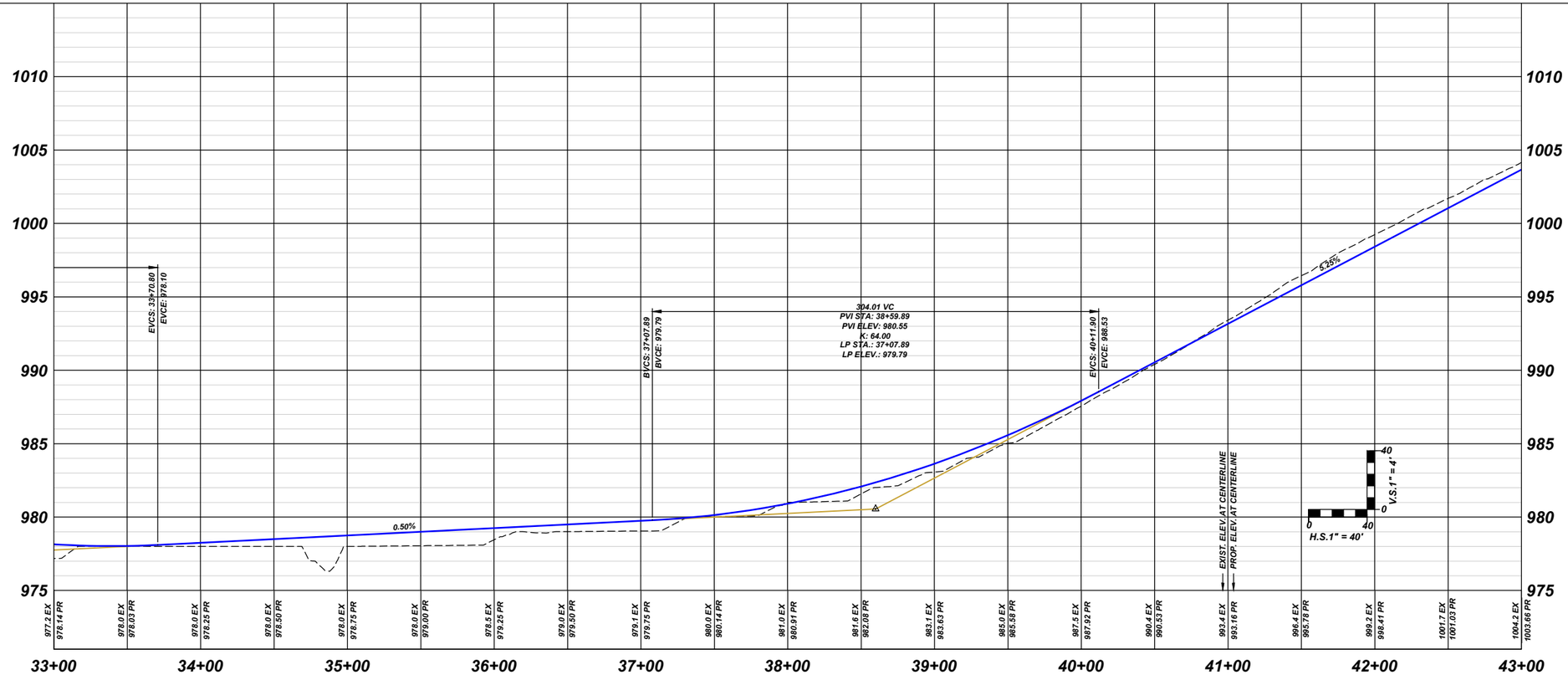




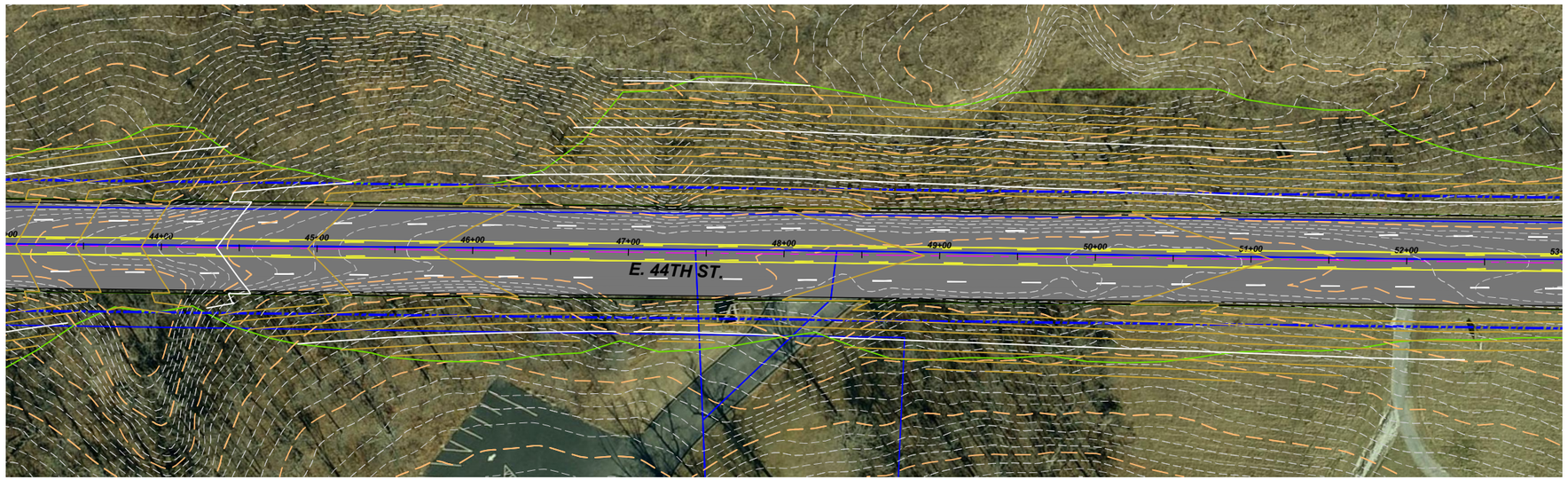
Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

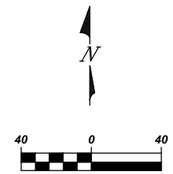


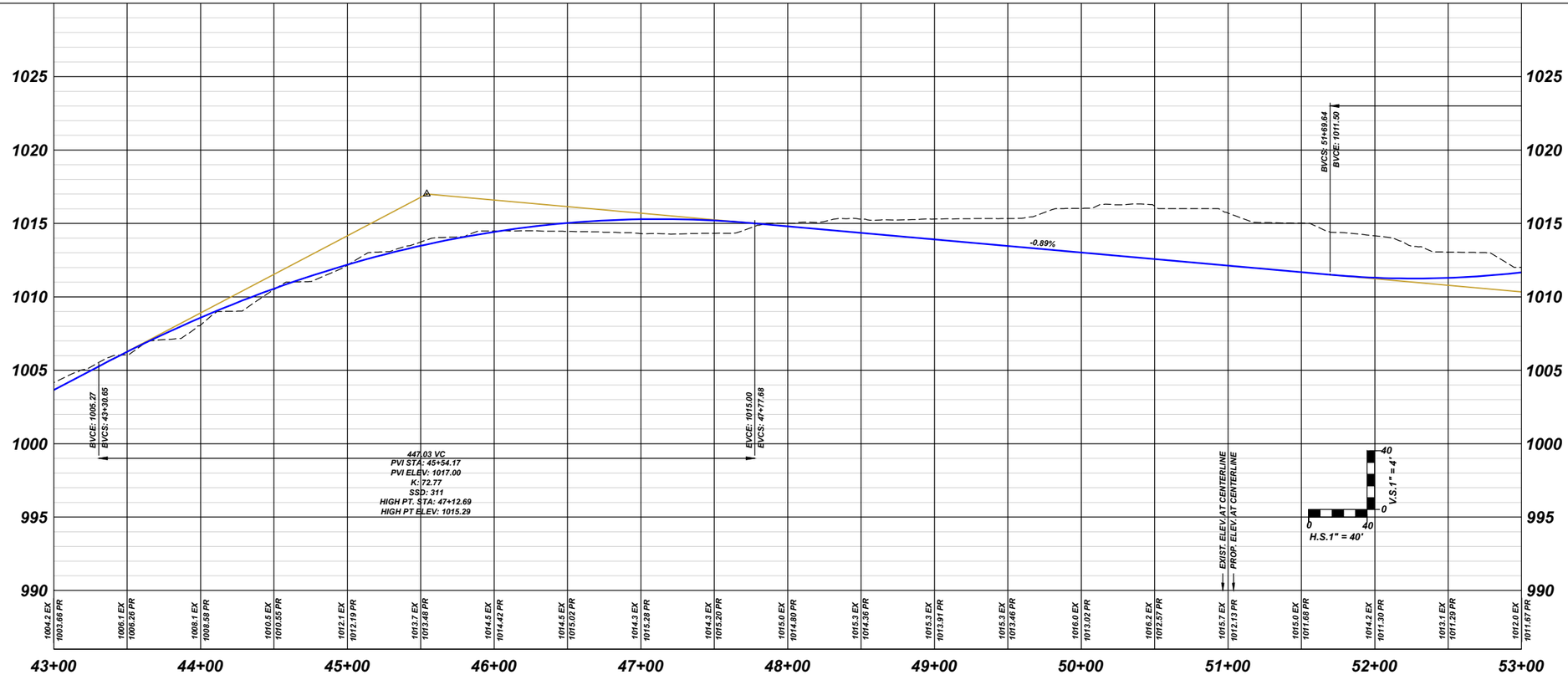




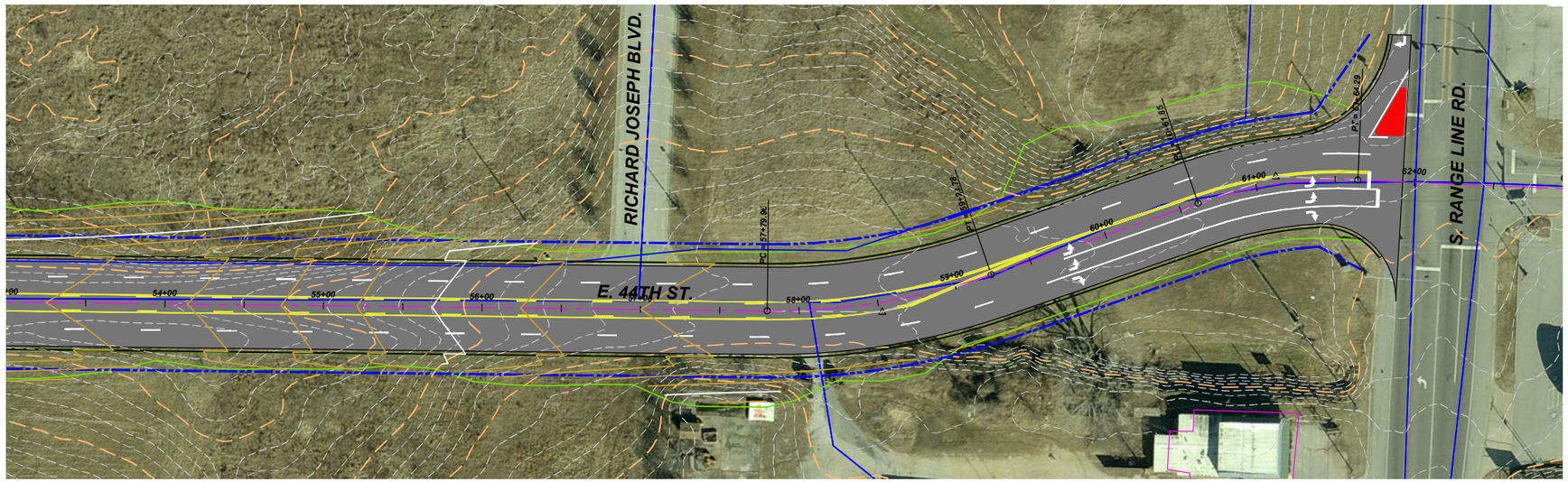
Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

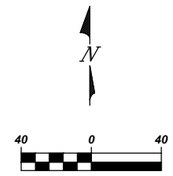


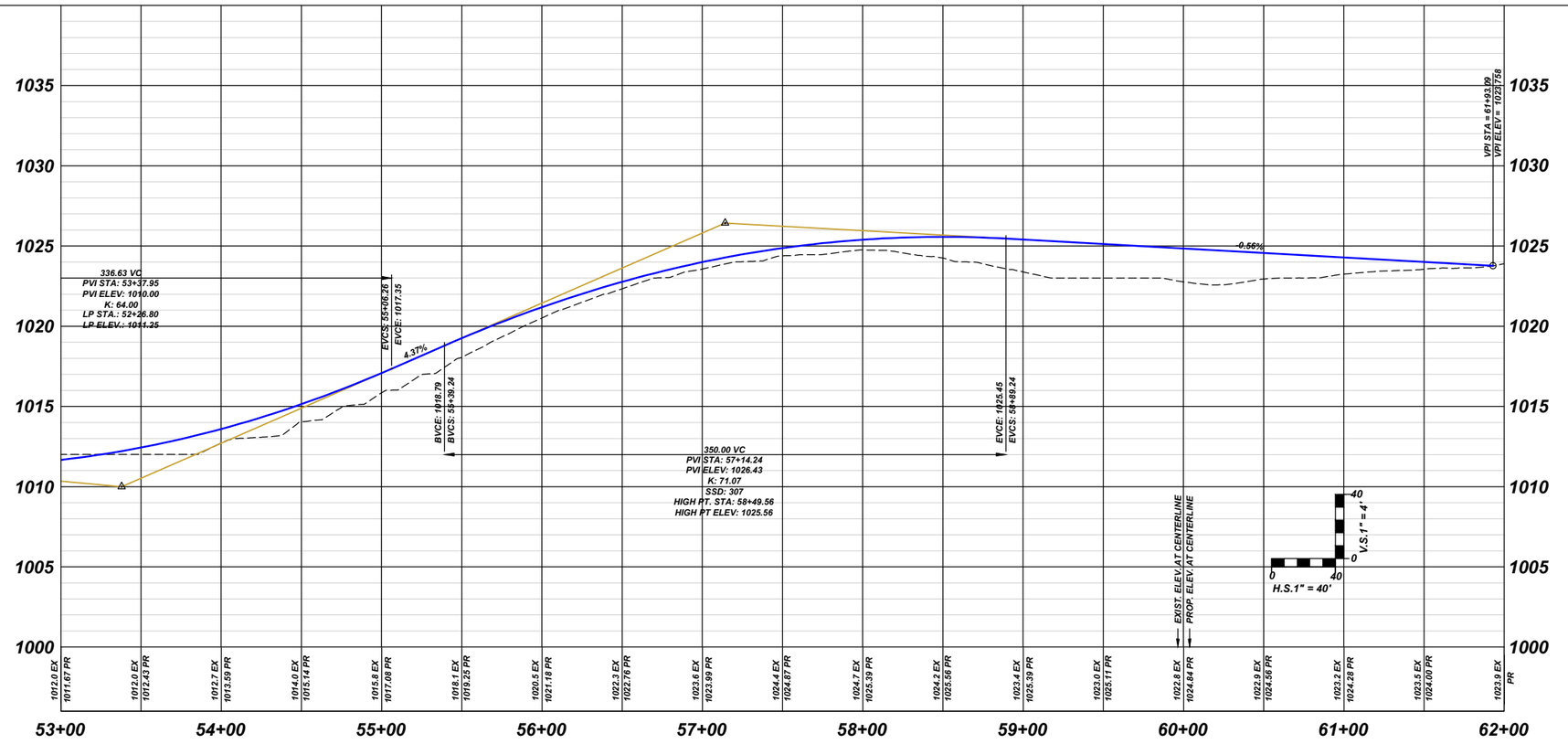




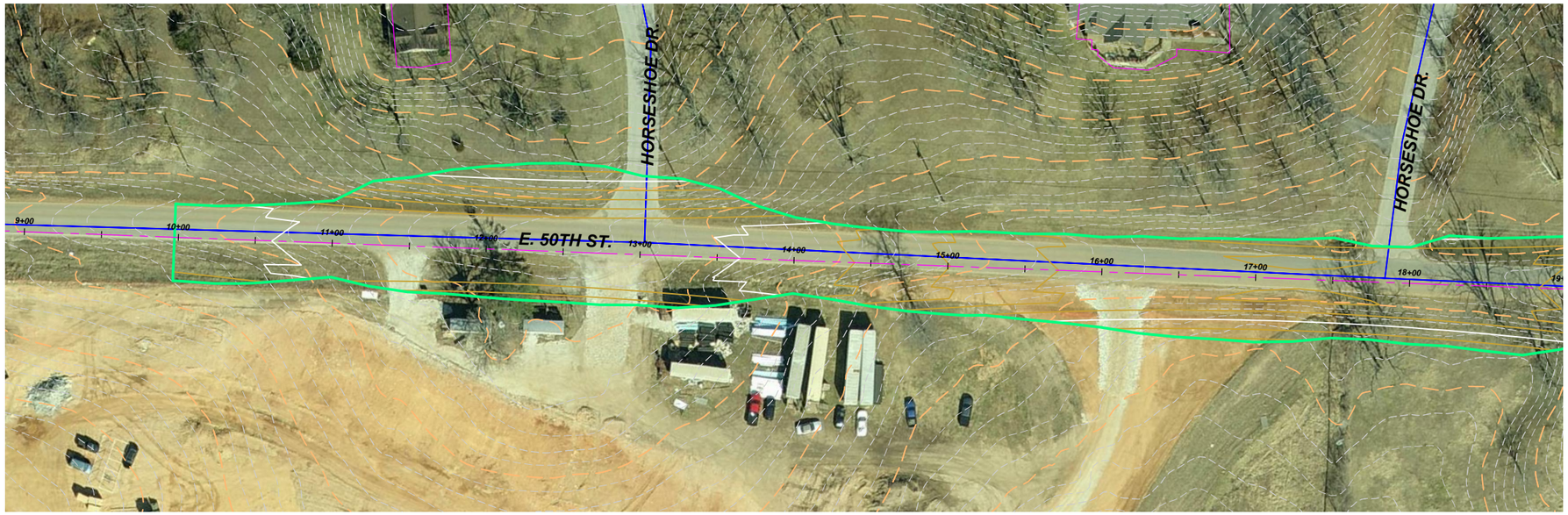
Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

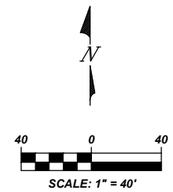


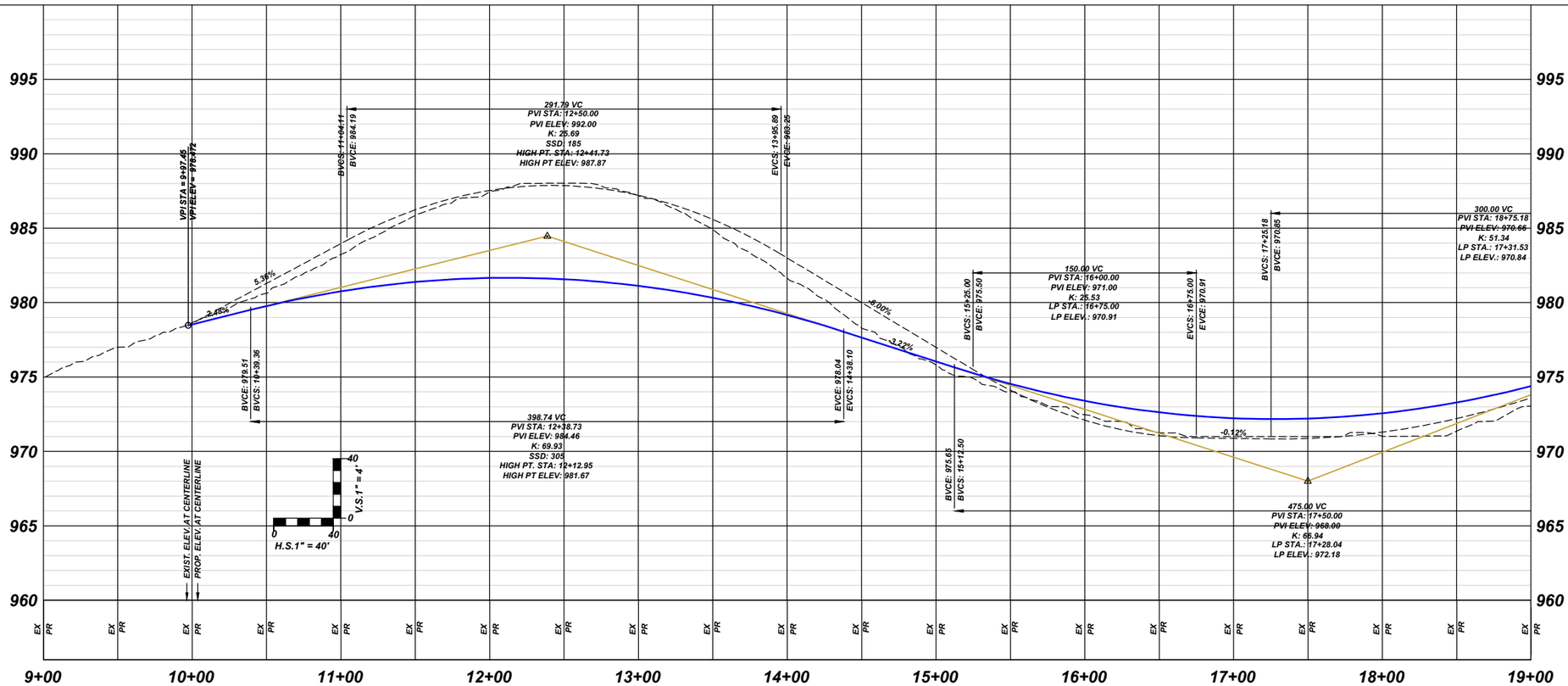




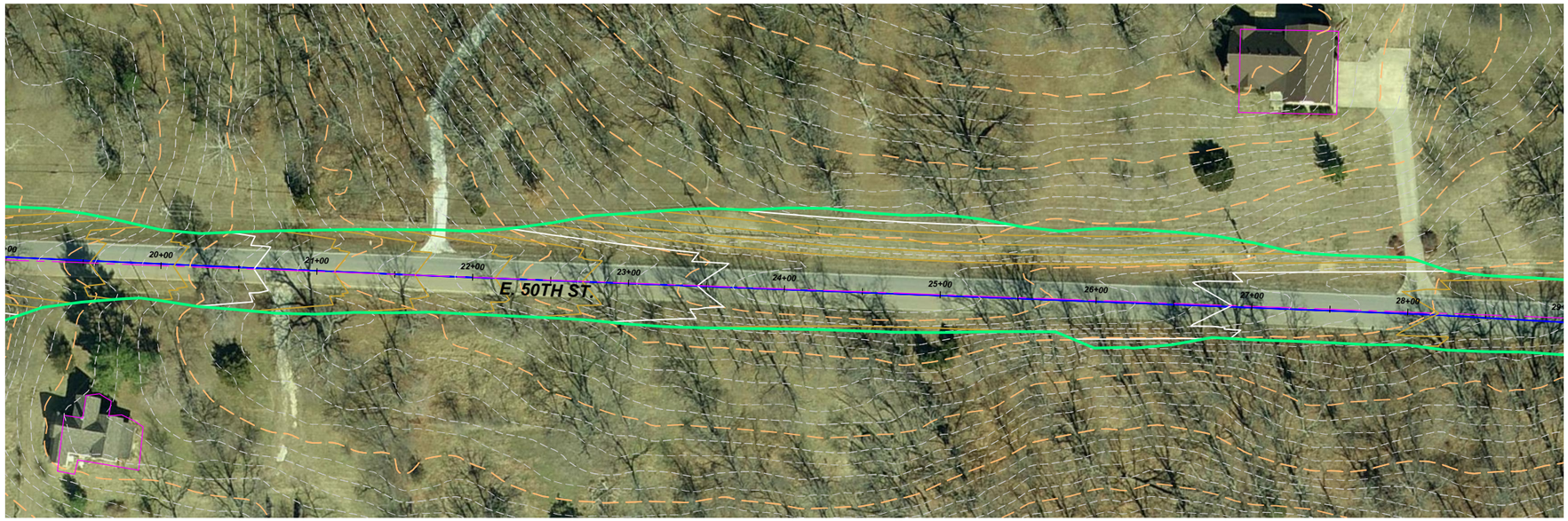
Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

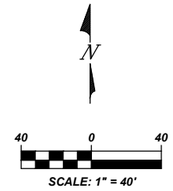


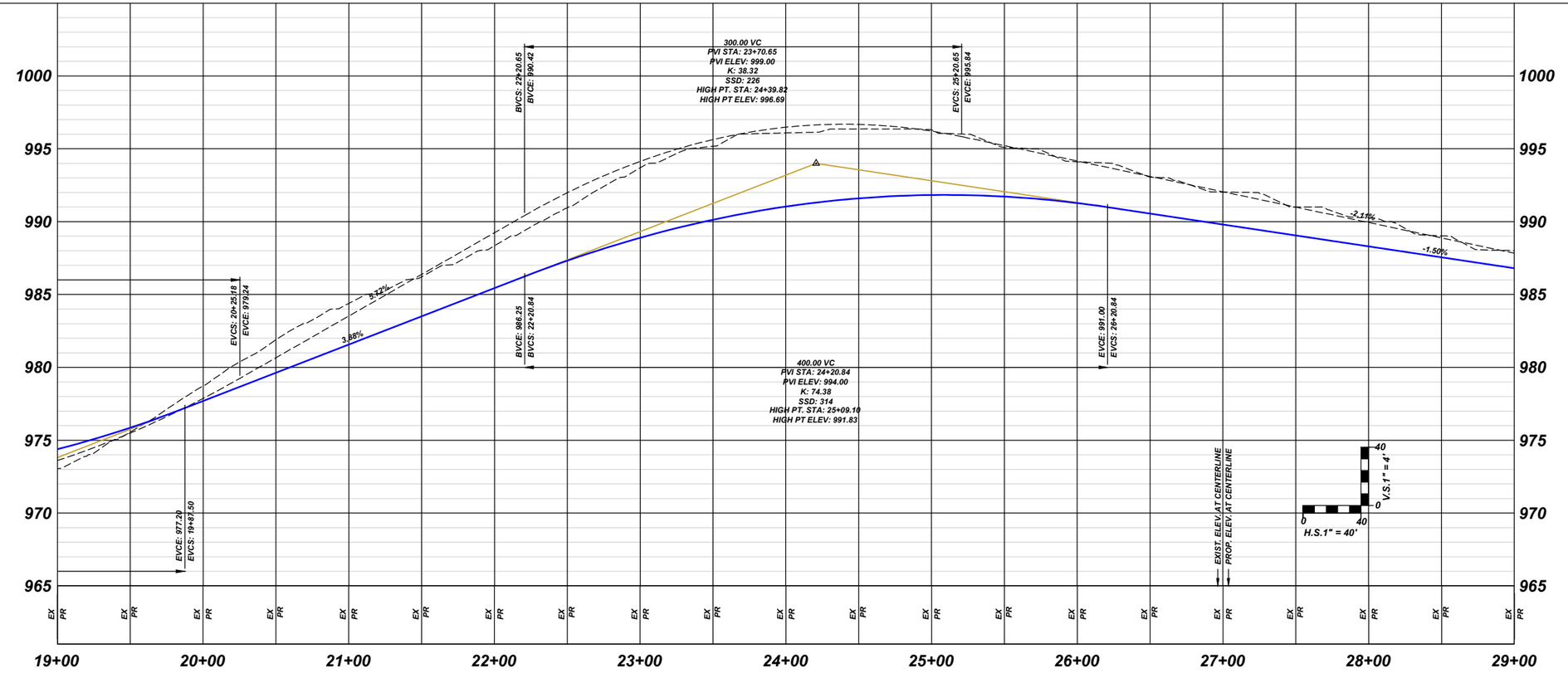




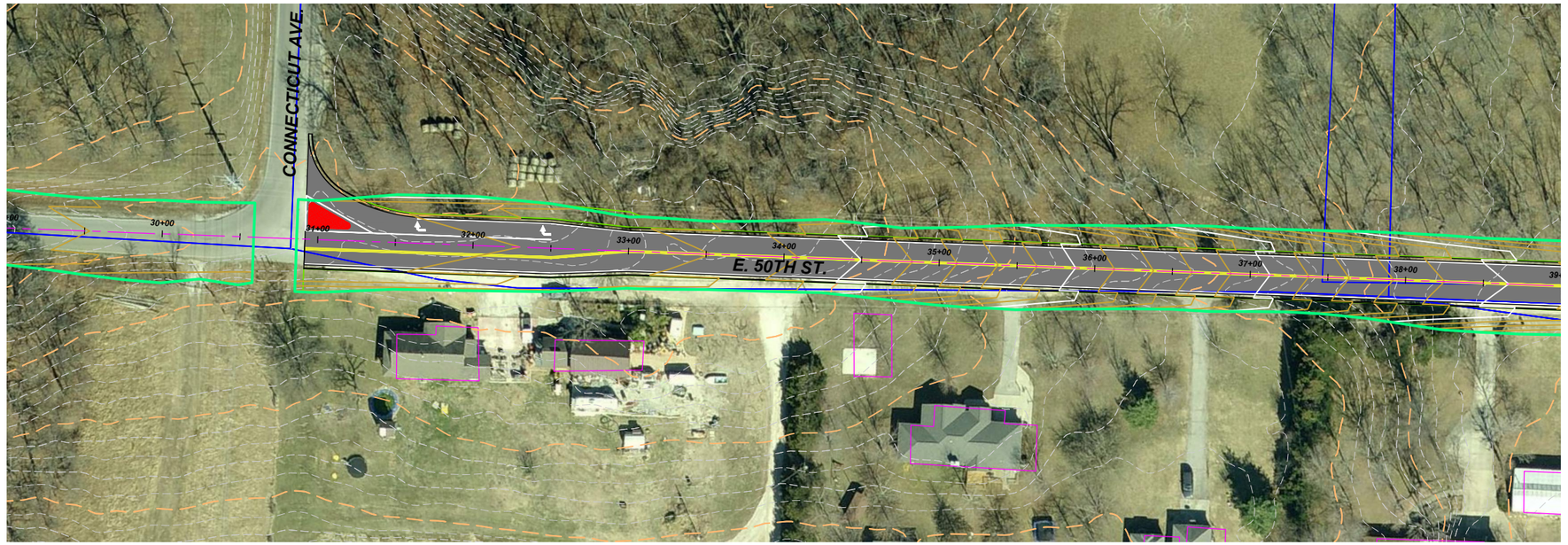
Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
3051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

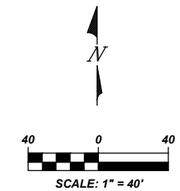


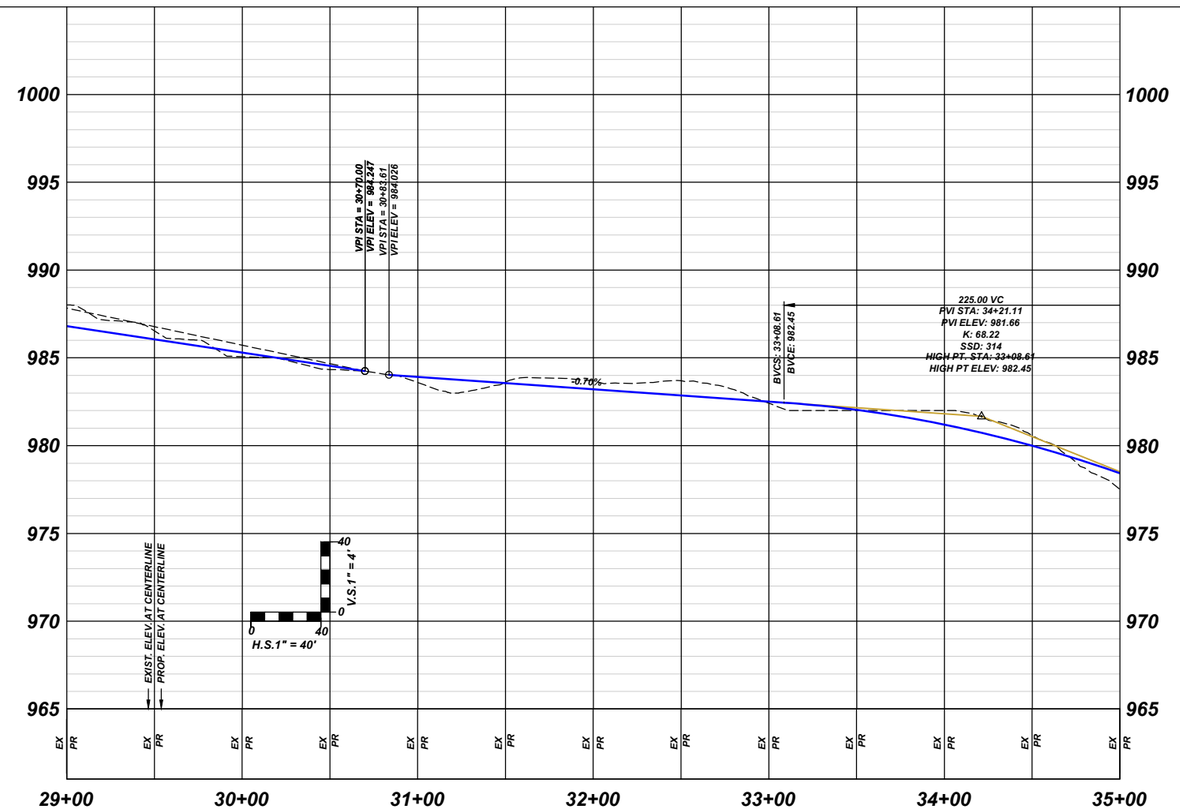


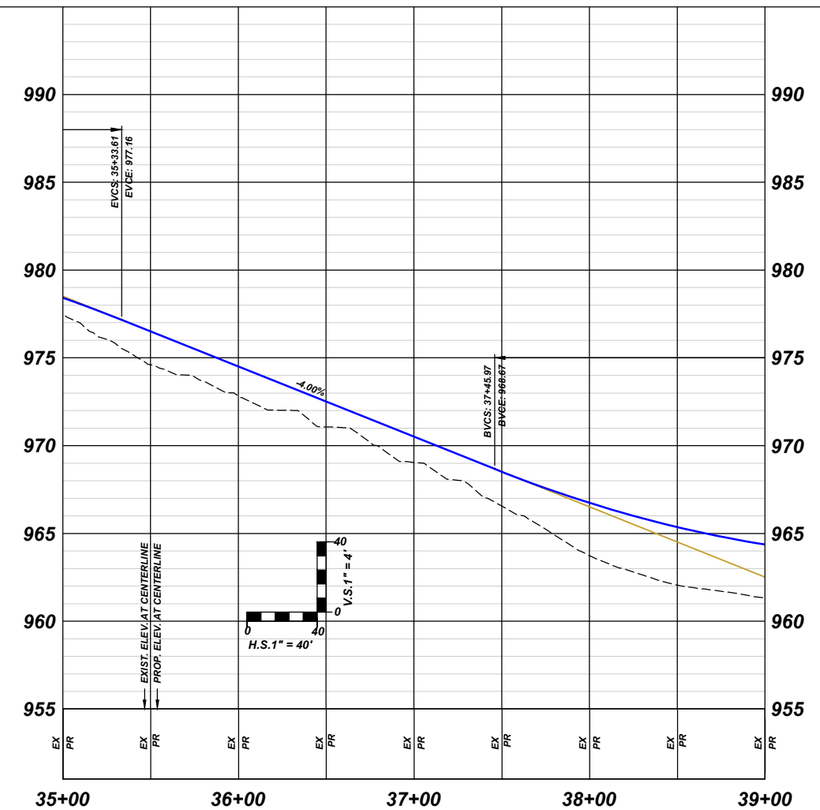


Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com



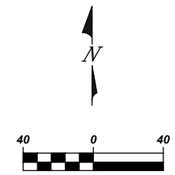


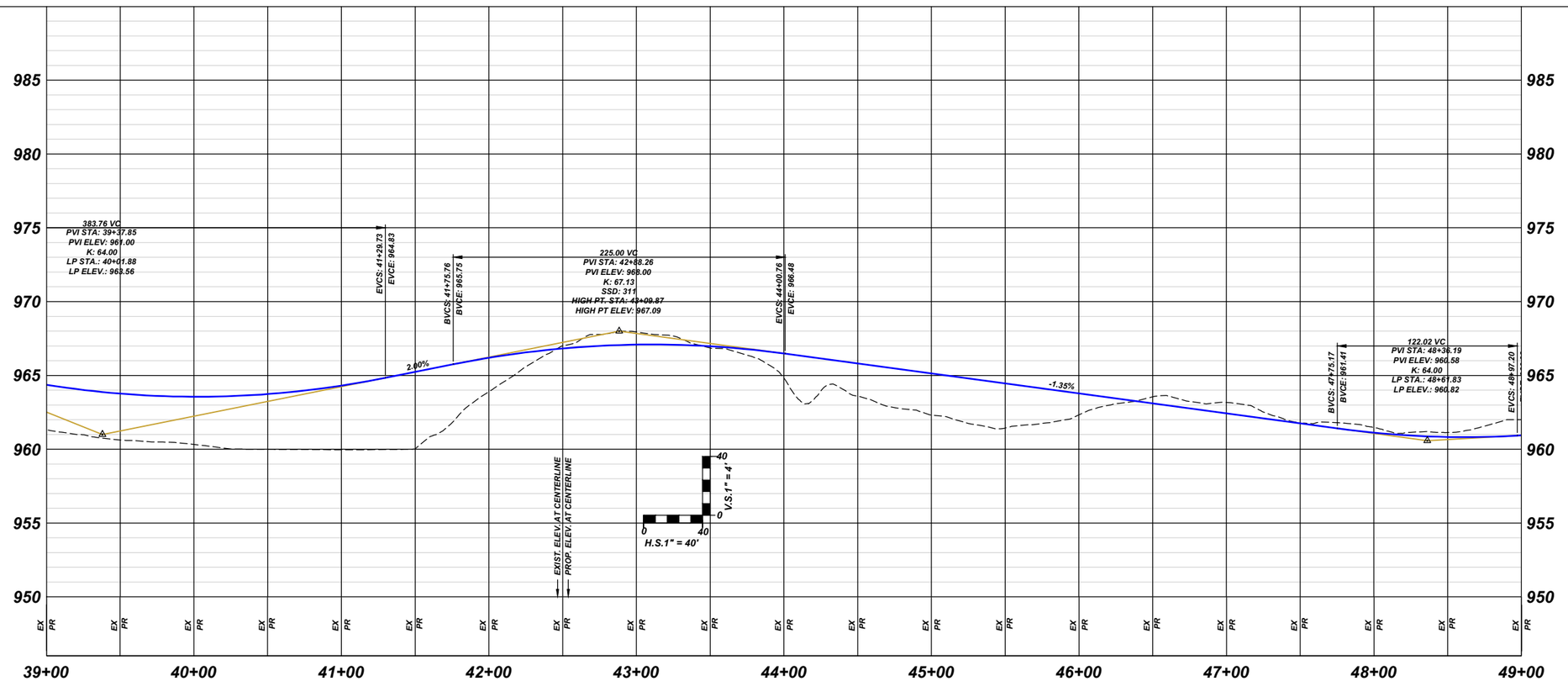




Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

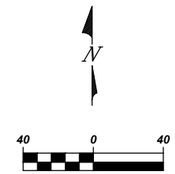


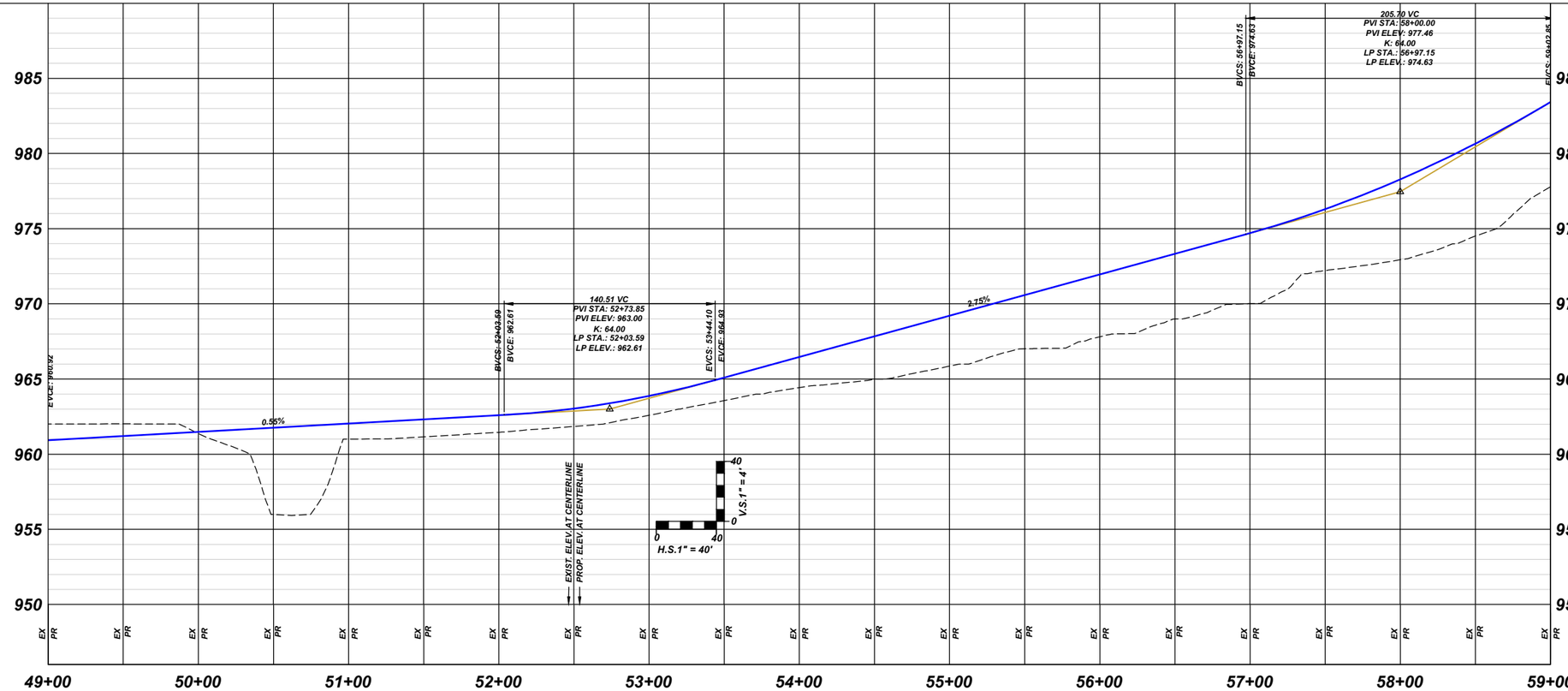




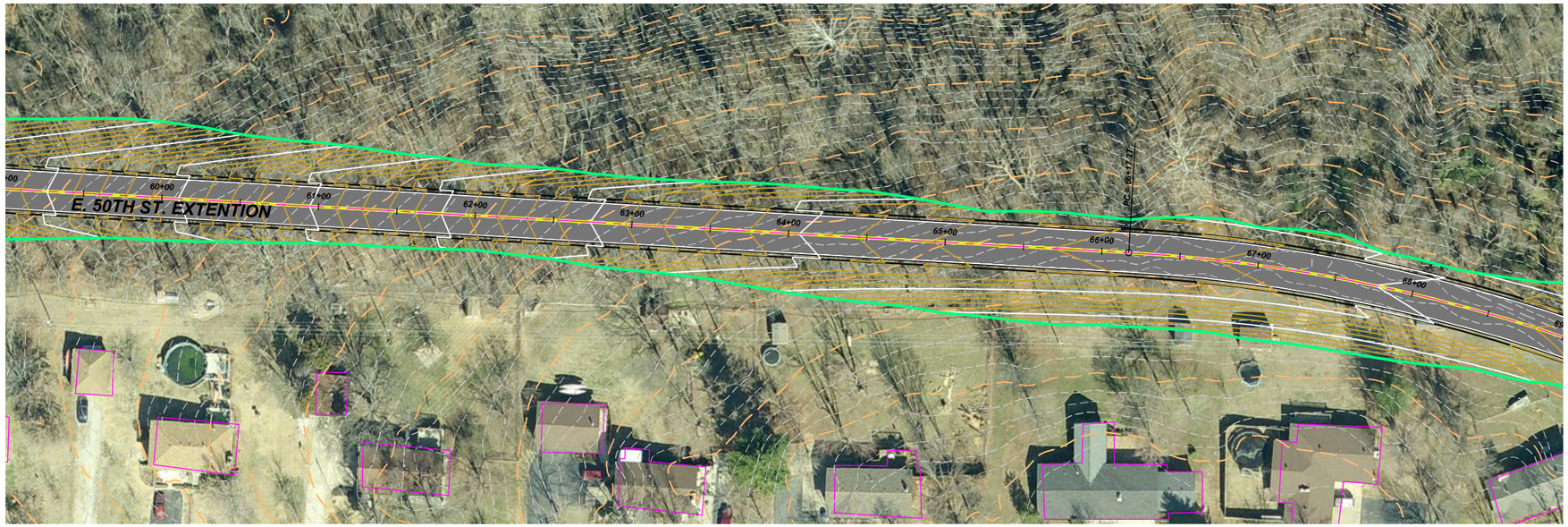
Prepared by:
CJW Transportation Consultants, L.L.C.
3051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com







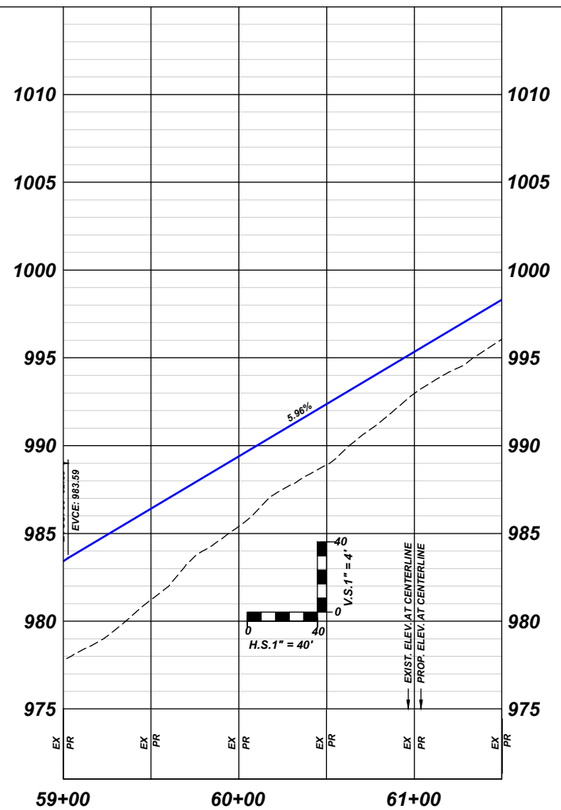
Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

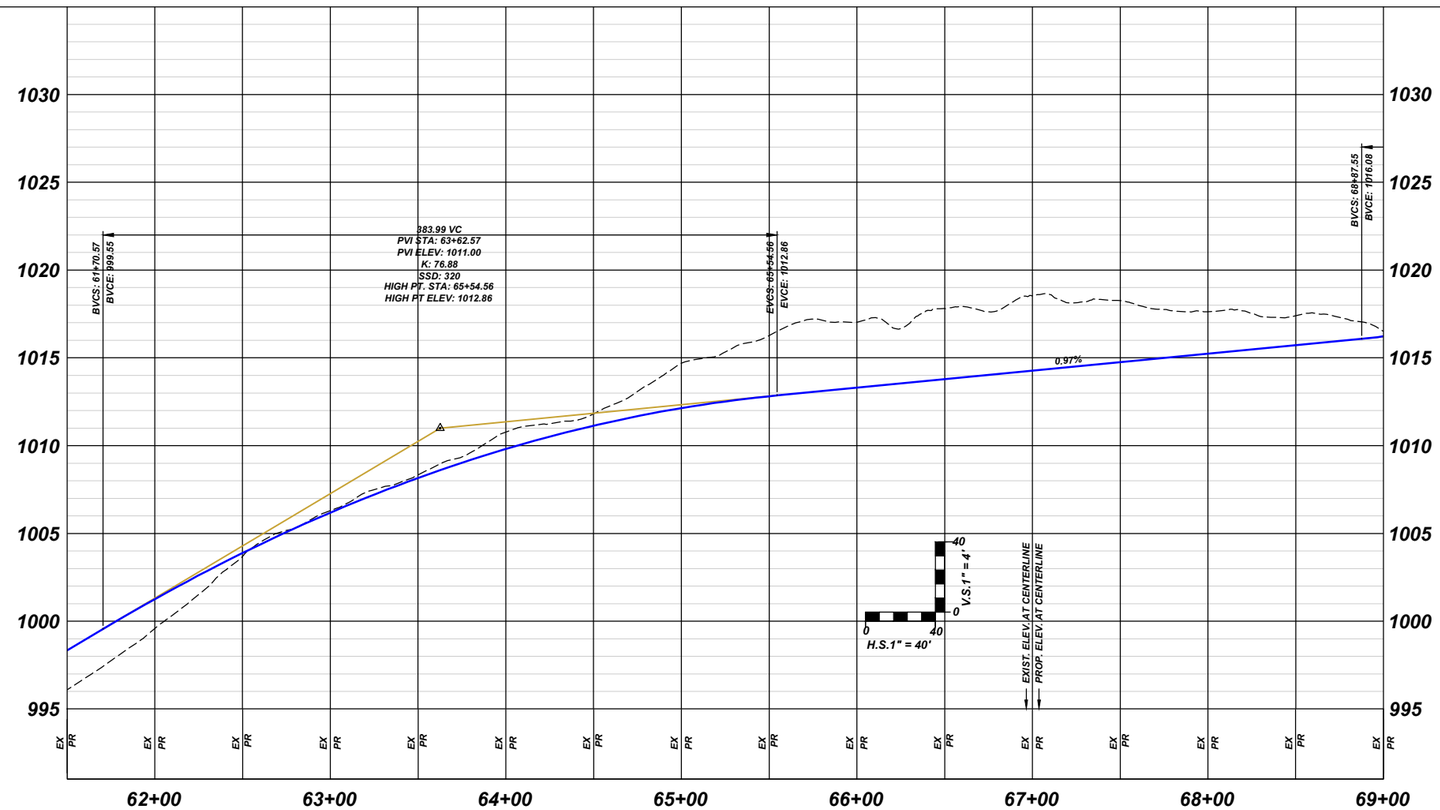


N

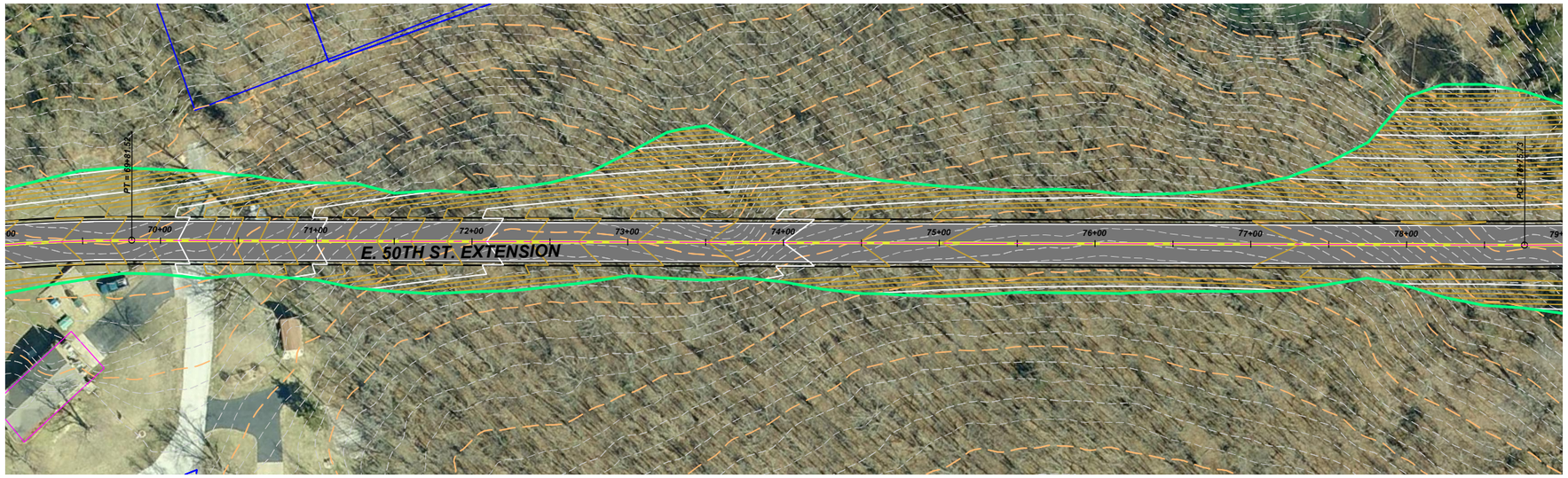
40 0 40

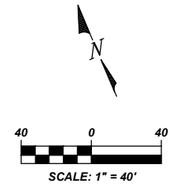
SCALE: 1" = 40'

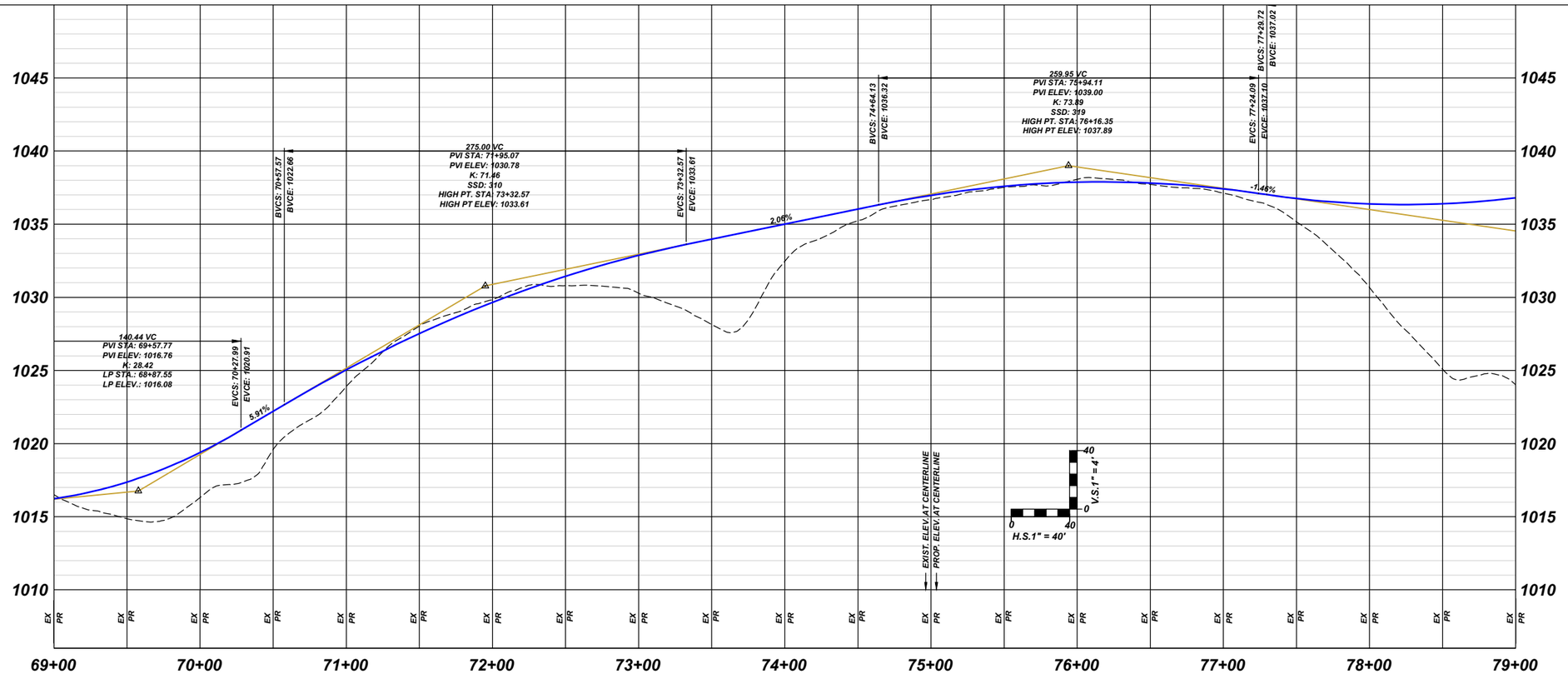




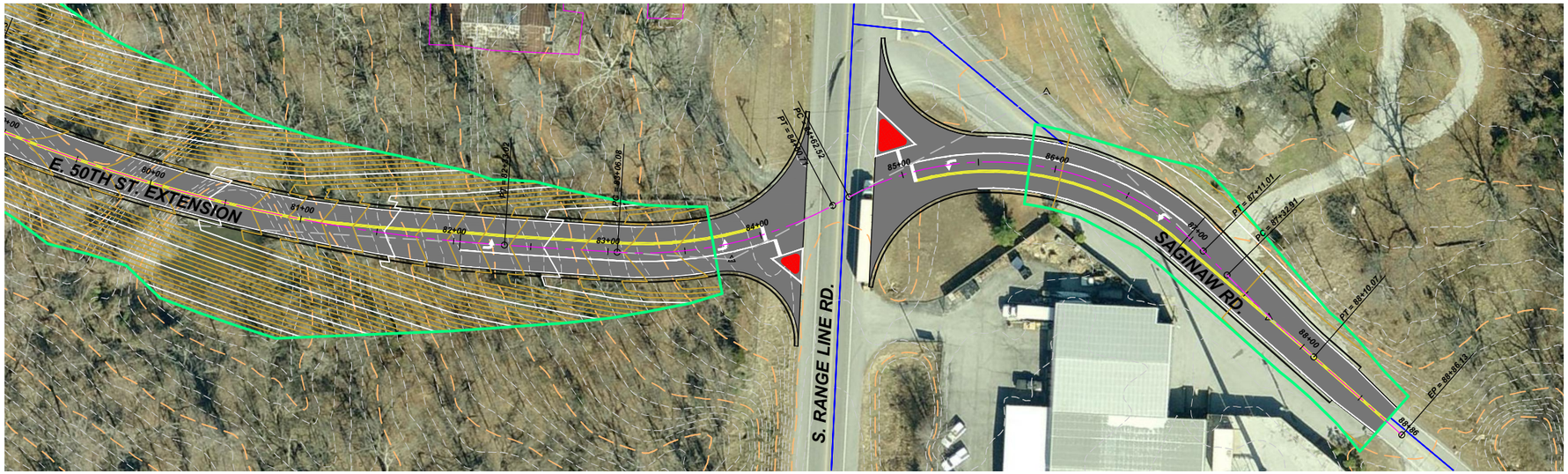
Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
3051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

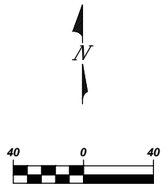


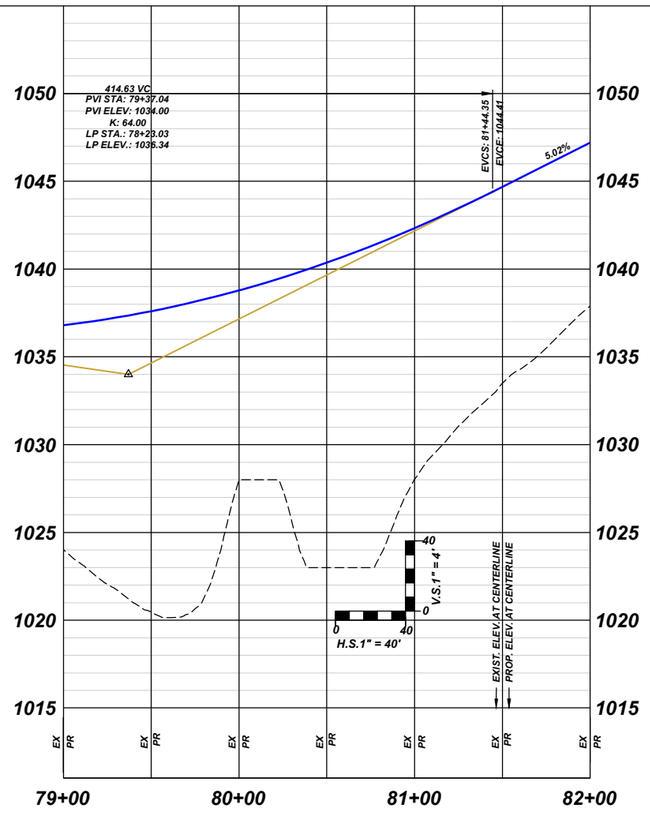


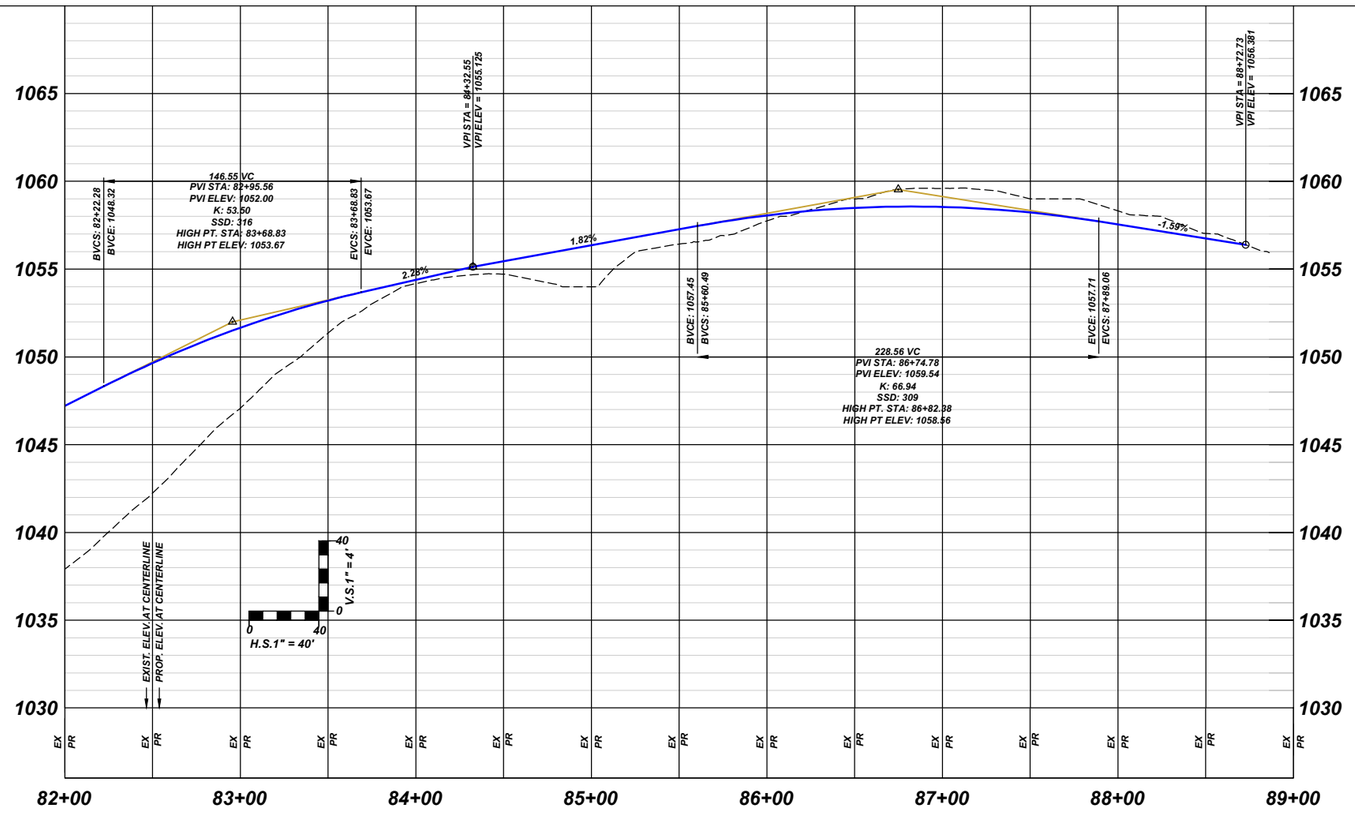


Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

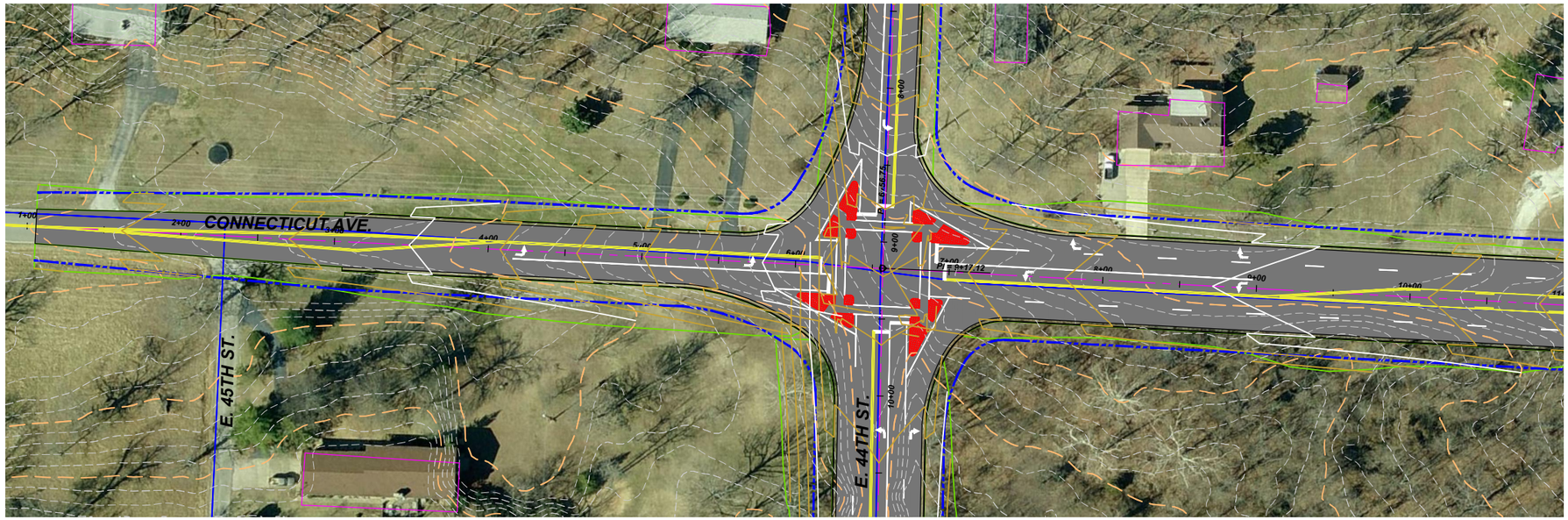


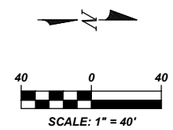


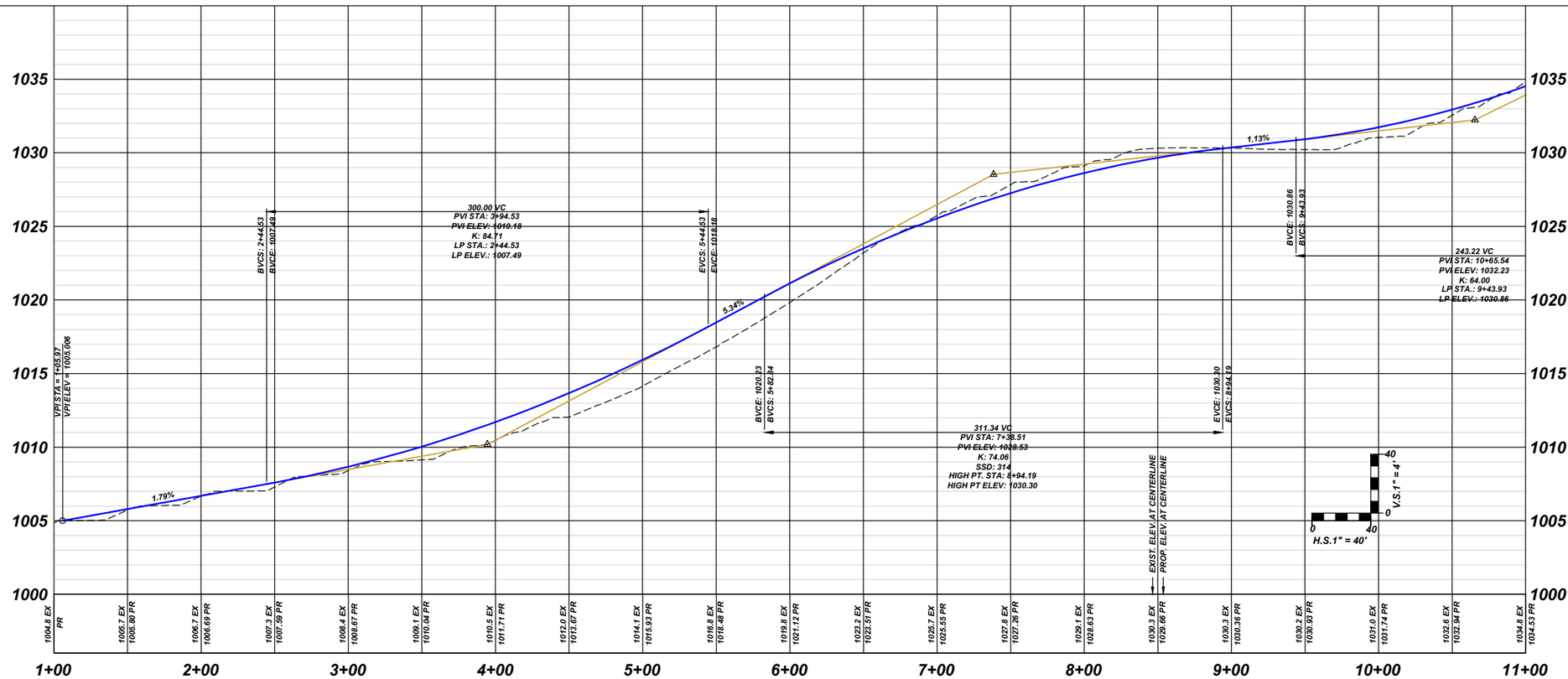




Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com



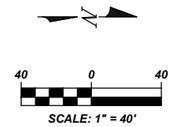


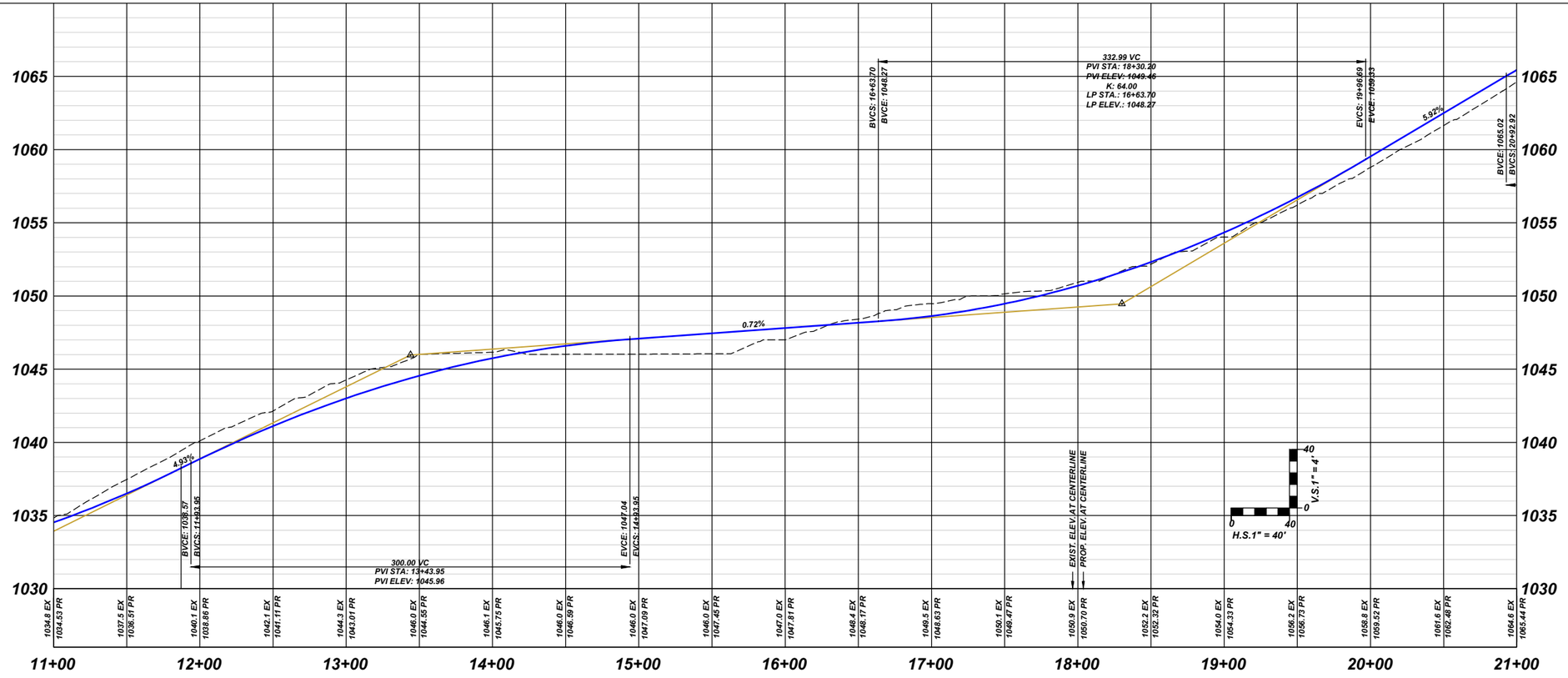


SHEET 1 OF 6

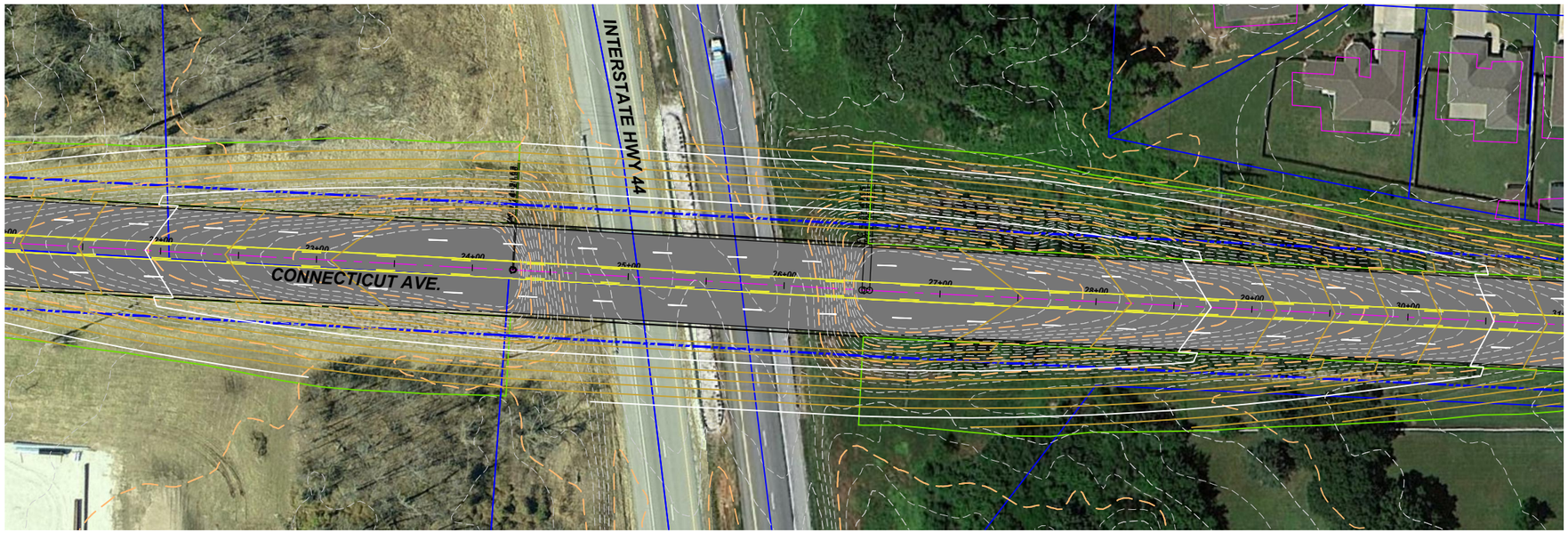
Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

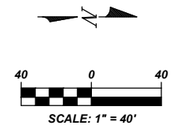


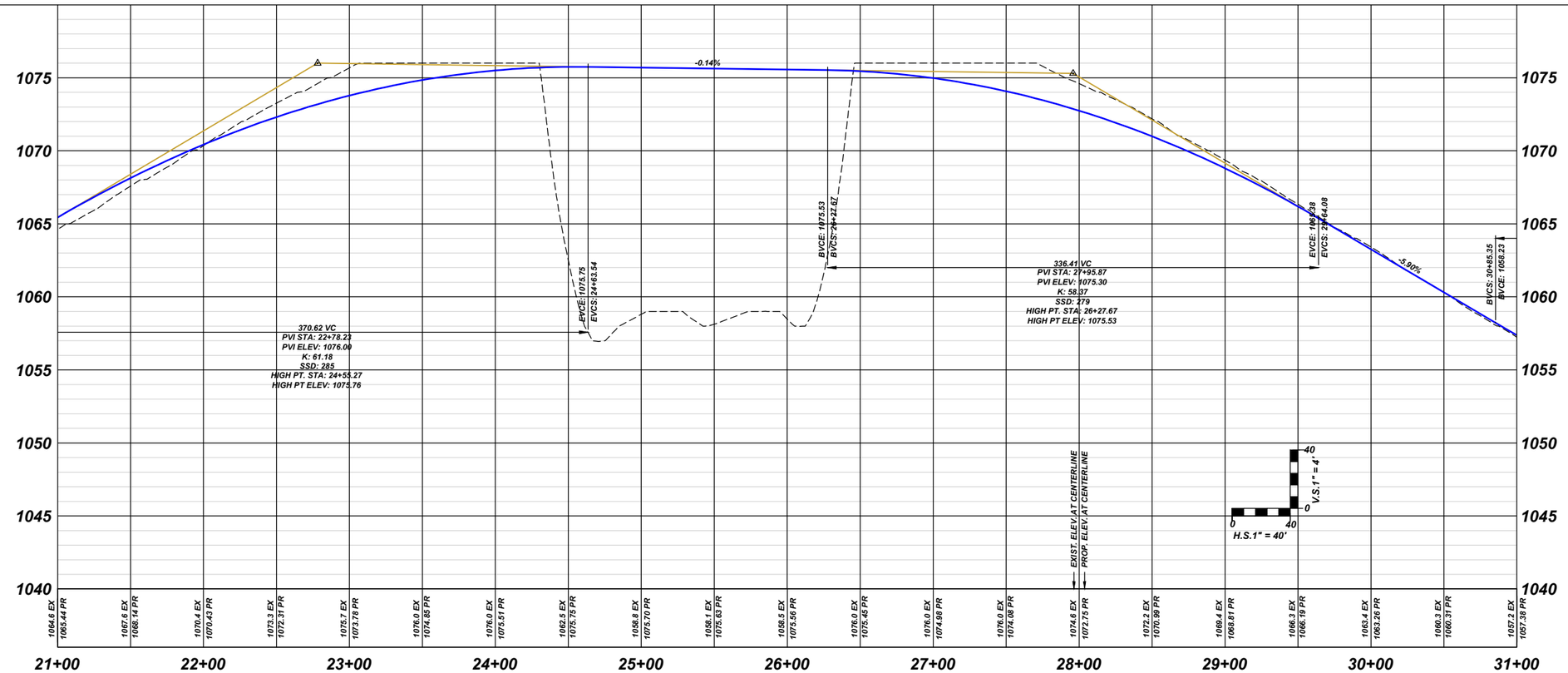




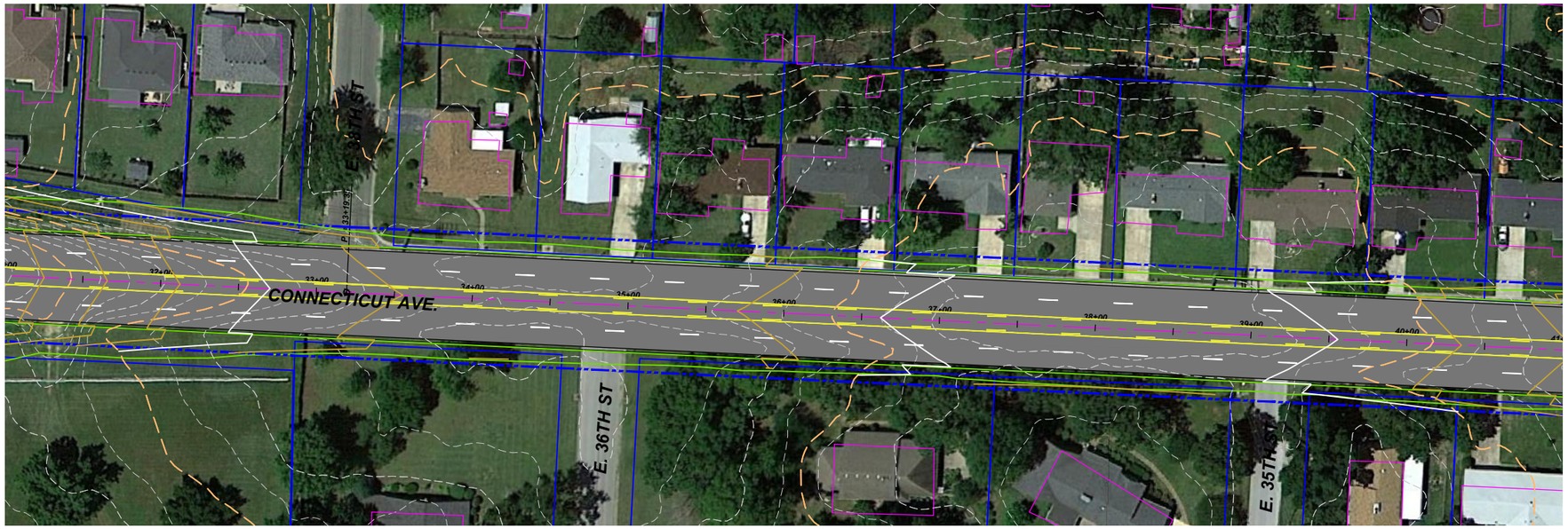
Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

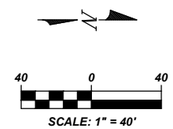


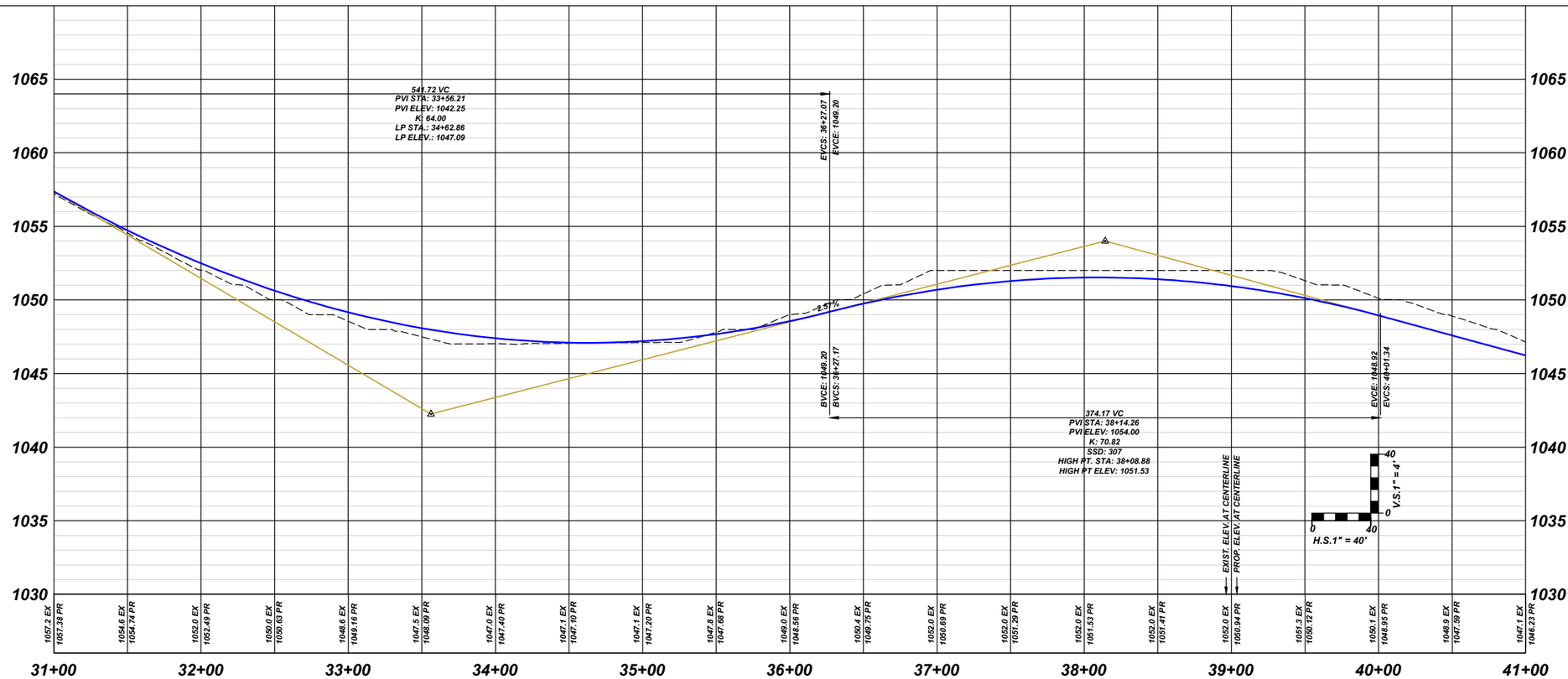




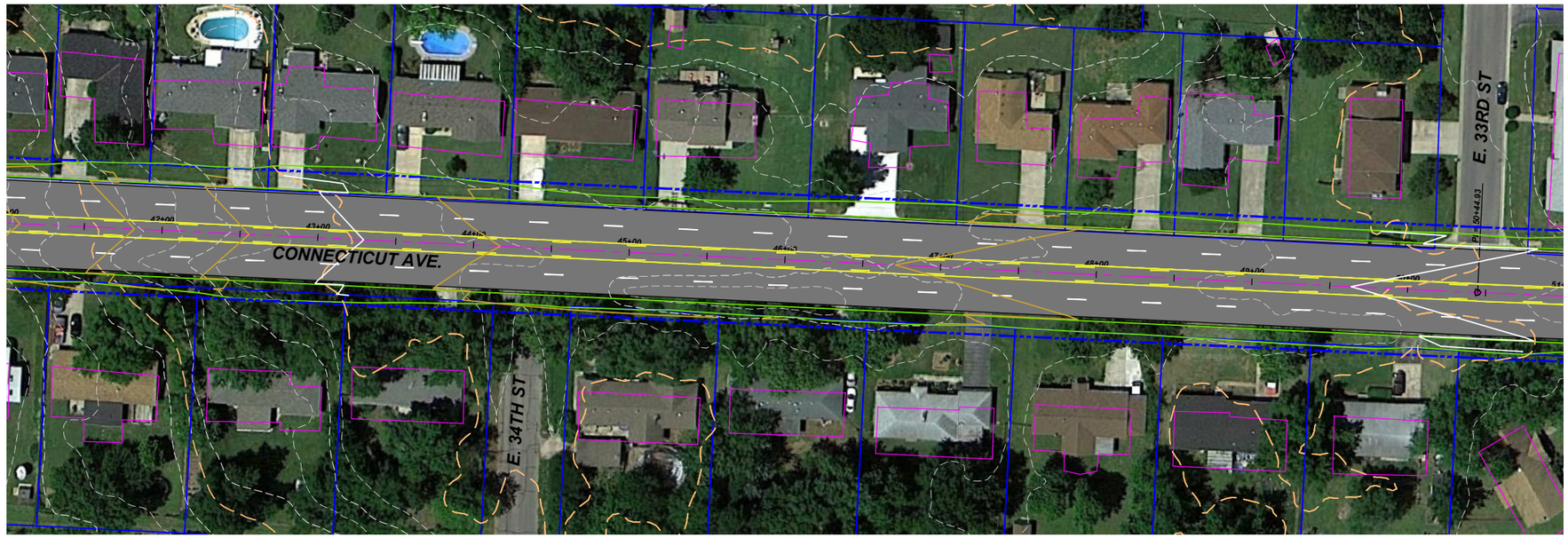
Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

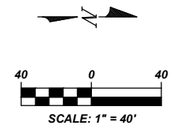


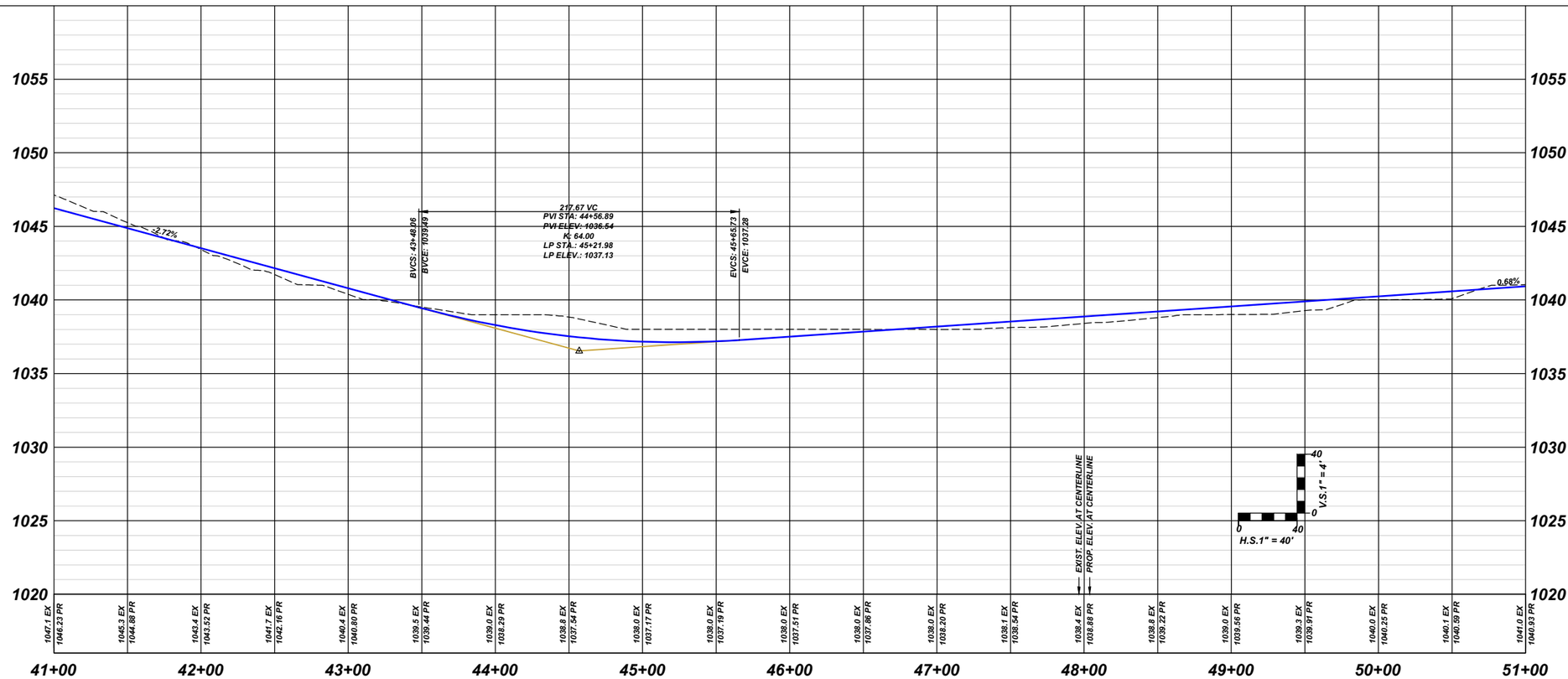




Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

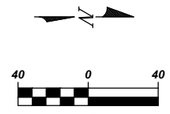


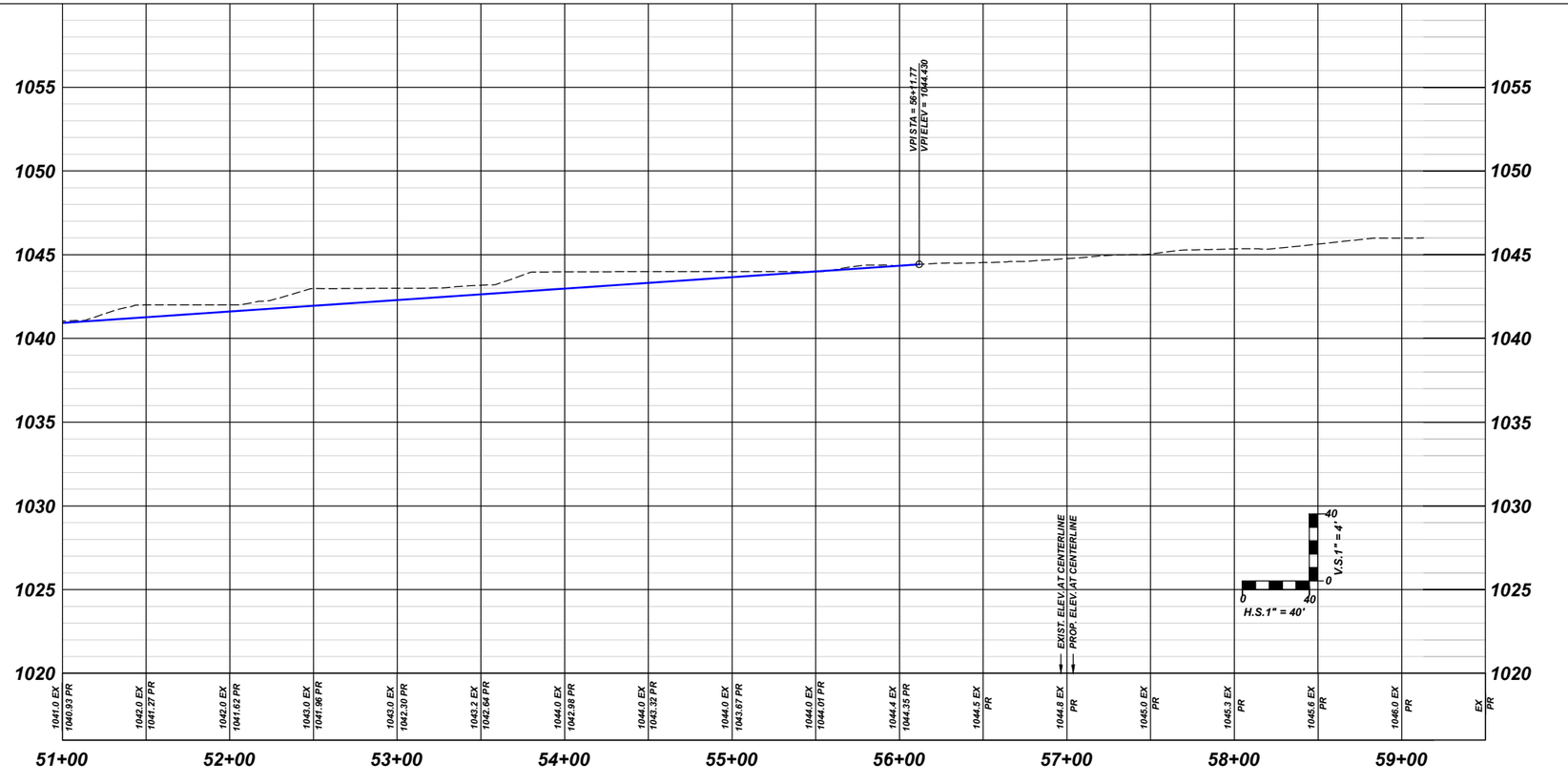




Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com







SHEET 6 OF 6

Prepared by:
CJW
CJW Transportation Consultants, L.L.C.
5051 S. National
Suite 4-110
Springfield, MO 65810
Tel: 417.889.3400
Fax: 417.889.3402
www.GoCJW.com

PRELIMINARY ESTIMATE

44th Street Roadway Widening
From Connecticut to Range Line Road

CONSTRUCTION COST			Quantity	Units	Cost/Unit	Cost/Item
A - GENERAL						
A-1	Mobilization & Bond	4%	1	LS	$165,000.00	$165,000.00
A-2	Erosion & Sediment Control		1	LS	$35,000.00	$35,000.00
A-3	Cleanup, Seeding, Fertilizing & Mulch		1	LS	$15,000.00	$15,000.00
A-4	Project Signing & Traffic Control		1	LS	$25,000.00	$25,000.00
					SUB-TOTAL	**$240,000.00**
B - REMOVALS						
B-3	Entrances		5	Each	$250.00	$1,250.00
B-4	Curb & Gutter - Roadway		500	LF	$7.25	$3,625.00
B-6	Drop Inlets		2	EA	$650.00	$1,300.00
B-7	Storm Pipe		600	LF	$10.00	$6,000.00
					SUB-TOTAL	**$12,175.00**
C - STORM SEWER						
C-1	SS-6 Drop Inlets, 4' x 8'		110	EA	$3,200.00	$352,000.00
C-2	24" RCP		11,000	LF	$60.00	$660,000.00
					SUB-TOTAL	**$1,012,000.00**
D - PAVEMENT, ISLANDS, SIDEWALK CURBS & GUTTER						
D-1	2" Bituminous Surface - Roadway Full Depth Surface		3,900	Tons	$75.00	$292,500.00
D-2	8" Bituminous Base - Roadway Full Depth Base		9,000	Tons	$70.00	$630,000.00
D-3	Asphalt Primer		13,292	Gal	$4.00	$53,200.00
D-4	Asphalt Tack		2,658	Gal	$3.50	$9,300.00
D-5	Saw Cut		600	LF	$2.00	$1,200.00
D-6	8" Rock Base - Roadway Full Depth		19,556	SQ. YD.	$8.00	$156,400.00
D-7	4" Sidewalk (including 2" Base)		7,333	SQ. YD.	$35.00	$256,700.00
D-8	ADA Ramps		10	Each	$1,200.00	$12,000.00
D-9	Curb & Gutter - Roadway		11,000	LF	$17.50	$192,500.00
D-10	8" Pinned On Concrete Island		160	SQ. YD.	$63.00	$10,100.00
D-11	Entrances		12	Each	$950.00	$11,400.00
D-13	Common Excavation		20,500	CY	$12.00	$246,000.00
D-14	Common Fill		54,000	CY	$8.00	$432,000.00
D-15	Undergrading		1,000	CY	$47.00	$47,000.00
					SUB-TOTAL	**$2,350,300.00**

E - TRAFFIC SIGNALS, STRIPING, AND SIGNING

E-1	Traffic Signal - 44th and Range Line	1	EA	$155,000.00	$155,000.00
E-2	Signing and Pavement Markings	1	EA	$65,000.00	$65,000.00
				SUB-TOTAL	**$220,000.00**

ITEMS TO BE DONE BY OTHERS

c) Lighting
d) Relocating Utilities within ROW

TOTAL **$3,834,475.00**

TOTAL IMPROVEMENTS

Contingency	**10%**	**$**	**383,400.00**
Utility Relocations	**10%**	**$**	**383,400.00**
SURVEYING & ENGINEERING	**14%**	**$**	**537,000.00**

CONSTRUCTION INSPECTION - TO BE DETERMINED

GRAND TOTAL - IMPROVEMENTS **$5,138,275.00**

Note: This cost estimate is an opinion of probable construction costs based on engineering experience using values that are current and reasonable at time estimate was created. Because CJW Transportation Consultants have no control over the cost of labor, materials, equipment or services furnished by others, the actual construction costs will vary from the opinion. Final costs are dependent on approved construction plans and receiving actual bids from contractors. This cost estimate is subject to final design considerations and governing agency requirements at time of construction.

PRELIMINARY ESTIMATE

50th Street Roadway
From Indiana to Connecticut

CONSTRUCTION COST			Quantity	Units	Cost/Unit	Cost/Item
A - GENERAL						
A-1	Mobilization & Bond	4%	1	LS	$75,000.00	$75,000.00
A-2	Erosion & Sediment Control		1	LS	$15,000.00	$15,000.00
A-3	Cleanup, Seeding, Fertilizing & Mulch		1	LS	$10,000.00	$10,000.00
A-4	Project Signing & Traffic Control		1	LS	$15,000.00	$15,000.00
					SUB-TOTAL	**$115,000.00**
B - REMOVALS						
B-3	Entrances		5	Each	$250.00	$1,250.00
B-4	Roadway		2,000	LF	$10.00	$20,000.00
					SUB-TOTAL	**$21,250.00**
C - STORM SEWER						
C-1	SS-6 Drop Inlets, 4' x 8'		110	EA	$3,200.00	$352,000.00
C-2	24" RCP		11,000	LF	$60.00	$660,000.00
					SUB-TOTAL	**$1,012,000.00**
D - PAVEMENT, ISLANDS, SIDEWALK CURBS & GUTTER						
D-1	2" Bituminous Surface - Roadway Full Depth Surface		700	Tons	$75.00	$52,500.00
D-2	8" Bituminous Base - Roadway Full Depth Base		2,800	Tons	$70.00	$196,000.00
D-3	Asphalt Primer		2,889	Gal	$4.00	$11,600.00
D-4	Asphalt Tack		578	Gal	$3.50	$2,000.00
D-5	Saw Cut		50	LF	$2.00	$100.00
D-6	8" Rock Base - Roadway Full Depth		5,778	SQ. YD.	$8.00	$46,200.00
D-7	4" Sidewalk (including 2" Base)		2,667	SQ. YD.	$35.00	$93,300.00
D-8	ADA Ramps		2	Each	$1,200.00	$2,400.00
D-9	Curb & Gutter - Roadway		4,000	LF	$17.50	$70,000.00
D-10	8" Pinned On Concrete Island		0	SQ. YD.	$63.00	$0.00
D-11	Entrances		6	Each	$950.00	$5,700.00
D-13	Common Excavation		2,000	CY	$12.00	$24,000.00
D-14	Common Fill		9,000	CY	$8.00	$72,000.00
D-15	Undergrading		500	CY	$47.00	$23,500.00
					SUB-TOTAL	**$599,300.00**

E - TRAFFIC SIGNALS, STRIPING, AND SIGNING

E-2	Signing and Pavement Markings	1	EA	$65,000.00	$65,000.00
				SUB-TOTAL	**$65,000.00**

ITEMS TO BE DONE BY OTHERS

c) Lighting
d) Relocating Utilities within ROW

TOTAL	**$1,812,550.00**

TOTAL IMPROVEMENTS

Contingency	**10%**	**$**	**181,300.00**
Utility Relocations	**10%**	**$**	**181,300.00**
SURVEYING & ENGINEERING	**14%**	**$**	**254,000.00**

CONSTRUCTION INSPECTION - TO BE DETERMINED

GRAND TOTAL - IMPROVEMENTS **$2,429,150.00**

Note: This cost estimate is an opinion of probable construction costs based on engineering experience using values that are current and reasonable at time estimate was created. Because CJW Transportation Consultants have no control over the cost of labor, materials, equipment or services furnished by others, the actual construction costs will vary from the opinion. Final costs are dependent on approved construction plans and receiving actual bids from contractors. This cost estimate is subject to final design considerations and governing agency requirements at time of construction.

PRELIMINARY ESTIMATE

50th Street Roadway Extension
From Connecticut to Range Line Road

CONSTRUCTION COST			Quantity	Units	Cost/Unit	Cost/Item
A - GENERAL						
A-1	Mobilization & Bond	4%	1	LS	$190,000.00	$190,000.00
A-2	Erosion & Sediment Control		1	LS	$35,000.00	$35,000.00
A-3	Cleanup, Seeding, Fertilizing & Mulch		1	LS	$15,000.00	$15,000.00
A-4	Project Signing & Traffic Control		1	LS	$25,000.00	$25,000.00
					SUB-TOTAL	**$265,000.00**
B - REMOVALS - None						
					SUB-TOTAL	**$0.00**
C - STORM SEWER						
C-1	SS-6 Drop Inlets, 4' x 8'		100	EA	$3,200.00	$320,000.00
C-2	24" RCP		10,000	LF	$60.00	$600,000.00
					SUB-TOTAL	**$920,000.00**
D - PAVEMENT, ISLANDS, SIDEWALK CURBS & GUTTER						
D-1	2" Bituminous Surface - Roadway Full Depth Surface		1,800	Tons	$75.00	$135,000.00
D-2	8" Bituminous Base - Roadway Full Depth Base		7,200	Tons	$70.00	$504,000.00
D-3	Asphalt Primer		7,832	Gal	$4.00	$31,300.00
D-4	Asphalt Tack		1,566	Gal	$3.50	$5,500.00
D-5	Saw Cut		50	LF	$2.00	$100.00
D-6	8" Rock Base - Roadway Full Depth		15,664	SQ. YD.	$8.00	$125,300.00
D-7	4" Sidewalk (including 2" Base)		6,667	SQ. YD.	$35.00	$233,300.00
D-8	ADA Ramps		8	Each	$1,200.00	$9,600.00
D-9	Curb & Gutter - Roadway		10,000	LF	$17.50	$175,000.00
D-10	8" Pinned On Concrete Island		160	SQ. YD.	$63.00	$10,100.00
D-11	Entrances		10	Each	$950.00	$9,500.00
D-13	Common Excavation		38,000	CY	$12.00	$456,000.00
D-14	Common Fill		7,500	CY	$8.00	$60,000.00
D-15	Undergrading		1,500	CY	$47.00	$70,500.00
D-16	Bridge		1	LS	$1,500,000.00	$1,500,000.00
					SUB-TOTAL	**$3,325,200.00**

E - TRAFFIC SIGNALS, STRIPING, AND SIGNING

E-1	Traffic Signal - 50th and Range Line	1	EA	$155,000.00	$155,000.00
E-2	Signing and Pavement Markings	1	EA	$50,000.00	$50,000.00
				SUB-TOTAL	**$205,000.00**

ITEMS TO BE DONE BY OTHERS

c) Lighting

d) Relocating Utilities within ROW

TOTAL **$4,715,200.00**

TOTAL IMPROVEMENTS

Contingency	**10%**	**$**	**471,500.00**
Utility Relocations	**10%**	**$**	**471,500.00**
SURVEYING & ENGINEERING	**14%**	**$**	**660,000.00**

CONSTRUCTION INSPECTION - TO BE DETERMINED

GRAND TOTAL - IMPROVEMENTS **$6,318,200.00**

Note: This cost estimate is an opinion of probable construction costs based on engineering experience using values that are current and reasonable at time estimate was created. Because CJW Transportation Consultants have no control over the cost of labor, materials, equipment or services furnished by others, the actual construction costs will vary from the opinion. Final costs are dependent on approved construction plans and receiving actual bids from contractors. This cost estimate is subject to final design considerations and governing agency requirements at time of construction.

PRELIMINARY ESTIMATE

Connecticut Avenue Roadway Widening
From 32nd Street to 44th Street

CONSTRUCTION COST			Quantity	Units	Cost/Unit	Cost/Item
A - GENERAL						
A-1	Mobilization & Bond	4%	1	LS	$225,000.00	$225,000.00
A-2	Erosion & Sediment Control		1	LS	$35,000.00	$35,000.00
A-3	Cleanup, Seeding, Fertilizing & Mulch		1	LS	$15,000.00	$15,000.00
A-4	Project Signing & Traffic Control		1	LS	$25,000.00	$25,000.00
					SUB-TOTAL	**$300,000.00**
B - REMOVALS						
B-3	Entrances		36	Each	$250.00	$9,000.00
B-4	Curb & Gutter - Roadway		4,800	LF	$7.25	$34,800.00
B-6	Drop Inlets		2	EA	$650.00	$1,300.00
B-7	Storm Pipe		250	LF	$10.00	$2,500.00
					SUB-TOTAL	**$47,600.00**
C - STORM SEWER						
C-1	SS-6 Drop Inlets, 4' x 8'		96	EA	$3,200.00	$307,200.00
C-2	24" RCP		9,600	LF	$60.00	$576,000.00
					SUB-TOTAL	**$883,200.00**
D - PAVEMENT, ISLANDS, SIDEWALK CURBS & GUTTER						
D-1	2" Bituminous Surface - Roadway Full Depth Surface		3,400	Tons	$75.00	$255,000.00
D-2	8" Bituminous Base - Roadway Full Depth Base		9,000	Tons	$70.00	$630,000.00
D-3	Asphalt Primer		12,133	Gal	$4.00	$48,500.00
D-4	Asphalt Tack		2,427	Gal	$3.50	$8,500.00
D-5	Saw Cut		9,600	LF	$2.00	$19,200.00
D-6	8" Rock Base - Roadway Full Depth		19,200	SQ. YD.	$8.00	$153,600.00
D-7	4" Sidewalk (including 2" Base)		6,400	SQ. YD.	$35.00	$224,000.00
D-8	ADA Ramps		16	Each	$1,200.00	$19,200.00
D-9	Curb & Gutter - Roadway		9,600	LF	$17.50	$168,000.00
D-10	8" Pinned On Concrete Island		247	SQ. YD.	$63.00	$15,600.00
D-11	Entrances		36	Each	$950.00	$34,200.00
D-13	Common Excavation		8,000	CY	$12.00	$96,000.00
D-14	Common Fill		35,000	CY	$8.00	$280,000.00
D-15	Undergrading		1,000	CY	$47.00	$47,000.00
D-16	Bridge Widening		14000	SQFT	$150.00	$2,100,000.00
					SUB-TOTAL	**$4,098,800.00**

E - TRAFFIC SIGNALS, STRIPING, AND SIGNING

E-1	Traffic Signal - 44th and Connecticut	1	EA	$135,000.00	$135,000.00
E-2	Signing and Pavement Markings	1	EA	$50,000.00	$50,000.00
				SUB-TOTAL	**$185,000.00**

ITEMS TO BE DONE BY OTHERS

c) Lighting
d) Relocating Utilities within ROW

TOTAL **$5,514,600.00**

TOTAL IMPROVEMENTS

Contingency	**10%**	**$**	**551,500.00**
Utility Relocations	**10%**	**$**	**551,500.00**
SURVEYING & ENGINEERING	**14%**	**$**	**772,000.00**

CONSTRUCTION INSPECTION - TO BE DETERMINED

GRAND TOTAL - IMPROVEMENTS **$7,389,600.00**

Note: This cost estimate is an opinion of probable construction costs based on engineering experience using values that are current and reasonable at time estimate was created. Because CJW Transportation Consultants have no control over the cost of labor, materials, equipment or services furnished by others, the actual construction costs will vary from the opinion. Final costs are dependent on approved construction plans and receiving actual bids from contractors. This cost estimate is subject to final design considerations and governing agency requirements at time of construction.