

## MEMORANDUM

TO: Schane Rudlang, PE, Senior Civil Engineer  
CITY OF BLOOMINGTON

FROM: Marie Cote, PE, Principal  
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DATE: July 29, 2009

SUBJECT: AIRPORT SOUTH DISTRICT PLAN – TRAFFIC ANALYSIS

### INTRODUCTION

The City of Bloomington is currently preparing a District Plan for the Airport South area to guide future land use, transportation, urban design and redevelopment of this major commercial and employment area of the city. As part of this long-term Plan, a supporting transportation system is being developed to reduce automobile trips and promote the use of alternative modes of transportation. The purpose of this memorandum is to document the planning-level traffic analysis completed as part of the Airport South District Plan.

### TRAFFIC ANALYSIS

The first phase of analysis included the evaluation of roadway network options for the District. The main roadway elements involved the rerouting of, or the extension of Lindau Lane from IKEA Way to the east. Other roadway options being reviewed included a connection under I-494 to the Airport and revisiting the one-way along American Boulevard from 30th Avenue to 34th Avenue. For this analysis, it was assumed that American Boulevard is a two-way roadway between 30th Avenue and 34th Avenue and full access ramps to the eastbound I-494 collector-distributor roadway are constructed at Thunderbird Road. All roadway alternatives were analyzed assuming updated land use provided by the City. The new development projections were similar to the *I-494/34th Avenue Study* (dated June 24, 2008), with a reduction in the Mall of America (MOA) Phase II development. The results of the analysis were used by the City to develop the proposed roadway network (draft) shown in Figure 1.

The second phase of analysis included the evaluation of specific roadway segments and intersection areas in the proposed roadway network shown in Figure 1. As shown in Table 1, year 2030 and 2050 land use projections were provided by the City. Land use projections from the *MOA Phase II Traffic Study* (dated September 6, 2006) and the *I-494/34th Avenue Study* are also shown for comparison purposes. The location of each development is shown in the TAZ location map (see Figure 2). Highlighted land uses indicate significant changes from the *MOA Phase II Traffic Study* that are expected to impact operations during the peak hours.

With the updated land use assumptions, daily traffic volumes were developed for year 2030 and 2050 conditions using the Metropolitan Council's Regional Forecast Model. Peak hour volumes were also developed, based on information from the *MOA Phase II Traffic Study* and the *I-494/34th Avenue Study*. For the proposed roadway network, traffic impacts were evaluated at the following locations:

- American Boulevard (30th Avenue to 34th Avenue)
- Lindau Lane extension east of 24th Avenue
- 30th Avenue underpass at I-494
- 30th Avenue (American Boulevard to East Old Shakopee Road)
- 28th Avenue
- 83rd Street extension (24th Avenue to 30th Avenue)
- Realignment of 24th Avenue on the east side of the MOA
- At-grade bus mall on the east side of the MOA

## **FINDINGS AND RECOMMENDATIONS**

In order to determine how well the proposed transportation system will support future traffic conditions within the Airport South area, a planning-level traffic analysis was conducted. Key intersections were analyzed using the Synchro/SimTraffic software. The results of our analysis are summarized below:

- During the first phase of analysis, it was determined that routing Lindau Lane to Thunderbird Road would have a negative impact at the intersection of American Boulevard/24th Avenue. Based on the traffic analysis results, this intersection is expected to operate at unacceptable levels of service during peak periods under year 2030 conditions. Also, routing Lindau Lane to Thunderbird Road would reduce the amount of vehicle expected to utilize the proposed Lindau Lane Extension because of the non-continuous route.
- Based on the analysis, the intersection of 34th Avenue/American Boulevard will operate at unacceptable level of service (LOS) F during the p.m. peak hour under year 2030 conditions. This indicates that American Boulevard between 30th Avenue and 34th Avenue should be converted to a one-way by year 2030. This improvement was identified in the *Bloomington Central Station Traffic Study* (dated October 28, 2004). The timing of this improvement is directly related to the development west of 34th Avenue along American Boulevard.
- An extension of Lindau Lane to 30th Avenue or to 31st Avenue was analyzed. Year 2030 and 2050 daily traffic volume projections for the Lindau Lane extension are shown in Table 1. Between year 2030 and year 2050, the daily volume projections are expected increase by 2,000 vehicles for the segments between 24th Avenue and 30th Avenue. The segment between 30th Avenue and 31st Avenue is not expected to increase in volume between year 2030 and year 2050 since this segment mainly serves the Bloomington Central Station area which will be mostly developed by year 2030.

**Table 1**  
**Daily Traffic Projections (Year 2030 / Year 2050)**

<i>Segment</i>	<i>Extension to 30th Avenue</i>	<i>Extension to 31st Avenue</i>
24th Ave to 28th Ave	10,000 / 12,000	12,000 / 14,000
28th Ave to 30th Ave	8,000 / 10,000	10,000 / 12,000
30th Ave to 31st Ave	N/A / N/A	4,000 / 4,000

A two-lane roadway (one lane in each direction with turn lanes) will be able to accommodate the projected traffic volumes if Lindau Lane is extended to 30th Avenue or 31st Avenue under year 2030 conditions. By year 2050, the segment between 24th Avenue and 28th Avenue will approach the capacity of a two-lane roadway with turn lanes. A four-lane roadway section may be needed by year 2050.

Most of the vehicles expected to use this extension are vehicles that would utilize American Boulevard to travel to/from the west. This extension will have little effect on the amount of vehicles that would utilize American Boulevard at 34th Avenue to travel to/from the east. However, the extension will provide alternative routes which will reduce the amount of vehicles on American Boulevard and 24th Avenue. Construction of this extension could have the potential to delay some improvements in this area.

- The possibility of converting 30th Avenue to a southbound one-way was analyzed. This conversion would reduce the amount of vehicles traveling eastbound on American Boulevard at 34th Avenue slightly, but would not divert enough traffic to avoid converting American Boulevard into a westbound one-way by year 2030.
- Dynamic wayfinding signage can be used to balance peak period traffic flows once more detailed development plans are in place. For this planning level analysis, it is difficult to estimate the potential benefits of dynamic wayfinding signs because the parking locations are not finalized.
- A 30th Avenue underpass of I-494 would carry approximately 4,000 vehicles per day in year 2030. An additional 1,000 vehicles per day can be expected by year 2050.
- 28th Avenue is expected to carry approximately 5,000 - 10,000 vehicles per day in year 2030. A two-lane roadway could accommodate these traffic volumes. However, due to the LRT impact at the intersection of 28th Avenue/82nd Street, it is recommended that 28th Avenue be a four-lane roadway to provide the additional capacity for LRT operations and future growth.
- The optional 83rd Street extension from 28th Avenue to East Old Shakopee Road would carry approximately 4,000 vehicles per day in year 2030. An additional 2,000 vehicles per day can be expected by year 2050. The location of a new intersection at East Old Shakopee Road as shown would be spaced only 300 feet from the existing intersection of 30th Avenue/East Old Shakopee Road. As redevelopment of the PolarFab site occurs, plans to increase the intersection spacing should be considered. An option of relocating the access location of 83rd Street at East Old Shakopee Road was considered. This

option involves a straight east-west connection that ties in with East Old Shakopee Road at 30th Avenue. As shown in Figure 3, this new intersection will consist of East Old Shakopee Road on the south and east approaches, 30th Avenue on the north approach, and 83rd Street on the west approach. The intersection is designed to operate at acceptable levels of service under full build (year 2050) conditions. The Long Meadow Circle access was relocated approximately 150 feet to the south. This concept requires right-of-way. The additional 4th leg reduces the efficiency of the intersection and the new configuration converts significant through movements into right and left-turn movements.

- Based on the current preliminary design of the 24th Avenue/Bus Mall area, the following issues need to be addressed should this concept be considered further:
  - The north access of the Bus Mall at Lindau Lane should only provide access for eastbound to southbound turning vehicles
  - The intersection operations of 82nd Street/Bus Mall needs to be analyzed in more detail to determine traffic impacts to 24th Avenue
  - Adequate bus storage needs to be provided between 82nd Street and 83rd Street to prevent blockage of the 82nd Street/Bus Mall intersection
- Based on the layout, a four-leg intersection will be constructed at 24th Avenue/83rd Street. This intersection was assumed to be a full-access signalized intersection. Based on year 2030 results, this intersection should be able to accommodate the projected traffic volumes without impacting the traffic flow on 24th Avenue. However, there is only 400 feet of storage from the northbound stop bar back to the LRT tracks. Special attention should be given to signal timing and queue detection. Problems may occur once the Adjoining Lands area fully develops by year 2050. A right-in/right-out access into the Adjacent Lands parcel would operate acceptably under year 2030 and year 2050 conditions. As more detailed development plans are available, this intersection should be re-evaluated.
- The possibility of constructing a bus loading area on the existing 24th Avenue alignment was evaluated. A traffic analysis was conducted to determine if any additional capacity is available on 24th Avenue. Based on year 2030 results, 24th Avenue will operate acceptably with a reduction of one southbound through lane between 82nd Street and 83rd Street. Currently, there is an auxiliary lane between 82nd Street and 83rd Street. Based on year 2030 volumes, a fourth through lane between 82nd Street and 83rd Street is not needed. This space could be used to provide a bus loading area on the existing 24th Avenue alignment. All existing northbound through lanes are needed.

cc: Karl Keel, Larry Lee, Shelly Pederson, Jim Gates, Bob Hawbaker, Jill Hutmacher, Bob Sharlin, Julie Farnham, Rebecca Schindler, Tom Bowlin



### Roadway Network

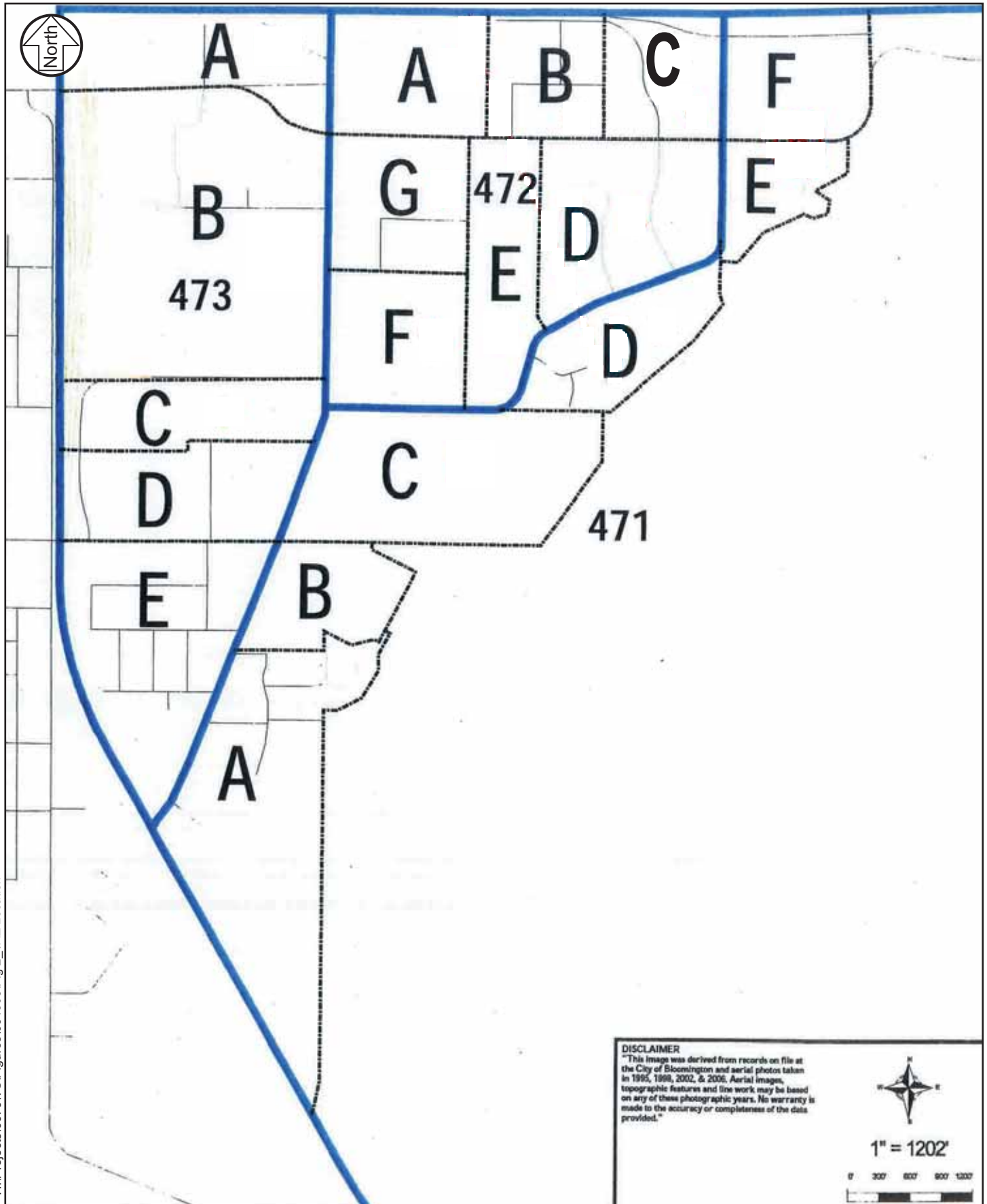
Airport South District Plan Traffic Analysis  
City of Bloomington

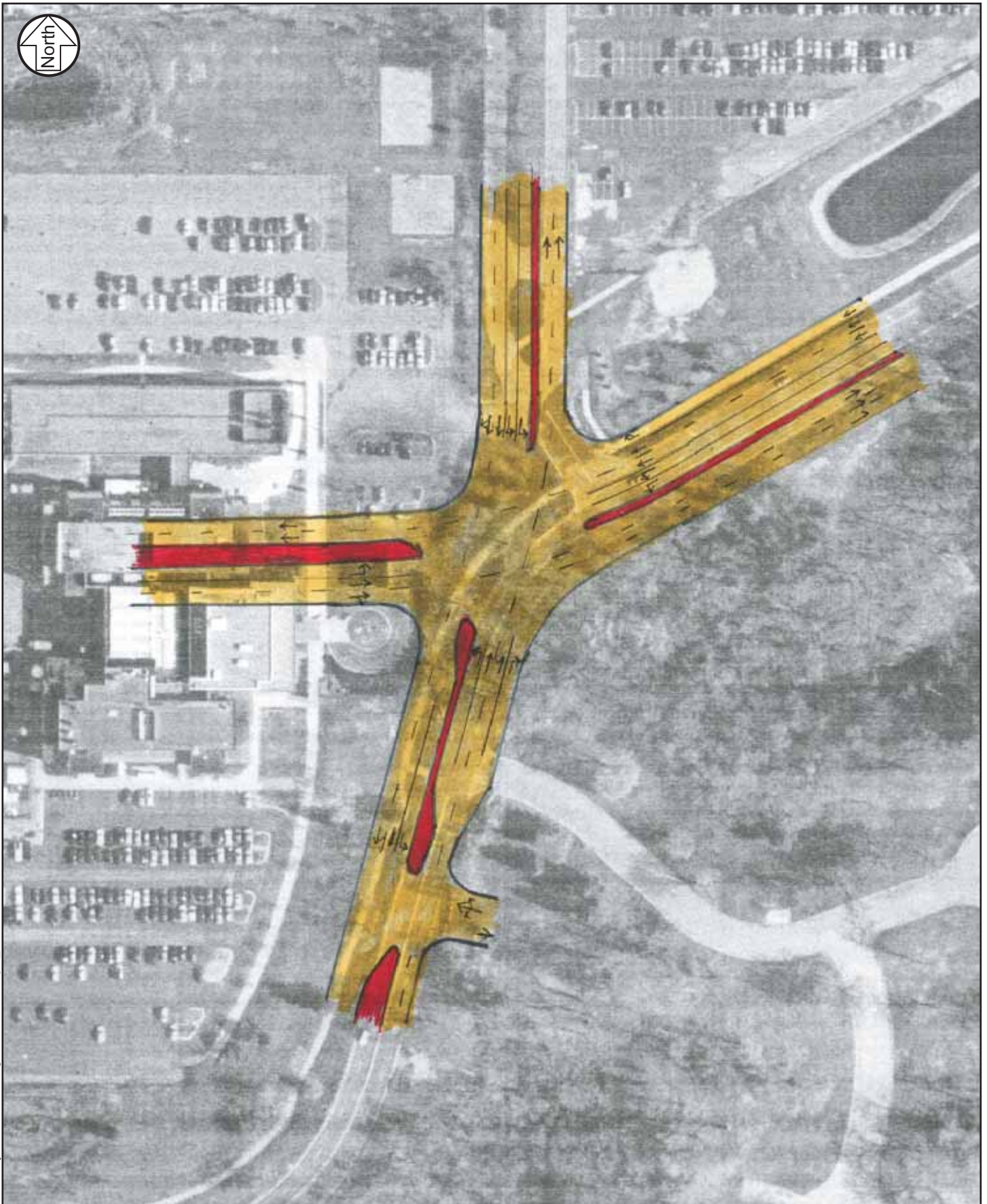
Figure 1



**Table 1**  
**Land Use Projections for Various Studies**  
**Airport South District Plan Traffic Study**

TAZ	Land Use	Existing Size	Study							Land Use	TAZ
			MOA 2030	34th Ave 2030		ASDP 2030		ASDP 2050			
			Size	Size	% Change from MOA	Size	% Change from MOA	Size	% Change from MOA		
471 B	Office (KSF)			50						Office (KSF)	471 B
	Flex Tech (KSF)	219	367	438	19%	438	19%	219	-40%	Flex Tech (KSF)	
471 C	<b>Office (KSF)</b>		<b>1085</b>	<b>500</b>	<b>-54%</b>		<b>-100%</b>	<b>600</b>	<b>-45%</b>	<b>Office (KSF)</b>	471 C
	Hotel (Rooms)							250		Hotel (Rooms)	
	Residential (Units)	4		150			4				
471 D	<b>Office (KSF)</b>	<b>195</b>	<b>583</b>	<b>250</b>	<b>-57%</b>	<b>195</b>	<b>-67%</b>	<b>445</b>	<b>-24%</b>	<b>Office (KSF)</b>	471 D
471 E	Office (KSF)	435	435	435	0%	435	0%	435	0%	Office (KSF)	471 E
	Retail (KSF)					10		10		Retail (KSF)	
	Hotel (Rooms)	429	429	429	0%	429	0%	429	0%	Hotel (Rooms)	
	Residential (Units)	45	234	195	-100%	195	-17%	195	-17%	Residential (Units)	
471 F	<b>Office (KSF)</b>		<b>419</b>	<b>140</b>	<b>-67%</b>		<b>-100%</b>	<b>220</b>	<b>-47%</b>	<b>Office (KSF)</b>	471 F
	Retail (KSF)			30				30		Retail (KSF)	
	Hotel (Rooms)	610	610	610	0%	610	0%	610	0%	Hotel (Rooms)	
	<b>Residential (Units)</b>		<b>479</b>	<b>454</b>	<b>-5%</b>	<b>300</b>	<b>-37%</b>	<b>1200</b>	<b>151%</b>	<b>Residential (Units)</b>	
472 A	Office (KSF)		79		-100%		-100%		-100%	Office (KSF)	472 A
	Hotel (Rooms)			263						Hotel (Rooms)	
472 B	<b>Office (KSF)</b>	<b>466</b>	<b>503</b>	<b>672</b>	<b>34%</b>	<b>466</b>	<b>-7%</b>	<b>220</b>	<b>-56%</b>	<b>Office (KSF)</b>	472 B
	<b>Hotel (Rooms)</b>	<b>263</b>				<b>263</b>		<b>813</b>		<b>Hotel (Rooms)</b>	
472 C	<b>Office (KSF)</b>	<b>298</b>	<b>708</b>	<b>572</b>	<b>-19%</b>	<b>548</b>	<b>-23%</b>	<b>548</b>	<b>-23%</b>	<b>Office (KSF)</b>	472 C
	Retail (KSF)		20	13	-35%	30	50%	30	50%	Retail (KSF)	
	Hotel (Rooms)	128				128		128		Hotel (Rooms)	
	Residential (Units)		375	250	-33%	500	33%	500	33%	Residential (Units)	
472 D (BCS)	<b>Office (KSF)</b>	<b>471</b>	<b>2182</b>	<b>2100</b>	<b>-4%</b>	<b>1906</b>	<b>-13%</b>	<b>2518</b>	<b>15%</b>	<b>Office (KSF)</b>	472 D (BCS)
	<b>Retail (KSF)</b>		<b>225</b>	<b>70</b>	<b>-69%</b>	<b>80</b>	<b>-64%</b>	<b>80</b>	<b>-64%</b>	<b>Retail (KSF)</b>	
	<b>Hotel (Rooms)</b>		<b>200</b>	<b>350</b>	<b>75%</b>	<b>350</b>	<b>75%</b>	<b>350</b>	<b>75%</b>	<b>Hotel (Rooms)</b>	
	Residential (Units)	263	1103	1103	0%	1103	0%	1103	0%	Residential (Units)	
472 E	Office (KSF)							45		Office (KSF)	472 E
	Retail (KSF)			50		20		20		Retail (KSF)	
	Flex Tech (KSF)	220	220	220	0%	440	100%	220	0%	Flex Tech (KSF)	
472 F (Adj. Lands)	<b>Office (KSF)</b>		<b>547</b>	<b>729</b>	<b>33%</b>	<b>220</b>	<b>-60%</b>	<b>1100</b>	<b>101%</b>	<b>Office (KSF)</b>	472 F (Adj. Lands)
	<b>Retail (KSF)</b>		<b>273</b>	<b>365</b>	<b>34%</b>		<b>-100%</b>	<b>200</b>	<b>-27%</b>	<b>Retail (KSF)</b>	
472 G	<b>Office (KSF)</b>		<b>470</b>	<b>425</b>	<b>-10%</b>	<b>220</b>	<b>-53%</b>	<b>220</b>	<b>-53%</b>	<b>Office (KSF)</b>	472 G
	<b>Hotel (Rooms)</b>	<b>134</b>	<b>134</b>		<b>-100%</b>	<b>434</b>	<b>224%</b>	<b>434</b>	<b>224%</b>	<b>Hotel (Rooms)</b>	
	Flex Tech (KSF)	440	75		-100%	0	-100%	0	-100%	Flex Tech (KSF)	
473 A	<b>Retail (KSF)</b>			<b>160</b>		<b>160</b>		<b>160</b>		<b>Retail (KSF)</b>	473 A
	<b>Hotel (Rooms)</b>	<b>735</b>	<b>1100</b>	<b>751</b>	<b>-32%</b>	<b>472</b>	<b>-57%</b>	<b>472</b>	<b>-57%</b>	<b>Hotel (Rooms)</b>	
473 B (MOA)	<b>Office (KSF)</b>		<b>615</b>	<b>615</b>	<b>0%</b>	<b>300</b>	<b>-51%</b>	<b>915</b>	<b>49%</b>	<b>Office (KSF)</b>	473 B (MOA)
	<b>Retail (KSF)</b>	<b>4555</b>	<b>7548</b>	<b>7890</b>	<b>5%</b>	<b>6285</b>	<b>-17%</b>	<b>7575</b>	<b>0%</b>	<b>Retail (KSF)</b>	
	<b>Hotel (Rooms)</b>		<b>1325</b>	<b>1250</b>	<b>-6%</b>	<b>1540</b>	<b>16%</b>	<b>2080</b>	<b>57%</b>	<b>Hotel (Rooms)</b>	
	<b>Residential (Units)</b>		<b>300</b>		<b>-100%</b>		<b>-100%</b>		<b>-100%</b>	<b>Residential (Units)</b>	
473 C	Office (KSF)	430	430	430	0%	430	0%	430	0%	Office (KSF)	473 C
	Retail (KSF)	20	20	20	0%	20	0%	20	0%	Retail (KSF)	
	Hotel (Rooms)	585	808	650	-20%	650	-20%	650	-20%	Hotel (Rooms)	
473 D	Residential (Units)	860	860	860	0%	860	0%	1110	29%	Residential (Units)	473 D
TOTALS	Office (KSF)	2295	8056	6918	-14%	4720	-41%	7696	-4%	Office (KSF)	TOTALS
	Retail (KSF)	4575	8086	8598	6%	6605	-18%	8125	0%	Retail (KSF)	
	Hotel (Rooms)	2884	4606	4453	-3%	4876	6%	6216	35%	Hotel (Rooms)	
	Residential (Units)	1172	3351	2667	-20%	2962	-12%	4108	23%	Residential (Units)	
	Flex Tech (KSF)	879	662	658	-1%	878	33%	439	-34%	Flex Tech (KSF)	





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### East Old Shakopee Road/83rd Street Intersection Concept

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Figure 3