SRF

Memorandum

SRF No. 14398

To: Brian Hansen
Development Coordinator
City of Bloomington

From: Brent Clark, PE, Senior Engineer
Phil Kulis, PE, Senior Associate

Date: April 28, 2021

Subject: BCS Mixed Use Development Traffic Study

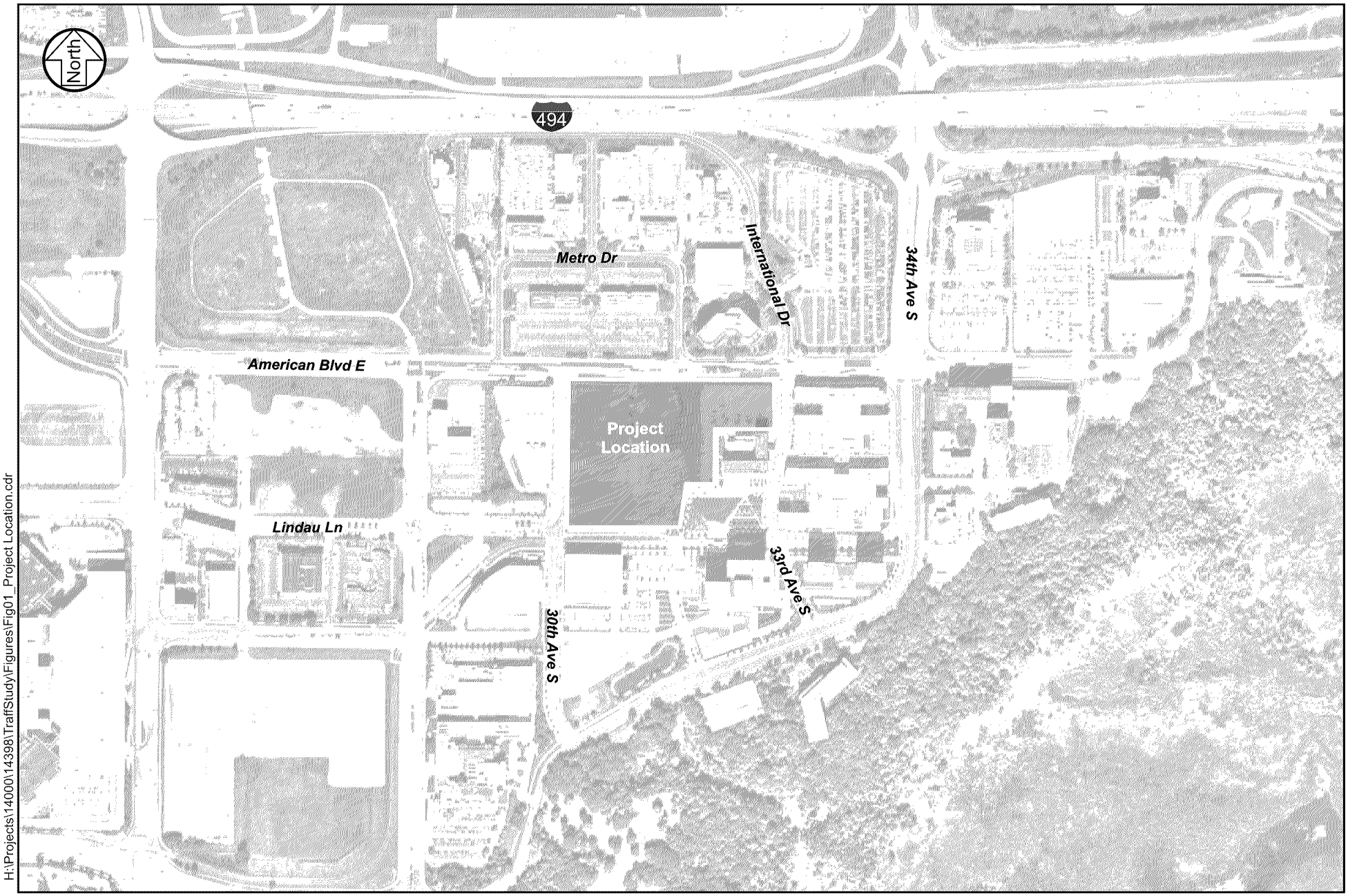
Introduction

SRF has completed a traffic study for the proposed Bloomington Central Station (BCS) Mixed-Use Development in the City of Bloomington. The development is generally bound by American Boulevard to the north, 30th Avenue to the west, and the light rail/Hyatt Regency hotel to the south/west (see Figure 1: Project Location). The initial phases of development are expected to open between 2023-2027, while future development phases are currently unknown. Therefore, the main objectives of this study are to evaluate the existing operations within the study area and identify any potential deficiencies in safety, capacity, or operations on the adjacent roadway network associated with the proposed development. The following information provides the assumptions, analysis, and study recommendations offered for consideration.

Project Background

Development and transportation within the project area has been discussed and evaluated over the past few years. The following studies have been conducted since 2018 that have reviewed various intersections and/or roadway segments within the South Loop District.

1) *South Loop Roadway Infrastructure Improvement Study,* SRF Consulting (March 2018)
    - Hereon referred to as the *South Loop Study*. This study was an update to the previous AUAR update in the South Loop District in 2012. The study collected updated traffic counts and land use projections throughout the South Loop District, evaluated traffic operations within the study area, and identified numerous infrastructure improvements.
2) *Mall of America Phase 2B Waterpark Development Traffic Study*, SRF Consulting (March 2020)
    - Hereon referred to as the *Waterpark Study*. As part of the study, traffic counts and land use projections from the *South Loop Study* were updated throughout the South Loop District and operations were evaluated under existing, 2025, and 2040 conditions, with a focus on 24th Avenue and near the MOA.
3) *SICK Inc. Development Traffic Study,* SRF Consulting (June 2020)
    - Hereon referred to as the *SICK Study*. The study evaluated the traffic safety and operations at the SICK development access locations, particularly on Lindau Lane.



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Project Location

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Figure 1

Note that the *Waterpark* and *SICK Studies* focused on intersections along 24th Avenue/Lindau Lane and near the Mall of America. Traffic data was collected as part of these studies in 2019, however, other area developments have opened since the data was collected. A summary of the location and density of the recent developments is summarized in the Appendix.

The proposed land use assumptions for the BCS mixed use development has changed since completion of the previous studies. In addition, based on discussions with City staff, several future development land use assumptions within the South Loop District Area have also changed. Therefore, information from each of the previous studies were leveraged to aide in the development of the *BCS Mixed Use Development Traffic Study.*

Existing Conditions

Existing conditions were reviewed to establish a baseline condition to compare and determine any impacts of the proposed development. The evaluation of existing conditions includes traffic data, roadway characteristics, and an intersection capacity analysis, which are summarized in the following sections.

Study Intersections

The following study intersections represent the primary focus of the traffic study. These intersections were identified through discussion with City staff as they relate to potential development impacts, as well as future area infrastructure needs.

- American Boulevard / 30th Avenue
- American Boulevard / Metro Drive
- American Boulevard / International Drive / 33rd Avenue
- American Boulevard / 34th Avenue
- 30th Avenue / Lindau Lane

Traffic Data

New intersection turning movement counts were not collected as part of the study due to abnormal travel patterns caused by the COVID-19 pandemic. Existing turning movement volumes for the weekday a.m. and p.m. peak hours were developed at the study intersections based on a combination of 2019 data collected as part of the *Waterpark* and *SICK Studies* and historical traffic data (i.e., 2016 data collected as part of the *South Loop Study*) within the study area. Note the turning movement data represents a base 2019 condition, which is prior to the development openings previously mentioned, but reflects pre-COVID 19 conditions. Therefore, trip generation estimates were developed using the *ITE Trip Generation Manual, 10th Edition* for the new developments and distributed throughout the study area to develop year 2020 existing conditions volumes.

Roadway Characteristics

A field assessment was completed to identify various roadway characteristics within the study area, such as functional classification, general configuration, and posted speed limit. A summary of these roadway characteristics is shown in Table 1. Note that these are general characteristics and that there are some deviations within the area or segments of the roadways. For example, 34th Avenue transitions from an A-minor reliever to a major collector south of American Boulevard.

Table 1. Existing Roadway Characteristics

Roadway	Functional Classification (1)	General Configuration	Posted Speed Limit (mph)
American Boulevard	A Minor Reliever	4-lane divided	35
30th Avenue	Local Road	5-lane undivided	30
33rd Avenue	Local Road	2-lane undivided	30
34th Avenue	A Minor Reliever (2)	6-lane divided	35
Lindau Lane	Local Road	2-lane divided	30

(1) Functional Classification based on *City of Bloomington's 2040 Comprehensive Plan*.
(2) 34th Avenue transitions from an A-minor reliever to a major collector south of American Boulevard.

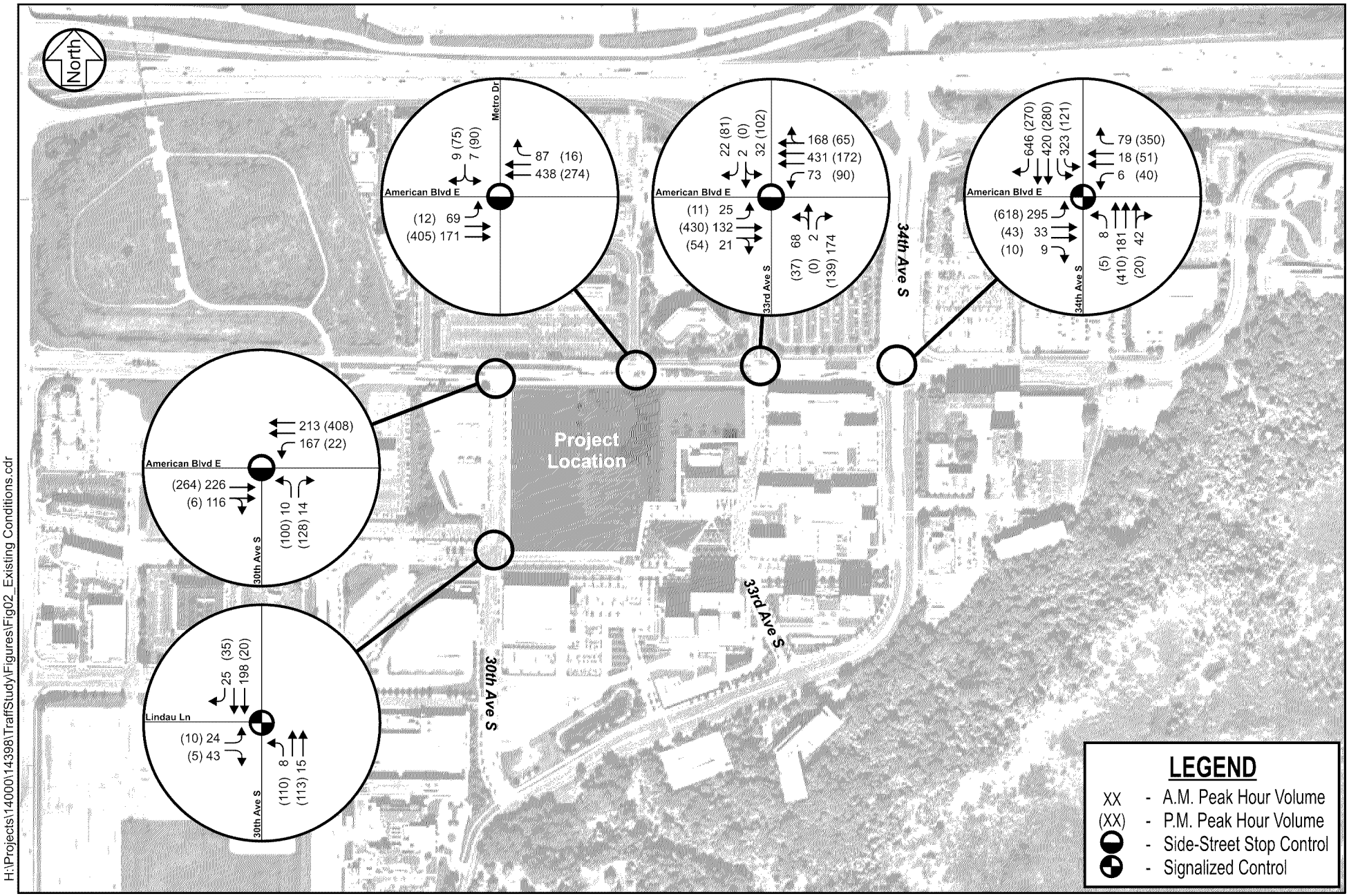
From a traffic control perspective, the American Boulevard/34th Avenue and Lindau Lane/30th Avenue intersections are signalized, while all other study intersections are unsignalized, side-street stop controlled. Existing geometrics, traffic controls, and traffic volumes at the study intersections are shown in Figure 2.

Intersection Operations Analysis

An intersection capacity analysis was conducted to determine how traffic is currently operating at the study intersections during typical weekday a.m. and p.m. peak hour conditions. All study intersections were analyzed using VISSIM software. Capacity analysis results identify a Level of Service (LOS) which indicates how well an intersection is operating. Intersections are ranked from LOS A through LOS F. The LOS results are based on average delay per vehicle, which correspond to the delay threshold values shown in Table 2. LOS A indicates the best traffic operation and LOS F indicates an intersection where demand exceeds capacity. Overall intersection LOS A through LOS D is considered acceptable by the City of Bloomington.

Table 2. Level of Service Criteria for Signalized and Unsignalized Intersections

LOS Designation	Signalized Intersection Average Delay/Vehicle (seconds)	Unsignalized Intersection Average Delay/Vehicle (seconds)
A	≤ 10	≤ 10
B	> 10 – 20	> 10 - 15
C	> 20 – 35	> 15 - 25
D	> 35 – 55	> 25 - 35
E	> 55 – 80	> 35 - 50
F	> 80	> 50



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Existing Conditions

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Figure 2

For side-street stop-controlled intersections, special emphasis is given to providing an estimate for the level of service of the side-street approach. Traffic operations at an unsignalized intersection with side-street stop control can be described in two ways. First, consideration is given to the overall intersection level of service. This takes into account the total number of vehicles entering the intersection and the capability of the intersection to support these volumes.

Second, it is important to consider the delay on the minor approach. Since the mainline is not stop controlled, the majority of delay is attributed to the minor approaches. It is typical of unsignalized intersections with higher mainline traffic volumes to experience high levels of delay, i.e., poor levels of service, on the side-street approaches, but an acceptable overall intersection level of service during peak hour conditions.

Results of the existing capacity analysis shown in Table 3 indicate that all study intersections currently operate at an acceptable overall LOS D or better during the weekday a.m. and p.m. peak hours, with the existing traffic control, geometric layout, and signal timing. It should be noted that in 2018/2019, the dual eastbound left-turn lanes at the American Boulevard/34th Avenue intersection were reduced to a single eastbound left-turn lane to eliminate the eastbound/westbound left-turn overlap and improve lane utilization. While no significant side-street delays were observed, queuing issues were identified at the American Boulevard/34th Avenue intersection. Detailed traffic operations results, including movement delays and queue lengths are provided in the Appendix.

Table 3. Existing Intersection Capacity Analysis

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay
American Boulevard /30th Avenue (1)	A/B	11 sec.	A/B	14 sec.
American Boulevard / Metro Drive (1)	A/B	12 sec.	A/B	13 sec.
American Boulevard / International Dr / 33rd Avenue (1)	A/B	15 sec.	A/C	19 sec.
American Boulevard / 34th Avenue	C	30 sec.	D	43 sec.
Lindau Lane / 30th Avenue	A	10 sec.	A	9 sec.

(1) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst side-street approach LOS. The delay shown represents the worst side-street approach delay.

The following information summarizes the operational and/or queuing issues identified as part of the existing capacity analysis:

- **American Boulevard/34th Avenue:**
  - During the p.m. peak hour there is a significant amount of eastbound left-turn movements that are destined for I-494. This heavy movement results in 95th percentile queues of approximately 550 feet, which extend into the International Drive/33rd Avenue intersection during approximately five (5) to 10 percent of the p.m. peak hour.

- **American Boulevard/30th Avenue:**
    - Newly collected turning movements indicate that more vehicles are utilizing Lindau Lane as compared to the *South Loop Study*. This travel pattern shift is likely due to the recently constructed Health Partners parking ramp, which is located in the southeast quadrant of the Lindau Lane/30th Avenue intersection. Health Partners users destined to the northwest are likely utilizing Lindau Lane instead of American Boulevard, which provides operational benefits to the American Boulevard/30th Avenue intersection.

Previously Identified Transportation Improvements

The *South Loop Study* identified numerous infrastructure improvements within the South Loop District, several of which currently have funding allocated for in the City of Bloomington's *2021-2030 Capital Improvement Plan*. Three of the improvements identified in the *South Loop Study* and the *2021-2030 Capital Improvement Plan* pertain to the immediate study area and are summarized below:

1) I-494/34th Avenue Geometric Improvements

- Identified in the *2021-2030 Capital Improvement Plan* as a year 2026 improvement.
- The geometric improvement provides an extended dual eastbound left-turn lane, reduces the westbound thru-lane to one lane, and increases pedestrian storage at the American Boulevard/34th Avenue intersection. In addition, dual northbound right-turn lanes are provided at the I-494 eastbound on-ramp.
- The improvement project accomplishes similar goals to the 2018/2019 eastbound left-turn lane restripe (i.e., improves lane utilization/eliminates left-turn overlap) while also providing additional capacity and turn lane storage.

2) American Boulevard at International Drive/Metro Drive Traffic Control Modifications

- Identified in the *2021-2030 Capital Improvement Plan* as a year 2022 improvement.
- Converts International Drive/33rd Avenue to a three-quarter access and constructs a roundabout at Metro Drive to facilitate U-turn maneuvers.

3) American Boulevard/30th Avenue Signalization

- Identified in the *2021-2030 Capital Improvement Plan* as a year 2026 improvement.
- Traffic signal installed to improve operations caused by insufficient gaps.

It should be noted that all three of these mitigation improvements were triggered based on year 2025 traffic forecasts as part of the *South Loop Study*. However, future land use assumptions throughout the South Loop District area have changed. Therefore, these improvements were not assumed in the year 2025 operations analysis to determine if the recommendations are still valid and/or an approximate timeframe for when the improvements will be needed. Note that the other various improvement projects identified in the *South Loop Study* are captured in the future operation models/traffic volumes.

Proposed Development

The BCS mixed-use development is generally bound by American Boulevard to the north, 30th Avenue to the west, and the light rail/Hyatt Regency hotel to the south/west. The project area currently serves as a surface parking lot for adjacent businesses. The proposed development is expected to be constructed in four phases. The initial phase (Phase 1) is expected to be open by 2023, with Phases 2 and 3 to follow, likely two to four years after Phase 1. For the purposes of this study, Phases 1 through 3 are assumed to be open by year 2025 to align with previous area study forecasts/analysis. The construction timeline of Phase 4 is unknown, but for the purpose of this study is assumed to be fully constructed by Year 2040. A summary of the proposed land uses and the assumed analysis timeline is shown in Table 4.

Table 4. BCS Mixed Use Development by Phase

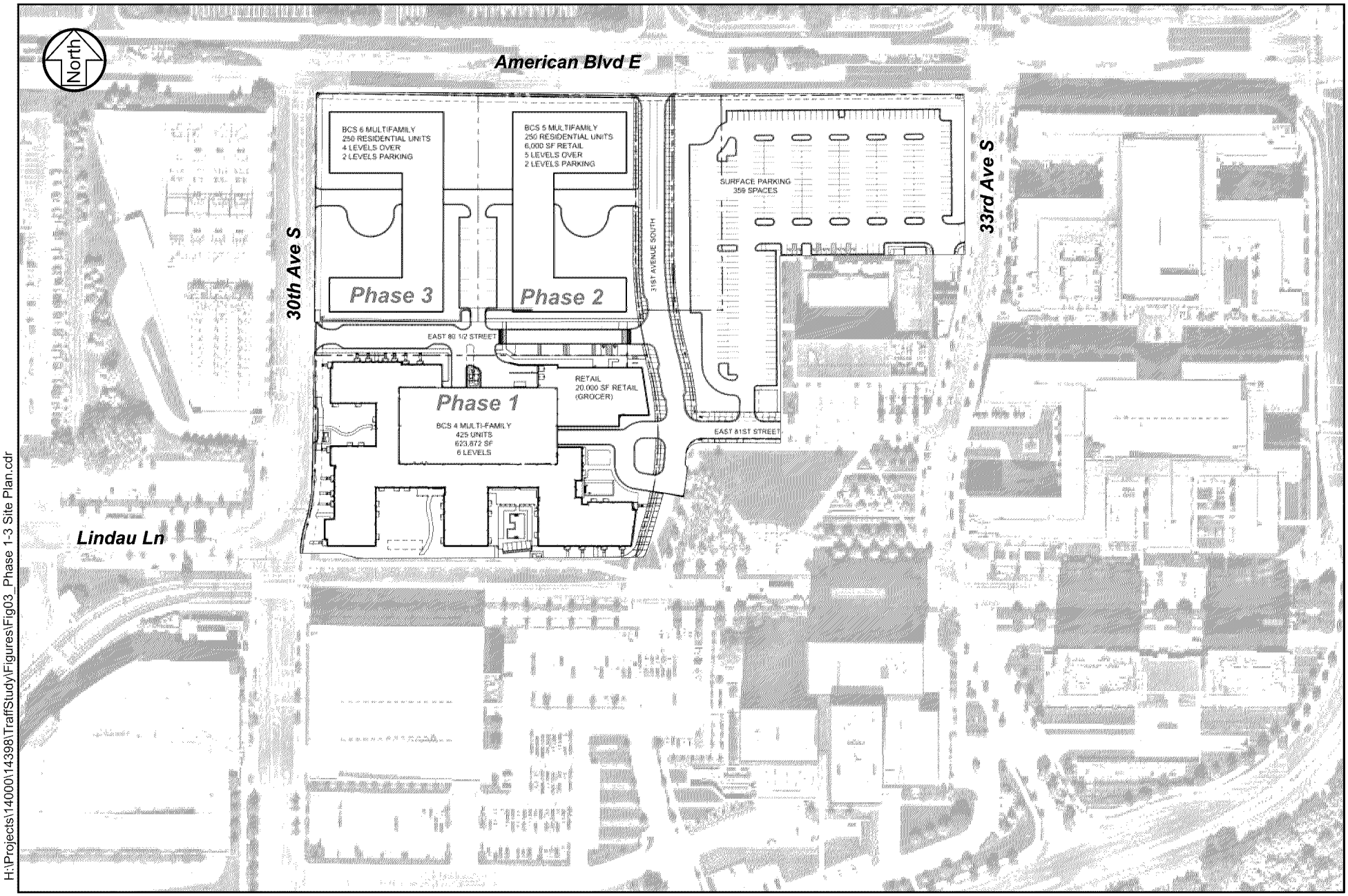
Estimated Timeline	Assumed Completed by 2025			Assumed Completed by 2040	Total
Type of Use	Phase 1	Phase 2	Phase 3	Phase 4	
Residential	425 DU	250 DU	250 DU	--	925 DU
Retail	20 KSF (1)	6 KSF	--	4 KSF	30 KSF
Office	--	--	--	359.5 KSF	359.5 KSF
Parking Ramp	--	--	--	2,002-stall	2,002-stall

(1) Proposed Grocery Store.

Phases 1-3 – Proposed Mixed Use Development

Phases 1 through 3 consist of approximately 925 residential dwelling units, a 20,000-sf grocery store, and 6,000-sf of retail space. Each residential development is expected to have its own parking structure. Unlike the Phase 2 and 3 parking structures, which are designated for residents only, the Phase 1 parking structure is expected to be utilized by multiple users. The first level of the parking structure is designated for residential guests and/or grocery store visitors only, while the upper levels are assigned to residents. Note there will be a secure garage separating the two users. Therefore, grocery/retail users of Phase 1 and 2 are expected to utilize a combination of on-street parking and the Phase 1 parking structure.

As part of the development, new roadways (i.e., 31st Avenue and E 80 ½ Street) will be constructed to provide access and on-street parking. The 31st Avenue roadway will begin just south of E 81st Street and tie into the American Boulevard/Metro Drive intersection. The roadway will provide direct access to the Phase 1 and 2 residential parking structures and is expected to be the primary residential access. E 80 ½ Street will connect 30th Avenue to 31st Avenue and will serve as the primary grocery/retail access, in addition to provide a secondary access to the residential developments. The current proposed site plan of Phases 1-3 is shown in Figure 3.



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Phase 1-3 Site Plan

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Figure 3

Phase 4 – Future Office/Parking Structure Development

Phase 4 is located in the southeast quadrant of the American Boulevard/Metro Drive intersection, which currently serves as the Hyatt Regency hotel parking lot. The Phase 4 development is assumed to include approximately 359,500-sf office space, 4,000-sf retail space, and a 2,002-stall parking structure. As part of the development, a roadway will be constructed to connect 31st Avenue to 33rd Avenue, which will provide access to the parking structure. The parking structure will be utilized to accommodate the increased office development and the removal of the existing hotel parking. In addition, 31st Avenue is expected to connect to E Old Shakopee Road, to help facilitate future Health Partners expansions. The proposed full-build site plan, which includes all phases of development, is shown in Figure 4.

Traffic Forecasts

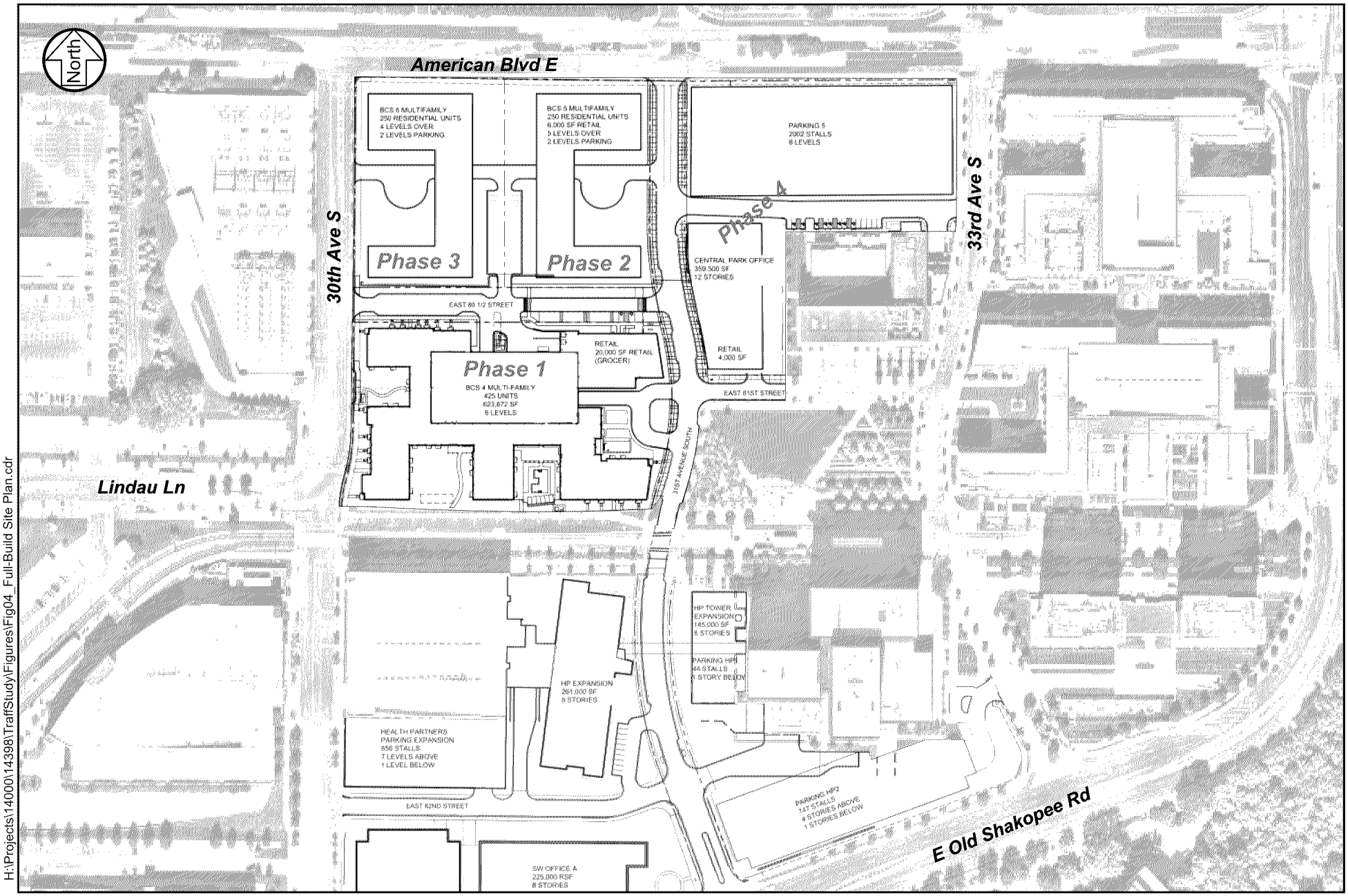
Traffic forecasts were developed for the study area to help determine short- and long-term transportation infrastructure needs within the study area. The forecasts were developed using a combination of the BCS development trip generation along with the South Loop District background traffic. The background traffic accounts for the adjacent land use development in the area, planned infrastructure improvements, and general background growth. It should be noted that these traffic forecasts were based on pre-COVID conditions and the COVID-19 pandemic may have trip generation impacts on various land use types (i.e. office/retail/residential). For the purpose of this study, the analysis assumes traffic volumes will return to pre-COVID conditions by year 2025. The following sections outline the proposed development trip generation within the study area, as well as the overall traffic forecast development process and assumptions.

Adjacent Land Use

Based on discussions with the project team, numerous development assumptions within the South Loop District have changed since previous studies. In general, residential developments have been accelerated to the near-term, while retail/office/hotel developments have been delayed and/or eliminated. A summary of all assumed year 2025 and year 2040 development outside of the BCS mixed use development area is shown in the Appendix. Therefore, to develop short- and long-term traffic forecasts within the study area, trip generation estimates were updated for all adjacent land use assumptions within the South Loop District.

Background Growth

General background growth expected in the South Loop District is minimal, as few trips that travel through the District are not destined to/from one of the developments. Generally, non-South Loop District generated trips are primarily traffic generated by developments to the west of TH 77, near American Boulevard, that utilize American Boulevard to access I-494 at either 24th Avenue or 34th Avenue interchange. Therefore, to account for the growth generated by these routes, an annual growth rate of one-half percent was applied to the through trips on American Boulevard, which is consistent with previous studies. In addition to general background growth, current/future traffic volumes were adjusted to account for future constructions projects, such as the 77th Street Connection.



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Full-Build Site Plan

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Figure 4

Development Traffic

To account for traffic impacts associated with the proposed development, trip generation estimates for the weekday a.m. and p.m. peak hours and a daily basis were calculated using the *ITE Trip Generation Manual, 10th Edition*, and are shown in Table 5. The specific ITE land use codes used, as well as the assumed project phasing, were developed in conjunction with project staff during the study process. As previously mentioned, Phases 1-3 were assumed to be completed by year 2025 to align with previous area study forecasts/analysis. Note that a multi-use reduction was applied to the Phase 1-3 development to account for vehicles utilizing more than one land use. In addition, due to the close proximity to the BCS light rail station, a 15 percent light rail reduction was applied to all phases of development, with is consistent with previous BCS studies.

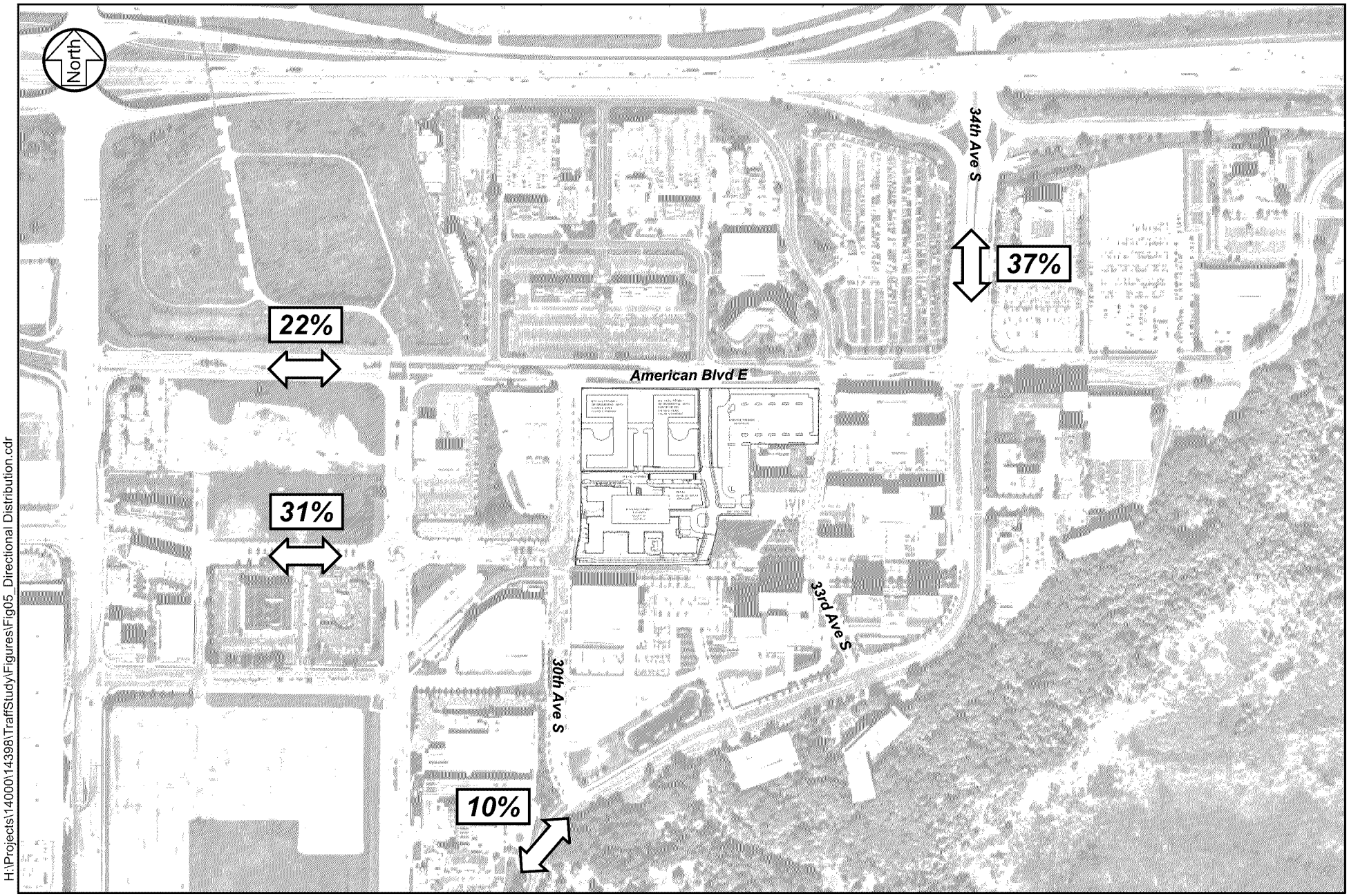
Table 5. Proposed Development Trip Generation Estimate

Phase - Land Use Type *(ITE Code)*	Size	A.M. Peak Hour Trips		P.M. Peak Hour Trips		Weekday Daily Trips
		In	Out	In	Out	
Phase 1 - 3 Development (2025)						
1 - Mid-Rise Multifamily Housing *(221)*	425 DU	40	113	114	73	2,312
1 - Supermarket *(850)*	20,000 sf	46	30	94	90	2,136
2 - Mid-Rise Multifamily Housing *(221)*	250 DU	23	67	67	43	1,360
2 - Retail *(820)*	6,000 sf	4	2	11	12	226
3 - Mid-Rise Multifamily Housing *(221)*	250 DU	23	67	67	43	1,360
Phase 1-3 Subtotal		136	279	353	261	7,394
Multi-Use Reduction (5% AM, 10 % PM) (1)		(-7)	(-14)	(-35)	(-26)	(-739)
Light Rail Reduction (15%) (2)		*(-20)*	*(-42)*	*(-53)*	*(-39)*	*(-1,109)*
Phase 1-3 Total		109	223	265	196	5,546
Future Development (2040)						
4 - Office *(710)*	359,500 sf	359	59	66	347	3,502
4 - Retail *(820)*	4,000 sf	2	1	7	8	151
Phase 4 Subtotal		361	60	73	355	3,653
Light Rail Reduction (15%) (2)		*(-54)*	*(-9)*	*(-11)*	*(-53)*	*(-548)*
Future Development Total		307	51	62	302	3,105
Year 2040 Total Trips (All Development)		416	274	327	498	8,651

(1) Multi-use reductions were based on methodology described in the *ITE Trip Generation Manual, 10th Edition*.

(2) A 15 percent light rail reduction was applied to trip generation estimates to account for a light rail station with ¼ mile of Development.

Accounting for the multi-use and light rail reductions, the proposed development is expected to generate approximately 690 a.m. peak hour, 825 p.m. peak hour, 8,651 daily trips once fully constructed. The trips generated by the proposed development were distributed throughout the study area based on the directional distribution shown in Figure 5, which was updated from the *South Loop Study* based on existing travel patterns and engineering judgment. The resultant year 2025 and 2040 peak hour traffic forecasts, which include general background growth, adjacent development trips, and traffic generated by the proposed development, are shown in Figure 6 and 7, respectively.



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Directional Distribution

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Figure 5

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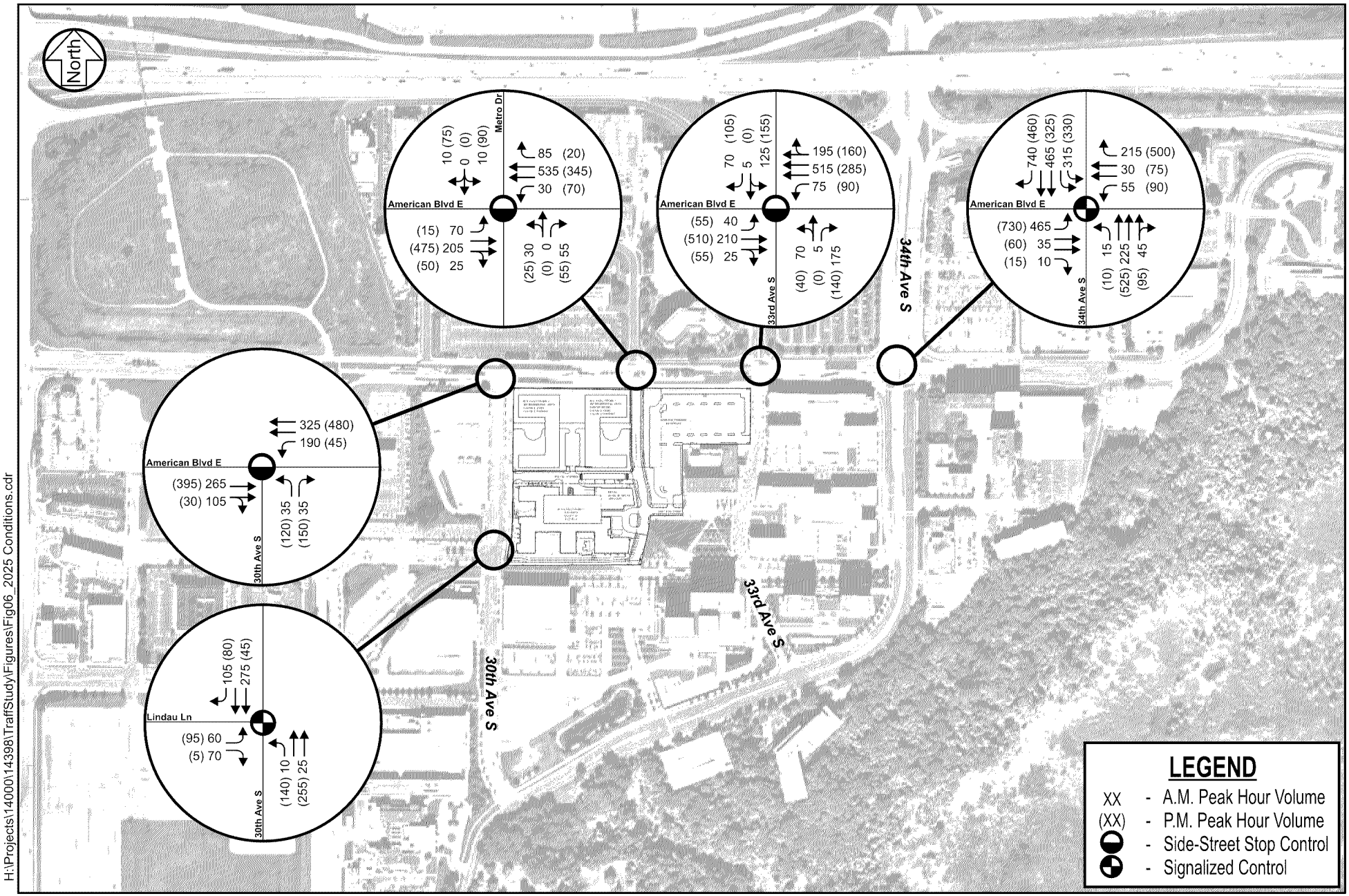

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Year 2025 Conditions

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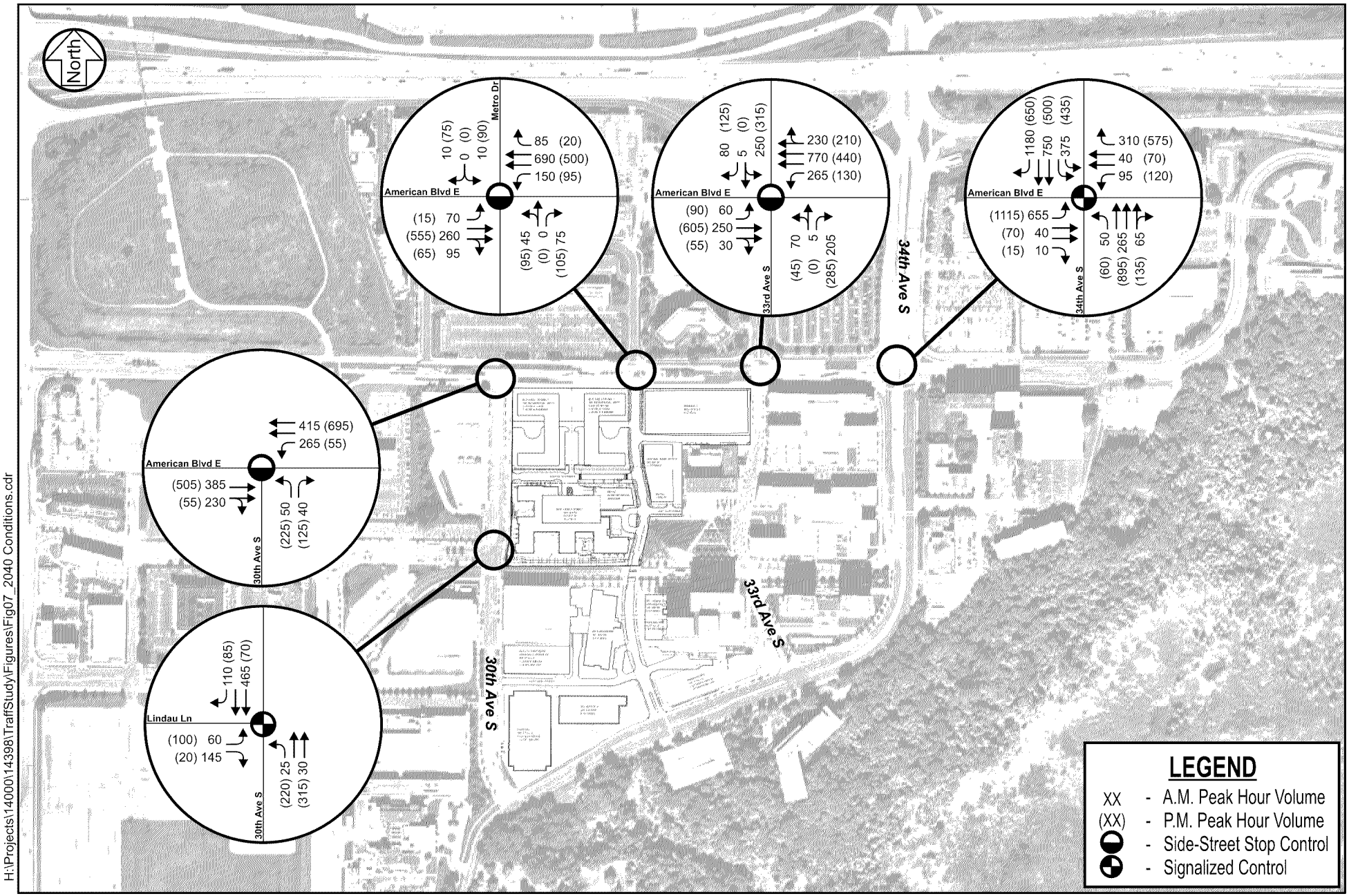
Figure 6



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Year 2040 Conditions

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Figure 7

Trip Generation Comparison

Trip generation estimates for the BCS development were compared to the *South Loop Study* trip generation estimates for year 2025 and 2040 and are shown in Table 6 and 7, respectively. The comparison indicates that the BCS development will generate approximately 332 additional a.m. peak hour trips and 461 additional p.m. peak hour trips than previous year 2025 assumptions (note no development was previously assumed by year 2025), and 274 fewer a.m. peak hour trips and 160 fewer p.m. peak hour trips than the previous year 2040 assumptions. Note that this trip generation comparison was performed only for the BCS development site and does not include the change in trips that are expected from the updated land use assumptions within the TAZ and throughout the South Loop District, which are accounted for in the analysis.

Table 6. Year 2025 Development Trip Generation Comparison

Phase - Land Use Type	Size	Weekday A.M. Peak Hour Trips		Weekday P.M. Peak Hour Trips	
		In	Out	In	Out
***South Loop* Development Assumptions**					
No Development Assumptions	--	--	--	--	--
Current Development Proposal (Phases 1 - 3)					
Mid-Rise Multifamily Housing (710)	925 DU	69	197	186	119
Supermarket (850)	20 KSF	37	24	71	68
Retail (820)	6 KSF	3	2	8	9
2025 Net New System Trips		109	223	265	196
Total Change in Trips from *South Loop Study*		+109	+223	+265	+196

Table 7. Year 2040 Development Trip Generation Comparison

Phase - Land Use Type	Size	Weekday A.M. Peak Hour Trips		Weekday P.M. Peak Hour Trips	
		In	Out	In	Out
***South Loop* Total Development Assumptions**					
Office (710)	635.3 KSF	829	113	153	747
Retail (820)	24.4 KSF	14	8	41	45
Existing to 2040 Net New System Trips		843	121	194	792
Current Development Proposal (All Phases)					
Mid-Rise Multifamily Housing (710)	925 DU	69	197	186	119
Supermarket (850)	20 KSF	37	24	71	68
Retail (820)	10 KSF	5	3	15	17
Office (710)	359.5 KSF	305	50	55	294
Existing to 2040 Net New System Trips		416	274	327	498
Total Change in Trips from *South Loop Study*		(-427)	+153	+133	(-294)

Year 2025 Conditions

To help determine impacts associated with the proposed development, year 2025 build conditions were reviewed.

Year 2025 Build Conditions

To determine how the study intersections will accommodate the year 2025 build traffic forecasts, an intersection capacity analysis was completed using VISSIM software. Results of the intersection capacity analysis shown in Table 8 indicate that all study intersections are expected to operate at an overall LOS D or better during the weekday a.m. and p.m. peak hours, except the American Boulevard/International Drive/33rd Avenue intersection which is expected to operate at an overall LOS F during the p.m. peak hour. Eastbound queues from the American Boulevard/34th Avenue intersection are expected to impact operations at the American Boulevard/International Drive/33rd Avenue intersection.

Table 8. Year 2025 Build Intersection Capacity Analysis

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay
American Boulevard /30th Avenue (1)	A/B	12 sec.	A/B	14 sec.
American Boulevard / Metro Drive / 31st Avenue (1)	A/B	14 sec.	A/D	25 sec.
American Boulevard / International Dr / 33rd Avenue (1)	A/F	52 sec.	F/F	>3 min
American Boulevard / 34th Avenue	C	30 sec.	D	42 sec.
Lindau Lane / 30th Avenue	B	12 sec.	B	12 sec.

(1) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst side-street approach LOS. The delay shown represents the worst side-street approach delay.

The following information summarizes the operational and/or queuing issues that warrant consideration as development occurs.

- **American Boulevard/34th Avenue:**
  - During the p.m. peak hour, the eastbound left-turn movement is overcapacity and is expected to have a 95th percentile queue of approximately 900 feet. Eastbound queues are expected to continuously extend beyond International Drive/33rd Avenue. When this occurs, the International Drive/33rd Avenue side-street movements are unable to go, causing intersection failure.
  - *Recommendation:* Construct the **I-494/34th Avenue Geometric Improvement** project identified in the *South Loop Study* and within the City of Bloomington's *2021-2030 Capital Improvement Plan.*

Year 2025 Build Conditions with Improvements

To illustrate how the recommend improvement at the American Boulevard/34th Avenue intersection is expected to operate under year 2025 build conditions, an additional intersection capacity analysis was conducted. Results of the intersection capacity analysis, shown in Table 9, indicate that with the recommended improvements the American Boulevard/International Dr/33rd Avenue intersection is expected to improve from an overall LOS F to an overall LOS B.

Table 9. Year 2025 Build with Improvements Intersection Capacity Analysis

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay
American Boulevard /30th Avenue (1)	A/B	13 sec.	A/B	14 sec.
American Boulevard / Metro Drive / 31st Avenue (1)	A/C	16 sec.	A/C	22 sec.
American Boulevard / International Dr / 33rd Avenue (1)	A/D	32 sec.	B/F	58 sec.
American Boulevard / 34th Avenue	C	26 sec.	D	38 sec.
Lindau Lane / 30th Avenue	B	11 sec.	B	11 sec.

(1) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst side-street approach LOS. The delay shown represents the worst side-street approach delay.

The following information summarizes the operational and/or queuing issues that warrant consideration as development occurs.

- **American Boulevard/International Drive/33rd Avenue:**
  - The southbound approach is expected to operate at LOS F (58 seconds) during the p.m. peak hour. Southbound 95th percentile left-turn queues are expected to be approximately 150 to 250 feet during peak hours. Left turning vehicles from the side-street are expected to have limited gaps due a combination of mainline volumes and eastbound left-turn queues at the American Boulevard/34th Avenue intersection.
  - While multiple developments contribute to the increase in traffic along American Boulevard, the increase in southbound traffic is primarily attributed to development in the northeast quadrant of the intersection.
  - As mentioned previously, traffic forecasts are based on pre-COVID conditions, and the COVID-19 pandemic may have future traffic impacts to various land use types.
  - *Consideration:* Consider collecting data when traffic volumes normalize and re-evaluating the intersection when development occurs in the northeast quadrant of the intersection. If/when traffic volumes warrant and/or safety issues occur, consider implementing the **American Boulevard at International Drive/Metro Drive Traffic Control Modification** project identified in the *South Loop Study* and within the City of Bloomington's *2021-2030 Capital Improvement Plan.*

Year 2040 Conditions

To help determine impacts associated with the proposed development, year 2040 build conditions were reviewed. It should be noted that the American Boulevard/34th Avenue geometric improvements identified under the 2025 conditions was assumed to be completed and is included in the year 2040 intersection capacity analysis.

The Riverview Corridor project consists of a modern streetcar transit that will run from downtown St. Paul to the Mall of America. The streetcar is expected to run on the existing light rail tracks through the American Boulevard/34th Avenue intersection and into the Mall of America. While the project is anticipated to be open by year 2040, for the purpose of this study it was not evaluated as part of the 2040 conditions. Further detailed traffic impacts associated with the Riverview Corridor will be evaluated as part of the Riverview Corridor project, which is currently underway.

Year 2040 Build Conditions

To determine how the study intersections will accommodate the year 2040 build traffic forecasts, an intersection capacity analysis was completed using VISSIM software. Results of the year 2040 build intersection capacity analysis, shown in Table 10, indicate that several intersections are expected to be overcapacity during the weekday p.m. peak hour.

Table 10. Year 2040 Build Intersection Capacity Analysis

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay
American Boulevard /30th Avenue (1)	A/C	30 sec.	B/F	53 sec.
American Boulevard / Metro Drive / 31st Avenue (1)	A/D	28 sec.	A/D	30 sec.
American Boulevard / International Drive/33rd Avenue (1)	F/F	> 3 min	F/F	>3 min
American Boulevard / 34th Avenue	C	31 sec.	F	~1.5 min
Lindau Lane / 30th Avenue	B	13 sec.	B	13 sec.

(1) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst side-street approach LOS. The delay shown represents the worst side-street approach delay.

The following information summarizes the operational and/or queuing issues that warrant consideration as development occurs.

- **American Boulevard/30th Avenue:**
    - The northbound approach operates at LOE F (53 seconds) and the northbound left-turn movement has a delay of approximately one and half minutes during the p.m. peak hour. Northbound queues are expected to be approximately 250 feet during the p.m. peak hour.
    - *Recommendation:* Construct the **American Boulevard/30th Avenue Signalization** project identified in the *South Loop Study* and within the City of Bloomington's *2021-2030 Capital Improvement Plan.*

- **American Boulevard/International Drive/33rd Avenue:**
  - The southbound approach of the American Boulevard/International Drive/33rd Avenue intersection are expected to have delays of greater than three (3) minutes, along with queues of over 1,000 feet.
  - *Recommendation:* Construct the **American Boulevard at International Drive/Metro Drive Traffic Control Modification** project identified in the *South Loop Study* and the City of Bloomington's *2021-2030 Capital Improvement Plan.*

- **American Boulevard/34th Avenue:**
  - Intersection is expected to operate at a LOS F (90 seconds) with westbound queues of 1,000 feet or greater.
  - Note that this intersection will be evaluated further as part of the Riverview Corridor project.
  - *Consideration:* In order to provide LOS E or better conditions during the peak hours, improvements such as triple eastbound left-turn lanes, four northbound through lanes, dual westbound left-turn lanes, and dual westbound right-turn lanes with a southbound left-turn signal overlap phase are required. It should be noted that this issue is consistent with the *South Loop Study.*

Year 2040 Build Conditions with Improvements

To illustrate how the recommend improvements are expected to operate under year 2040 build conditions, an additional intersection capacity analysis was conducted. Results of the intersection capacity analysis, shown in Table 11, indicate that with the recommended improvements, all study intersections are expected to operate at LOS D or better during the a.m. and p.m. peak hours.

Table 11. Year 2040 Build with Improvements Intersection Capacity Analysis

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay
American Boulevard /30th Avenue (1)	A	9 sec.	B	12 sec.
American Boulevard / Metro Drive / 31st Avenue (2)	A	8 sec.	C	20 sec.
American Boulevard / International Drive/33rd Avenue (1)	A/A	8 sec.	A/B	14 sec.
American Boulevard / 34th Avenue	D	36 sec.	D	54 sec.
Lindau Lane / 30th Avenue	B	13 sec.	B	13 sec.

(1) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst side-street approach LOS. The delay shown represents the worst side-street approach delay

(2) Indicates roundabout control.

Internal Intersection Operations

In addition to the external study intersections, the internal access operations were reviewed using a combination of Synchro/SimTraffic software, HCS 7 software, and engineering judgement. The evaluation was focused on the future build conditions with improvements. The internal traffic volumes for 2025 and 2040 conditions are shown in the Appendix. Results of the internal intersection evaluation, which is summarized in Table 12, indicates that all internal intersections are expected to operate acceptably under future conditions. Under year 2040 conditions, northbound queues at the American Boulevard and 30th Avenue/31st Avenue intersections are expected to extend into the proposed access locations during the p.m. peak hour. This is discussed further in the site plan/access review section.

Table 12. Internal Access Intersection Capacity Analysis Summary

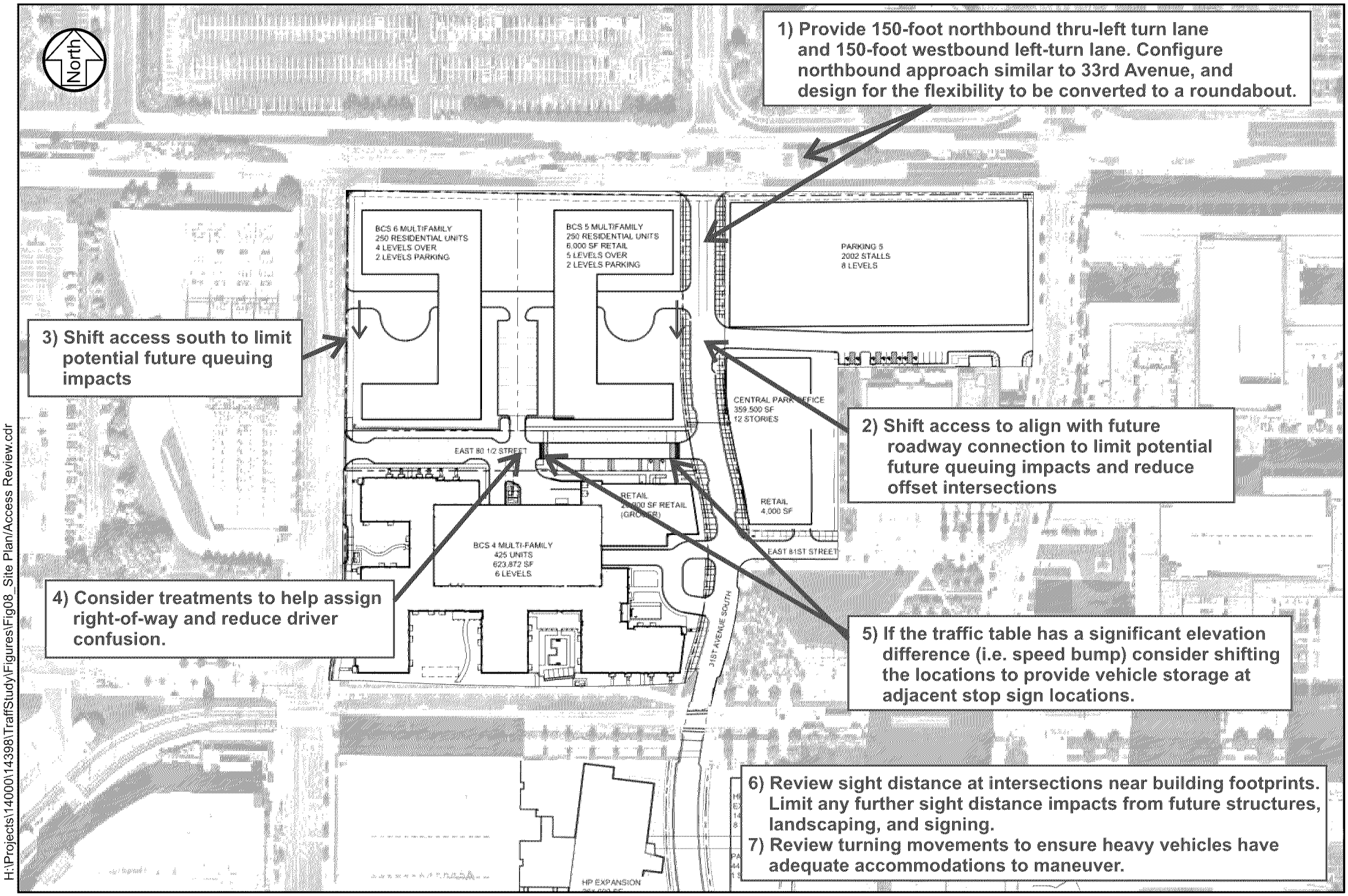
Intersection	Condition			
	2025 Build with Improvements		2040 Build with Improvements	
	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak
30th Avenue S / Phase 3 Access (1)	A/A	A/A	A/A	A/B
30th Avenue S / E 80 ½ Street (1)	A/A	A/A	A/A	A/A
31st Avenue S / Phase 2/Phase 4 Access (1)	A/A	A/A	A/A	A/C
31st Avenue S / E 80 ½ Street (1)	A/A	A/A	A/A	A/A
31st Avenue S / E 81st Street (1)	A/A	A/A	A/A	A/A
E 80 ½ Street / Internal Intersection (1)	A/A	A/A	A/A	A/A

(1) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst side-street approach LOS. The delay shown represents the worst side-street approach delay.

Site Plan/Access Review

A review of the proposed site plan was completed to identify any issues and recommend potential improvements with regard to sight distance, access, circulation, and any other related internal or site-specific issues. Based on this review, the following issues and mitigation were identified that should be discussed further. A summary of the site plan improvement considerations are shown in Figure 8.

1) Provide an approximately 150-foot northbound thru-left turn lane and a 150-foot westbound left-turn lane at the American Boulevard/31st Avenue/Metro Drive intersection. Configure the northbound approach similar to 33rd Avenue, but also design for the flexibility for a roundabout conversion. Note that year 2025 maximum queues are not expected to be 150 feet, however, providing additional storage provides future flexibility if improvement projects are delayed.
2) Shift access south to align with the future roadway connection to limit potential future queueing impacts from American Boulevard and to reduce offset intersections.
3) Shift access south to limit potential future queueing impacts from American Boulevard.



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SRF

Site Plan/Access Review

BCS Mixed Use Development Traffic Study
City of Bloomington

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March 2021

Figure 8

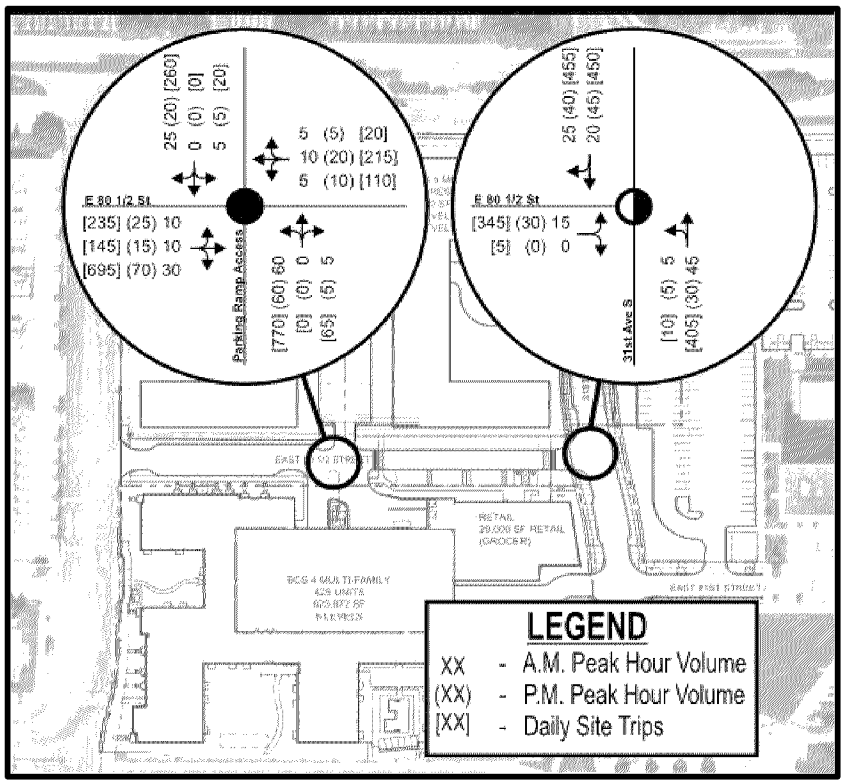
4) Consider treatments at the unique intersection configuration to help assign right-of-way and reduce driver confusion.

5) If the traffic table has a significant elevation difference (i.e., similar to a speed bump) consider shifting the traffic table location to provide vehicle storage at the adjacent stop sign locations. If the traffic table elevation difference is gradual/minor, no changes are likely necessary. Note that the stop signs will provide traffic calming, and a gradual/minor difference in elevation will be beneficial from a maintenance perspective.

6) Review sight distance at intersections near building footprints. Limit any further sight distance impacts from future structures, landscaping, and signing.

7) Review turning movements to ensure heavy vehicles have adequate accommodations to maneuver.

In addition, the expected traffic volumes along 80 ½ Street near the traffic table/grocery parking area were reviewed. A summary of the year 2025 peak hour and daily site trips are summarized in the inset. Note that some traffic pattern shifts are expected between year 2025 and year 2040 due to the 31st Avenue connection to East Old Shakopee, however, the magnitude of volumes remains consistent. The traffic table area is expected to have approximately 60 a.m. peak hour, 120 p.m. peak hour, and 1,400 daily trips. A vast majority of these trips are expected to be to/from the grocery store. Given the minimal traffic volumes expected and the traffic table/stop-sign configuration, the traffic table is expected facilitate slow vehicular speeds and promote a pedestrian friendly environment.



Summary and Recommendations

Based on the traffic study for the proposed BCS Mixed Use development in the City of Bloomington discussed above, the following is a summary of the findings and recommendations:

1) All study intersections currently operate at an overall LOS D or better during the weekday a.m. and p.m. peak hours with the existing traffic control, geometric layout, and signal timing.
    a. Eastbound left-turn queues at the American Boulevard/34th Avenue intersection can extend into the American Boulevard/International Drive/33rd Avenue intersection.
2) The BCS mixed-use development is located in the southeast quadrant of the American Blvd/30th Avenue intersection. The development is expected to be constructed in four phases, with the initial three phases assumed to be completed by year 2025. The fully constructed project will consist of 925 residential dwelling units, 20,000-sf grocery store, 10,000-sf retail, and 359,500-sf office.
3) The proposed development is expected to generate approximately 690 a.m. peak hour, 825 p.m. peak hour, and 8,651 daily trips once fully constructed.
    a. The trip generation estimates for BCS Development are less than what was assumed in the *South Loop Study*, which is due to more refined land use assumptions (i.e. less office space).
4) Results of the year 2025 build condition intersection capacity analysis indicate that operational issues identified under the existing conditions are expected to degrade as area development occurs.
    a. The eastbound left-turn movement at the American Boulevard/34th Avenue intersection is expected to be overcapacity and cause intersection failure at the American Boulevard/International/33rd Avenue intersection.
    b. To address the operational issues, construct the **I-494/34th Avenue Geometric Improvement** project identified in the *South Loop Study* and within the City of Bloomington's *2021-2030 Capital Improvement Plan.*
    c. Operations at the study intersections are improved with the improvement project, however, the American Boulevard/International Drive/33rd Avenue intersection southbound approach operates at a LOS F during the p.m. peak hour. Consider monitoring the intersection and implementing the **American Boulevard at International Drive/Metro Drive Traffic Control Modification** project if/when traffic volumes and/or safety issues occur. Note this improvement project was identified in the *South Loop Study* and is within the City of Bloomington's *2021-2030 Capital Improvement Plan.*

5) Results of the year 2040 build conditions intersection capacity analysis indicate that several study intersections are expected to be overcapacity during the weekday p.m. peak hour. To address the future capacity issues identified, the following improvements are offered:

    a. Construct the **American Boulevard/30th Avenue Signalization** project.

    b. Construct the **American Boulevard at International Drive/Metro Drive Traffic Control Modification** project.

    c. Consider providing additional capacity to the American Boulevard/34th Avenue intersection. This improvement, which is consistent with the *South Loop Study*, includes triple eastbound left-turn lanes, four northbound through lanes, dual westbound right-turn lanes. Note this intersection will be further evaluated as part of the Riverview Corridor project.

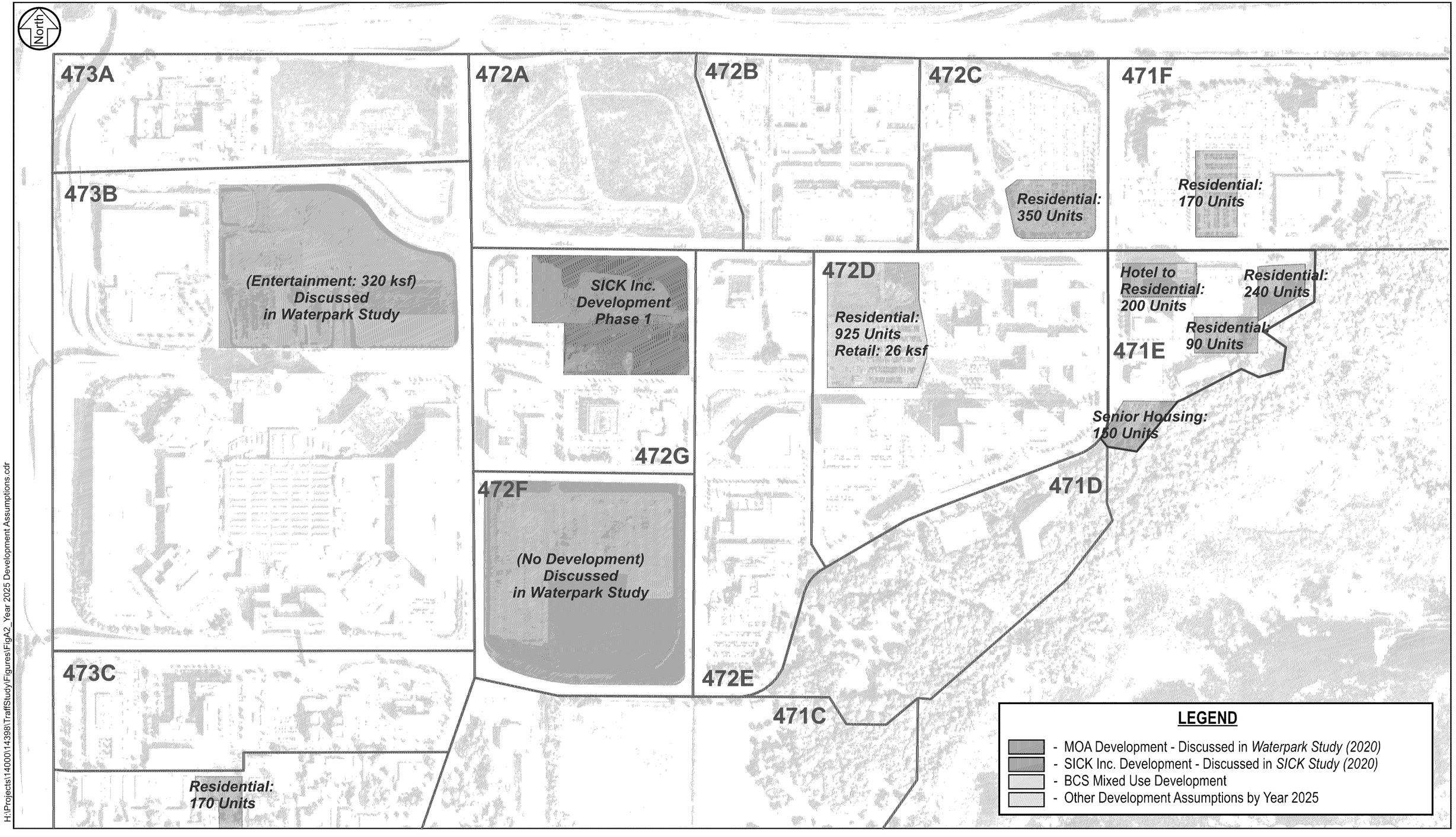
6) All internal development site access locations are expected to operate acceptably during both 2025 and 2040 build conditions with improvements.

7) A review of the proposed site plan/access was completed to identify any issues and recommend potential improvements with regard to sight distance, access, circulation, and any other internal or site-specific issues. The following improvements are offered for consideration and are found in the site plan/access review section.

8) Given the minimal traffic volumes expected and the traffic table/stop-sign configuration, the traffic table/grocery store parking area is expected to facilitate slow vehicular speeds and promote a pedestrian friendly environment.

Appendices

- Future Land Use Assumption
- VISSIM Results
- Internal Traffic Volumes



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SRF Consulting Group, Inc.

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January 2021

Year 2025 Development Assumptions

Bloomington Central Station Mixed Use Development Traffic Study
City of Bloomington

Figure A1

North

473A

Hotel: 325 Rooms
Retail: 130 ksf

473B

Hotel: 300 Rooms
Retail: 170 ksf

Discussed
in Waterpark Study

(Entertainment: 200 ksf
Hotel:1,300 Rooms
Office: 300 ksf)

473C

472A

472B

472C

Hotel: 700 Rooms
Retail: 30 ksf
Residential: 150 Units

471F

Hotel: 250 Rooms
Residential: 250 Units

SICK Inc.
Development
Phases 2-4

472G

472F

Discussed
in Waterpark Study

Hotel: 1,000 Rooms
Hotel Banquet: 100 ksf
Entertainment
Theater: 3,000 Seats

472D

Office: 359.5 ksf
Retail: 4 ksf

Office:
145 ksf

Office:
486 ksf

471E

471D

Office:
250 ksf

472E

471C

Industrial/Office:
200 ksf

LEGEND

- MOA Development - Discussed in *Waterpark Study (2020)*
- SICK Inc. Development - Discussed in *SICK Study (2020)*
- BCS Mixed Use Development
- Other Development Assumptions by Year 2040

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January 2021

Year 2025 to Year 2040 Development Assumptions

Bloomington Central Station Mixed Use Development Traffic Study
City of Bloomington

Figure A2

2020 VISSIM Model: Existing
South Loop Traffic Study
Arterial MOEs (AM Peak Hour)

American Blvd & 30th Ave (Unsignalized)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	630	Unsignalized	Left	9	1	38	16.6	C	10.7	B	1.5	A
	630	Unsignalized	Right	16	0	42	7.3	A				
Eastbound	630	Unsignalized	Thru	217	0	0	0.2	A	0.5	A		
	630	Unsignalized	Right	115	0	2	1.0	A				
Westbound	630	Unsignalized	Left	167	1	63	3.4	A	1.7	A		
	630	Unsignalized	Thru	212	0	0	0.4	A				

Lindau Ln & 30th Ave (Signal)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	640	Signal	Left	7	0	12	17.9	B	12.2	B	9.8	A
	640	Signal	Thru	16	1	36	9.7	A				
Southbound	640	Signal	Thru	194	8	92	10.0	B	9.2	A		
	640	Signal	Right	28	0	47	3.8	A				
Eastbound	640	Signal	Left	24	1	44	12.9	B	10.9	B		
	640	Signal	Right	45	2	51	9.9	A				

American Blvd & Metro Drive E (Unsignalized)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	730	Unsignalized	Left	7	1	38	16.7	C	11.6	B	1.1	A
	730	Unsignalized	Right	6	0	45	5.7	A				
Eastbound	730	Unsignalized	Left	66	1	42	3.9	A	1.6	A		
	730	Unsignalized	Thru	165	0	0	0.6	A				
Westbound	730	Unsignalized	Thru	438	0	0	0.4	A	0.6	A		
	730	Unsignalized	Right	80	0	15	1.2	A				

American Blvd & International Dr/33rd Ave (Unsignalized)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	830	Unsignalized	Left	70	6	74	14.2	B	9.3	A	3.5	A
	830	Unsignalized	Thru	3	4	71	20.3	C				
	830	Unsignalized	Right	169	8	98	7.1	A				
Southbound	830	Unsignalized	Left	34	4	49	23.2	C	14.6	B		
	830	Unsignalized	Thru	0	-	-	-	A				
	830	Unsignalized	Right	21	0	3	0.8	A				
Eastbound	830	Unsignalized	Left	25	1	26	5.3	A	1.3	A		
	830	Unsignalized	Thru	128	0	8	0.6	A				
	830	Unsignalized	Right	20	0	8	0.7	A				
Westbound	830	Unsignalized	Left	72	0	28	4.7	A	1.0	A		
	830	Unsignalized	Thru	428	0	1	0.4	A				
	830	Unsignalized	Right	171	0	0	1.2	A				

34th Ave & American Blvd (Signal)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	930	Signal	Left	7	1	21	35.5	D	40.5	D	30.4	C
	930	Signal	Thru	173	38	228	47.0	D				
	930	Signal	Right	42	0	5	14.6	B				
Southbound	930	Signal	Left	313	63	281	57.5	E	28.8	C		
	930	Signal	Thru	422	65	**328**	43.2	D				
	930	Signal	Right	648	2	120	5.6	A				
Eastbound	930	Signal	Left	287	64	295	37.7	D	35.5	D		
	930	Signal	Thru	33	4	36	26.9	C				
	930	Signal	Right	10	0	1	0.6	A				
Westbound	930	Signal	Left	6	2	26	74.5	E	13.7	B		
	930	Signal	Thru	16	4	32	54.4	D				
	930	Signal	Right	78	0	9	0.7	A				

Note: Results are the average of ten (10) simulation runs

2020 VISSIM Model: Existing
South Loop Traffic Study
Arterial MOEs (PM Peak Hour)

American Blvd & 30th Ave (Unsignalized)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	630	Unsignalized	Left	96	7	78	18.8	C	13.9	B	4.4	A
	630	Unsignalized	Right	126	1	63	10.2	B				
Eastbound	630	Unsignalized	Thru	261	0	3	0.2	A	0.2	A		
	630	Unsignalized	Right	5	0	0	0.6	A				
Westbound	630	Unsignalized	Left	24	0	18	6.4	A	2.0	A		
	630	Unsignalized	Thru	404	0	0	1.7	A				

Lindau Ln & 30th Ave (Signal)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	640	Signal	Left	105	0	33	8.8	A	8.0	A	8.8	A
	640	Signal	Thru	112	6	68	7.2	A				
Southbound	640	Signal	Thru	19	1	23	13.9	B	9.8	A		
	640	Signal	Right	35	1	51	7.6	A				
Eastbound	640	Signal	Left	9	1	42	22.1	C	17.7	B		
	640	Signal	Right	4	0	13	7.7	A				

American Blvd & Metro Drive E/31st Ave (Unsignalized)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Southbound	730	Unsignalized	Left	89	11	101	16.1	C	12.9	B	3.1	A
	730	Unsignalized	Right	75	12	107	9.1	A				
Eastbound	730	Unsignalized	Left	12	0	12	2.4	A	1.0	A		
	730	Unsignalized	Thru	400	0	0	0.9	A				
Westbound	730	Unsignalized	Thru	277	0	0	0.6	A	0.6	A		
	730	Unsignalized	Right	18	0	0	0.8	A				

American Blvd & International Dr/33rd Ave (Unsignalized)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	830	Unsignalized	Left	39	6	55	29.1	D	12.1	B	7.1	A
	830	Unsignalized	Thru	0	-	-	-	A				
	830	Unsignalized	Right	135	6	93	7.3	A				
Southbound	830	Unsignalized	Left	101	13	101	32.5	D	18.5	C		
	830	Unsignalized	Thru	0	-	-	-	A				
	830	Unsignalized	Right	80	0	8	0.8	A				
Eastbound	830	Unsignalized	Left	11	0	11	2.5	A	3.6	A		
	830	Unsignalized	Thru	423	3	71	3.9	A				
	830	Unsignalized	Right	53	3	70	1.7	A				
Westbound	830	Unsignalized	Left	89	4	64	10.8	B	3.3	A		
	830	Unsignalized	Thru	174	0	0	0.4	A				
	830	Unsignalized	Right	62	0	0	0.8	A				

34th Ave & American Blvd (Signal)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	930	Signal	Left	5	1	20	51.7	D	75.5	E	43.4	D
	930	Signal	Thru	399	156	**476**	77.0	E				
	930	Signal	Right	21	0	0	52.6	D				
Southbound	930	Signal	Left	120	42	152	88.7	F	47.8	D		
	930	Signal	Thru	285	70	279	72.5	E				
	930	Signal	Right	272	0	25	3.9	A				
Eastbound	930	Signal	Left	604	170	**536**	38.5	D	37.0	D		
	930	Signal	Thru	41	4	39	24.9	C				
	930	Signal	Right	11	0	1	0.5	A				
Westbound	930	Signal	Left	38	22	94	93.7	F	15.3	B		
	930	Signal	Thru	47	13	60	56.2	E				
	930	Signal	Right	353	0	35	1.4	A				

Note: Results are the average of ten (10) simulation runs

2025 VISSIM Model
South Loop Traffic Study
Arterial MOEs (AM Peak Hour)

American Blvd & 30th Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	630	Left	NBL	27	3	51	18.7	C	12.1	B	1.5	A
	630	Right	NBR	34	1	48	6.9	A				
Eastbound	630	Thru	EBT	256	0	1	0.2	A	0.4	A		
	630	Right	EBR	98	0	0	1.0	A				
Westbound	630	Left	WBL	170	1	55	2.7	A	1.2	A		
	630	Thru	WBT	315	0	0	0.4	A				

Lindau Ln & 30th Ave (Signal)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	640	Left	NBL	8	0	13	15.2	B	10.8	B	11.6	B
	640	Thru	NBT	24	2	41	9.3	A				
Southbound	640	Thru	SBT	258	12	111	14.3	B	12.0	B		
	640	Right	SBR	97	2	56	5.9	A				
Eastbound	640	Left	EBL	58	3	58	12.2	B	10.8	B		
	640	Right	EBR	66	2	52	9.5	A				

American Blvd & Metro Drive E/31st Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	730	Left	NBL	28	2	50	17.8	C	11.1	B	2.0	A
	730	Thru	NBT	0	-	-	-	A				
	730	Right	NBR	52	2	61	7.5	A				
Southbound	730	Left	SBL	7	1	31	21.2	C	14.4	B		
	730	Thru	SBT	0	-	-	-	A				
	730	Right	SBR	6	1	43	6.4	A				
Eastbound	730	Left	EBL	69	1	41	4.6	A	1.4	A		
	730	Thru	EBT	201	0	0	0.4	A				
	730	Right	EBR	20	0	0	1.0	A				
Westbound	730	Left	WBL	31	0	19	2.4	A	0.8	A		
	730	Thru	WBT	532	0	0	0.6	A				
	730	Right	WBR	79	0	17	1.2	A				

American Blvd & International Dr/33rd Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	830	Left	NBL	69	7	77	19.1	C	12.1	B	9.9	A
	830	Thru	NBT	3	4	74	21.4	C				
	830	Right	NBR	168	8	99	9.1	A				
Southbound	830	Left	SBL	120	63	190	80.1	F	52.3	F		
	830	Thru	SBT	1	92	232	109.3	F				
	830	Right	SBR	66	0	12	0.9	A				
Eastbound	830	Left	EBL	35	1	33	8.7	A	4.0	A		
	830	Thru	EBT	206	1	31	3.6	A				
	830	Right	EBR	19	1	22	0.6	A				
Westbound	830	Left	WBL	71	0	30	3.2	A	0.8	A		
	830	Thru	WBT	506	0	1	0.4	A				
	830	Right	WBR	194	0	0	1.3	A				

34th Ave & American Blvd (Signal)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	930	Left	NBL	11	2	31	50.8	D	32.3	C	29.8	C
	930	Thru	NBT	213	29	150	35.8	D				
	930	Right	NBR	39	0	7	8.4	A				
Southbound	930	Left	SBL	305	66	233	59.1	E	26.3	C		
	930	Thru	SBT	459	54	257	34.7	C				
	930	Right	SBR	733	8	259	7.3	A				
Eastbound	930	Left	EBL	451	149	489	47.6	D	46.1	D		
	930	Thru	EBT	30	5	40	38.4	D				
	930	Right	EBR	10	0	2	0.8	A				
Westbound	930	Left	WBL	50	20	106	66.2	E	18.3	B		
	930	Thru	WBT	28	8	44	60.2	E				
	930	Right	WBR	215	1	41	1.7	A				

Note: Results are the average of ten (10) simulation runs

2025 VISSIM Model
South Loop Traffic Study
Arterial MOEs (PM Peak Hour)

American Blvd & 30th Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	630	Left	NBL	113	12	94	20.9	C	13.7	B	3.8	A
	630	Right	NBR	149	5	91	8.3	A				
Eastbound	630	Thru	EBT	383	0	15	0.4	A	0.4	A		
	630	Right	EBR	28	0	3	0.8	A				
Westbound	630	Left	WBL	39	0	23	3.6	A	1.6	A		
	630	Thru	WBT	496	0	0	1.5	A				

Lindau Ln & 30th Ave (Signal)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	640	Left	NBL	136	1	66	12.4	B	11.0	B	11.7	B
	640	Thru	NBT	248	15	105	10.2	B				
Southbound	640	Thru	SBT	47	3	35	16.8	B	11.4	B		
	640	Right	SBR	70	1	51	7.8	A				
Eastbound	640	Left	EBL	94	7	79	15.3	B	14.8	B		
	640	Right	EBR	6	0	17	8.1	A				

American Blvd & Metro Drive E/31st Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	730	Left	NBL	23	3	42	22.8	C	13.9	B	5.7	A
	730	Thru	NBT	0	-	-	-	A				
	730	Right	NBR	50	2	60	9.8	A				
Southbound	730	Left	SBL	90	22	123	31.1	D	25.2	D		
	730	Thru	SBT	0	-	-	-	A				
	730	Right	SBR	75	26	133	18.0	C				
Eastbound	730	Left	EBL	12	0	12	2.9	A	1.7	A		
	730	Thru	EBT	468	0	0	1.8	A				
	730	Right	EBR	48	0	0	1.1	A				
Westbound	730	Left	WBL	65	2	43	6.9	A	1.6	A		
	730	Thru	WBT	334	0	0	0.6	A				
	730	Right	WBR	17	0	1	0.8	A				

American Blvd & International Dr/33rd Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	830	Left	NBL	38	20	83	78.8	F	42.3	E	57.9	F
	830	Thru	NBT	0	-	-	-	A				
	830	Right	NBR	134	24	132	32.0	D				
Southbound	830	Left	SBL	109	**396**	**552**	452.2	F	258.6	F		
	830	Thru	SBT	0	-	-	-	A				
	830	Right	SBR	99	21	47	45.4	E				
Eastbound	830	Left	EBL	55	1	34	7.7	A	39.2	E		
	830	Thru	EBT	492	97	**360**	45.7	E				
	830	Right	EBR	55	84	**335**	13.0	B				
Westbound	830	Left	WBL	85	12	81	26.1	D	4.8	A		
	830	Thru	WBT	280	0	3	0.4	A				
	830	Right	WBR	159	0	0	1.2	A				

34th Ave & American Blvd (Signal)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	930	Left	NBL	8	2	25	50.7	D	53.6	D	41.5	D
	930	Thru	NBT	489	125	**381**	56.4	E				
	930	Right	NBR	86	2	35	38.4	D				
Southbound	930	Left	SBL	323	89	247	78.6	E	40.6	D		
	930	Thru	SBT	326	61	238	52.9	D				
	930	Right	SBR	455	1	98	4.9	A				
Eastbound	930	Left	EBL	655	**300**	**560**	54.1	D	52.0	D		
	930	Thru	EBT	55	9	48	38.2	D				
	930	Right	EBR	12	0	7	1.2	A				
Westbound	930	Left	WBL	86	43	165	82.5	F	20.1	C		
	930	Thru	WBT	62	19	70	74.4	E				
	930	Right	WBR	496	2	92	2.5	A				

Note: Results are the average of ten (10) simulation runs

2025 VISSIM Model
South Loop Traffic Study
Arterial MOEs (AM Peak Hour with Improvements)

American Blvd & 30th Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	630	Left	NBL	27	3	45	19.7	C	12.6	B	1.7	A
	630	Right	NBR	33	1	48	6.7	A				
Eastbound	630	Thru	EBT	256	0	0	0.3	A	0.5	A		
	630	Right	EBR	99	0	3	1.0	A				
Westbound	630	Left	WBL	172	1	58	3.0	A	1.3	A		
	630	Thru	WBT	313	0	0	0.4	A				

Lindau Ln & 30th Ave (Signal)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	640	Left	NBL	8	0	18	16.7	B	11.2	B	11.4	B
	640	Thru	NBT	25	2	40	9.4	A				
Southbound	640	Thru	SBT	257	12	109	14.1	B	11.9	B		
	640	Right	SBR	97	2	60	6.0	A				
Eastbound	640	Left	EBL	59	3	56	11.0	B	9.9	A		
	640	Right	EBR	66	2	54	8.8	A				

American Blvd & Metro Drive E/31st Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	730	Left	NBL	27	2	50	19.6	C	11.7	B	2.1	A
	730	Thru	NBT	0	-	-	-	A				
	730	Right	NBR	52	2	61	7.5	A				
Southbound	730	Left	SBL	7	1	31	24.2	C	16.0	C		
	730	Thru	SBT	0	-	-	-	A				
	730	Right	SBR	6	1	43	6.4	A				
Eastbound	730	Left	EBL	69	1	43	4.8	A	1.5	A		
	730	Thru	EBT	201	0	0	0.4	A				
	730	Right	EBR	20	0	0	1.0	A				
Westbound	730	Left	WBL	32	0	23	2.4	A	0.8	A		
	730	Thru	WBT	532	0	0	0.7	A				
	730	Right	WBR	80	0	18	1.5	A				

American Blvd & International Dr/33rd Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	830	Left	NBL	70	8	77	22.4	C	11.4	B	6.7	A
	830	Thru	NBT	3	4	75	21.5	C				
	830	Right	NBR	169	8	98	6.6	A				
Southbound	830	Left	SBL	121	38	150	48.3	E	32.1	D		
	830	Thru	SBT	1	53	179	74.4	F				
	830	Right	SBR	66	0	34	1.8	A				
Eastbound	830	Left	EBL	36	1	34	7.0	A	1.6	A		
	830	Thru	EBT	204	0	5	0.7	A				
	830	Right	EBR	20	0	1	0.6	A				
Westbound	830	Left	WBL	71	0	33	2.5	A	0.8	A		
	830	Thru	WBT	507	0	0	0.4	A				
	830	Right	WBR	194	0	0	1.3	A				

34th Ave & American Blvd (Signal)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	930	Left	NBL	11	2	29	39.7	D	24.2	C	25.5	C
	930	Thru	NBT	213	21	129	27.3	C				
	930	Right	NBR	39	0	8	3.4	A				
Southbound	930	Left	SBL	308	51	195	45.8	D	20.8	C		
	930	Thru	SBT	461	38	219	25.5	C				
	930	Right	SBR	732	9	266	7.4	A				
Eastbound	930	Left	EBL	450	69	254	45.6	D	44.2	D		
	930	Thru	EBT	30	69	254	40.3	D				
	930	Right	EBR	12	0	4	0.7	A				
Westbound	930	Left	WBL	51	16	90	55.1	E	19.2	B		
	930	Thru	WBT	30	8	62	51.9	D				
	930	Right	WBR	215	4	89	6.1	A				

Note: Results are the average of ten (10) simulation runs

2025 VISSIM Model
South Loop Traffic Study
Arterial MOEs (PM Peak Hour With Improvements)

American Blvd & 30th Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	630	Left	NBL	113	12	95	21.8	C	14.1	B	3.9	A
	630	Right	NBR	149	5	86	8.2	A				
Eastbound	630	Thru	EBT	385	0	12	0.4	A	0.4	A		
	630	Right	EBR	28	0	3	0.8	A				
Westbound	630	Left	WBL	39	0	27	4.4	A	1.6	A		
	630	Thru	WBT	498	0	0	1.4	A				

Lindau Ln & 30th Ave (Signal)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	640	Left	NBL	136	1	65	12.7	B	11.1	B	11.7	B
	640	Thru	NBT	249	15	104	10.2	B				
Southbound	640	Thru	SBT	47	3	42	18.2	B	12.2	B		
	640	Right	SBR	69	1	52	8.1	A				
Eastbound	640	Left	EBL	95	6	82	14.0	B	13.6	B		
	640	Right	EBR	6	0	15	7.1	A				

American Blvd & Metro Drive E/31st Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	730	Left	NBL	23	2	43	22.7	C	12.7	B	4.7	A
	730	Thru	NBT	0	-	-	-	A				
	730	Right	NBR	51	2	59	8.1	A				
Southbound	730	Left	SBL	90	20	121	28.7	D	22.7	C		
	730	Thru	SBT	0	-	-	-	A				
	730	Right	SBR	74	24	133	15.4	C				
Eastbound	730	Left	EBL	12	0	13	2.6	A	0.6	A		
	730	Thru	EBT	468	0	0	0.5	A				
	730	Right	EBR	49	0	0	1.2	A				
Westbound	730	Left	WBL	66	1	44	5.2	A	1.3	A		
	730	Thru	WBT	337	0	0	0.6	A				
	730	Right	WBR	18	0	0	1.2	A				

American Blvd & International Dr/33rd Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	830	Left	NBL	38	7	57	34.7	D	12.7	B	12.5	B
	830	Thru	NBT	0	-	-	-	A				
	830	Right	NBR	135	6	93	6.6	A				
Southbound	830	Left	SBL	145	97	246	99.2	F	58.6	F		
	830	Thru	SBT	0	-	-	-	A				
	830	Right	SBR	103	0	25	1.3	A				
Eastbound	830	Left	EBL	55	1	29	3.3	A	2.7	A		
	830	Thru	EBT	495	3	83	2.8	A				
	830	Right	EBR	54	2	61	0.8	A				
Westbound	830	Left	WBL	86	3	60	7.3	A	1.8	A		
	830	Thru	WBT	280	0	0	0.4	A				
	830	Right	WBR	160	0	0	1.3	A				

34th Ave & American Blvd (Signal)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	930	Left	NBL	8	2	24	43.6	D	38.5	D	37.2	D
	930	Thru	NBT	494	90	**344**	40.6	D				
	930	Right	NBR	86	0	13	26.0	C				
Southbound	930	Left	SBL	320	69	232	60.1	E	32.3	C		
	930	Thru	SBT	328	48	217	42.1	D				
	930	Right	SBR	455	1	100	5.6	A				
Eastbound	930	Left	EBL	690	128	**424**	50.8	D	49.0	D		
	930	Thru	EBT	57	128	**425**	39.0	D				
	930	Right	EBR	14	0	7	1.0	A				
Westbound	930	Left	WBL	85	34	146	65.0	E	30.7	C		
	930	Thru	WBT	61	42	299	63.6	E				
	930	Right	WBR	493	57	**346**	20.7	C				

Note: Results are the average of ten (10) simulation runs

2040 VISSIM Model
South Loop Traffic Study
Arterial MOEs (AM Peak Hour)

SRF Consulting Group, Inc.

American Blvd & 30th Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	630	Left	NBL	41	8	70	33.9	D	20.3	C	2.8	A
	630	Right	NBR	41	1	49	6.6	A				
Eastbound	630	Thru	EBT	346	0	3	0.7	A	1.0	A		
	630	Right	EBR	206	0	28	1.6	A				
Westbound	630	Left	WBL	234	4	89	4.6	A	2.0	A		
	630	Thru	WBT	378	0	0	0.3	A				

Lindau Ln & 30th Ave (Signal)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	640	Left	NBL	19	1	30	19.2	B	14.0	B	12.9	B
	640	Thru	NBT	38	4	50	11.4	B				
Southbound	640	Thru	SBT	414	21	151	15.5	B	13.6	B		
	640	Right	SBR	100	2	59	5.7	A				
Eastbound	640	Left	EBL	59	4	65	13.0	B	11.0	B		
	640	Right	EBR	132	5	82	10.1	B				

American Blvd & Metro Drive E/31st Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	730	Left	NBL	38	5	64	30.6	D	15.9	C	2.7	A
	730	Thru	NBT	0	-	-	-	A				
	730	Right	NBR	68	3	65	7.7	A				
Southbound	730	Left	SBL	7	2	31	44.8	E	28.4	D		
	730	Thru	SBT	0	-	-	-	A				
	730	Right	SBR	6	1	44	9.3	A				
Eastbound	730	Left	EBL	61	1	43	6.1	A	1.5	A		
	730	Thru	EBT	240	0	0	0.4	A				
	730	Right	EBR	85	0	0	1.3	A				
Westbound	730	Left	WBL	131	2	55	3.9	A	1.1	A		
	730	Thru	WBT	632	0	0	0.5	A				
	730	Right	WBR	78	0	15	1.3	A				

American Blvd & International Dr/33rd Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	830	Left	NBL	72	26	110	64.1	F	22.7	C	69.9	F
	830	Thru	NBT	2	25	114	68.5	F				
	830	Right	NBR	199	11	111	7.2	A				
Southbound	830	Left	SBL	77	**894**	**1,003**	1,246.6	F	1,019.9	F		
	830	Thru	SBT	1	**623**	**891**	442.8	F				
	830	Right	SBR	44	**433**	**561**	636.3	F				
Eastbound	830	Left	EBL	59	3	55	10.2	B	2.6	A		
	830	Thru	EBT	233	0	8	0.9	A				
	830	Right	EBR	24	0	2	0.6	A				
Westbound	830	Left	WBL	244	3	77	3.8	A	1.3	A		
	830	Thru	WBT	727	0	0	0.4	A				
	830	Right	WBR	220	0	0	1.4	A				

34th Ave & American Blvd (Signal)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	930	Left	NBL	41	12	77	50.5	D	28.7	C	30.8	C
	930	Thru	NBT	257	29	159	30.4	C				
	930	Right	NBR	61	0	11	7.0	A				
Southbound	930	Left	SBL	351	68	239	56.1	E	28.3	C		
	930	Thru	SBT	699	101	**461**	41.2	D				
	930	Right	SBR	1,112	37	**621**	11.4	B				
Eastbound	930	Left	EBL	476	83	278	51.4	D	50.2	D		
	930	Thru	EBT	24	83	278	40.4	D				
	930	Right	EBR	7	0	3	0.8	A				
Westbound	930	Left	WBL	88	29	132	58.0	E	22.1	C		
	930	Thru	WBT	36	12	108	56.5	E				
	930	Right	WBR	312	9	136	8.1	A				

Note: Results are the average of ten (10) simulation runs

2040 VISSIM Model
South Loop Traffic Study
Arterial MOEs (PM Peak Hour)

SRF Consulting Group, Inc.

American Blvd & 30th Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	630	Left	NBL	171	92	245	78.0	F	52.8	F	10.2	B
	630	Right	NBR	95	3	68	7.6	A				
Eastbound	630	Thru	EBT	472	0	11	0.4	A	0.4	A		
	630	Right	EBR	50	0	6	0.9	A				
Westbound	630	Left	WBL	49	0	28	4.7	A	2.0	A		
	630	Thru	WBT	707	0	0	1.8	A				

Lindau Ln & 30th Ave (Signal)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	640	Left	NBL	150	2	85	14.5	B	12.0	B	12.5	B
	640	Thru	NBT	220	14	117	10.4	B				
Southbound	640	Thru	SBT	68	4	46	17.2	B	11.9	B		
	640	Right	SBR	72	1	50	7.0	A				
Eastbound	640	Left	EBL	99	8	92	15.8	B	14.4	B		
	640	Right	EBR	20	1	27	7.4	A				

American Blvd & Metro Drive E/31st Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	730	Left	NBL	91	15	90	32.3	D	20.3	C	7.0	A
	730	Thru	NBT	0	-	-	-	A				
	730	Right	NBR	97	5	72	9.0	A				
Southbound	730	Left	SBL	90	29	136	37.0	E	30.3	D		
	730	Thru	SBT	0	-	-	-	A				
	730	Right	SBR	74	32	146	22.1	C				
Eastbound	730	Left	EBL	11	0	16	4.1	A	0.9	A		
	730	Thru	EBT	497	0	0	0.8	A				
	730	Right	EBR	58	0	0	1.3	A				
Westbound	730	Left	WBL	71	2	49	5.5	A	1.2	A		
	730	Thru	WBT	419	0	0	0.5	A				
	730	Right	WBR	14	0	2	1.0	A				

American Blvd & International Dr/33rd Ave (Unsignalized)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	830	Left	NBL	44	13	69	56.2	F	18.7	C	96.3	F
	830	Thru	NBT	0	-	-	-	A				
	830	Right	NBR	281	26	164	12.9	B				
Southbound	830	Left	SBL	125	**935**	**1,031**	1,039.4	F	875.6	F		
	830	Thru	SBT	0	-	-	-	A				
	830	Right	SBR	65	**446**	**539**	560.5	F				
Eastbound	830	Left	EBL	80	1	44	5.5	A	11.9	B		
	830	Thru	EBT	548	27	225	13.7	B				
	830	Right	EBR	49	22	204	2.6	A				
Westbound	830	Left	WBL	113	5	73	9.5	A	2.1	A		
	830	Thru	WBT	393	0	0	0.4	A				
	830	Right	WBR	192	0	1	1.4	A				

34th Ave & American Blvd (Signal)

Approach	Node	Movement	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	930	Left	NBL	46	24	102	87.3	F	70.1	E	89.3	F
	930	Thru	NBT	919	265	**551**	70.4	E				
	930	Right	NBR	115	3	58	61.2	E				
Southbound	930	Left	SBL	392	144	**451**	95.7	F	52.4	D		
	930	Thru	SBT	478	133	**576**	74.2	E				
	930	Right	SBR	595	3	153	6.4	A				
Eastbound	930	Left	EBL	865	233	**540**	71.3	E	69.4	E		
	930	Thru	EBT	52	234	**540**	51.5	D				
	930	Right	EBR	10	0	6	1.2	A				
Westbound	930	Left	WBL	96	172	**437**	176.1	F	246.5	F		
	930	Thru	WBT	58	**974**	**1,355**	226.7	F				
	930	Right	WBR	438	**987**	**1,369**	264.6	F				

Note: Results are the average of ten (10) simulation runs

2040 VISSIM Model
South Loop Traffic Study
Arterial MOEs (AM Peak Hour with Improvements)

SRF Consulting Group, Inc.

American Blvd & 30th Ave (Signal)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	630	Signal	Left	41	7	60	31.0	C	18.9	B	8.7	A
	630	Signal	Right	40	0	45	6.5	A				
Eastbound	630	Signal	Thru	342	13	162	8.4	A	7.7	A		
	630	Signal	Right	204	5	117	6.5	A				
Westbound	630	Signal	Left	248	27	172	20.2	C	8.2	A		
	630	Signal	Thru	460	2	59	1.8	A				

Lindau Ln & 30th Ave (Signal)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	640	Signal	Left	19	1	31	20.2	C	14.2	B	13.1	B
	640	Signal	Thru	38	3	53	11.2	B				
Southbound	640	Signal	Thru	424	22	158	15.6	B	13.7	B		
	640	Signal	Right	103	2	59	5.9	A				
Eastbound	640	Signal	Left	59	3	63	12.3	B	11.1	B		
	640	Signal	Right	132	6	78	10.6	B				

American Blvd & Metro Drive E (Roundabout)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	730	Roundabout	Left	114	2	75	8.1	A	6.3	A	7.7	A
	730	Roundabout	Thru	0	-	-	-	A				
	730	Roundabout	Right	68	2	74	3.3	A				
Southbound	730	Roundabout	Left	8	1	26	18.7	C	11.2	B		
	730	Roundabout	Thru	0	-	-	-	A				
	730	Roundabout	Right	8	0	26	3.7	A				
Eastbound	730	Roundabout	Left	59	13	135	13.8	B	9.1	A		
	730	Roundabout	Thru	238	13	136	9.2	A				
	730	Roundabout	Right	79	13	136	5.4	A				
Westbound	730	Roundabout	U-turn	248	22	220	10.1	B	6.2	A		
	730	Roundabout	Left	144	22	220	8.7	A				
	730	Roundabout	Thru	606	22	220	6.4	A				
	730	Roundabout	Right	85	22	221	5.2	A				

American Blvd & International Dr (Unsignalized)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	830	Unsignalized	Thru	2	1	28	42.3	E	7.9	A	2.9	A
	830	Unsignalized	Right	198	11	110	7.6	A				
Southbound	830	Unsignalized	Thru	0	-	-	-	A	3.7	A		
	830	Unsignalized	Right	326	3	100	3.7	A				
Eastbound	830	Unsignalized	Left	58	4	51	13.6	B	2.1	A		
	830	Unsignalized	Thru	477	0	0	0.7	A				
	830	Unsignalized	Right	27	0	0	1.0	A				
Westbound	830	Unsignalized	Left	257	8	118	7.3	A	2.2	A		
	830	Unsignalized	Thru	761	0	0	0.8	A				
	830	Unsignalized	Right	230	0	1	1.2	A				

34th Ave & American Blvd (Signal)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	930	Signal	Left	42	15	90	57.6	E	30.6	C	35.3	D
	930	Signal	Thru	259	27	123	32.8	C				
	930	Signal	Right	61	1	30	2.8	A				
Southbound	930	Signal	Left	365	86	**315**	62.3	E	33.3	C		
	930	Signal	Thru	737	127	**576**	44.1	D				
	930	Signal	Right	1,172	61	**739**	17.4	B				
Eastbound	930	Signal	Left	621	86	283	54.3	D	52.7	D		
	930	Signal	Thru	33	86	283	39.4	D				
	930	Signal	Right	11	0	3	0.7	A				
Westbound	930	Signal	Left	86	19	84	49.0	D	31.6	C		
	930	Signal	Thru	37	13	120	55.3	E				
	930	Signal	Right	310	31	171	24.0	C				

Note: Results are the average of ten (10) simulation runs

2040 VISSIM Model
South Loop Traffic Study
Arterial MOEs (PM Peak Hour With Improvements)

SRF Consulting Group, Inc.

American Blvd & 30th Ave (Signal)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	630	Signal	Left	219	31	176	25.0	C	19.4	B	12.4	B
	630	Signal	Right	123	3	74	9.6	A				
Eastbound	630	Signal	Thru	481	23	163	14.3	B	13.8	B		
	630	Signal	Right	51	14	119	9.2	A				
Westbound	630	Signal	Left	44	6	59	28.9	C	8.1	A		
	630	Signal	Thru	705	12	132	6.8	A				

Lindau Ln & 30th Ave (Signal)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	640	Signal	Left	216	3	131	14.6	B	12.5	B	13.0	B
	640	Signal	Thru	313	19	142	11.1	B				
Southbound	640	Signal	Thru	64	5	51	19.4	B	13.4	B		
	640	Signal	Right	70	2	62	7.8	A				
Eastbound	640	Signal	Left	99	8	92	16.2	B	14.9	B		
	640	Signal	Right	19	1	31	7.9	A				

American Blvd & Metro Drive E/31st Ave (Roundabout)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	730	Roundabout	Left	136	38	169	33.4	D	28.5	D	19.8	C
	730	Roundabout	Thru	0	-	-	-	A				
	730	Roundabout	Right	100	40	171	21.8	C				
Southbound	730	Roundabout	Left	89	38	167	46.2	E	38.1	E		
	730	Roundabout	Thru	0	-	-	-	A				
	730	Roundabout	Right	70	34	164	27.8	D				
Eastbound	730	Roundabout	Left	11	65	240	45.7	E	28.1	D		
	730	Roundabout	Thru	523	61	229	28.5	D				
	730	Roundabout	Right	58	63	233	21.4	C				
Westbound	730	Roundabout	U-turn	312	15	177	12.9	B	5.8	A		
	730	Roundabout	Left	95	16	178	9.6	A				
	730	Roundabout	Thru	463	15	178	5.9	A				
	730	Roundabout	Right	15	16	178	4.6	A				

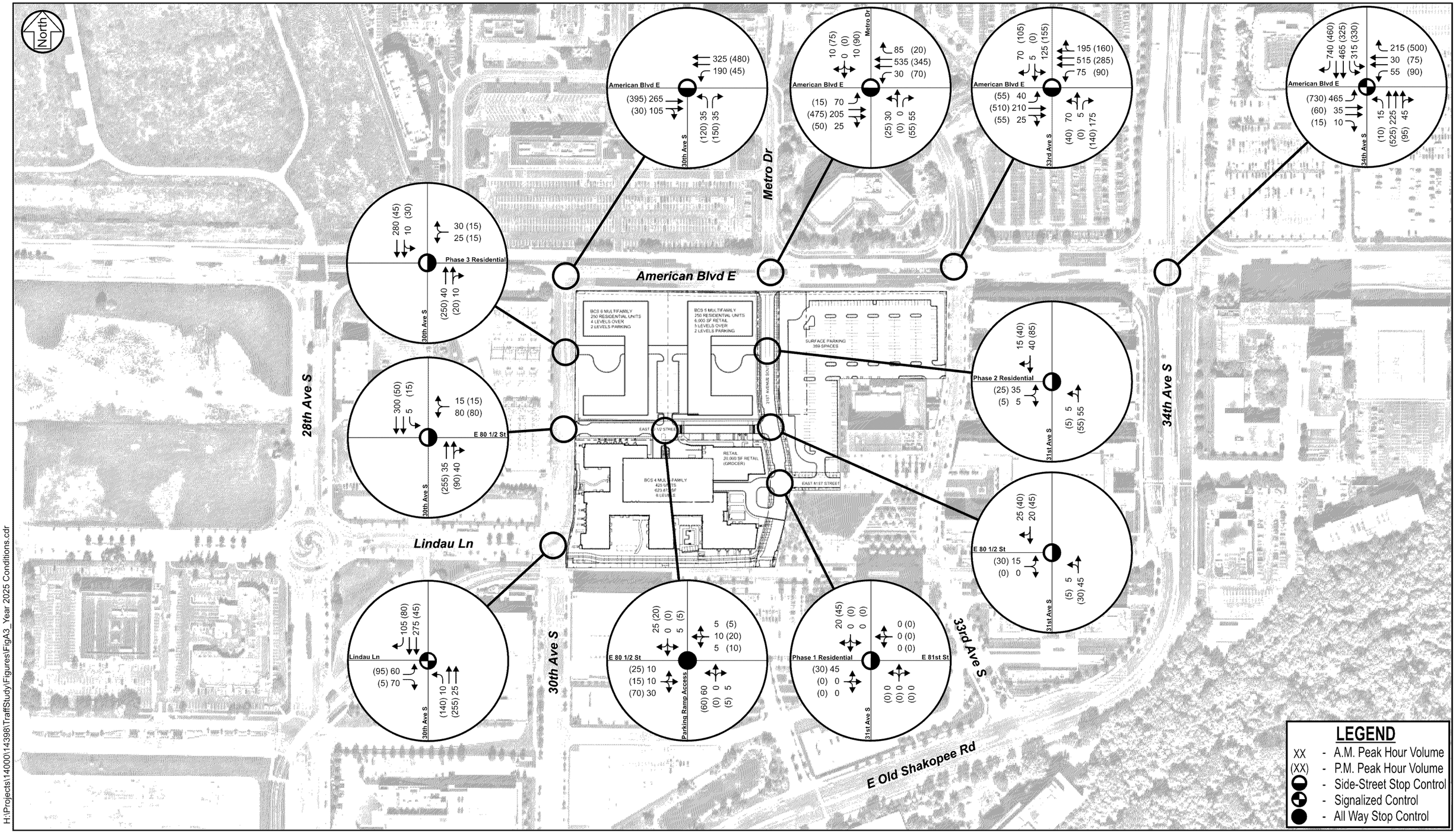
American Blvd & International Dr/33rd Ave (Unsignalized)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	830	Unsignalized	Thru	0	-	-	-	A	14.3	B	8.8	A
	830	Unsignalized	Right	281	26	154	14.3	B				
Southbound	830	Unsignalized	Thru	0	-	-	-	A	3.1	A		
	830	Unsignalized	Right	430	3	102	3.1	A				
Eastbound	830	Unsignalized	Left	83	2	55	9.3	A	10.9	B		
	830	Unsignalized	Thru	882	52	**316**	11.5	B				
	830	Unsignalized	Right	52	52	**316**	2.9	A				
Westbound	830	Unsignalized	Left	125	36	146	38.7	E	7.4	A		
	830	Unsignalized	Thru	452	0	0	1.4	A				
	830	Unsignalized	Right	218	0	1	1.7	A				

34th Ave & American Blvd (Signal)

Approach	Node	Control	Movement	Volume (vph)	Average Queue (ft)	Maximum Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	930	Signal	Left	54	24	117	79.2	E	52.8	D	53.8	D
	930	Signal	Thru	1,027	129	**427**	55.3	E				
	930	Signal	Right	131	2	55	21.7	C				
Southbound	930	Signal	Left	444	142	**450**	86.5	F	48.5	D		
	930	Signal	Thru	526	131	**540**	66.5	E				
	930	Signal	Right	677	9	221	9.6	A				
Eastbound	930	Signal	Left	1,083	218	**492**	73.1	E	71.6	E		
	930	Signal	Thru	61	218	**493**	57.4	E				
	930	Signal	Right	11	3	28	4.5	A				
Westbound	930	Signal	Left	112	34	112	74.6	E	39.5	D		
	930	Signal	Thru	70	42	296	70.6	E				
	930	Signal	Right	572	68	**313**	28.8	C				

Note: Results are the average of ten (10) simulation runs



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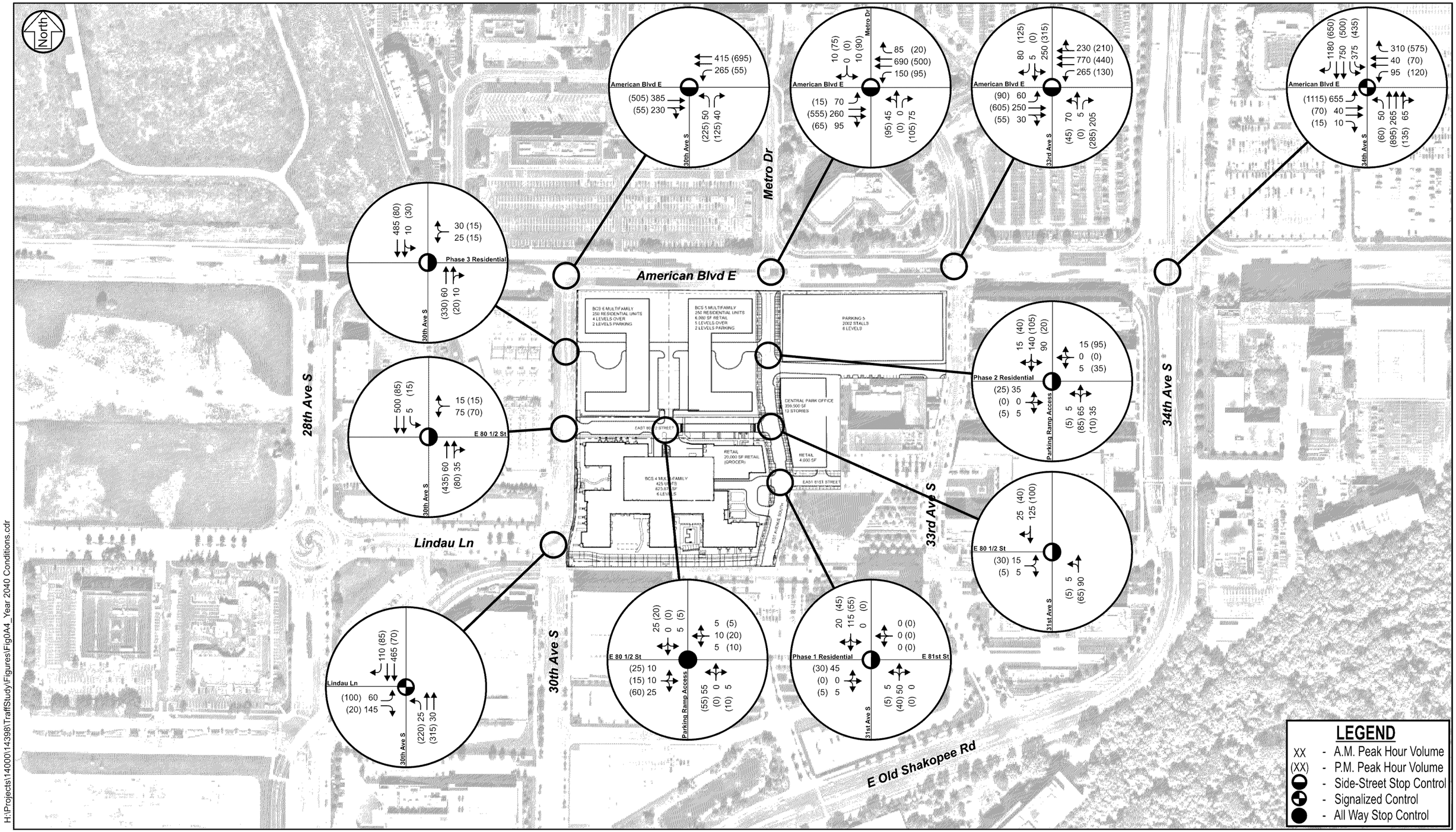
02114398
March 2021

Year 2025 Conditions

BCS Mixed Use Development Traffic Study
City of Bloomington

Figure A3



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Year 2040 Conditions

Central Station Mixed Use Development Traffic Study
City of Bloomington

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February 2021

Figure A4