

Rice Creek Commons

TRAFFIC STUDY (RAMSEY COUNTY, MN)

FINAL DOCUMENT

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1. Introduction

The Rice Creek Commons study area consists of 429 acres located within the broader Twin Cities Army Ammunition Plant (TCAAP) site in Arden Hills, MN (see **Figure 1**). Ramsey County, under direction of the Joint Development Authority (JDA), has requested that Alliant Engineering provide an updated traffic study to the TCAAP Traffic Study originally completed in March 2014, which was conducted for the preparation of the TCAAP Final AUAR and Final Mitigation Plan completed in July 2014, and further reference in a TCAAP AUAR Update completed in August 2019. The requested 2023 updated traffic study will analyze recent revisions to the Rice Creek Commons mixed-use development plan to understand changes in previously documented assumptions, evaluate potential impacts on the surrounding roadway network that were not previously evaluated, and help understand the capacity needs of internal roadways.

The current development plan for the proposed mixed-use development located in Arden Hills consists of 150 units of senior adult housing, 300 condominiums / townhomes, 725 rental townhomes, 300 apartment units, 525 detached single-family homes, 500,000 square feet of shopping centers, 1,250,000 square feet of general office space, and 250,000 square feet of warehousing buildings. The following sections provide the assumptions, analysis, and study conclusions offered for consideration.

2. Existing Conditions

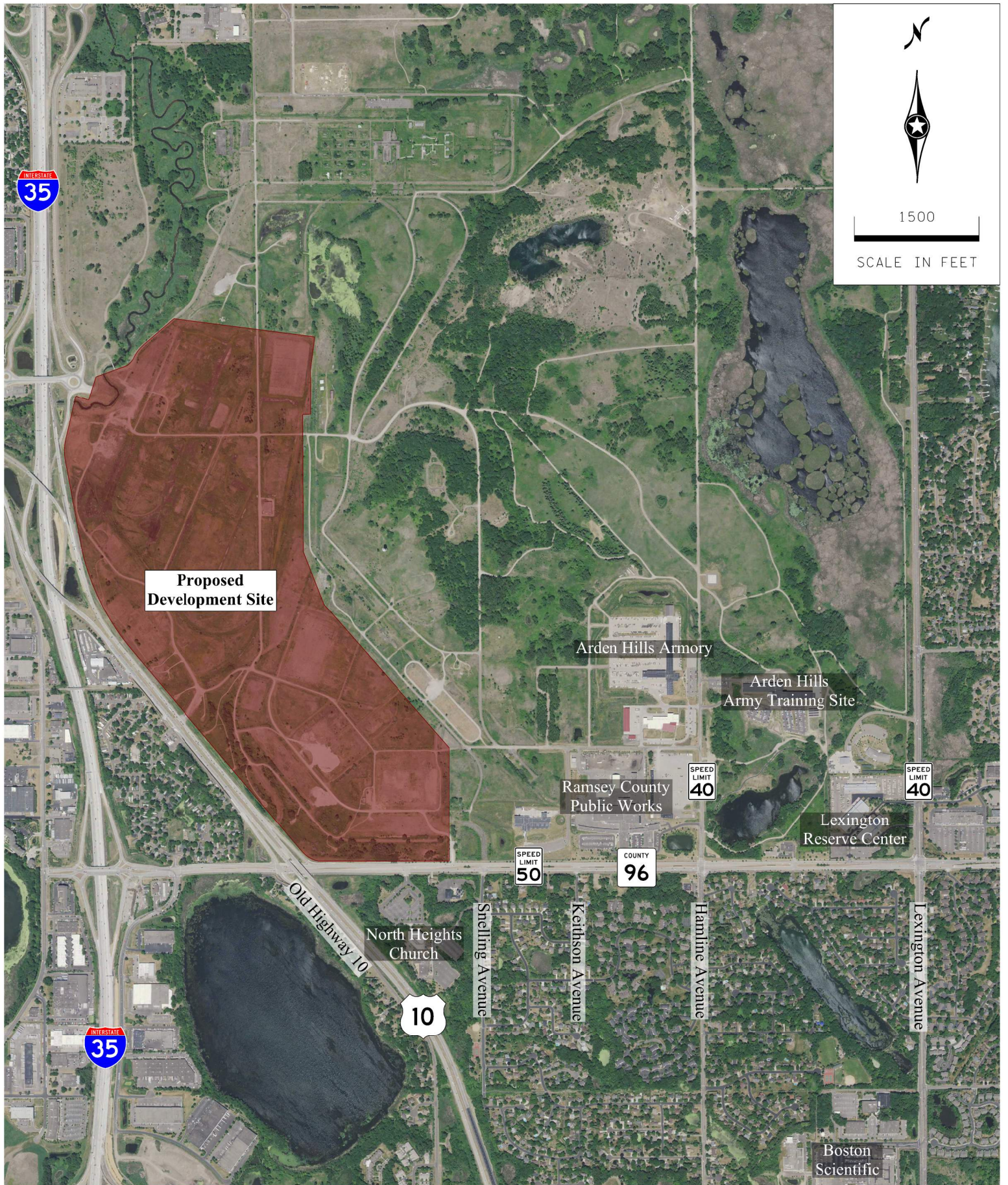
The existing conditions were reviewed to establish a baseline for identifying any future impacts associated with the proposed development. The evaluation of existing conditions includes various field observations and research, turning movement counts, and an intersection capacity analysis.

The following study intersections were identified:

- CR 96 & Old Highway 10
- CR 96 & Snelling Avenue
- CR 96 & Keithson Drive
- CR 96 & Hamline Avenue
- CR 96 & Lexington Avenue

The following development accesses were identified:

- CR 96 & Rice Creek Commons Property / Northern Heights Church Access
- CR H / Thumb Road & I-35W NB Ramps



Rice Creek commons Traffic Study

Figure 1
Project Location



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2.1 DATA COLLECTION

Turning movement counts were documented using video collected by Alliant Engineering on Tuesday, October 24th, 2023. The weekday AM and PM peak hours were determined to be 7:30 to 8:30 AM and 4:30 to 5:30 PM, respectively. Existing lane configurations and 2023 peak hour turning movement counts are shown in **Figure 2**. Turning movement count data sheets can be found in the **Appendix**.

Existing pedestrian and bicycle accommodations were documented. Shared-use facilities are present along the south side of CR 96 throughout the study corridor. A sidewalk is also present along the north side of CR 96, however, there is an approximately 0.7-mile gap between the proposed site access and Hamline Avenue. North-south CR 96 crossings with crosswalks are provided at Old Highway 10 (west) and Hamline Avenue (east).

2.2 LEVEL OF SERVICE

Operations analysis results identify a Level of Service (LOS), which indicates the quality of traffic flow through an intersection. Intersections are given a ranking from LOS A through LOS F. LOS A indicates the best traffic operation, with vehicles experiencing minimal delays. LOS F indicates an intersection where demand exceeds capacity, or a breakdown of traffic flow. Although traffic simulation models arrive at the average seconds of delay per vehicle slightly differently than HCM procedures, the thresholds presented are still applicable. Ramsey County uses an intersection LOS E as an acceptable operating condition for traffic studies and project planning. The LOS results are based on average delay per vehicle, during the peak hour analyzed, which correspond to the delay threshold values shown in **Table 1**. It should be noted that even if an intersection performs at LOS E during the peak hour(s) – the hour(s) with the highest traffic volumes throughout the day – the intersection would be expected to perform at a better LOS throughout the day.

Table 1. Level of Service Criteria

Level of Service	Description	Delay per Vehicle (seconds)	
		Signalized Intersection	Unsignalized Intersection
A	Free Flow: Low volumes and no delays.	0 - 10	0 - 10
B	Stable Flow: Speeds restricted by travel conditions, minor delays.	> 10 - 20	> 10 - 15
C	Stable Flow: Speeds and maneuverability closely controlled due to higher volumes.	> 20 - 35	> 15 - 25
D	Stable Flow: Speeds considerably affected by change in operating conditions. High density traffic restricts maneuverability, volume near capacity.	> 35 - 55	> 25 - 35
E	Unstable Flow: Low speeds, considerable delay, volume at or slightly over capacity.	> 55 - 80	> 35 - 50
F	Forced Flow: Very low speeds, volume exceed capacity, long delays with stop and go traffic.	> 80	> 50

Source: Highway Capacity Manual, 2010 Edition, Transportation Research Board, Exhibits 18-4 & 19-1.

For side-street stop-controlled intersections, a key measure of operational effectiveness is the side-street LOS. Long delays and poor LOS can occur on side-street approaches even if the overall intersection is functioning well, making side-street LOS a valuable design criterion. Side-street LOS is included in the detailed measures of effectiveness tables in the **Appendix** for reference.

2.3 INTERSECTION CAPACITY ANALYSIS

An existing year 2023 intersection capacity analysis was performed for the study intersections during the weekday AM and PM peak hours as observed by Alliant Engineering on October 24th, 2023. Results of the existing year 2023 intersection capacity analysis presented in **Table 2** indicate that all study intersections currently operate at overall LOS C or better during the AM and PM peak hours, except for CR 96 & Lexington Avenue which operates at overall LOS D during the PM peak hour.

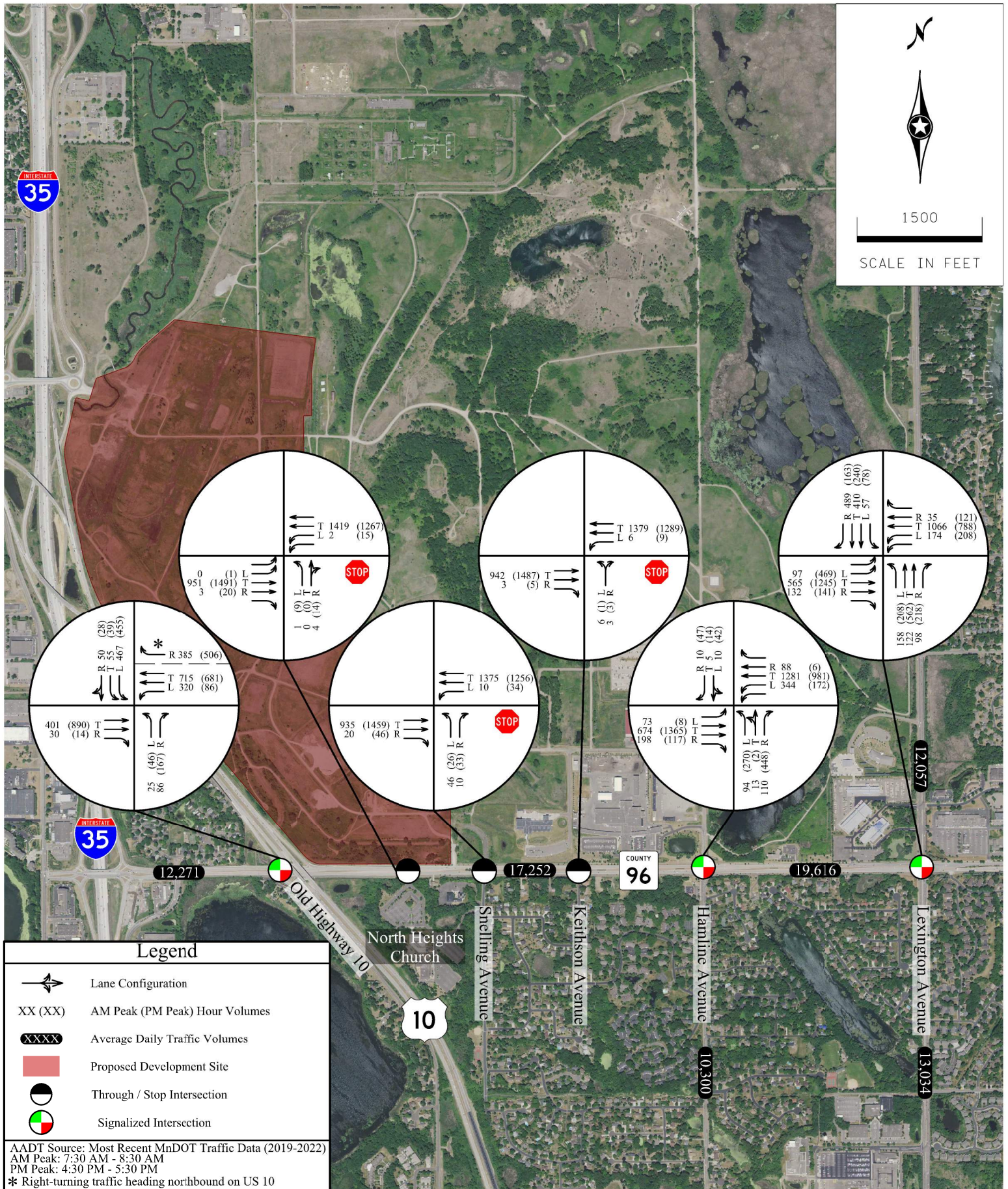
Table 2. 2023 Existing – Intersection Capacity Analysis

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
CR 96 & Old Highway 10	C	25.6	C	24.8
CR 96 & Rice Creek Commons Property / North Heights Church Access	A	2.2	A	1.9
CR 96 & Snelling Avenue	A	2.1	A	1.9
CR 96 & Keithson Avenue	A	2.6	A	3.2
CR 96 & Hamline Avenue	C	24.9	C	26.7
CR 96 & Lexington Avenue	C	33.1	D	49.2

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay

During the AM peak hour, the CR 96 & Snelling Avenue intersection sees a worst approach LOS E as northbound left-turns struggle to find acceptable gaps. Observations of collected video show some motorists completing the movement in two stages, stopping briefly in the median. During the PM peak hour, the CR 96 & Lexington Avenue intersection also sees a worst approach LOS E due to considerable eastbound volumes. In conversations with Ramsey County staff, there is a well-known travel pattern between Lexington Avenue and Hamline Avenue which results in a significant number of southbound right-turns at Lexington Avenue and westbound left-turns at Hamline Avenue during the morning commute and subsequently a significant number of northbound right-turns at Hamline Avenue and eastbound left-turns at Lexington Avenue during the evening commute. Detailed operations and queuing analysis results are presented in **Appendix**.



Rice Creek Commons Traffic Study

Figure 2
Existing Conditions

3. Volume Comparison

Ramsey County requested that a volume comparison be conducted between the turning movement counts collected by Alliant Engineering in October 2023 and the turning movement counts shown in the initial TCAAP Traffic Study from March 2014. The comparison would help determine whether projected long-term growth in the study area was realized while also capturing the impact of COVID-19 on study area traffic volumes. Overall, traffic volumes have decreased when comparing October 2023 turning movement counts to 2013 volumes. At the intersection of CR 96 & Rice Creek Commons Property / North Heights Church Access, for example:

Table 3. 2013 vs 2023 Traffic Volume Comparison

Peak Period	2013	2023	Change in Volume	Percentage Change in Volume
AM Peak	2,830	2,354	-476	-17%
PM Peak	2,960	2,806	-154	-5%

Results of the volume comparison indicate that the impact of the lower than projected overall traffic growth and COVID-19 on study area traffic volumes outweighs the anticipated traffic growth over the last 10 years. Furthermore, it suggests that forecast traffic growth between the current year (2023) and the original forecast year (2030) will likely not be as high.

4. Traffic Growth Rates

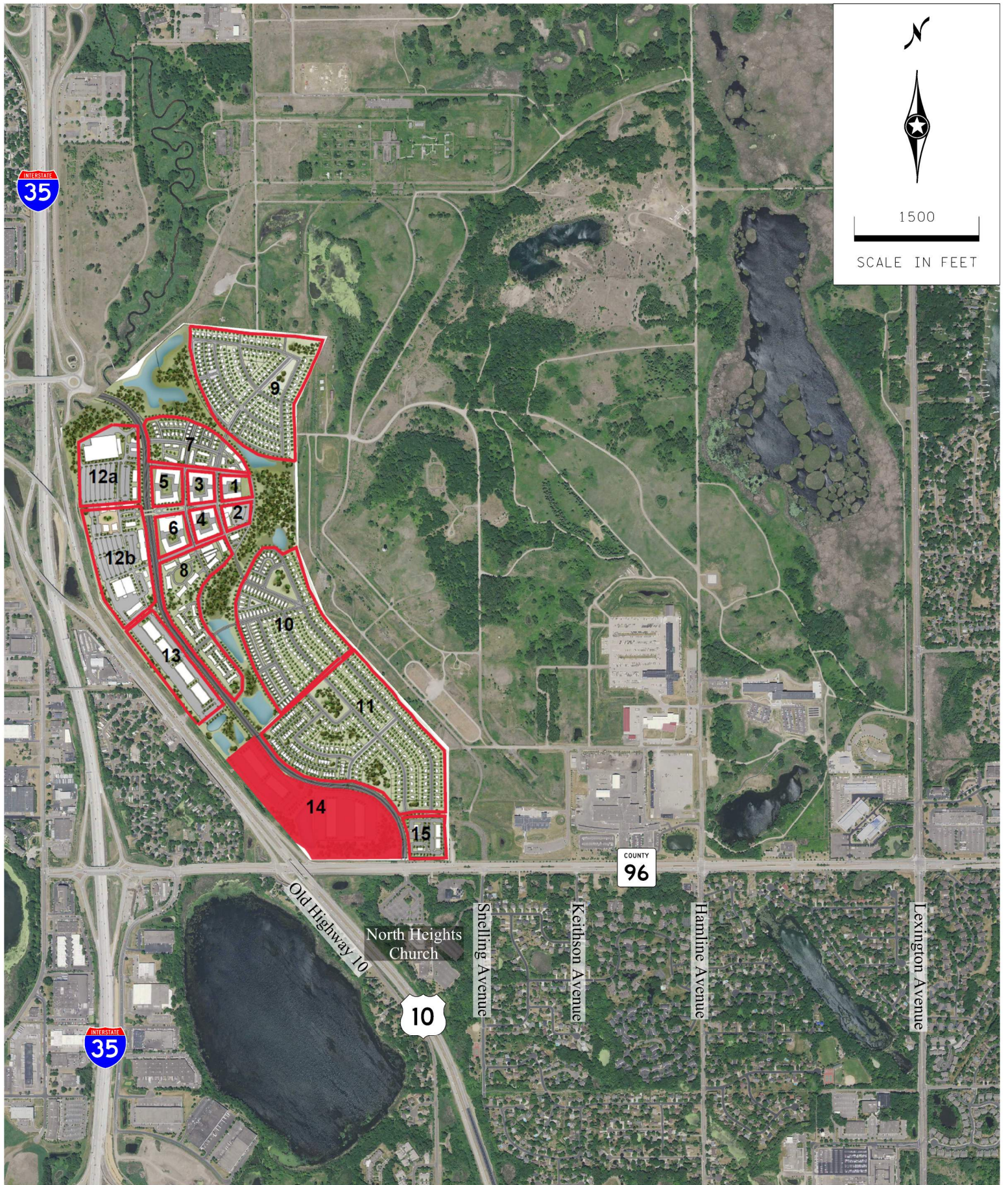
4.1 TRAFFIC GROWTH

Utilizing MnDOT’s Cumulative ESAL’s worksheet for the segment of CR 96 between US 10 and Hamline Avenue and only Annual Average Daily Traffic (AADT) volumes available in 2014, the resulting growth rate would be 0.93 percent. Reviewing the initial TCAAP Traffic Study growth rates are approximately 1.0 percent, consistent with the results from the ESAL worksheet. As previously noted, the impact of COVID-19 on traffic volumes and growth rates suggests a need to revisit the anticipated traffic growth rate to determine forecast year 2030 volumes.

A least squares analysis was completed using MnDOT’s Cumulative ESAL’s worksheet and available AADTs through 2023. Recommended traffic growth rates are demographically adjusted for Ramsey County, which is currently listed as a low growth area with a county factor of 0.81. The recommended traffic growth rate for the segment of CR 96 between US 10 and Hamline Avenue is 0.50 percent, lower than the previous 0.93 percent.

4.2 PROPOSED DAILY FORECASTS

Based on the results of the MnDOT Cumulative ESAL worksheet, a 0.5 percent growth rate was applied to all study intersections to obtain forecast year 2030 traffic volumes. A forecast year of 2030 was selected to remain consistent with previously completed studies for the sake of continuity and comparison. 2023 MnDOT Cumulative ESAL Worksheets can be found in the **Appendix**. Forecast year 2030 No Build traffic volumes generated using the proposed growth rate are depicted in **Figure 3**.



Rice Creek Commons Traffic Study

Figure 3
Proposed Site Layout

5. 2030 No Build – Intersection Capacity Analysis

To determine the full impact of the Rice Creek Commons development on the adjacent roadway network, a 2030 No Build intersection capacity analysis was performed to establish baseline traffic operations. Forecast year 2030 No Build intersection capacity analysis was performed for the study intersections during the weekday AM and PM peak hours as observed by Alliant Engineering on October 24th, 2023. Results of the forecast year 2030 No Build intersection capacity analysis presented in **Table 4** indicates that all study intersections are expected to operate at overall LOS C or better during the AM and PM peak hours, except for CR 96 & Lexington Avenue which operates at overall LOS D during the PM peak hour.

Table 4. 2030 No Build – Intersection Capacity Analysis

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
CR 96 & Old Highway 10	C	27.4	C	26.0
CR 96 & Rice Creek Commons Property / North Heights Church Access	A	2.3	A	2.0
CR 96 & Snelling Avenue	A	2.6	A	2.5
CR 96 & Keithson Avenue	A	2.6	A	3.3
CR 96 & Hamline Avenue	C	25.4	C	27.7
CR 96 & Lexington Avenue	C	34.3	D	53.7

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay

Slightly worse than under existing year 2023 volumes, the CR 96 & Snelling Avenue intersection sees a worst approach LOS F during the AM peak hour and a worst approach LOS E during the PM peak hour as northbound left-turns struggle to find acceptable gaps. During the PM peak hour, the CR 96 & Lexington Avenue intersection continues to see a worst approach LOS E due to considerable eastbound volumes. Although side-street volumes are nearly non-existent at the Rice Creek Commons Property / North Height Church Access intersection, the northbound approach delay is LOS E and LOS F in the AM and PM peak hours, respectively. Detailed operations and queuing analysis results are presented in **Appendix**.

6. Proposed Development

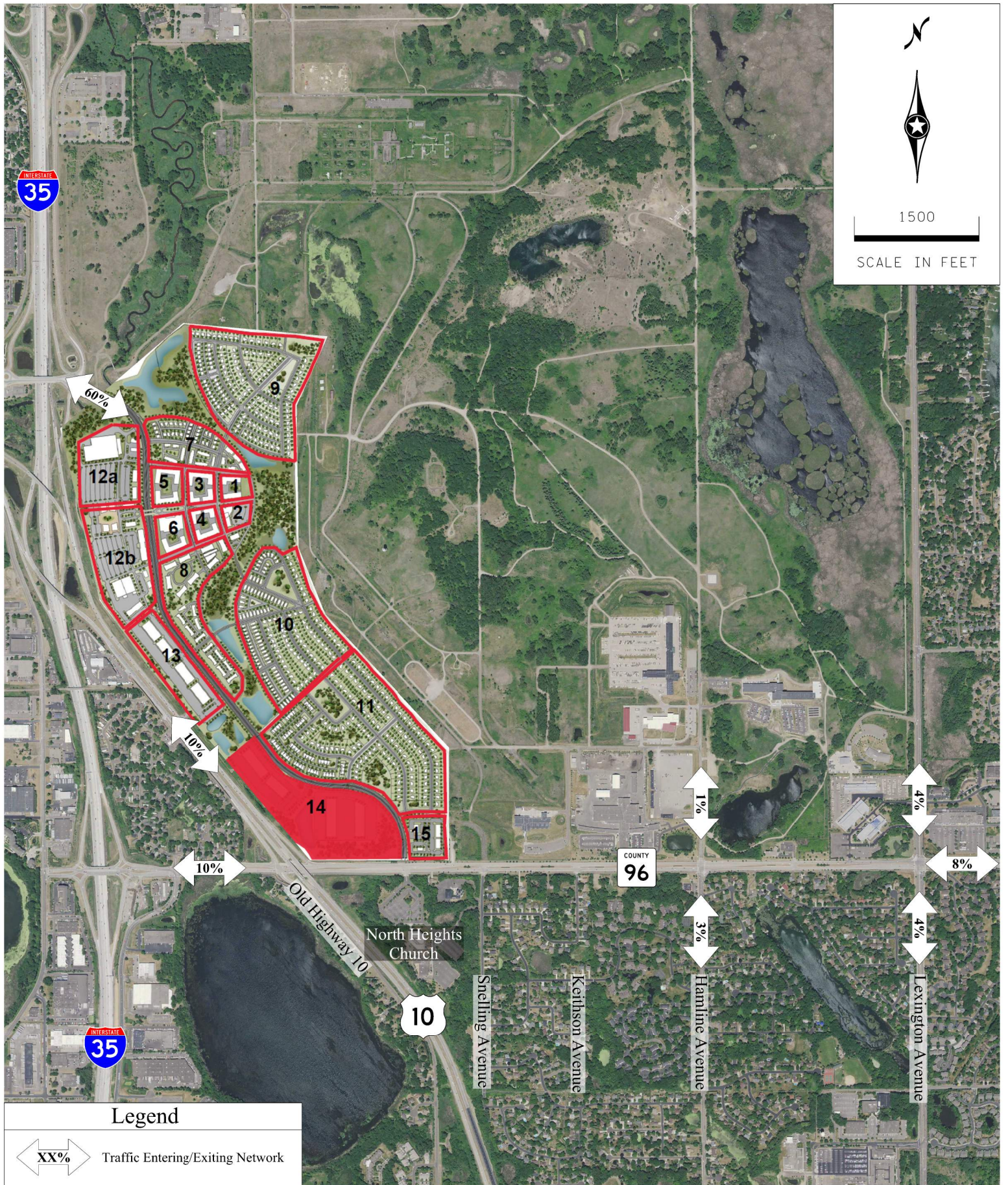
The Rice Creek Commons study area consists of 429 acres located within the broader TCAAP site in Arden Hills, MN. The current development plan for the proposed mixed-use development located in Arden Hills consists of 150 units of senior adult housing, 300 condominiums / townhomes, 725 rental townhomes, 300 apartment units, 525 detached single-family homes, 500,000 square feet of shopping centers, 1,250,000 square feet of general office space, and 250,000 square feet of warehousing buildings.

Based on the initial TCAAP AUAR traffic study, construction was anticipated to be completed by year 2030. As such, a year 2030 completion was assumed for the study. It is unlikely that the full buildout of the site will occur by 2030. The proposed site layout can be found in **Figure 4**.

6.1 PROPOSED ACCESS

Access to the proposed development is available at the following two locations:

- CR 96 & Rice Creek Commons Property / North Heights Church Access
 - A full access located approximately 1,500 feet east of the CR 96 & Old Highway 10 intersection. This access may serve as the primary access for residents of the southern half of the development, and motorists entering and exiting the development site from the east.
 - Results of the 2030 No Build traffic operations analysis, combined with mitigation recommendations from the previously completed TCAAP Traffic Study, confirm the need for a higher form of traffic control at the Rice Creek Commons Property / North Height Church Access intersection under any build scenario. As such, a traffic signal is assumed to replace the existing through / stop traffic control once development begins.
- CR H / Thumb Road & I-35W Ramps
 - A full access located on the north side of the development. A 2x1 roundabout was constructed per mitigation recommendations from the previously completed TCAAP Traffic Study which is anticipated to have enough capacity to handle Rice Creek Commons mixed-use development trips. This access will serve as the primary access for residents of the northern half of the development, and motorists entering and exiting the development site from the north and west.
 - Higher-density residential and commercial land uses are planned for the northern half of the development, which would suggest a higher proportion of the trips will utilize this access when entering and exiting the development.



Rice Creek Commons Traffic Study

Figure 4
Proposed Development Directional Distribution



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7. Development Trip Generation

Based on guidance provided by Ramsey County related to the most recent revisions to the land use plan (included in the **Appendix**), the minimum development scenario shown in the initial TCAAP Traffic Study was analyzed for this update. In addition to this, several editions to the ITE Trip Generation Manual have since been released and an update to the initial trip generation estimates performed in the TCAAP Traffic Study was also conducted. The following sections document the updates and assumptions for the trip generation efforts.

7.1 DEVELOPMENT SCENARIO CHANGES

The minimum development scenario has changed slightly from what was previously analyzed in the initial TCAAP Traffic Study. General industrial and general office land uses were removed and/or reduced in order to accommodate 500 additional residential units. These 500 units were added to lower-density areas surrounding the town center and throughout the southern half of the development. Based on a review of Ramsey County land use codes it was determined that TRC NR-3 and TRC NR-4 Residential units are typically medium density land uses such as townhomes. The 500 units were added to Rental Townhomes (ITE Code: 215) as the trip generation rate was slightly higher than Condominium / Townhome (ITE Code: 230).

7.2 TRIP GENERATION

Trip generation estimates were developed under the minimum development scenario for the weekday AM and PM peak hours, as well as on a daily basis. The trip generation estimates were developed utilizing trip generation rates for similar land uses as documented in the *ITE Trip Generation Manual, 11th Edition*. It should be noted that the previous TCAAP Traffic Study applied a 15 percent multi-use reduction to all development trips to account for internal trips between land uses and external alternative modes of travel. NCHRP Report 684 was utilized to confirm that this reduction was still applicable, calculating an 8 percent AM peak hour reduction and an 18 percent PM peak hour reduction. The average peak hour reduction of 13 percent could feasibly be rounded up to 15 percent, so the same reduction was also applied for this study.

The ITE Trip Generation Manual was utilized to estimate the trip generation potential for the proposed development. The ITE Trip Generation Manual provides peak hour and daily trip generation rates based on studies of similar land uses. Estimated site generated traffic based on the ITE Trip Generation Manual is detailed in **Table 5**. Results of the trip generation estimates indicate the current development plan is expected to generate approximately 2,857 AM peak hour, 4,039 PM peak hour, and 39,265 daily trips. Based on the methodology described in the ITE Trip Generation Manual, and to provide a conservative estimate of the impact of the current development plan, pass-by trips were not applied.

Table 5. ITE Trip Generation Estimate

Land Use (ITE Code)	Units	Size	AM Peak Hour Trips ¹			PM Peak Hour Trips ¹			Daily Trips
			Trips In	Trips Out	Total Trips	Trips In	Trips Out	Total Trips	
Senior Adult Housing- Attached (252)	Dwellings	150	10	20	30	21	17	38	486
	<i>Multi-Use Reduction (15%)</i>		<i>Applied to gross development trips.</i>						
	Land Use Gross Trips		10	20	30	21	17	38	486
Condominium / Townhome (230)	Dwellings	300	30	102	132	77	31	108	1,032
	<i>Multi-Use Reduction (15%)</i>		<i>Applied to gross development trips.</i>						
	Land Use Gross Trips		30	102	132	77	31	108	1,032
Rental Townhome (215)	Dwellings	725	87	261	348	244	169	413	5,220
	<i>Multi-Use Reduction (15%)</i>		<i>Applied to gross development trips.</i>						
	Land Use Gross Trips		87	261	348	244	169	413	5,220
Apartments (220)	Dwellings	300	29	91	120	96	57	153	2,022
	<i>Multi-Use Reduction (15%)</i>		<i>Applied to gross development trips.</i>						
	Land Use Gross Trips		29	91	120	96	57	153	2,022
Single-Family Detached Housing (210)	Dwellings	525	92	276	368	311	183	494	4,951
	<i>Multi-Use Reduction (15%)</i>		<i>Applied to gross development trips.</i>						
	Land Use Gross Trips		92	276	368	311	183	494	4,951
Shopping Center (820)	Gross Floor Area (GFA)	500	260	160	420	816	884	1,700	18,505
	<i>Multi-Use Reduction (15%)</i>		<i>Applied to gross development trips.</i>						
	Land Use Gross Trips		260	160	420	816	884	1,700	18,505
General Office (710)	Gross Floor Area (GFA)	1,350	1,672	228	1,900	306	1,494	1,800	13,550
	<i>Multi-Use Reduction (15%)</i>		<i>Applied to gross development trips.</i>						
	Land Use Gross Trips		1,672	228	1,900	306	1,494	1,800	13,550
Building Warehousing (150)	Gross Floor Area (GFA)	250	33	10	43	13	32	45	428
	<i>Multi-Use Reduction (15%)</i>		<i>Applied to gross development trips.</i>						
	Land Use Gross Trips		33	10	43	13	32	45	428
Gross Development Trips			2,213	1,148	3,361	1,884	2,867	4,751	46,194
<i>Multi-Use Reduction (15%)</i>			<i>-332</i>	<i>-172</i>	<i>-504</i>	<i>-282</i>	<i>-430</i>	<i>-712</i>	<i>-6,929</i>
Net New Development Trips			1,881	976	2,857	1,602	2,437	4,039	39,265

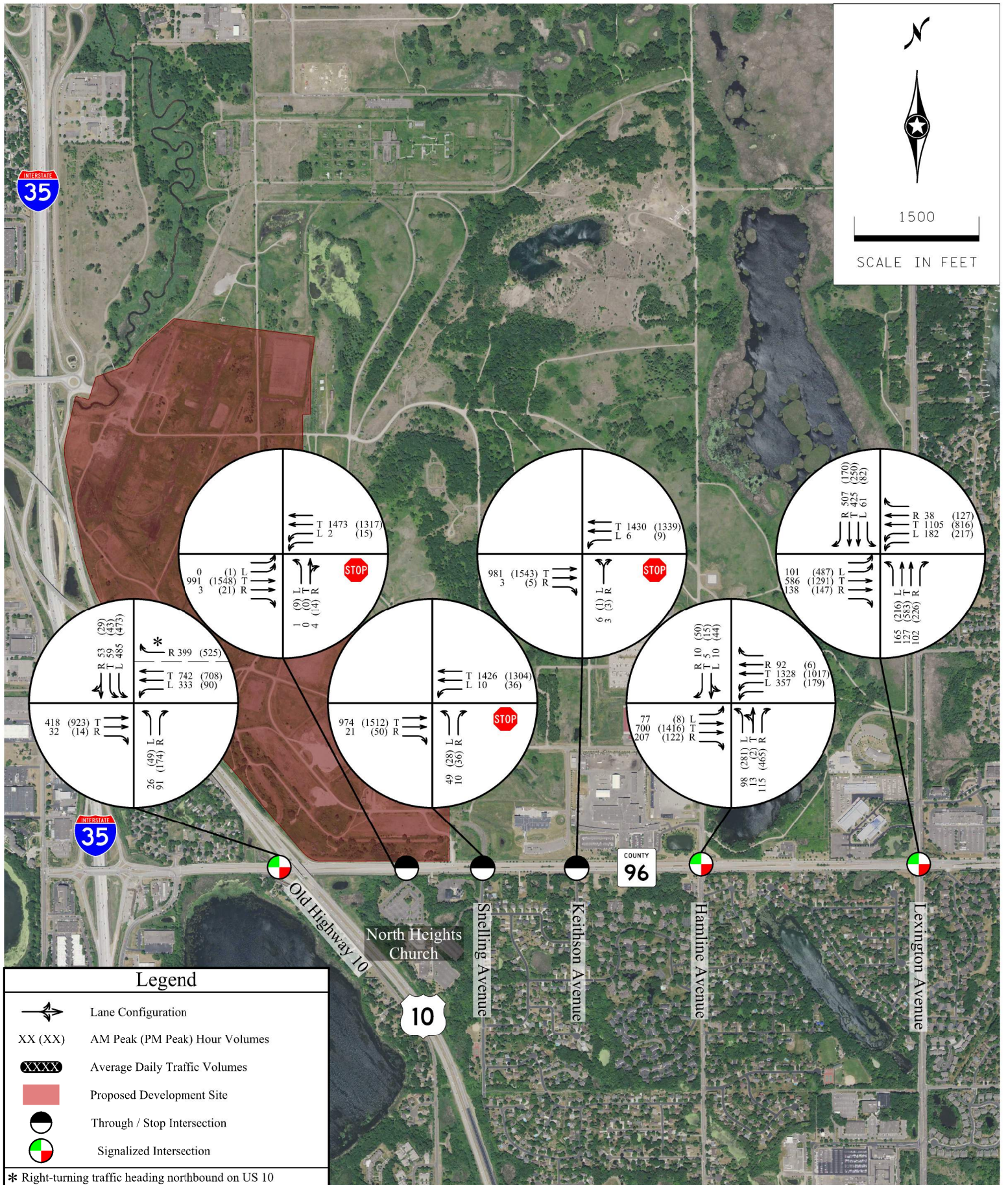
Source: Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition.

1: Trips generated for the peak hour of the adjacent roadway network.

2: Pass-by trips not applied to provide conservative estimate.

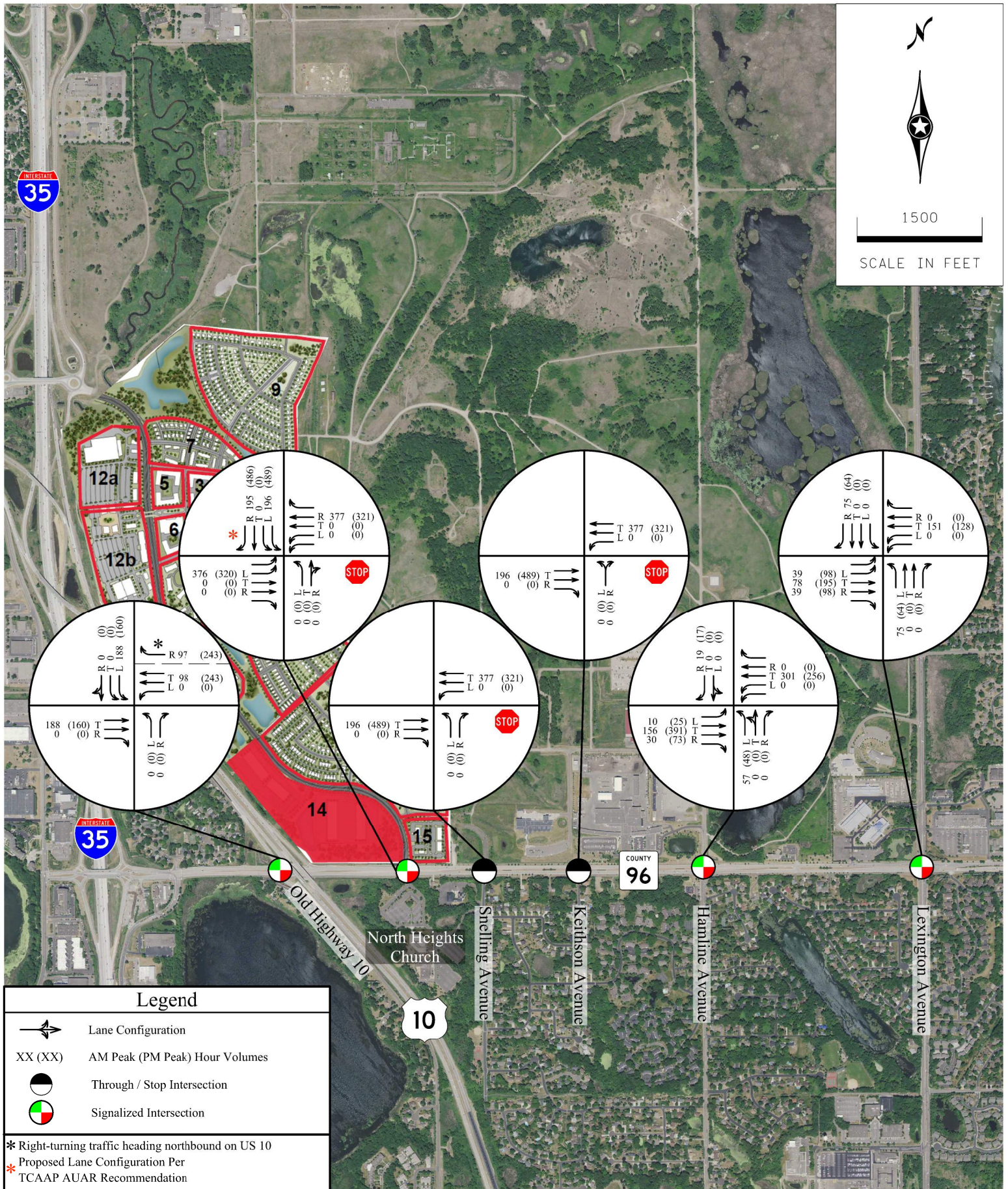
7.3 DEVELOPMENT TRIP DISTRIBUTION

The distribution of site-generated traffic in and out of the site was based upon distributions documented in the initial TCAAP Traffic Study. As the study area for this update extends further east, a review of existing traffic volumes and patterns was completed to determine trip distribution percentages for Hamline Avenue and Lexington Avenue. Proposed development directional distributions are shown in **Figure 5**. This distribution was applied to site-generated traffic volumes to generate added development trips shown in **Figure 6**, which were subsequently added to 2030 No Build traffic volumes to generate 2030 Build traffic volumes shown in **Figure 7**.



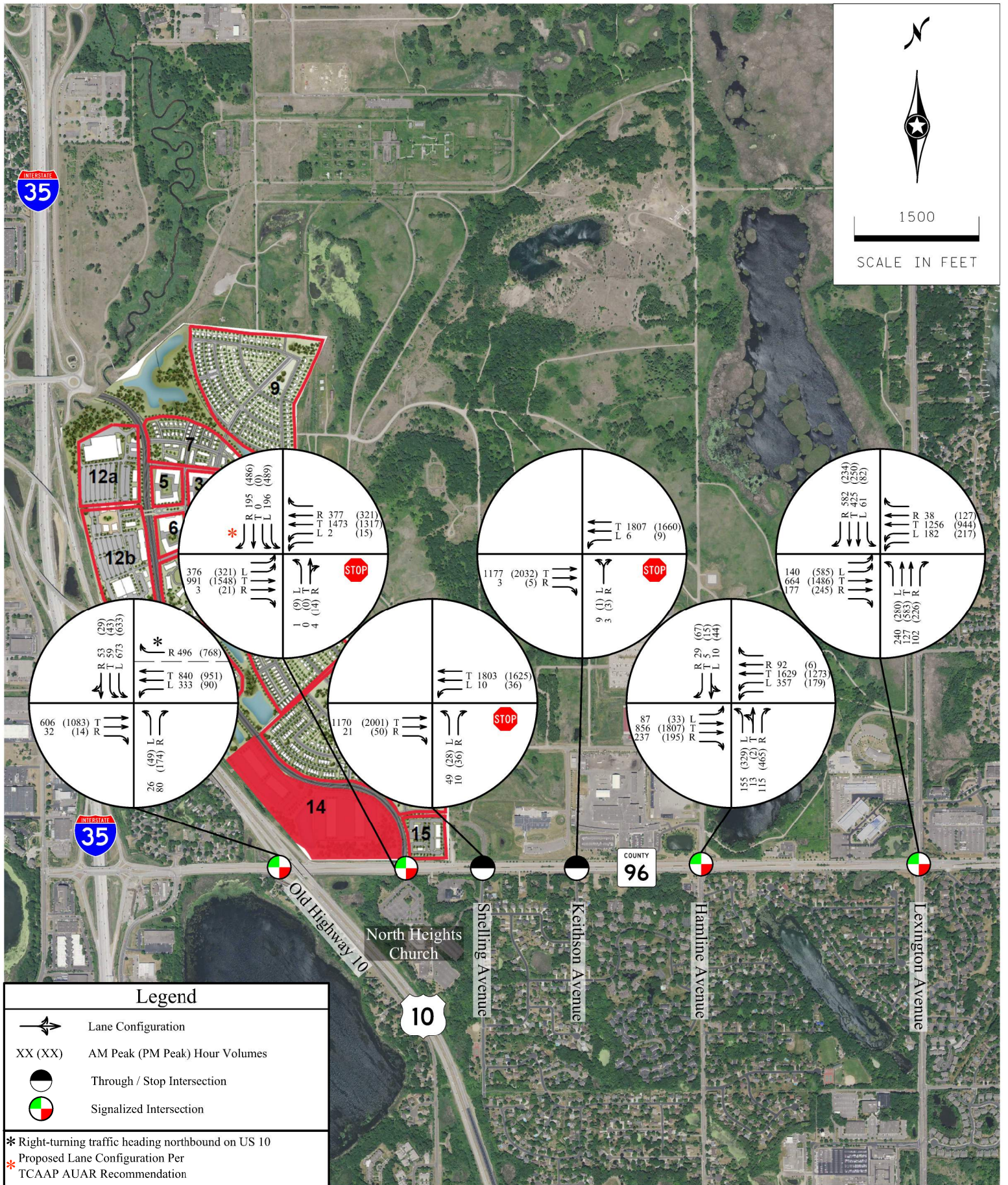
Rice Creek Commons Traffic Study

Figure 5
2030 No Build Traffic Volumes



Rice Creek Commons Traffic Study

Figure 6
 Added Development Trip



Rice Creek Commons Traffic Study

Figure 7
2030 Build Traffic Volumes

8. 2030 Build – Intersection Capacity Analysis

Utilizing existing signal timing, and mitigation recommendations from the previously completed TCAAP Traffic Study for the CR 96 & Rice Creek Commons Property / North Height Church Access traffic signal, results of the forecast year 2030 Build analysis presented in **Table 6** indicate that all study intersections are expected to operate at overall LOS C or better during the weekday AM peak hour except for CR 96 & Lexington Avenue which operates at LOS F. All study intersections operate at overall LOS C or better during the PM peak hour except for CR 96 & Hamline Avenue and CR 96 & Lexington Avenue which operate at overall LOS F. CR 96 & Keithson Avenue performs at overall LOS E in the PM peak hour due to lengthy eastbound queues at Hamline Avenue.

Table 6. 2030 Build – Intersection Capacity Analysis

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
CR 96 & Old Highway 10	C	34.1	C	32.1
CR 96 & Rice Creek Commons Property / North Heights Church Access	C	26.6	D	40.6
CR 96 & Snelling Avenue	A	5.4	C	24.9
CR 96 & Keithson Avenue	A	4.5	E	39.3
CR 96 & Hamline Avenue	C	32.1	F	89.4
CR 96 & Lexington Avenue	F	85.4	F	94.6

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay

Due to the large operational deficiencies observed with existing signal timing, an additional intersection capacity analysis was performed with revised signal timing throughout the corridor. Ramsey County routinely evaluates signal timing and makes adjustments to the signal operations to be responsive to changes in traffic volumes. Results of the forecast year 2030 Build analysis with signal timing modifications presented in **Table 7** indicate that all study intersections are expected to operate at overall LOS D or better for both peak hours. Detailed operations and queuing analyses results are presented in the **Appendix**.

Table 7. 2030 Build w/ Signal Timing Modifications

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
CR 96 & Old Highway 10	D	36.1	C	30.6
CR 96 & Rice Creek Commons Property / North Heights Church Access	B	18.3	C	29.4
CR 96 & Snelling Avenue	A	4.3	C	15.0
CR 96 & Keithson Avenue	A	4.2	A	3.9
CR 96 & Hamline Avenue	C	31.0	D	39.2
CR 96 & Lexington Avenue	D	47.7	D	53.9

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay

9. CR 96 & Rice Creek Commons Property Lane Configurations

A few additional scenarios were analyzed to better understand when the second eastbound left-turn lane would be needed at the CR 96 & Rice Creek Commons Property / North Heights Church Access intersection. Although pavement is already in place for the second eastbound left-turn lane, a second receiving lane would need to be built. Results of the forecast year 2030 Build analysis with a single eastbound left at CR 96 & Rice Creek Commons Property / North Heights Church Access are presented in **Table 8** and indicate that CR 96 & Rice Creek Commons Property / North Heights Church Access would operate at overall LOS E during the PM peak hour with the Rice Creek Commons development fully built out.

Table 8. 2030 Build w/ Single EBL at Rice Creek Commons Property

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
CR 96 & Old Highway 10	D	35.4	D	43.8
CR 96 & Rice Creek Commons Property / North Heights Church Access	C	33.0	E	67.1
CR 96 & Snelling Avenue	A	5.4	D	26.0
CR 96 & Keithson Avenue	A	4.4	A	3.6
CR 96 & Hamline Avenue	C	31.3	D	35.7
CR 96 & Lexington Avenue	D	48.3	D	53.9

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay

A second scenario was analyzed based on mitigation recommendations from the previously completed TCAAP Traffic Study, which suggested a third westbound through lane be added at the CR 96 & Rice Creek Commons Property / North Heights Church Access intersection. This would allow additional green time to be allocated to eastbound and southbound movements instead of westbound movements. Results of this scenario presented in **Table 9** indicate that all study intersections are expected to operate at overall LOS D or better for both peak hours. However, this would require over one-half mile of additional widening between US 10 and Keithson Drive.

Table 9. 2030 Build w/ Single EBL & Additional WBT

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
CR 96 & Old Highway 10	C	33.0	C	30.3
CR 96 & Rice Creek Commons Property / North Heights Church Access	C	25.9	C	29.4
CR 96 & Snelling Avenue	A	5.5	C	16.6
CR 96 & Keithson Avenue	A	4.2	A	3.5
CR 96 & Hamline Avenue	C	33.0	D	43.3
CR 96 & Lexington Avenue	D	48.0	D	54.9

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay

A third scenario was analyzed based on existing split phase signal timing at the CR 96 & Hamline Avenue intersection. If the North Heights Church remained as is, with minimal volumes throughout the day, one potential alternative would be to operate the traffic signal as split phase and modify the southbound through lane to be a shared southbound through and right-turn lane as there would be minimal through volumes and the lane would mostly operate as a second right-turn lane. Much of the observed delay at the intersection is due to the inefficiencies along the southbound approach due to the high number of southbound right-turns. Results of this scenario presented in **Table 10** indicate that all study intersections are expected to operate at overall LOS D or better for both peak hours. Adding a channelized southbound right-turn lane may also have the same effect as a second southbound right-turn lane but this would require a wider southbound approach.

Table 10. 2030 Build w/ Single EBL at Rice Creek Commons Property & Split Phasing

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
CR 96 & Old Highway 10	D	39.2	C	31.7
CR 96 & Rice Creek Commons Property / North Heights Church Access	D	47.3	D	52.3
CR 96 & Snelling Avenue	A	7.5	C	17.3
CR 96 & Keithson Avenue	A	4.3	A	3.5
CR 96 & Hamline Avenue	C	31.2	D	40.1
CR 96 & Lexington Avenue	D	51.1	D	53.0

Overall Intersection LOS / Worst Approach LOS
 Overall Intersection Delay / Worst Approach Delay

Regardless of the recommended configuration once the Rice Creek Commons development is fully built out, the additional analysis of these scenarios indicates that a second eastbound left-turn lane would not be needed immediately and could instead be implemented once development volumes increase and impacts are fully realized as implementation of the additional left-turn lane could be delayed by modifying traffic signal timing. It should be noted that along the corridor modifications to side-street approaches will likely be needed at all unsignalized intersections to mitigate side-street approach delays when the site is fully built out.

10. Internal Roadway Capacity Analysis

A high-level capacity analysis was conducted for the primary internal roadway through the Rice Creek Commons development, which was previously shown as a four-lane divided roadway. Utilizing the proposed land use maps (included in the **Appendix**), gross development trips previously documented in the trip generation estimate (**Table 5**) were distributed amongst each development area (**Figure 4**). The 15 percent multi-use reduction applied to all development trips for the CR 96 operational analysis was not utilized for this capacity analysis. Multi-use reductions are typically only applied to external roadway network trips as it is assumed the multi-use trips never leave the internal roadway network. For example, the retail land use would receive a portion of its trips from the neighboring residential land uses within the Rice Creek Commons development; however, these vehicle trips between land uses would still use the internal roadway network. As a result, 46,194 daily trips were distributed throughout the internal roadways of the Rice Creek Commons development.

Based on the distribution of site-generated traffic in and out of the site documented in the initial TCAAP Traffic Study, 60 percent of site generated trips are expected to utilize the north access with the remaining 40 percent utilizing the south access. This split was applied to each development area which would account for internal trips through the development in addition to shorter trips in / out of the development from either end.

As there are several intersections within the development, and volumes between intersections are expected to vary, the primary internal roadway was divided into seven segments for the analysis (see **Figure 8**). Projected AADTs were compared to capacity guidelines within the Highway Capacity Manual for various facility types. A volume-to-capacity ratio of 0.9 is the LOS D/E threshold for when roadway segments are approaching capacity.

- Two-lane undivided urban – 10,000 ADT (9,000 ADT = LOS D/E)
- Three-lane (two-lane with turn lanes) – 22,500 ADT (20,250 ADT = LOS D/E)
- Four-lane undivided urban – 20,000 ADT (18,000 ADT = LOS D/E)
- Five-lane urban (four-lane with turn lanes) – 32,000 ADT (28,800 ADT = LOS D/E)

Although the volume thresholds utilized for the roadway capacity analysis are daily totals, the resulting LOS represents the expected performance of the internal roadway network during the peak hours and is not representative of all non-peak hours throughout the day where traffic volumes are far less. This roadway capacity analysis is performed under the assumption that the entire development is constructed, which will likely not be realized until after 2030. Internal roadways could begin with a smaller cross section and grow as other parts of the development are constructed.

Table 11 and **Table 12** summarize the results of the internal roadway capacity analysis for a three-lane cross section. These tables include additional rows that provide reductions to the overall daily trips being applied to the internal roadway network, shedding light on the impact modal choices and other outside factors may have on traffic operations. Modal choices of residents and travelers from neighboring areas would impact trips within the internal roadway network. For example, if residents or customers chose public transportation, biking, or walking to the retail center instead of driving a lower number of vehicles would utilize the internal roadways.

As shown in **Table 11** and called out in **Figure 8**, the southernmost segments of the development (E, F, G) are expected to perform at LOS D or better during the peak hours with a three-lane facility. More central segments (C, D) would also be expected to perform at LOS D or a high-performing LOS E with slightly less than the full 46,194 daily trips; it is important to reiterate that Ramsey County uses an intersection LOS E as an acceptable operating condition for traffic studies and project planning. The northernmost segments (A, B) would likely require a larger facility type. As a result, the intersection between segments B and C would be the most logical transition point between a larger facility type to the north and a smaller facility type to the south. With a large amount of retail and high-density residential nearby, this intersection would likely require a higher form of traffic control (traffic signal, roundabout).

Table 11. 3-Lane Capacity w/ 60%/40% Distribution

		Internal Roadway Segments						
		A	B	C	D	E	F	G
% Reduction	0%	F	F	E	E	D	D	D
	5%	F	F	E	D	D	D	C
	10%	F	E	D	D	D	C	C
	15%	F	E	D	C	C	C	C
	20%	E	D	C	C	C	B	B
	25%	E	D	C	B	B	B	B

An additional analysis was completed for an even 50 percent distribution. The results of this analysis are presented in **Table 12**. At a planning level, a 50 percent split results in all segments having the same ADT. A 5 percent reduction – through mode choice or other unrealized trip generation – in projected gross development trips would be needed for the segments to perform at LOS E during peak hour traffic volumes with a three-lane section and a 15 percent reduction would be needed for the segments to perform at LOS D.

Table 12. 3-Lane Capacity w/ 50%/50% Distribution

		Internal Roadway Segments						
		A	B	C	D	E	F	G
% Reduction	0%	F	F	F	F	F	F	F
	5%	E	E	E	E	E	E	E
	10%	E	E	E	E	E	E	E
	15%	D	D	D	D	D	D	D
	20%	D	D	D	D	D	D	D
	25%	C	C	C	C	C	C	C

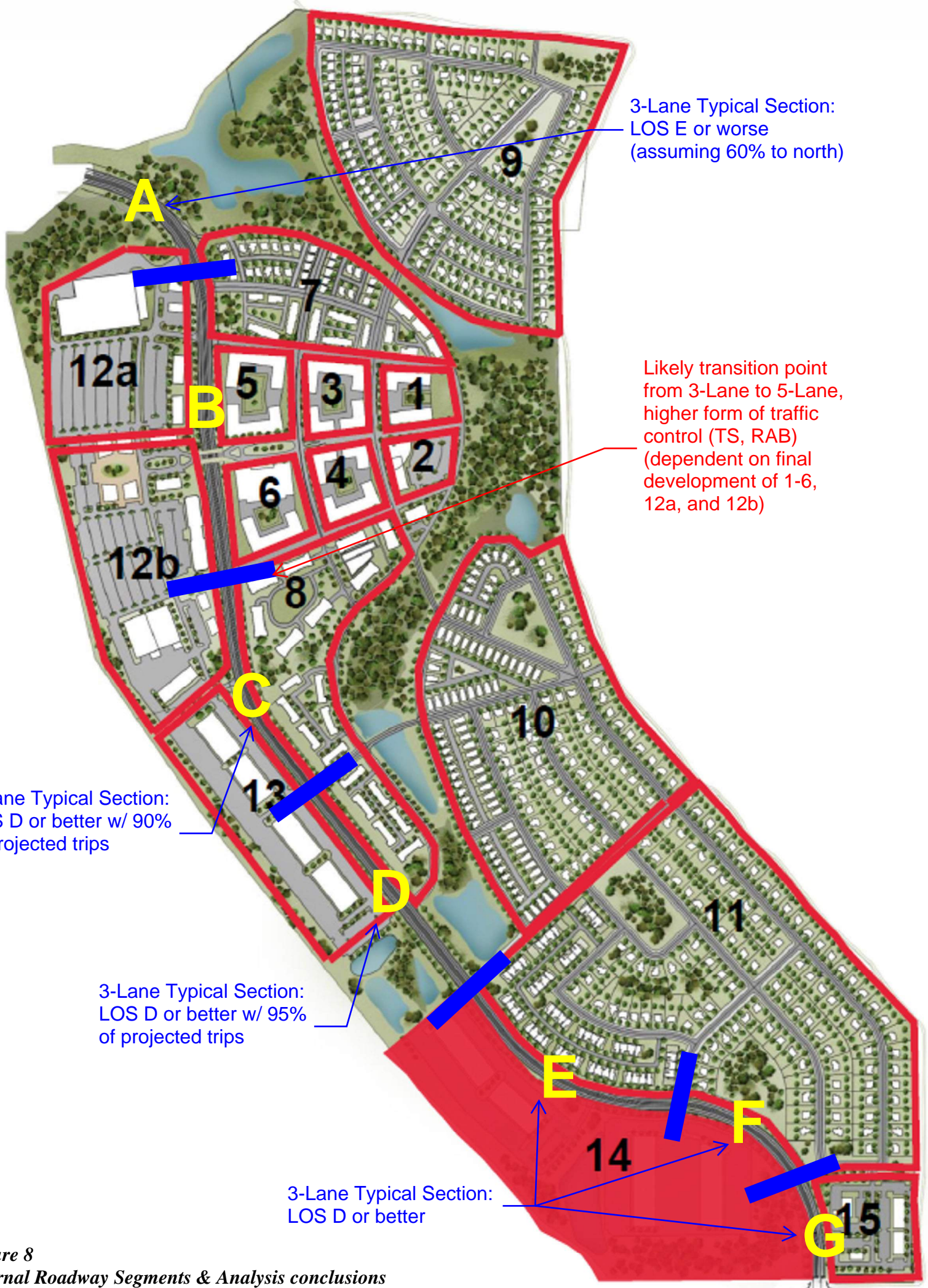


Figure 8
Internal Roadway Segments & Analysis conclusions

11. Conclusions

The following study conclusions are offered for consideration:

- A comparison of TMCs indicate that 2023 TMCs were 17 percent less and 5 percent less than 2013 TMCs for the AM and PM peak hours, respectively. The impact of COVID-19 may have contributed to reduced traffic volumes but data indicates growth was tapering off prior to COVID-19 as well.
- A comparison of growth rates utilizing MnDOT's Cumulative ESAL's worksheet indicates the previously calculated 2014 growth rate of 0.93 percent is much higher than the current 0.5 percent growth rate; the result of historical AADTs tapering off along the corridor and impacts of COVID-19 on traffic patterns.
- General industrial and general office land uses were removed and/or reduced in order to accommodate the additional 500 residential units added to rental townhomes based on the most recent land use map. A 15 percent multi-use reduction and a 60 percent / 40 percent north-south split was still utilized.
 - Results of the trip generation estimates indicate the current development plan is expected to generate approximately 2,857 AM peak hour, 4,039 PM peak hour, and 39,265 daily trips.
- Results of forecast year 2030 Build intersection capacity analyses indicate that with signal timing modifications, all study intersections are expected to operate at overall LOS D or better during both the AM and PM peak hours with dual eastbound left-turn lanes at CR 96 & Rice Creek Commons Property.
 - Through / stop-controlled intersections at Snelling Avenue and Keithson Avenue would see increased delay when making northbound left-turns under forecast year 2030 No Build traffic volumes. These delays would be exacerbated under 2030 Build scenarios.
- Results of the forecast year 2030 Build analysis with a single eastbound left at CR 96 & Rice Creek Commons Property / North Heights Church Access indicate the intersection would operate at overall LOS E during the PM peak hour with the Rice Creek Commons development fully built out.
 - Scenarios that add a third westbound through lane, modify operations to split phasing, or provide a channelized southbound right-turn lane would improve the intersection to overall LOS D or better during the PM peak hour. However, a second eastbound left-turn lane would not be needed immediately and could instead be implemented once development volumes increase and impacts are fully realized.
- Based on a high-level capacity analysis the primary internal roadway through the Rice Creek Commons development, the intersection between segments B and C would be the most logical transition point between a larger facility type to the north and a smaller facility type (three-lane) to the south
 - With a large amount of retail and high-density residential nearby, this intersection would likely require a higher form of traffic control (traffic signal, roundabout).

Overall, external to the site there is adequate capacity along CR 96 to accommodate anticipated Rice Creek Commons development trips, although additional spot intersection improvements may be necessary to address side-street delays at through /stop intersections. Internal to the site, the primary internal roadway would not need to be a four-lane divided facility as a portion could perform acceptably as a three-lane facility.

Appendix

RICE CREEK COMMONS TRAFFIC STUDY



LEAST SQUARES WORKSHEET

SEGMENT B1

Corresponds : SEGMENT A1

ROUTE: _____

SP#: _____

DATE : 12/26/23

LOCATION: CR 96 - Hamline Avenue to US 10 (2014 Study)

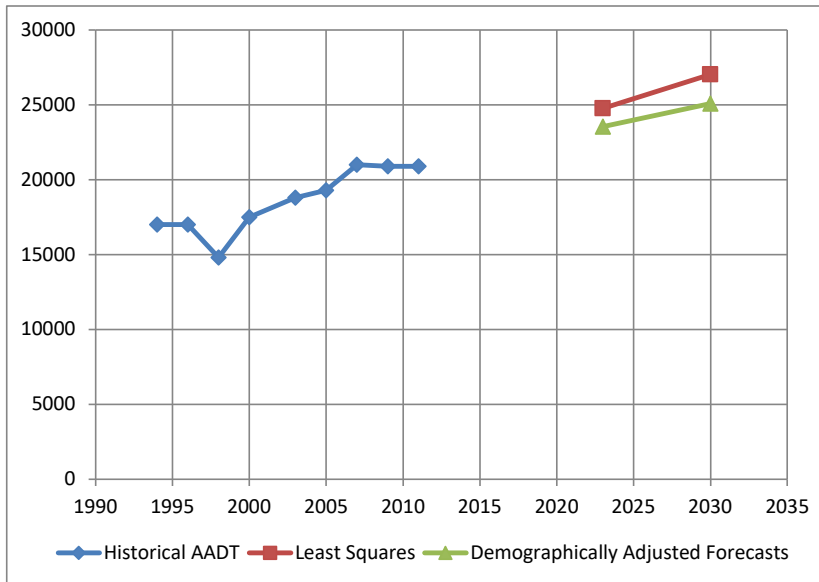
Seq # 42347

BASE YEAR: 2023

FORECAST YEAR: 2030

of lanes 4

COUNTED YEAR	FLOW MAP AADT (SEG A)
1994	17000
1996	17000
1998	14800
2000	17500
2003	18800
2005	19300
2007	21000
2009	20900
2011	20900
2015	
2019	
2021	



LEAST SQUARES BASED FORECASTS:

Year	AAADT	Calc	ADT Calc
2011	21301	-401	20900
2023	25171		24770
2030	27428		27027

Statistics	AAADT
R 2	0.78
SLOPE	322.48
INTERCEPT	-627207
N	9

Raw Least Squares Forecasts	
YEAR	AAADT
2011	20900
2023	24770
2030	27030

Slope Over Base Year
1.30%

Demographically Adjusted Forecasts	
YEAR	AAADT
2011	20900
2023	23540
2030	25080

Slope Over Base Year
0.93%

NOTE:
County Adjustment Factors were developed to Apply to Projected AADT. They are based on 1992-2007 VMT, Population, Labor Force, Household, and Employment Data.

COUNTY	COUNTY FACTOR	GROWTH PROFILE
RAMSEY	0.81	LOW GROWTH AREA

LEAST SQUARES WORKSHEET

SEGMENT B1

Corresponds : SEGMENT A1

ROUTE: _____

SP#: _____

DATE : 12/26/23

LOCATION: CR 96 - Hamline Avenue to US 10 (2023 Update)

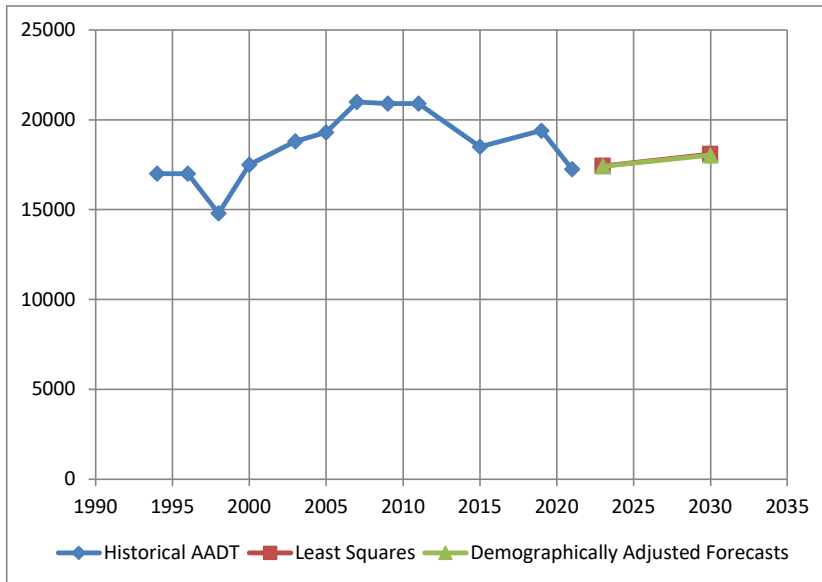
Seq # 42347

BASE YEAR: 2023

FORECAST YEAR: 2030

of lanes 4

COUNTED YEAR	FLOW MAP AADT (SEG A)
1994	17000
1996	17000
1998	14800
2000	17500
2003	18800
2005	19300
2007	21000
2009	20900
2011	20900
2015	18500
2019	19400
2021	17252



LEAST SQUARES BASED FORECASTS:

Year	AA DT	Calc	AD T Calc
2021	19900	-2648	17252
2023	20089		17441
2030	20751		18103

Statistics	AA DT
R 2	0.19
SLOPE	94.55
INTERCEPT	-171177
N	12

Raw Least Squares Forecasts	
YEAR	AA DT
2021	17250
2023	17440
2030	18100

Slope Over Base Year
0.54%

Demographically Adjusted Forecasts	
YEAR	AA DT
2021	17250
2023	17420
2030	18030

Slope Over Base Year
0.50%

NOTE:
County Adjustment Factors were developed to Apply to Projected AADT. They are based on 1992-2007 VMT, Population, Labor Force, Household, and Employment Data.

COUNTY	COUNTY FACTOR	GROWTH PROFILE
RAMSEY	0.81	LOW GROWTH AREA

TCAAP Update Traffic Study - Measures of Effectiveness Summary

Existing Year 2023 Traffic Operations

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
CR 96 & Old Highway 10	C / D	25.6 / 35.5	C / D	24.8 / 38.7
CR 96 & TCAAP Property / North Heights Church Access	A / D	2.2 / 32.4	A / E	1.9 / 39.6
CR 96 & Snelling Avenue	A / E	2.1 / 38.4	A / D	1.9 / 26.1
CR 96 & Keithson Avenue	A / C	2.6 / 21.7	A / D	3.2 / 27.1
CR 96 & Hamline Avenue	C / C	24.9 / 34.5	C / D	26.7 / 37.7
CR 96 & Lexington Avenue	C / D	33.1 / 45.0	D / E	49.2 / 63.2

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay

Forecast Year 2030 No Build Traffic Operations

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
CR 96 & Old Highway 10	C / D	27.4 / 38.5	C / D	26.0 / 37.3
CR 96 & TCAAP Property / North Heights Church Access	A / E	2.3 / 37.0	A / F	2.0 / 52.0
CR 96 & Snelling Avenue	A / F	2.6 / 54.5	A / E	2.5 / 42.6
CR 96 & Keithson Avenue	A / C	2.6 / 23.3	A / C	3.3 / 19.9
CR 96 & Hamline Avenue	C / D	25.4 / 38.5	C / C	27.7 / 34.8
CR 96 & Lexington Avenue	C / D	34.3 / 54.7	D / E	53.7 / 71.9

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay

Forecast Year 2030 Build Traffic Operations

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
CR 96 & Old Highway 10	C / D	34.1 / 46.9	C / D	32.1 / 38.6
CR 96 & TCAAP Property / North Heights Church Access	C / C	26.6 / 31.9	D / D	40.6 / 52.9
CR 96 & Snelling Avenue	A / F	5.4 / 127.3	C / F	24.9 / > 300
CR 96 & Keithson Avenue	A / E	4.5 / 48.9	E / F	39.3 / > 300
CR 96 & Hamline Avenue	C / D	32.1 / 35.9	F / F	89.4 / 149.8
CR 96 & Lexington Avenue	F / F	85.4 / 222.1	F / F	94.6 / 148.2

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay

Forecast Year 2030 Build Traffic Operations - Modified Signal Timing

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
CR 96 & Old Highway 10	D / D	36.1 / 52.6	C / D	30.6 / 49.1
CR 96 & TCAAP Property / North Heights Church Access	B / D	18.3 / 42.0	C / D	29.4 / 53.3
CR 96 & Snelling Avenue	A / F	4.3 / 107.9	C / F	15.0 / > 300
CR 96 & Keithson Avenue	A / F	4.2 / 78.3	A / F	3.9 / 895
CR 96 & Hamline Avenue	C / D	31.0 / 36.9	D / F	39.2 / 86.0
CR 96 & Lexington Avenue	D / E	47.7 / 66.4	D / E	53.9 / 60.8

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay

Forecast Year 2030 Build Traffic Operations - Single EBL

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
CR 96 & Old Highway 10	D / D	35.4 / 54.6	D / E	43.8 / 72.0
CR 96 & TCAAP Property / North Heights Church Access	C / D	33.0 / 40.3	E / F	67.1 / 80.8
CR 96 & Snelling Avenue	A / F	5.4 / 136.7	D / F	26.0 / > 300
CR 96 & Keithson Avenue	A / F	4.4 / 148.1	A / F	3.6 / > 300
CR 96 & Hamline Avenue	C / D	31.3 / 36.4	D / D	35.7 / 49.8
CR 96 & Lexington Avenue	D / E	48.3 / 67.3	D / E	53.9 / 64.6

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay

Forecast Year 2030 Build Traffic Operations - Single EBL with Additional WBT

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
CR 96 & Old Highway 10	C / D	33.0 / 48.6	C / D	30.3 / 47.3
CR 96 & TCAAP Property / North Heights Church Access	C / D	25.9 / 46.2	C / D	29.4 / 42.1
CR 96 & Snelling Avenue	A / F	5.5 / 163.6	C / F	16.6 / > 300
CR 96 & Keithson Avenue	A / F	4.2 / 61.4	A / F	3.5 / 57.0
CR 96 & Hamline Avenue	C / D	33.0 / 39.2	D / E	43.3 / 63.2
CR 96 & Lexington Avenue	D / E	48.0 / 69.7	D / E	54.9 / 69.5

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay

Forecast Year 2030 Build Traffic Operations - Single EBL W/ Altered Lane Configuration & Phasing

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
CR 96 & Old Highway 10	D / D	39.2 / 51.4	C / D	31.7 / 47.6
CR 96 & TCAAP Property / North Heights Church Access	D / D	47.3 / 53.8	D / E	52.3 / 56.9
CR 96 & Snelling Avenue	A / F	7.5 / 173.0	C / F	17.3 / > 300
CR 96 & Keithson Avenue	A / F	4.3 / 53.9	A / F	3.5 / 153.3
CR 96 & Hamline Avenue	C / D	31.2 / 35.5	D / D	40.1 / 53.2
CR 96 & Lexington Avenue	D / E	51.1 / 79.6	D / E	53.0 / 59.5

Overall Intersection LOS / Worst Approach LOS

Overall Intersection Delay / Worst Approach Delay

Existing Year 2023 Traffic Operations - AM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Old Highway 10	Movement Delay (sec/veh)	0.0	27.3	8.1	43.6	11.6	0.0	47.7	0.0	9.2	39.6	31.9	2.5	25.6
	Total Delay (hr)	0.0	3.0	0.1	3.7	2.4	0.0	0.3	0.0	0.2	5.0	0.4	0.0	15.1
	Movement LOS	A	C	A	D	B	A	D	A	A	D	C	A	C
	Movement Volume	0	392	29	308	725	0	22	0	88	451	49	51	2115
	Movement 95th Queue (ft)	0	147	10	292	225	0	51	0	71	242	81	81	
	Storage Bay Distance (ft)	0	0	275	325	0	0	0	0	0	125	0	0	
	Approach Delay (sec/veh)	26.0			21.1			16.9			35.5			
	Approach LOS	C			C			B			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & TCAAP Property / North Heights Church Access	Movement Delay (sec/veh)	0.0	1.1	1.4	31.5	2.8	0.0	157.2	0.0	7.4	0.0	0.0	0.0	2.2
	Total Delay (hr)	0.0	0.3	0.0	0.0	1.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	1.5
	Movement LOS	A	A	A	D	A	A	F	A	A	A	A	A	A
	Movement Volume	0	929	3	1	1436	0	1	0	5	0	0	0	2375
	Movement 95th Queue (ft)	0	0	0	11	0	0	12	14	14	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.1			2.8			32.4			0.0			
	Approach LOS	A			A			D			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Snelling Avenue	Movement Delay (sec/veh)	0.0	0.8	0.4	5.2	1.5	0.0	45.9	0.0	9.1	0.0	0.0	0.0	2.1
	Total Delay (hr)	0.0	0.2	0.0	0.0	0.6	0.0	0.6	0.0	0.0	0.0	0.0	0.0	1.4
	Movement LOS	A	A	A	A	A	A	E	A	A	A	A	A	A
	Movement Volume	0	913	21	10	1388	0	47	0	12	0	0	0	2391
	Movement 95th Queue (ft)	0	0	0	20	0	0	91	0	44	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	50	0	0	0	
	Approach Delay (sec/veh)	0.8			1.5			38.4			0.0			
	Approach LOS	A			A			E			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Keithson Avenue	Movement Delay (sec/veh)	0.0	0.9	0.4	7.2	3.6	0.0	32.4	0.0	6.8	0.0	0.0	0.0	2.6
	Total Delay (hr)	0.0	0.2	0.0	0.0	1.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	1.7
	Movement LOS	A	A	A	A	A	A	D	A	A	A	A	A	A
	Movement Volume	0	922	4	6	1384	0	7	0	5	0	0	0	2328
	Movement 95th Queue (ft)	0	0	0	18	0	0	25	0	25	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.9			3.6			21.7			0.0			
	Approach LOS	A			A			C			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Hamline Avenue	Movement Delay (sec/veh)	63.0	24.7	6.9	43.1	20.9	15.5	52.0	55.0	2.9	54.0	57.9	10.5	24.9
	Total Delay (hr)	1.2	4.6	0.3	4.1	7.8	0.4	1.4	0.2	0.1	0.2	0.1	0.0	20.4
	Movement LOS	E	C	A	D	C	B	D	D	A	D	E	B	C
	Movement Volume	70	676	182	338	1317	92	93	11	106	10	4	12	2911
	Movement 95th Queue (ft)	139	237	81	143	229	45	80	58	0	36	36	21	
	Storage Bay Distance (ft)	280	0	340	300	0	290	0	0	0	0	0	0	
	Approach Delay (sec/veh)	24.1			24.9			27.4			34.5			
	Approach LOS	C			C			C			C			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Lexington Avenue	Movement Delay (sec/veh)	51.6	26.3	13.0	55.6	38.6	6.6	76.5	35.6	7.7	55.0	40.5	6.7	33.1
	Total Delay (hr)	1.4	4.4	0.5	2.7	11.7	0.1	3.4	1.2	0.2	0.8	4.9	0.9	32.2
	Movement LOS	D	C	B	E	D	A	E	D	A	D	D	A	C
	Movement Volume	95	596	128	170	1081	31	155	118	101	51	427	481	3434
	Movement 95th Queue (ft)	77	173	76	173	459	78	230	85	55	90	221	0	
	Storage Bay Distance (ft)	475	0	350	280	0	330	250	0	275	320	0	0	
	Approach Delay (sec/veh)	27.2			40.1			45.0			24.3			
	Approach LOS	C			D			D			C			

Existing Year 2023 Traffic Operations - PM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Old Highway 10	Movement Delay (sec/veh)	0.0	23.6	3.8	50.7	13.0	0.0	51.0	0.0	16.8	41.3	35.2	2.1	24.8
	Total Delay (hr)	0.0	6.0	0.0	1.2	2.4	0.0	0.6	0.0	0.8	5.3	0.4	0.0	16.7
	Movement LOS	A	C	A	D	B	A	D	A	B	D	D	A	C
	Movement Volume	0	902	14	86	670	0	41	0	164	453	37	29	2396
	Movement 95th Queue (ft)	0	257	0	113	178	0	89	0	109	256	64	64	
	Storage Bay Distance (ft)	0	0	275	325	0	0	0	0	0	125	0	0	
	Approach Delay (sec/veh)	23.3			17.3			23.6			38.7			
	Approach LOS	C			B			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & TCAAP Property / North Heights Church Access	Movement Delay (sec/veh)	33.4	1.8	1.5	30.3	1.1	0.0	124.5	0.0	11.3	0.0	0.0	0.0	1.9
	Total Delay (hr)	0.0	0.7	0.0	0.1	0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0	1.4
	Movement LOS	D	A	A	D	A	A	F	A	B	A	A	A	A
	Movement Volume	1	1511	24	16	1260	0	5	0	15	0	0	0	2832
	Movement 95th Queue (ft)	7	0	0	20	0	0	25	26	26	0	0	0	
	Storage Bay Distance (ft)	415	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.8			1.5			39.6			0.0			
	Approach LOS	A			A			E			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Snelling Avenue	Movement Delay (sec/veh)	0.0	1.2	0.6	11.8	1.5	0.0	44.5	0.0	11.1	0.0	0.0	0.0	1.9
	Total Delay (hr)	0.0	0.5	0.0	0.1	0.5	0.0	0.3	0.0	0.1	0.0	0.0	0.0	1.5
	Movement LOS	A	A	A	B	A	A	E	A	B	A	A	A	A
	Movement Volume	0	1464	48	28	1253	0	27	0	33	0	0	0	2853
	Movement 95th Queue (ft)	0	0	0	44	0	0	64	0	56	0	0	0	
	Storage Bay Distance (ft)	0	0	325	300	0	0	0	0	50	0	0	0	
	Approach Delay (sec/veh)	1.2			1.7			26.1			0.0			
	Approach LOS	A			A			D			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Keithson Avenue	Movement Delay (sec/veh)	0.0	1.3	0.8	15.9	5.3	0.0	77.2	0.0	10.4	0.0	0.0	0.0	3.2
	Total Delay (hr)	0.0	0.5	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4
	Movement LOS	A	A	A	C	A	A	F	A	B	A	A	A	A
	Movement Volume	0	1488	5	7	1293	0	1	0	3	0	0	0	2797
	Movement 95th Queue (ft)	0	0	0	25	0	0	15	0	15	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.3			5.4			27.1			0.0			
	Approach LOS	A			A			D			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Hamline Avenue	Movement Delay (sec/veh)	67.2	26.3	6.0	55.5	24.7	10.1	50.7	68.3	8.7	59.5	62.5	9.7	26.7
	Total Delay (hr)	0.2	10.2	0.2	2.7	6.8	0.0	3.8	0.0	1.1	0.7	0.3	0.1	26.1
	Movement LOS	E	C	A	E	C	B	D	E	A	E	E	A	C
	Movement Volume	11	1375	114	171	981	6	265	2	442	42	15	46	3470
	Movement 95th Queue (ft)	40	407	99	126	296	14	224	262	241	120	120	42	
	Storage Bay Distance (ft)	280	0	340	300	0	290	0	0	125	0	0	0	
	Approach Delay (sec/veh)	25.1			29.2			24.6			37.7			
	Approach LOS	C			C			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Lexington Avenue	Movement Delay (sec/veh)	63.3	67.0	26.8	64.8	40.4	10.1	43.3	38.3	20.3	61.0	56.3	3.3	49.2
	Total Delay (hr)	8.1	24.8	1.0	3.8	8.9	0.3	2.5	6.1	1.2	1.3	4.0	0.1	62.1
	Movement LOS	E	E	C	E	D	B	D	D	C	E	E	A	D
	Movement Volume	455	1298	136	201	781	116	205	568	213	77	247	158	4455
	Movement 95th Queue (ft)	263	614	415	183	311	65	226	242	146	127	181	0	
	Storage Bay Distance (ft)	475	0	350	280	0	330	250	0	275	320	0	0	
	Approach Delay (sec/veh)	63.2			41.7			35.5			39.7			
	Approach LOS	E			D			D			D			

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Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Old Highway 10	Movement Delay (sec/veh)	0.0	29.0	9.1	46.5	11.8	0.0	45.7	0.0	9.8	43.3	30.8	2.5	27.4
	Total Delay (hr)	0.0	3.4	0.1	4.0	2.5	0.0	0.3	0.0	0.3	6.1	0.5	0.0	17.2
	Movement LOS	A	C	A	D	B	A	D	A	A	D	C	A	C
	Movement Volume	0	417	40	309	741	0	27	0	94	499	55	54	2236
	Movement 95th Queue (ft)	0	157	15	308	250	0	59	0	82	269	89	89	
	Storage Bay Distance (ft)	0	0	275	325	0	0	0	0	0	125	0	0	
	Approach Delay (sec/veh)	27.3			22.0			17.8			38.5			
	Approach LOS	C			C			B			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & TCAAP Property / North Heights Church Access	Movement Delay (sec/veh)	0.0	1.3	1.2	16.3	2.9	0.0	133.1	0.0	5.0	0.0	0.0	0.0	2.3
	Total Delay (hr)	0.0	0.4	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
	Movement LOS	A	A	A	C	A	A	F	A	A	A	A	A	A
	Movement Volume	0	1011	4	1	1475	0	1	0	3	0	0	0	2495
	Movement 95th Queue (ft)	2	0	0	8	0	0	8	13	13	0	0	0	
	Storage Bay Distance (ft)	415	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.3			2.9			37.0			0.0			
	Approach LOS	A			A			E			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Snelling Avenue	Movement Delay (sec/veh)	0.0	0.9	0.5	9.0	1.6	0.0	62.5	0.0	9.9	0.0	0.0	0.0	2.6
	Total Delay (hr)	0.0	0.2	0.0	0.0	0.6	0.0	0.9	0.0	0.0	0.0	0.0	0.0	1.7
	Movement LOS	A	A	A	A	A	A	F	A	A	A	A	A	A
	Movement Volume	0	993	19	8	1438	0	50	0	9	0	0	0	2517
	Movement 95th Queue (ft)	0	0	0	20	0	0	115	0	37	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	50	0	0	0	
	Approach Delay (sec/veh)	0.9			1.6			54.5			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Keithson Avenue	Movement Delay (sec/veh)	0.0	0.9	0.5	5.5	3.7	0.0	38.2	0.0	5.5	0.0	0.0	0.0	2.6
	Total Delay (hr)	0.0	0.3	0.0	0.0	1.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	1.9
	Movement LOS	A	A	A	A	A	A	E	A	A	A	A	A	A
	Movement Volume	0	998	4	6	1434	0	6	0	5	0	0	0	2453
	Movement 95th Queue (ft)	0	0	0	16	0	0	22	0	22	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	0.9			3.7			23.3			0.0			
	Approach LOS	A			A			C			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Hamline Avenue	Movement Delay (sec/veh)	57.9	24.8	7.7	43.8	21.8	15.5	50.7	50.6	2.9	59.0	59.8	11.9	25.4
	Total Delay (hr)	1.2	5.0	0.5	4.4	8.4	0.4	1.5	0.2	0.1	0.1	0.1	0.0	21.9
	Movement LOS	E	C	A	D	C	B	D	D	A	E	E	B	C
	Movement Volume	72	723	210	360	1358	95	106	11	101	8	6	11	3061
	Movement 95th Queue (ft)	127	238	90	151	243	86	84	66	0	39	39	20	
	Storage Bay Distance (ft)	280	0	340	300	0	290	0	0	0	0	0	0	
	Approach Delay (sec/veh)	23.6			25.8			28.5			38.5			
	Approach LOS	C			C			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Lexington Avenue	Movement Delay (sec/veh)	48.2	26.9	13.9	56.5	39.7	6.0	95.1	39.2	7.7	51.9	39.4	8.0	34.3
	Total Delay (hr)	1.4	4.7	0.5	2.8	12.3	0.1	4.4	1.4	0.2	0.8	4.6	1.2	34.4
	Movement LOS	D	C	B	E	D	A	F	D	A	D	D	A	C
	Movement Volume	106	622	134	173	1101	43	162	121	99	54	414	518	3547
	Movement 95th Queue (ft)	77	174	80	197	468	131	297	178	63	87	203	0	
	Storage Bay Distance (ft)	475	0	350	280	0	330	250	0	275	320	0	0	
	Approach Delay (sec/veh)	27.5			40.8			54.7			23.6			
	Approach LOS	C			D			D			C			

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Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Old Highway 10	Movement Delay (sec/veh)	0.0	25.9	4.4	54.9	14.6	0.0	50.5	0.0	18.2	40.2	31.9	2.0	26.0
	Total Delay (hr)	0.0	6.6	0.0	1.2	2.9	0.0	0.7	0.0	0.9	5.4	0.4	0.0	18.1
	Movement LOS	A	C	A	D	B	A	D	A	B	D	C	A	C
	Movement Volume	0	909	12	81	710	0	49	0	168	473	49	31	2482
	Movement 95th Queue (ft)	0	277	3	107	196	0	91	0	119	243	70	70	
	Storage Bay Distance (ft)	0	0	275	325	0	0	0	0	0	125	0	0	
	Approach Delay (sec/veh)	25.6			18.7			25.5			37.3			
	Approach LOS	C			B			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & TCAAP Property / North Heights Church Access	Movement Delay (sec/veh)	0.0	1.8	1.5	24.4	1.2	0.0	153.2	0.0	11.5	0.0	0.0	0.0	2.0
	Total Delay (hr)	0.0	0.8	0.0	0.1	0.4	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.6
	Movement LOS	A	A	A	C	A	A	F	A	B	A	A	A	A
	Movement Volume	0	1547	22	13	1328	0	6	0	15	0	0	0	2931
	Movement 95th Queue (ft)	3	0	0	30	0	0	31	28	28	0	0	0	
	Storage Bay Distance (ft)	415	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.8			1.4			52.0			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Snelling Avenue	Movement Delay (sec/veh)	0.0	1.3	0.7	16.1	1.7	0.0	74.6	0.0	18.0	0.0	0.0	0.0	2.5
	Total Delay (hr)	0.0	0.5	0.0	0.2	0.6	0.0	0.6	0.0	0.2	0.0	0.0	0.0	2.1
	Movement LOS	A	A	A	C	A	A	F	A	C	A	A	A	A
	Movement Volume	0	1497	53	33	1316	0	27	0	35	0	0	0	2961
	Movement 95th Queue (ft)	0	0	3	54	0	0	82	0	66	0	0	0	
	Storage Bay Distance (ft)	0	0	325	300	0	0	0	0	50	0	0	0	
	Approach Delay (sec/veh)	1.3			2.1			42.6			0.0			
	Approach LOS	A			A			E			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Keithson Avenue	Movement Delay (sec/veh)	0.0	1.3	1.0	14.7	5.5	0.0	62.2	0.0	5.8	0.0	0.0	0.0	3.3
	Total Delay (hr)	0.0	0.5	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6
	Movement LOS	A	A	A	B	A	A	F	A	A	A	A	A	A
	Movement Volume	0	1522	5	8	1363	0	1	0	3	0	0	0	2902
	Movement 95th Queue (ft)	0	0	0	25	0	0	13	0	13	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.3			5.6			19.9			0.0			
	Approach LOS	A			A			C			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Hamline Avenue	Movement Delay (sec/veh)	66.4	28.7	7.1	58.5	24.9	13.5	48.7	45.8	9.1	53.1	61.2	11.7	27.7
	Total Delay (hr)	0.1	11.5	0.2	3.0	7.2	0.0	3.8	0.0	1.2	0.7	0.3	0.2	28.2
	Movement LOS	E	C	A	E	C	B	D	D	A	D	E	B	C
	Movement Volume	6	1415	117	184	1035	4	273	3	455	44	16	53	3605
	Movement 95th Queue (ft)	62	446	55	121	308	8	211	237	279	121	121	48	
	Storage Bay Distance (ft)	280	0	340	300	0	290	0	0	125	0	0	0	
	Approach Delay (sec/veh)	27.2			29.9			24.0			34.8			
	Approach LOS	C			C			C			C			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Lexington Avenue	Movement Delay (sec/veh)	64.7	78.7	31.8	63.1	45.3	12.8	42.0	41.6	19.7	60.7	53.6	3.4	53.7
	Total Delay (hr)	8.8	29.6	1.3	4.1	10.6	0.5	2.5	7.0	1.2	1.5	3.8	0.2	71.1
	Movement LOS	E	E	C	E	D	B	D	D	B	E	D	A	D
	Movement Volume	481	1321	139	221	826	128	212	599	221	86	248	168	4650
	Movement 95th Queue (ft)	335	743	491	211	349	81	231	277	142	123	166	0	
	Storage Bay Distance (ft)	475	0	350	280	0	330	250	0	275	320	0	0	
	Approach Delay (sec/veh)	71.9			45.1			37.0			38.0			
	Approach LOS	E			D			D			D			

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Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Old Highway 10	Movement Delay (sec/veh)	0.0	34.1	6.5	41.7	22.5	0.0	48.9	0.0	11.6	51.5	33.9	4.3	34.1
	Total Delay (hr)	0.0	5.8	0.1	3.4	5.3	0.0	0.3	0.0	0.3	9.7	0.6	0.1	25.6
	Movement LOS	A	C	A	D	C	A	D	A	B	D	C	A	C
	Movement Volume	0	603	30	292	832	0	23	0	90	674	60	55	2659
	Movement 95th Queue (ft)	0	227	8	313	322	0	55	0	83	355	113	113	
	Storage Bay Distance (ft)	0	0	275	325	0	0	0	0	0	125	0	0	
	Approach Delay (sec/veh)	32.8			27.5			19.2			46.9			
	Approach LOS	C			C			B			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & TCAAP Property / North Heights Church Access	Movement Delay (sec/veh)	50.1	7.2	2.4	69.4	35.3	13.7	41.4	0.0	12.3	41.3	0.0	22.0	26.6
	Total Delay (hr)	5.6	2.0	0.0	0.0	14.3	1.5	0.0	0.0	0.0	2.5	0.0	1.3	27.2
	Movement LOS	D	A	A	E	D	B	D	A	B	D	A	C	C
	Movement Volume	386	973	3	1	1447	396	0	0	4	220	0	207	3637
	Movement 95th Queue (ft)	209	161	8	12	545	369	6	13	13	121	10	161	
	Storage Bay Distance (ft)	415	0	300	300	0	300	0	0	0	150	0	300	
	Approach Delay (sec/veh)	19.3			30.7			12.3			31.9			
	Approach LOS	B			C			B			C			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Snelling Avenue	Movement Delay (sec/veh)	0.0	2.6	2.5	8.3	3.4	0.0	147.2	0.0	21.1	0.0	0.0	0.0	5.4
	Total Delay (hr)	0.0	0.8	0.0	0.0	1.7	0.0	2.0	0.0	0.1	0.0	0.0	0.0	4.6
	Movement LOS	A	A	A	A	A	A	F	A	C	A	A	A	A
	Movement Volume	0	1175	18	10	1807	0	48	0	9	0	0	0	3067
	Movement 95th Queue (ft)	0	0	0	25	0	0	213	0	47	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	50	0	0	0	
	Approach Delay (sec/veh)	2.6			3.4			127.3			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Keithson Avenue	Movement Delay (sec/veh)	0.0	1.1	0.5	12.2	6.5	0.0	55.0	0.0	32.5	0.0	0.0	0.0	4.5
	Total Delay (hr)	0.0	0.4	0.0	0.0	3.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	3.8
	Movement LOS	A	A	A	B	A	A	F	A	D	A	A	A	A
	Movement Volume	0	1172	3	6	1801	0	8	0	3	0	0	0	2993
	Movement 95th Queue (ft)	0	0	0	17	0	0	32	0	32	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.1			6.5			48.9			0.0			
	Approach LOS	A			A			E			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Hamline Avenue	Movement Delay (sec/veh)	64.3	29.9	9.4	47.7	32.1	19.0	48.8	60.7	3.1	57.3	57.6	23.3	32.1
	Total Delay (hr)	1.5	7.2	0.6	4.8	15.0	0.4	2.3	0.2	0.1	0.2	0.1	0.2	32.6
	Movement LOS	E	C	A	D	C	B	D	E	A	E	E	C	C
	Movement Volume	84	859	232	359	1649	80	165	13	114	9	5	24	3593
	Movement 95th Queue (ft)	161	305	108	145	352	40	103	101	0	33	33	39	
	Storage Bay Distance (ft)	280	0	340	300	0	290	0	0	0	0	0	0	
	Approach Delay (sec/veh)	28.3			34.3			31.5			35.9			
	Approach LOS	C			C			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Lexington Avenue	Movement Delay (sec/veh)	60.3	35.1	18.6	103.4	116.9	50.4	392.3	47.8	9.3	50.6	40.9	23.4	85.4
	Total Delay (hr)	2.3	6.9	1.0	5.2	42.1	0.6	28.6	1.7	0.3	0.9	4.9	3.8	98.3
	Movement LOS	E	D	B	F	F	D	F	D	A	D	D	C	F
	Movement Volume	135	702	184	178	1272	40	255	122	104	61	417	583	4053
	Movement 95th Queue (ft)	94	226	113	411	1495	366	491	1549	65	98	405	0	
	Storage Bay Distance (ft)	475	0	350	280	0	330	250	0	275	320	0	0	
	Approach Delay (sec/veh)	35.5			113.5			222.1			31.8			
	Approach LOS	D			F			F			C			

Forecast Year 2030 Build Traffic Operations - PM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total	
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
CR 96 & Old Highway 10	Movement Delay (sec/veh)	0.0	35.4	6.2	46.3	23.8	0.0	44.9	0.0	22.1	40.7	31.8	3.0	32.1	
	Total Delay (hr)	0.0	10.9	0.0	1.1	6.2	0.0	0.6	0.0	1.0	7.3	0.4	0.0	27.5	
	Movement LOS	A	D	A	D	C	A	D	A	C	D	C	A	C	
	Movement Volume	0	1081	14	88	943	0	45	0	165	636	44	30	3046	
	Movement 95th Queue (ft)	0	345	5	112	273	0	82	0	126	282	74	74		
	Storage Bay Distance (ft)	0	0	275	325	0	0	0	0	0	125	0	0		
	Approach Delay (sec/veh)		35.0			25.7			27.0			38.6			
	Approach LOS		D			C			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total	
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
CR 96 & TCAAP Property / North Heights Church Access	Movement Delay (sec/veh)	73.5	23.0	8.1	52.1	49.8	17.6	62.0	0.0	20.3	52.2	0.0	53.6	40.6	
	Total Delay (hr)	6.6	10.1	0.0	0.2	18.0	1.5	0.1	0.0	0.1	7.7	0.0	7.6	51.9	
	Movement LOS	E	C	A	D	D	B	E	A	C	D	A	D	D	
	Movement Volume	321	1559	18	14	1287	307	6	0	12	522	0	505	4551	
	Movement 95th Queue (ft)	236	432	107	78	698	481	25	25	25	328	419	491		
	Storage Bay Distance (ft)	415	0	300	300	0	300	0	0	0	150	0	300		
	Approach Delay (sec/veh)		31.4			43.7			34.2			52.9			
	Approach LOS		C			D			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total	
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
CR 96 & Snelling Avenue	Movement Delay (sec/veh)	0.0	16.5	9.4	50.9	5.9	0.0	780.1	0.0	752.4	0.0	0.0	0.0	24.9	
	Total Delay (hr)	0.0	9.2	0.1	0.5	2.6	0.0	5.6	0.0	8.4	0.0	0.0	0.0	26.4	
	Movement LOS	A	C	A	F	A	A	F	A	F	A	A	A	C	
	Movement Volume	0	2002	52	32	1605	0	26	0	38	0	0	0	3755	
	Movement 95th Queue (ft)	0	464	222	72	178	0	752	0	79	0	0	0		
	Storage Bay Distance (ft)	0	0	325	300	0	0	0	0	50	0	0	0		
	Approach Delay (sec/veh)		16.3			6.8			763.7			0.0			
	Approach LOS		C			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total	
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
CR 96 & Keithson Avenue	Movement Delay (sec/veh)	0.0	65.2	43.0	35.6	7.5	0.0	335.0	0.0	362.6	0.0	0.0	0.0	39.3	
	Total Delay (hr)	0.0	36.2	0.1	0.1	3.5	0.0	0.1	0.0	0.2	0.0	0.0	0.0	40.2	
	Movement LOS	A	F	E	E	A	A	F	A	F	A	A	A	E	
	Movement Volume	0	1995	5	8	1650	0	1	0	2	0	0	0	3661	
	Movement 95th Queue (ft)	0	1259	217	25	0	0	23	0	23	0	0	0		
	Storage Bay Distance (ft)	0	0	315	300	0	0	0	0	0	0	0	0		
	Approach Delay (sec/veh)		65.1			7.6			353.4			0.0			
	Approach LOS		F			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total	
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
CR 96 & Hamline Avenue	Movement Delay (sec/veh)	148.8	154.0	108.2	64.3	31.7	21.5	50.0	76.0	44.8	67.2	76.4	17.9	89.4	
	Total Delay (hr)	1.3	76.7	5.4	3.3	11.3	0.0	4.6	0.0	6.1	0.9	0.3	0.3	110.2	
	Movement LOS	F	F	F	E	C	C	D	E	D	E	E	B	F	
	Movement Volume	31	1747	176	179	1268	5	322	2	486	45	16	63	4340	
	Movement 95th Queue (ft)	375	1722	732	125	423	14	727	830	361	143	143	67		
	Storage Bay Distance (ft)	280	0	340	300	0	290	0	0	125	0	0	0		
	Approach Delay (sec/veh)		149.8			35.7			46.9			43.3			
	Approach LOS		F			D			D			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total	
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
CR 96 & Lexington Avenue	Movement Delay (sec/veh)	116.6	165.9	114.0	68.8	85.0	22.5	46.6	39.2	20.5	52.4	55.0	4.0	94.6	
	Total Delay (hr)	18.2	68.7	7.8	4.3	23.0	0.8	3.6	6.6	1.3	1.1	4.1	0.3	139.8	
	Movement LOS	F	F	F	E	F	C	D	D	C	D	D	A	F	
	Movement Volume	553	1452	241	215	949	119	276	587	226	73	257	235	5183	
	Movement 95th Queue (ft)	648	2502	694	285	671	425	280	252	145	114	145	0		
	Storage Bay Distance (ft)	475	0	350	280	0	330	250	0	275	320	0	0		
	Approach Delay (sec/veh)		148.2			76.5			37.2			33.5			
	Approach LOS		F			E			D			C			

Forecast Year 2030 Build Traffic Operations - Modified Signal Timing - AM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Old Highway 10	Movement Delay (sec/veh)	0.0	46.9	11.0	54.7	8.7	0.0	63.5	0.0	17.7	57.5	38.9	3.8	36.1
	Total Delay (hr)	0.0	8.0	0.1	4.5	2.1	0.0	0.4	0.0	0.4	11.1	0.6	0.1	27.3
	Movement LOS	A	D	B	D	A	A	E	A	B	E	D	A	D
	Movement Volume	0	604	29	293	853	0	25	0	91	679	58	52	2684
	Movement 95th Queue (ft)	0	276	15	316	261	0	64	0	101	428	123	123	
	Storage Bay Distance (ft)	0	0	275	325	0	0	0	0	0	125	0	0	
	Approach Delay (sec/veh)	45.3			20.5			27.6			52.6			
	Approach LOS	D			C			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & TCAAP Property / North Heights Church Access	Movement Delay (sec/veh)	39.3	2.1	2.0	52.3	18.1	11.0	68.3	0.0	12.7	51.5	0.0	32.5	18.3
	Total Delay (hr)	4.5	0.6	0.0	0.0	7.4	1.2	0.0	0.0	0.0	3.2	0.0	2.0	18.9
	Movement LOS	D	A	A	D	B	B	E	A	B	D	A	C	B
	Movement Volume	409	969	3	2	1452	404	1	0	4	217	0	216	3677
	Movement 95th Queue (ft)	210	31	0	11	292	159	11	14	14	141	0	199	
	Storage Bay Distance (ft)	415	0	0	300	0	300	0	0	0	150	0	300	
	Approach Delay (sec/veh)	13.1			16.6			23.8			42.0			
	Approach LOS	B			B			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Snelling Avenue	Movement Delay (sec/veh)	0.0	1.3	0.9	9.9	2.8	0.0	130.0	0.0	11.7	0.0	0.0	0.0	4.3
	Total Delay (hr)	0.0	0.4	0.0	0.0	1.4	0.0	1.8	0.0	0.0	0.0	0.0	0.0	3.6
	Movement LOS	A	A	A	A	A	A	F	A	B	A	A	A	A
	Movement Volume	0	1156	19	10	1818	0	48	0	11	0	0	0	3062
	Movement 95th Queue (ft)	0	0	3	25	0	0	177	0	45	0	0	0	
	Storage Bay Distance (ft)	0	0	325	300	0	0	0	0	50	0	0	0	
	Approach Delay (sec/veh)	1.3			2.8			107.9			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Keithson Avenue	Movement Delay (sec/veh)	0.0	1.1	0.5	12.5	5.9	0.0	119.7	0.0	9.2	0.0	0.0	0.0	4.2
	Total Delay (hr)	0.0	0.3	0.0	0.0	3.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	3.5
	Movement LOS	A	A	A	B	A	A	F	A	A	A	A	A	A
	Movement Volume	0	1162	3	5	1811	0	5	0	3	0	0	0	2989
	Movement 95th Queue (ft)	0	0	0	15	0	0	32	0	32	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.1			5.9			78.3			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Hamline Avenue	Movement Delay (sec/veh)	70.9	22.9	9.2	53.7	31.2	22.5	56.4	54.7	3.3	58.6	69.5	25.3	31.0
	Total Delay (hr)	1.7	5.4	0.6	5.3	14.6	0.6	2.6	0.2	0.1	0.2	0.1	0.2	31.6
	Movement LOS	E	C	A	D	C	C	E	D	A	E	E	C	C
	Movement Volume	84	847	229	343	1652	89	160	13	121	9	4	28	3579
	Movement 95th Queue (ft)	158	253	120	167	356	46	118	120	0	46	46	44	
	Storage Bay Distance (ft)	280	0	340	300	0	290	0	0	0	0	0	0	
	Approach Delay (sec/veh)	23.7			34.5			34.5			36.9			
	Approach LOS	C			C			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Lexington Avenue	Movement Delay (sec/veh)	39.9	19.4	12.9	71.2	67.1	16.9	68.0	39.8	10.2	63.8	66.3	31.1	47.7
	Total Delay (hr)	1.7	3.8	0.6	3.6	23.8	0.2	4.5	1.5	0.3	1.2	8.1	5.0	54.3
	Movement LOS	D	B	B	E	E	B	E	D	B	E	E	C	D
	Movement Volume	144	690	177	179	1255	36	232	130	106	67	423	569	4008
	Movement 95th Queue (ft)	97	128	90	330	776	267	297	147	68	162	490	0	
	Storage Bay Distance (ft)	475	0	350	280	0	330	250	0	275	320	0	0	
	Approach Delay (sec/veh)	21.2			66.4			47.1			47.2			
	Approach LOS	C			E			D			D			

Forecast Year 2030 Build Traffic Operations - Modified Signal Timing - PM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Old Highway 10	Movement Delay (sec/veh)	0.0	33.8	4.6	44.7	9.5	0.0	63.7	0.0	35.7	51.8	37.0	3.5	30.6
	Total Delay (hr)	0.0	10.3	0.0	1.0	2.5	0.0	0.8	0.0	1.7	9.5	0.5	0.0	26.3
	Movement LOS	A	C	A	D	A	A	E	A	D	D	D	A	C
	Movement Volume	0	1083	11	84	945	0	46	0	171	639	43	27	3049
	Movement 95th Queue (ft)	0	358	3	108	146	0	96	0	175	356	70	70	
	Storage Bay Distance (ft)	0	0	275	325	0	0	0	0	0	125	0	0	
	Approach Delay (sec/veh)	33.5			12.4			41.6			49.1			
	Approach LOS	C			B			D			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & TCAAP Property / North Heights Church Access	Movement Delay (sec/veh)	52.9	11.4	4.6	74.5	30.7	10.7	75.9	0.0	32.4	47.7	0.0	59.2	29.4
	Total Delay (hr)	4.9	5.0	0.0	0.3	11.3	1.0	0.1	0.0	0.1	7.1	0.0	8.3	38.1
	Movement LOS	D	B	A	E	C	B	E	A	C	D	A	E	C
	Movement Volume	332	1562	23	14	1308	324	5	0	15	519	0	493	4595
	Movement 95th Queue (ft)	216	221	17	22	431	223	21	31	31	274	393	483	
	Storage Bay Distance (ft)	415	0	300	300	0	300	0	0	0	150	0	300	
	Approach Delay (sec/veh)	18.5			27.1			43.3			53.3			
	Approach LOS	B			C			D			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Snelling Avenue	Movement Delay (sec/veh)	0.0	4.0	3.8	32.0	2.7	0.0	782.3	0.0	588.9	0.0	0.0	0.0	15.0
	Total Delay (hr)	0.0	2.3	0.1	0.3	1.2	0.0	6.1	0.0	6.4	0.0	0.0	0.0	16.4
	Movement LOS	A	A	A	D	A	A	F	A	F	A	A	A	C
	Movement Volume	0	2031	48	31	1627	0	27	0	38	0	0	0	3802
	Movement 95th Queue (ft)	0	0	3	53	3	0	633	0	72	0	0	0	
	Storage Bay Distance (ft)	0	0	325	300	0	0	0	0	50	0	0	0	
	Approach Delay (sec/veh)	4.0			3.2			669.2			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Keithson Avenue	Movement Delay (sec/veh)	0.0	2.3	2.0	30.0	4.1	0.0	1566.0	0.0	559.6	0.0	0.0	0.0	3.9
	Total Delay (hr)	0.0	1.3	0.0	0.1	1.9	0.0	0.4	0.0	0.3	0.0	0.0	0.0	4.0
	Movement LOS	A	A	A	D	A	A	F	A	F	A	A	A	A
	Movement Volume	0	2036	5	9	1682	0	1	0	2	0	0	0	3735
	Movement 95th Queue (ft)	0	0	0	31	0	0	63	0	63	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	2.3			4.2			895.1			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Hamline Avenue	Movement Delay (sec/veh)	80.8	43.6	16.6	68.4	22.8	11.8	61.3	81.4	33.6	154.3	148.0	19.5	39.2
	Total Delay (hr)	0.7	22.5	0.9	3.7	8.3	0.0	5.8	0.1	4.6	2.1	0.8	0.4	49.9
	Movement LOS	F	D	B	E	C	B	E	F	C	F	F	B	D
	Movement Volume	30	1829	191	181	1276	6	334	3	478	44	19	63	4454
	Movement 95th Queue (ft)	223	690	485	142	247	10	552	631	363	263	263	61	
	Storage Bay Distance (ft)	280	0	340	300	0	290	0	0	125	0	0	0	
	Approach Delay (sec/veh)	41.6			28.4			45.1			86.0			
	Approach LOS	D			C			D			F			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Lexington Avenue	Movement Delay (sec/veh)	82.2	57.7	30.6	72.9	44.8	15.0	64.6	61.4	29.7	61.0	63.9	4.4	53.9
	Total Delay (hr)	14.1	25.2	2.3	4.4	12.1	0.6	5.0	10.4	1.9	1.4	4.6	0.3	82.3
	Movement LOS	F	E	C	E	D	B	E	E	C	E	E	A	D
	Movement Volume	593	1525	262	212	962	135	275	594	226	80	251	227	5342
	Movement 95th Queue (ft)	326	550	356	191	395	83	328	351	213	126	160	0	
	Storage Bay Distance (ft)	475	0	350	280	0	330	250	0	275	320	0	0	
	Approach Delay (sec/veh)	60.8			46.3			55.7			39.3			
	Approach LOS	E			D			E			D			

Forecast Year 2030 Build Traffic Operations - Single EBL - AM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Old Highway 10	Movement Delay (sec/veh)	0.0	47.6	9.8	42.7	6.8	0.0	59.3	0.0	15.9	60.2	35.4	4.3	35.4
	Total Delay (hr)	0.0	8.1	0.1	3.6	1.6	0.0	0.4	0.0	0.4	12.3	0.6	0.1	27.2
	Movement LOS	A	D	A	D	A	A	E	A	B	E	D	A	D
	Movement Volume	0	603	33	304	825	0	24	0	83	709	62	55	2698
	Movement 95th Queue (ft)	0	279	18	313	235	0	62	0	91	468	162	162	
	Storage Bay Distance (ft)	0	0	275	325	0	0	0	0	0	125	0	0	
	Approach Delay (sec/veh)	45.6			16.5			25.6			54.6			
	Approach LOS	D			B			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & TCAAP Property / North Heights Church Access	Movement Delay (sec/veh)	69.3	3.2	1.4	75.1	43.6	25.7	51.6	0.0	9.4	53.4	0.0	27.3	33.0
	Total Delay (hr)	7.9	0.9	0.0	0.0	17.7	2.8	0.0	0.0	0.0	3.2	0.0	1.6	34.1
	Movement LOS	E	A	A	E	D	C	D	A	A	D	A	C	C
	Movement Volume	402	1010	5	2	1443	392	1	0	5	209	0	211	3680
	Movement 95th Queue (ft)	580	343	0	13	619	432	7	16	16	144	0	186	
	Storage Bay Distance (ft)	415	0	0	300	0	300	0	0	0	150	0	300	
	Approach Delay (sec/veh)	21.9			39.8			16.4			40.3			
	Approach LOS	C			D			B			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Snelling Avenue	Movement Delay (sec/veh)	0.0	1.4	1.0	12.9	4.0	0.0	160.7	0.0	40.7	0.0	0.0	0.0	5.4
	Total Delay (hr)	0.0	0.5	0.0	0.0	2.0	0.0	2.1	0.0	0.1	0.0	0.0	0.0	4.7
	Movement LOS	A	A	A	B	A	A	F	A	E	A	A	A	A
	Movement Volume	0	1187	19	10	1807	0	44	0	11	0	0	0	3078
	Movement 95th Queue (ft)	0	0	3	25	18	0	205	0	48	0	0	0	
	Storage Bay Distance (ft)	0	0	325	300	0	0	0	0	50	0	0	0	
	Approach Delay (sec/veh)	1.4			4.0			136.7			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Keithson Avenue	Movement Delay (sec/veh)	0.0	1.1	0.5	9.0	6.0	0.0	158.6	0.0	116.5	0.0	0.0	0.0	4.4
	Total Delay (hr)	0.0	0.4	0.0	0.0	3.0	0.0	0.3	0.0	0.1	0.0	0.0	0.0	3.8
	Movement LOS	A	A	A	A	A	A	F	A	F	A	A	A	A
	Movement Volume	0	1194	2	8	1794	0	6	0	2	0	0	0	3006
	Movement 95th Queue (ft)	0	0	0	19	0	0	41	0	41	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.1			6.0			148.1			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Hamline Avenue	Movement Delay (sec/veh)	64.7	24.8	9.7	53.1	31.4	21.4	54.5	64.5	3.4	67.9	63.3	25.0	31.3
	Total Delay (hr)	1.5	6.1	0.7	5.4	14.7	0.6	2.5	0.2	0.1	0.2	0.1	0.2	32.3
	Movement LOS	E	C	A	D	C	C	D	E	A	E	E	C	C
	Movement Volume	82	873	241	352	1645	96	159	11	113	7	5	31	3615
	Movement 95th Queue (ft)	152	260	120	164	351	57	107	107	0	41	41	40	
	Storage Bay Distance (ft)	280	0	340	300	0	290	0	0	0	0	0	0	
	Approach Delay (sec/veh)	24.5			34.6			34.5			36.4			
	Approach LOS	C			C			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Lexington Avenue	Movement Delay (sec/veh)	40.5	19.8	13.7	72.4	68.2	14.3	72.5	38.2	11.3	59.4	63.4	33.8	48.3
	Total Delay (hr)	1.6	4.0	0.7	3.6	24.3	0.2	4.9	1.5	0.3	1.0	7.7	5.4	55.2
	Movement LOS	D	B	B	E	E	B	E	D	B	E	E	C	D
	Movement Volume	131	713	179	174	1261	38	238	135	104	58	425	569	4025
	Movement 95th Queue (ft)	93	132	91	315	763	298	328	149	74	102	381	0	
	Storage Bay Distance (ft)	475	0	350	280	0	330	250	0	275	320	0	0	
	Approach Delay (sec/veh)	21.4			67.3			49.4			47.2			
	Approach LOS	C			E			D			D			

Forecast Year 2030 Build Traffic Operations - Single EBL - PM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Old Highway 10	Movement Delay (sec/veh)	0.0	72.5	33.1	48.0	9.6	0.0	63.8	0.0	38.9	48.8	37.1	3.4	43.8
	Total Delay (hr)	0.0	22.0	0.1	1.1	2.6	0.0	0.9	0.0	2.0	8.9	0.5	0.0	38.1
	Movement LOS	A	E	C	D	A	A	E	A	D	D	D	A	D
	Movement Volume	0	1073	13	81	958	0	50	0	181	628	43	31	3058
	Movement 95th Queue (ft)	0	840	211	118	158	0	99	0	203	317	85	85	
	Storage Bay Distance (ft)	0	0	275	325	0	0	0	0	0	125	0	0	
	Approach Delay (sec/veh)	72.0			12.6			44.3			46.1			
	Approach LOS	E			B			D			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & TCAAP Property / North Heights Church Access	Movement Delay (sec/veh)	277.4	32.1	14.9	84.5	57.7	25.0	74.5	0.0	24.1	69.4	0.0	93.0	67.1
	Total Delay (hr)	24.5	13.5	0.1	0.3	21.4	2.2	0.1	0.0	0.1	10.5	0.0	13.2	85.9
	Movement LOS	F	C	B	F	E	C	E	A	C	E	A	F	E
	Movement Volume	313	1512	20	12	1317	311	7	0	13	533	0	498	4536
	Movement 95th Queue (ft)	867	1313	155	51	817	546	27	28	28	408	809	565	
	Storage Bay Distance (ft)	415	0	300	300	0	300	0	0	0	150	0	300	
	Approach Delay (sec/veh)	73.5			51.7			41.7			80.8			
	Approach LOS	E			D			D			F			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Snelling Avenue	Movement Delay (sec/veh)	0.0	4.7	4.1	42.3	5.9	0.0	1150.0	0.0	1093.1	0.0	0.0	0.0	26.0
	Total Delay (hr)	0.0	2.6	0.1	0.4	2.7	0.0	9.9	0.0	12.1	0.0	0.0	0.0	27.8
	Movement LOS	A	A	A	E	A	A	F	A	F	A	A	A	D
	Movement Volume	0	1969	52	30	1630	0	30	0	39	0	0	0	3750
	Movement 95th Queue (ft)	0	0	0	63	168	0	1026	0	55	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	50	0	0	0	
	Approach Delay (sec/veh)	4.7			6.6			1117.8			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Keithson Avenue	Movement Delay (sec/veh)	0.0	2.1	2.2	21.0	4.0	0.0	910.3	0.0	375.6	0.0	0.0	0.0	3.6
	Total Delay (hr)	0.0	1.1	0.0	0.1	1.9	0.0	0.5	0.0	0.3	0.0	0.0	0.0	3.9
	Movement LOS	A	A	A	C	A	A	F	A	F	A	A	A	A
	Movement Volume	0	1962	5	10	1667	0	1	0	3	0	0	0	3648
	Movement 95th Queue (ft)	0	0	0	26	0	0	75	0	75	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	2.1			4.1			509.3			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Hamline Avenue	Movement Delay (sec/veh)	80.3	41.4	15.3	66.2	22.8	18.0	61.8	52.1	20.0	88.4	94.0	18.9	35.7
	Total Delay (hr)	0.6	20.4	0.8	3.6	8.1	0.0	5.8	0.0	2.6	1.1	0.3	0.4	43.7
	Movement LOS	F	D	B	E	C	B	E	D	B	F	F	B	D
	Movement Volume	28	1751	190	183	1256	6	331	2	456	42	13	71	4329
	Movement 95th Queue (ft)	195	730	408	142	250	11	365	436	360	145	145	70	
	Storage Bay Distance (ft)	280	0	340	300	0	290	0	0	125	0	0	0	
	Approach Delay (sec/veh)	39.4			28.3			37.6			49.8			
	Approach LOS	D			C			D			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Lexington Avenue	Movement Delay (sec/veh)	73.6	55.9	29.3	71.2	43.9	14.1	85.3	67.3	32.0	60.5	62.6	4.5	53.9
	Total Delay (hr)	11.5	23.9	2.1	4.2	11.5	0.5	6.8	11.2	2.1	1.3	4.4	0.3	79.8
	Movement LOS	E	E	C	E	D	B	F	E	C	E	E	A	D
	Movement Volume	542	1495	244	205	929	123	283	587	227	79	245	231	5190
	Movement 95th Queue (ft)	289	537	317	179	374	80	402	399	233	121	155	0	
	Storage Bay Distance (ft)	475	0	350	280	0	330	250	0	275	320	0	0	
	Approach Delay (sec/veh)	57.3			45.4			64.6			38.1			
	Approach LOS	E			D			E			D			

Forecast Year 2030 Build Traffic Operations - Single EBL with Additional WBT - AM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Old Highway 10	Movement Delay (sec/veh)	0.0	50.7	9.3	42.6	5.9	0.0	59.5	0.0	18.7	49.5	40.1	3.8	33.0
	Total Delay (hr)	0.0	9.0	0.1	3.5	1.4	0.0	0.4	0.0	0.5	9.7	0.7	0.1	25.4
	Movement LOS	A	D	A	D	A	A	E	A	B	D	D	A	C
	Movement Volume	0	632	34	296	844	0	21	0	87	683	60	51	2708
	Movement 95th Queue (ft)	0	330	67	324	261	0	55	0	101	336	112	112	
	Storage Bay Distance (ft)	0	0	275	325	0	0	0	0	0	125	0	0	
	Approach Delay (sec/veh)	48.6			15.4			26.6			45.9			
	Approach LOS	D			B			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & TCAAP Property / North Heights Church Access	Movement Delay (sec/veh)	42.8	11.2	3.0	71.1	31.1	16.3	101.5	0.0	9.4	52.4	0.0	17.3	25.9
	Total Delay (hr)	5.0	3.1	0.0	0.0	12.8	1.8	0.1	0.0	0.0	3.2	0.0	1.0	27.0
	Movement LOS	D	B	A	E	C	B	F	A	A	D	A	B	C
	Movement Volume	413	1008	4	1	1458	400	2	0	3	218	0	211	3718
	Movement 95th Queue (ft)	429	240	10	10	296	208	16	14	14	139	4	148	
	Storage Bay Distance (ft)	415	0	300	300	0	300	0	0	0	150	0	300	
	Approach Delay (sec/veh)	20.3			27.9			46.2			35.1			
	Approach LOS	C			C			D			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Snelling Avenue	Movement Delay (sec/veh)	0.0	3.3	3.5	6.0	2.3	0.0	185.0	0.0	58.9	0.0	0.0	0.0	5.5
	Total Delay (hr)	0.0	1.1	0.0	0.0	1.2	0.0	2.4	0.0	0.1	0.0	0.0	0.0	4.8
	Movement LOS	A	A	A	A	A	A	F	A	F	A	A	A	A
	Movement Volume	0	1191	19	8	1816	0	44	0	9	0	0	0	3087
	Movement 95th Queue (ft)	0	0	0	19	0	0	207	0	53	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	50	0	0	0	
	Approach Delay (sec/veh)	3.3			2.3			163.6			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Keithson Avenue	Movement Delay (sec/veh)	0.0	1.2	0.9	11.5	5.7	0.0	86.5	0.0	11.3	0.0	0.0	0.0	4.2
	Total Delay (hr)	0.0	0.4	0.0	0.0	2.9	0.0	0.2	0.0	0.0	0.0	0.0	0.0	3.5
	Movement LOS	A	A	A	B	A	A	F	A	B	A	A	A	A
	Movement Volume	0	1191	2	7	1805	0	8	0	4	0	0	0	3017
	Movement 95th Queue (ft)	0	0	0	21	0	0	34	0	34	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.2			5.7			61.4			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Hamline Avenue	Movement Delay (sec/veh)	64.7	29.4	9.3	53.6	32.0	21.9	58.1	50.9	3.3	70.1	63.6	21.4	33.0
	Total Delay (hr)	1.6	7.3	0.6	5.4	15.0	0.6	2.8	0.2	0.1	0.2	0.1	0.2	34.1
	Movement LOS	E	C	A	D	C	C	E	D	A	E	E	C	C
	Movement Volume	90	888	229	352	1652	96	168	13	120	11	5	26	3650
	Movement 95th Queue (ft)	145	288	105	164	353	52	116	120	0	41	41	35	
	Storage Bay Distance (ft)	280	0	340	300	0	290	0	0	0	0	0	0	
	Approach Delay (sec/veh)	28.2			35.2			35.9			39.2			
	Approach LOS	C			D			D			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Lexington Avenue	Movement Delay (sec/veh)	40.0	18.7	15.2	71.2	71.0	20.2	68.1	39.9	12.0	58.1	57.2	33.9	48.0
	Total Delay (hr)	1.7	3.8	0.8	3.5	25.1	0.2	4.5	1.4	0.3	1.1	6.9	5.7	55.0
	Movement LOS	D	B	B	E	E	C	E	D	B	E	E	C	D
	Movement Volume	144	716	184	175	1260	37	235	121	103	63	422	594	4054
	Movement 95th Queue (ft)	98	124	98	309	854	299	304	130	73	131	367	0	
	Storage Bay Distance (ft)	475	0	350	280	0	330	250	0	275	320	0	0	
	Approach Delay (sec/veh)	21.0			69.7			48.1			44.4			
	Approach LOS	C			E			D			D			

Forecast Year 2030 Build Traffic Operations - Single EBL with Additional WBT - PM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Old Highway 10	Movement Delay (sec/veh)	0.0	35.0	4.8	46.7	8.3	0.0	63.7	0.0	37.4	49.7	41.6	2.9	30.3
	Total Delay (hr)	0.0	10.8	0.0	1.1	2.2	0.0	0.8	0.0	1.9	8.9	0.5	0.0	26.2
	Movement LOS	A	C	A	D	A	A	E	A	D	D	D	A	C
	Movement Volume	0	1100	14	83	946	0	45	0	179	621	42	28	3058
	Movement 95th Queue (ft)	0	388	1	123	134	0	100	0	191	336	101	101	
	Storage Bay Distance (ft)	0	0	275	325	0	0	0	0	0	125	0	0	
	Approach Delay (sec/veh)	34.6			11.4			42.7			47.3			
	Approach LOS	C			B			D			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & TCAAP Property / North Heights Church Access	Movement Delay (sec/veh)	44.8	14.8	8.3	76.4	36.7	14.2	72.0	0.0	28.2	50.7	0.0	33.1	29.4
	Total Delay (hr)	4.0	6.5	0.0	0.3	13.5	1.3	0.1	0.0	0.1	7.7	0.0	4.7	38.2
	Movement LOS	D	B	A	E	D	B	E	A	C	D	A	C	C
	Movement Volume	318	1572	19	15	1309	324	5	0	14	524	0	506	4606
	Movement 95th Queue (ft)	346	348	78	28	355	149	21	28	28	293	12	356	
	Storage Bay Distance (ft)	415	0	300	300	0	300	0	0	0	150	0	300	
	Approach Delay (sec/veh)	19.7			32.6			39.7			42.1			
	Approach LOS	B			C			D			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Snelling Avenue	Movement Delay (sec/veh)	0.0	4.2	3.8	34.3	2.1	0.0	894.1	0.0	653.2	0.0	0.0	0.0	16.6
	Total Delay (hr)	0.0	2.4	0.1	0.3	0.9	0.0	7.5	0.0	7.4	0.0	0.0	0.0	18.6
	Movement LOS	A	A	A	D	A	A	F	A	F	A	A	A	C
	Movement Volume	0	2022	58	30	1628	0	29	0	37	0	0	0	3804
	Movement 95th Queue (ft)	0	0	0	59	0	0	811	0	76	0	0	0	
	Storage Bay Distance (ft)	0	0	325	300	0	0	0	0	50	0	0	0	
	Approach Delay (sec/veh)	4.2			2.7			759.1			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Keithson Avenue	Movement Delay (sec/veh)	0.0	2.5	1.1	26.7	4.6	0.0	106.9	0.0	32.1	0.0	0.0	0.0	3.5
	Total Delay (hr)	0.0	1.4	0.0	0.1	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7
	Movement LOS	A	A	A	D	A	A	F	A	D	A	A	A	A
	Movement Volume	0	2027	5	9	1679	0	1	0	2	0	0	0	3723
	Movement 95th Queue (ft)	0	0	0	26	0	0	19	0	19	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	2.5			4.7			57.0			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Hamline Avenue	Movement Delay (sec/veh)	83.1	51.0	21.6	72.1	28.1	8.8	66.4	76.0	28.1	116.0	119.7	15.1	43.3
	Total Delay (hr)	0.8	26.3	1.1	3.9	10.2	0.0	6.3	0.0	3.7	1.6	0.5	0.3	54.7
	Movement LOS	F	D	C	E	C	A	E	E	C	F	F	B	D
	Movement Volume	32	1829	182	181	1287	7	332	2	465	44	15	66	4442
	Movement 95th Queue (ft)	283	922	565	133	327	10	464	559	355	204	204	57	
	Storage Bay Distance (ft)	280	0	340	300	0	290	0	0	125	0	0	0	
	Approach Delay (sec/veh)	48.9			33.4			44.1			63.2			
	Approach LOS	D			C			D			E			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Lexington Avenue	Movement Delay (sec/veh)	76.5	53.5	28.5	72.6	44.2	18.3	83.5	78.0	30.0	65.7	62.4	5.0	54.9
	Total Delay (hr)	12.9	23.4	2.0	4.2	11.9	0.6	6.4	13.4	1.9	1.5	4.5	0.3	83.0
	Movement LOS	E	D	C	E	D	B	F	E	C	E	E	A	D
	Movement Volume	587	1523	252	203	957	124	273	600	226	82	253	236	5316
	Movement 95th Queue (ft)	299	494	281	176	398	124	405	459	252	135	166	0	
	Storage Bay Distance (ft)	475	0	350	280	0	330	250	0	275	320	0	0	
	Approach Delay (sec/veh)	56.5			46.2			69.5			39.1			
	Approach LOS	E			D			E			D			

Forecast Year 2030 Build Traffic Operations - Single EBL W/ Altered Lane Configuration & Phasing - AM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Old Highway 10	Movement Delay (sec/veh)	0.0	49.9	11.5	52.8	17.1	0.0	62.9	0.0	17.3	56.2	38.6	3.9	39.2
	Total Delay (hr)	0.0	8.8	0.1	4.4	3.9	0.0	0.5	0.0	0.4	11.0	0.7	0.1	29.9
	Movement LOS	A	D	B	D	B	A	E	A	B	E	D	A	D
	Movement Volume	0	626	34	301	829	0	26	0	85	689	61	54	2705
	Movement 95th Queue (ft)	0	298	15	335	352	0	67	0	97	382	110	110	
	Storage Bay Distance (ft)	0	0	275	325	0	0	0	0	0	125	0	0	
	Approach Delay (sec/veh)	47.9			26.6			28.0			51.4			
	Approach LOS	D			C			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & TCAAP Property / North Heights Church Access	Movement Delay (sec/veh)	151.9	11.5	2.2	87.6	48.1	29.2	69.4	0.0	10.0	56.7	0.0	22.4	47.3
	Total Delay (hr)	18.8	3.2	0.0	0.0	19.4	3.1	0.0	0.0	0.0	3.4	0.0	1.4	49.3
	Movement LOS	F	B	A	F	D	C	E	A	A	E	A	C	D
	Movement Volume	426	984	4	2	1440	385	2	0	3	213	0	219	3678
	Movement 95th Queue (ft)	788	940	3	11	748	522	12	12	12	147	159	103	
	Storage Bay Distance (ft)	415	0	300	300	0	300	0	0	0	150	0	300	
	Approach Delay (sec/veh)	53.8			44.2			33.8			39.3			
	Approach LOS	D			D			C			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Snelling Avenue	Movement Delay (sec/veh)	0.0	2.6	2.6	13.3	6.0	0.0	196.5	0.0	60.6	0.0	0.0	0.0	7.5
	Total Delay (hr)	0.0	0.8	0.0	0.0	3.0	0.0	2.5	0.0	0.2	0.0	0.0	0.0	6.5
	Movement LOS	A	A	A	B	A	A	F	A	F	A	A	A	A
	Movement Volume	0	1168	19	7	1802	0	43	0	9	0	0	0	3048
	Movement 95th Queue (ft)	0	0	0	20	141	0	224	0	44	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	50	0	0	0	
	Approach Delay (sec/veh)	2.6			6.0			173.0			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Keithson Avenue	Movement Delay (sec/veh)	0.0	1.2	1.3	13.2	6.0	0.0	80.2	0.0	21.1	0.0	0.0	0.0	4.3
	Total Delay (hr)	0.0	0.4	0.0	0.0	3.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	3.5
	Movement LOS	A	A	A	B	A	A	F	A	C	A	A	A	A
	Movement Volume	0	1168	2	8	1793	0	5	0	4	0	0	0	2980
	Movement 95th Queue (ft)	0	0	0	19	0	0	27	0	27	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	1.2			6.0			53.9			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Hamline Avenue	Movement Delay (sec/veh)	71.2	24.6	9.5	52.0	30.8	19.9	55.1	61.3	3.2	58.3	60.8	21.1	31.2
	Total Delay (hr)	1.8	5.9	0.6	5.2	14.3	0.5	2.5	0.2	0.1	0.2	0.1	0.2	31.6
	Movement LOS	E	C	A	D	C	B	E	E	A	E	E	C	C
	Movement Volume	92	853	227	348	1633	95	159	12	106	9	3	33	3570
	Movement 95th Queue (ft)	165	258	126	162	336	47	120	127	0	36	36	44	
	Storage Bay Distance (ft)	280	0	340	300	0	290	0	0	0	0	0	0	
	Approach Delay (sec/veh)	25.3			33.9			35.5			31.2			
	Approach LOS	C			C			D			C			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Lexington Avenue	Movement Delay (sec/veh)	41.5	21.7	11.9	78.0	81.5	23.5	78.0	39.0	10.0	59.2	55.2	21.3	51.1
	Total Delay (hr)	1.6	4.3	0.6	3.8	28.9	0.2	5.6	1.5	0.3	1.1	6.5	3.3	57.7
	Movement LOS	D	C	B	E	F	C	E	D	A	E	E	C	D
	Movement Volume	134	688	180	174	1259	37	254	132	105	62	413	555	3993
	Movement 95th Queue (ft)	93	140	76	361	934	340	329	171	70	99	265	0	
	Storage Bay Distance (ft)	475	0	350	280	0	330	250	0	275	320	0	0	
	Approach Delay (sec/veh)	22.6			79.6			53.0			37.2			
	Approach LOS	C			E			D			D			

Forecast Year 2030 Build Traffic Operations - Single EBL W/ Altered Lane Configuration & Phasing - PM Peak Hour

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Old Highway 10	Movement Delay (sec/veh)	0.0	34.3	5.8	53.6	13.3	0.0	62.9	0.0	33.9	50.4	38.7	2.5	31.7
	Total Delay (hr)	0.0	10.4	0.0	1.3	3.5	0.0	0.8	0.0	1.7	9.3	0.5	0.0	27.5
	Movement LOS	A	C	A	D	B	A	E	A	C	D	D	A	C
	Movement Volume	0	1079	14	89	945	0	45	0	182	636	46	31	3067
	Movement 95th Queue (ft)	0	368	7	128	167	0	93	0	176	336	86	86	
	Storage Bay Distance (ft)	0	0	275	325	0	0	0	0	0	125	0	0	
	Approach Delay (sec/veh)	33.9			16.8			39.6			47.6			
	Approach LOS	C			B			D			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & TCAAP Property / North Heights Church Access	Movement Delay (sec/veh)	176.3	32.0	11.7	70.7	61.6	28.9	87.1	0.0	22.8	53.5	0.0	24.5	52.3
	Total Delay (hr)	16.7	13.8	0.1	0.3	22.5	2.6	0.1	0.0	0.1	8.1	0.0	3.4	67.7
	Movement LOS	F	C	B	E	E	C	F	A	C	D	A	C	D
	Movement Volume	331	1553	19	14	1298	319	4	0	14	525	0	502	4579
	Movement 95th Queue (ft)	754	916	171	106	816	577	19	28	28	291	300	194	
	Storage Bay Distance (ft)	415	0	300	300	0	300	0	0	0	150	0	300	
	Approach Delay (sec/veh)	56.9			55.3			37.1			39.3			
	Approach LOS	E			E			D			D			

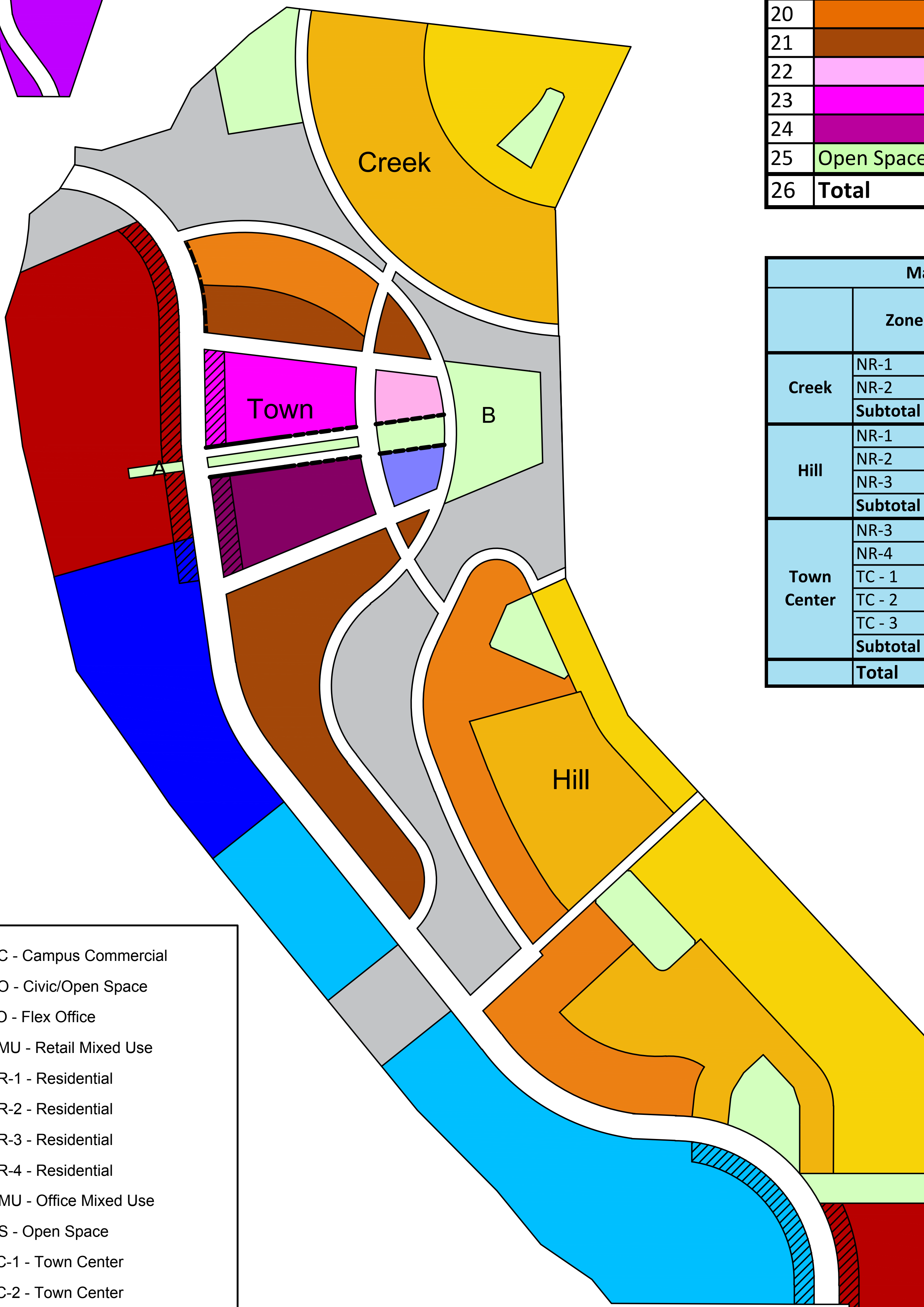
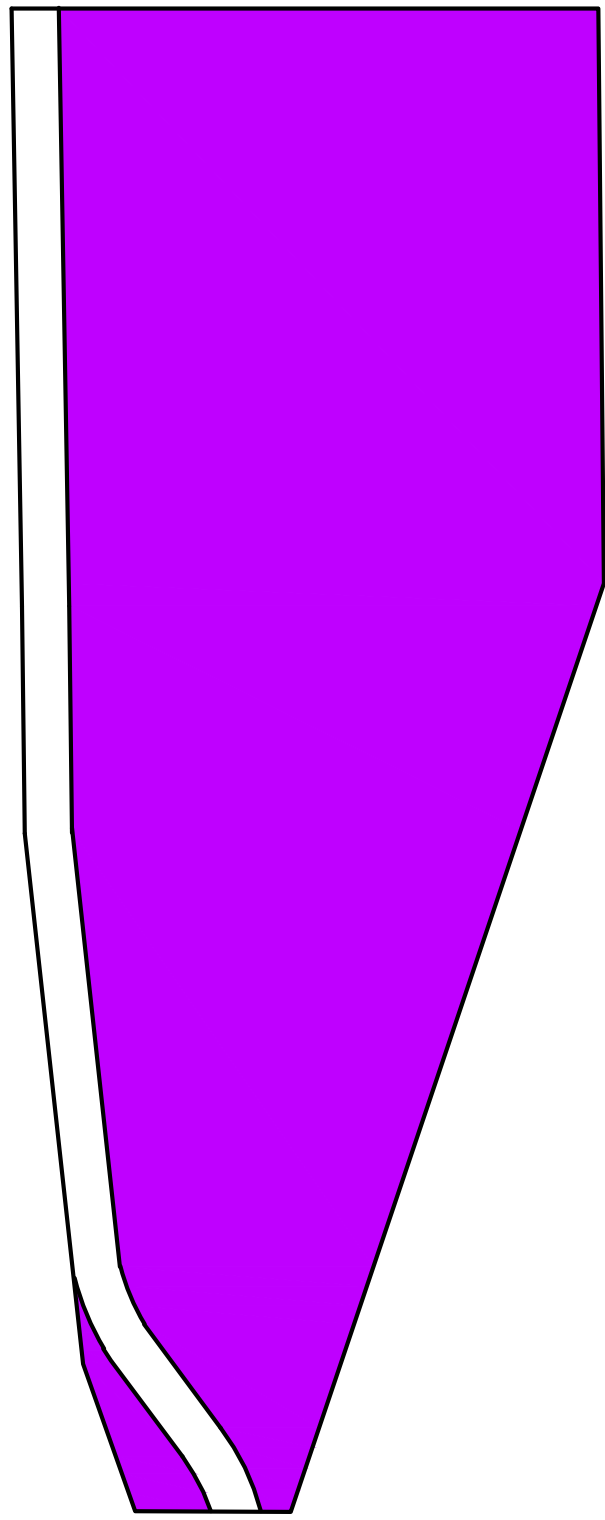
Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Snelling Avenue	Movement Delay (sec/veh)	0.0	5.0	4.3	37.6	9.1	0.0	692.1	0.0	487.3	0.0	0.0	0.0	17.3
	Total Delay (hr)	0.0	2.8	0.1	0.4	4.1	0.0	6.0	0.0	5.8	0.0	0.0	0.0	19.2
	Movement LOS	A	A	A	E	A	A	F	A	F	A	A	A	C
	Movement Volume	0	2004	55	34	1614	0	29	0	39	0	0	0	3775
	Movement 95th Queue (ft)	0	0	5	140	342	0	738	0	81	0	0	0	
	Storage Bay Distance (ft)	0	0	325	300	0	0	0	0	50	0	0	0	
	Approach Delay (sec/veh)	5.0			9.7			574.6			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Keithson Avenue	Movement Delay (sec/veh)	0.0	2.6	1.3	28.8	4.1	0.0	405.4	0.0	90.3	0.0	0.0	0.0	3.5
	Total Delay (hr)	0.0	1.5	0.0	0.1	1.9	0.0	0.1	0.0	0.1	0.0	0.0	0.0	3.7
	Movement LOS	A	A	A	D	A	A	F	A	F	A	A	A	A
	Movement Volume	0	2015	5	10	1666	0	1	0	4	0	0	0	3701
	Movement 95th Queue (ft)	0	0	0	28	0	0	28	0	28	0	0	0	
	Storage Bay Distance (ft)	0	0	0	300	0	0	0	0	0	0	0	0	
	Approach Delay (sec/veh)	2.6			4.2			153.3			0.0			
	Approach LOS	A			A			F			A			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Hamline Avenue	Movement Delay (sec/veh)	89.8	49.1	21.1	70.2	23.0	8.2	62.4	90.5	26.6	91.0	102.0	18.0	40.1
	Total Delay (hr)	0.9	24.9	1.2	3.6	8.2	0.0	5.7	0.1	3.6	1.2	0.4	0.3	50.1
	Movement LOS	F	D	C	E	C	A	E	F	C	F	F	B	D
	Movement Volume	35	1803	195	167	1268	5	319	2	472	43	15	67	4391
	Movement 95th Queue (ft)	243	926	517	144	240	6	465	547	369	161	161	65	
	Storage Bay Distance (ft)	280	0	340	300	0	290	0	0	125	0	0	0	
	Approach Delay (sec/veh)	47.1			28.4			41.2			53.2			
	Approach LOS	D			C			D			D			

Intersection	MOE	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach			Intersection Total
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
CR 96 & Lexington Avenue	Movement Delay (sec/veh)	82.2	55.8	29.5	76.3	42.3	13.7	71.5	58.6	31.2	66.8	63.8	5.2	53.0
	Total Delay (hr)	13.8	23.8	2.1	4.6	11.0	0.5	5.3	9.4	2.1	1.5	4.6	0.4	79.1
	Movement LOS	F	E	C	E	D	B	E	E	C	E	E	A	D
	Movement Volume	580	1491	253	210	922	131	263	561	235	79	248	249	5222
	Movement 95th Queue (ft)	322	633	333	196	361	77	344	397	195	141	161	0	
	Storage Bay Distance (ft)	475	0	350	280	0	330	250	0	275	320	0	0	
	Approach Delay (sec/veh)	59.5			45.0			55.7			38.9			
	Approach LOS	E			D			E			D			

TCAAP Regulating Plan

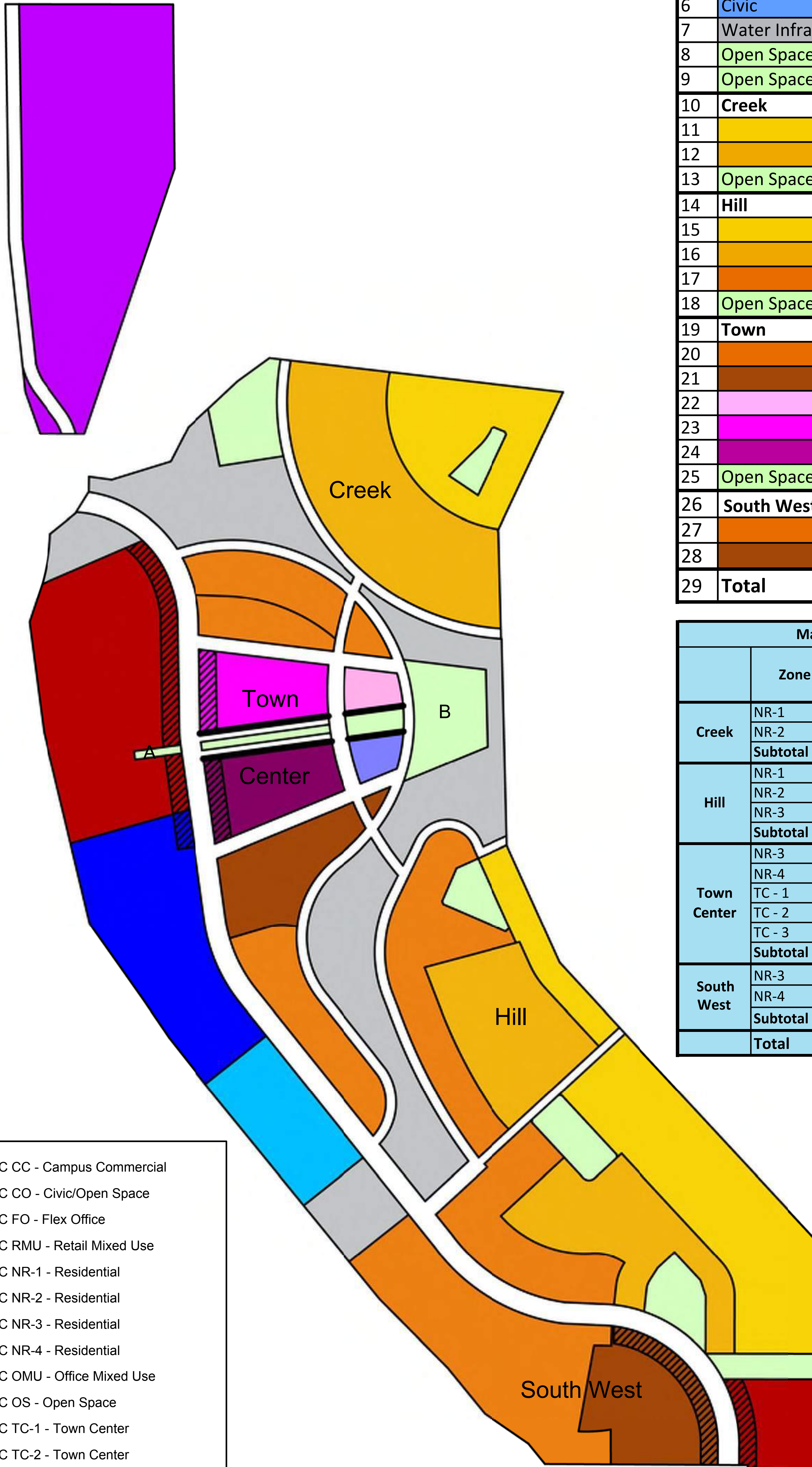


	TRC CC - Campus Commercial
	TRC CO - Civic/Open Space
	TRC FO - Flex Office
	TRC RMU - Retail Mixed Use
	TRC NR-1 - Residential
	TRC NR-2 - Residential
	TRC NR-3 - Residential
	TRC NR-4 - Residential
	TRC OMU - Office Mixed Use
	TRC OS - Open Space
	TRC TC-1 - Town Center
	TRC TC-2 - Town Center
	TRC TC-3 - Town Center
	TRC - Water Infrastructure
	Right of Way
	Gateway Overlay District
	Pedestrian Priority Frontage
	Pedestrian Friendly Frontage
	Property Boundary

	Parcel	Acreage
1	Campus Commercial	40.0
2	Mixed Use Retail - West	28.4
3	Mixed Use Retail - East	6.0
4	Office Mixed Use	20.0
5	Flex Business	41.8
6	Civic	1.6
7	Water Infrastructure	45.6
8	Open Space A	0.3
9	Open Space B	5.9
10	Creek	42.5
11	NR -1	13.1
12	NR -2	23.7
13	Open Space	5.7
14	Hill	92.5
15	NR -1	29.8
16	NR -2	27.8
17	NR -3	24.5
18	Open Space	10.4
19	Town	45.3
20	NR -3	5.8
21	NR -4	21.6
22	TC-1	1.8
23	TC-2	6.9
24	TC-3	7.2
25	Open Space	2.0
26	Total	369.9

Maximum Residential Units				
	Zone	Gross Density Range	Acreage	Maximum Units
Creek	NR-1	0.00 - 1.98	13.1	26
	NR-2	2.50 - 4.05	23.7	96
	Subtotal		36.8	122
Hill	NR-1	0.00 - 2.52	29.8	75
	NR-2	2.50 - 3.45	27.8	96
	NR-3	4.00 - 5.60	24.5	137
	Subtotal		82.1	308
Town Center	NR-3	4.00 - 5.66	5.8	33
	NR-4	4.00 - 5.41	21.6	117
	TC - 1	0.00 - 68.16	1.8	120
	TC - 2	0.00 - 67.02	6.9	460
	TC - 3	0.00 - 41.64	7.2	300
	Subtotal		43.3	1030
	Total		162.2	1460

TCAAP Proposed Regulating Plan



	Parcel	Acreage
1	Campus Commercial	40.0
2	Mixed Use Retail - West	28.4
3	Mixed Use Retail - East	6.0
4	Office Mixed Use	20.0
5	Flex Business	9.5
6	Civic	1.6
7	Water Infrastructure	45.6
8	Open Space A	0.3
9	Open Space B	5.9
10	Creek	42.5
11	NR -1	13.1
12	NR -2	23.7
13	Open Space	5.7
14	Hill	92.5
15	NR -1	29.8
16	NR -2	27.8
17	NR -3	24.5
18	Open Space	10.4
19	Town	45.3
20	NR -3	19.0
21	NR -4	8.7
22	TC-1	1.8
23	TC-2	6.9
24	TC-3	7.2
25	Open Space	2.0
26	South West	32.4
27	NR -3	21.0
28	NR -4	11.4
29	Total	369.9

Maximum Residential Units				
	Zone	Gross Density Range	Acreage	Maximum Units
Creek	NR-1	0.00 - 1.98	13.1	26
	NR-2	2.50 - 4.05	23.7	96
	Subtotal		36.8	122
Hill	NR-1	0.00 - 2.52	29.8	75
	NR-2	2.50 - 3.45	27.8	96
	NR-3	4.00 - 5.60	24.5	137
	Subtotal		82.1	308
Town Center	NR-3	4.00 - 5.66	19.0	108
	NR-4	4.00 - 21.0	8.7	183
	TC - 1	0.00 - 68.16	1.8	120
	TC - 2	0.00 - 67.02	6.9	460
	TC - 3	0.00 - 41.64	7.2	300
	Subtotal		43.6	1171
South West	NR-3	4.00 - 5.66	21.0	119
	NR-4	4.00 - 21.0	11.4	240
	Subtotal		32.4	359
	Total		194.9	1960

- TRC CC - Campus Commercial
- TRC CO - Civic/Open Space
- TRC FO - Flex Office
- TRC RMU - Retail Mixed Use
- TRC NR-1 - Residential
- TRC NR-2 - Residential
- TRC NR-3 - Residential
- TRC NR-4 - Residential
- TRC OMU - Office Mixed Use
- TRC OS - Open Space
- TRC TC-1 - Town Center
- TRC TC-2 - Town Center
- TRC TC-3 - Town Center
- TRC - Water Infrastructure
- Right of Way
- Gateway Overlay District
- Pedestrian Priority Frontage
- Pedestrian Friendly Frontage
- Property Boundary