

Appendix F

Greater Cornelia Area/West 70th Street Traffic Study
Study Advisory Committee
Meeting #6 – July 28, 2008

MET COUNCIL REGIONAL MODEL EXERCISE – 2005 MODEL (SRF)

The 2005 regional model was used to estimate the number of trips assigned to West 70th Street and West 66th Street from the neighborhoods north and south of West 70th Street.

TAZ 518 = 1,640 households

TAZ 519 = 723 households

Total = 2,363 households in 2005 model

TAZ 518

770 households assigned to West 70th Street

TAZ 519

320 households assigned to West 70th Street

380 households assigned to West 66th Street

Estimated Households using West 70th Street

Total = 1,090 households

@ 10 trips per day = 10,900 trips per day

@ 14 trips per day = 15,260 trips per day

Current daily traffic volume on West 70th Street = 13,600 vehicles per day

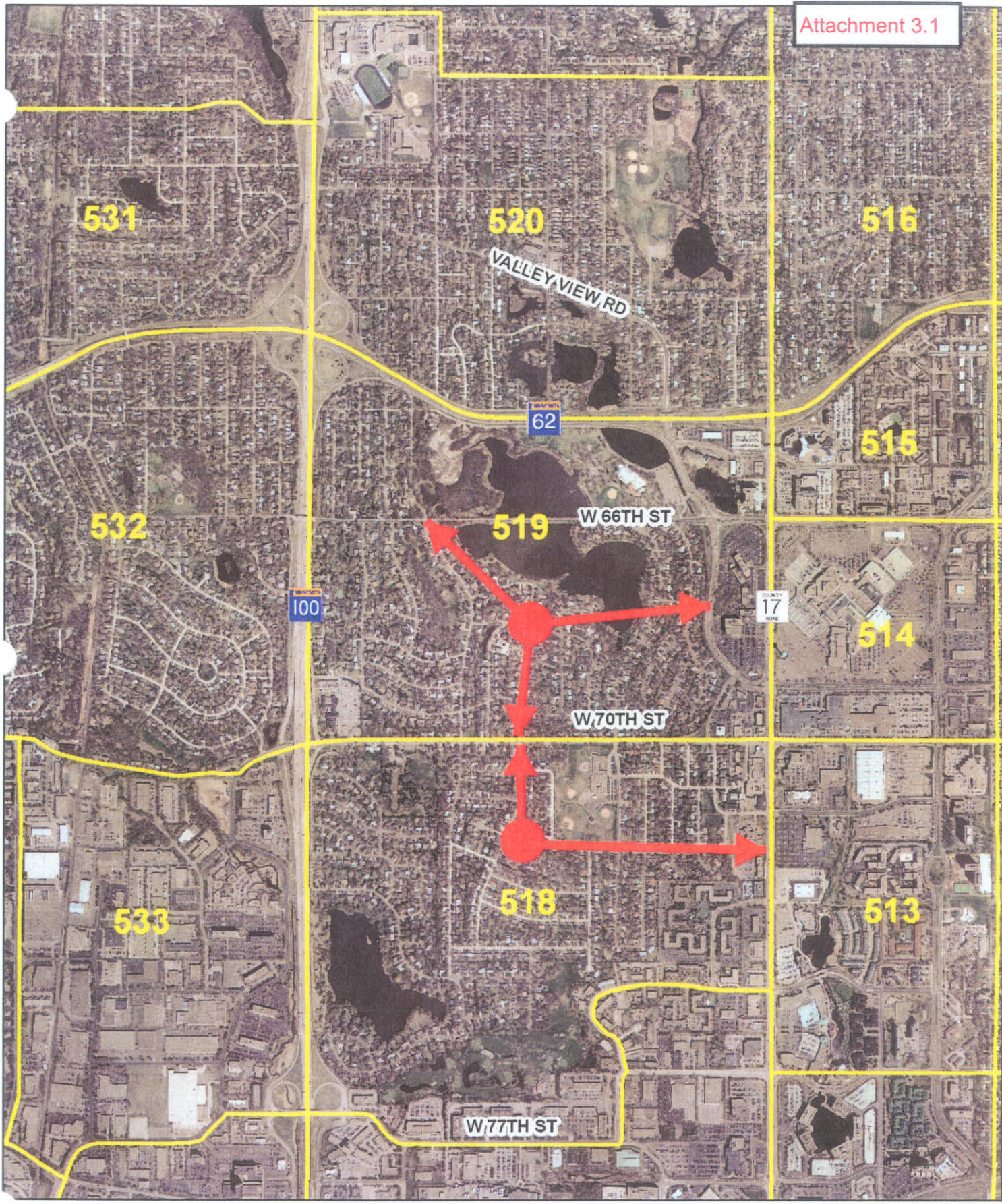
Estimated Households using West 66th Street

TAZ 519 = 380 households

@ 10 trips per day = 3,800 trips per day

@ 14 trips per day = 5,320 trips per day

Current daily traffic volume on West 66th Street = 5,600 vehicles per day



MET COUNCIL REGIONAL MODEL EXERCISE



Edina Traffic Analysis Zone Network
Neighborhood Trip Assignment to Area Roadways





MEMORANDUM

ENGINEERING DEPARTMENT CITY OF EDINA

DATE: July 21, 2008

TO: Study Advisory Committee
Greater Cornelia Area / West 70th Street Traffic Study

FROM: Wayne Houle – City Engineer / Director of Public Works

SUBJECT: Rubberized Pavement

Staff has analyzed the use of “Rubberized Pavement” in Minnesota and as requested by the Greater West 70th Street Homeowners Association. During the review we have found that “Rubberized Pavement” has not been used on a regular basis in Minnesota.

Many transportation agencies refer to Arizona study/performance:

- Although rubber is used in the asphalt mix, it is the “open gradation” (not the rubber) that reduces the noise. The rubber is used as a binding agent.
- An open-graded mix (looks like a “popcorn” texture) is porous. The “openness” allows sound to be “absorbed” which reduces the overall “noise”.
- According to Minnesota Department of Transportation (MNDOT), open-graded mixes haven’t worked well in Minnesota. As designed, the “openness” allows moisture in and during the spring-thaw moisture gets “trapped” within the pavement structure which causes pavement breakup.
- MNDOT has had success with Ultra-thin Bonded Wearing Course (UTBWC). A thin pavement (3/4” - 1.5”) that has an open-graded surface combined with a polymerized membrane. The open surface absorbs water (and sound) and the membrane prevents water from entering further into the pavement structure (it uses the pavement’s grade to drain the moisture laterally). MNDOT does have a specification (or special provision) for UTBWC. MNDOT used UTBWC on I-394 as a noise reduction application (attached is a PowerPoint that was presented at the Pavement Conference in 2004).
- UTBWC will have a higher initial cost than conventional mixes but has shown good performance in Minnesota climates.

Some other items to note:

- Both industries (asphalt and concrete) have noise reduction applications; users need to be careful and evaluate based on technical versus materials.

- Federal Highway Administration (FHWA) sponsored a scanning tour to review European practices to address pavement noise. In general, their practices include the use of a gap (e.g. "open surfaced") mix. <http://www.fhrc.gov/FOCUS/apr05/04.htm>
- Canada evaluated gap-graded rubberized asphalt. A significant increase in cost but effective in reducing noise. No discussion on long-term pavement performance. This paper does a nice job of illustrating how pavement noise is generated, measured and potentially reduced. <http://www.tac-atc.ca/english/pdf/conf2006/s016/treleaven.pdf>

Staff is concerned with an "open graded" pavement for the following reasons:

- What will happen with future maintenance of the pavement? Such as patching when this mix is not readily available.
- An "open graded" pavement will eventually get "clogged" with fine sediment thereby defeating the original purpose.
- Uplifting of the thin overlay during ice storms. Luckily, we have not had any real ice storms in the last couple of years. However, when these do occur, Public Works staff uses plows that are mounted below the truck and applies pressure from the truck to cut the ice. With an "open graded" pavement the ice will adhere to the overlay and portions will be "scraped off" during the ice removal.

Staff feels that normal bituminous pavement will reduce the current noise level and will be more sustainable in the future. Therefore, any project that is proposed to West 70th Street should have a bituminous pavement.

**West 70th Street Corridor Study
Study Advisory Committee**

Meeting #2 – May 17, 2007, 7:00 p.m. – 9:00 p.m.

STATE-AID RULES

Currently, West 70th Street between TH 100 and France Avenue is a two-lane 40-foot wide roadway carrying an Average Annual Daily Traffic (AADT) volume of 12,800 to 13,600 vehicles per day. This segment of West 70th Street is also a Municipal State Aid route. In order to provide clarification of the state-aid design criteria, we offer the following information:

Does the state-aid designation prevent the City from lowering the speed limit on West 70th Street?

The speed limit on West 70th Street is established by state law. Current state-aid standards do not dictate posted speed limits. With its current state-aid designation, a school zone speed limit of 25 mph within the boundaries of Cornelia Elementary can be considered.

Does the state-aid designation require the reconstruction of West 70th Street to a four-lane roadway as soon as the daily traffic volume exceeds 15,000 vehicles per day?

Based on Minnesota Rule 8820.9936, newly constructed roadways with traffic volumes greater than 15,000 vehicles per day require at least four through lanes. However, it is noted that higher daily traffic volumes may be allowed if a capacity analysis demonstrates that Level of Service (LOS) D or better is achieved. In addition, a formal request for a variance from the state-aid requirements can be submitted.

For reconditioning projects such as resurfacing, replacement, or rehabilitation of the pavement structure to extend the life of the roadway, Minnesota Rule 8820.9946 identifies the minimum design standards necessary for two-lane arterials carrying traffic volumes less than 15,000 vehicles per day. However, similar to Minnesota Rule 8820.9936, exceptions to the daily traffic volume threshold may be allowed by a variance.

West 70th Street between TH 100 and France Avenue is currently carrying an AADT volume of 12,800 vehicles per day west of France Avenue and 13,600 vehicles per day east of Highway 100. In addition, the current operations analysis results indicate that all intersections are operating at an acceptable LOS D or better during peak hour conditions. If West 70th Street was resurfaced in the future and the traffic volumes exceed 15,000 vehicles per day, exceptions to the daily traffic volume threshold can be considered through a variance.

Does the state-aid designation prevent the City from establishing truck restrictions on West 70th Street?

According to state-aid staff, trucks may not be banned from state-aid routes because they are public roadways supported by highway user taxes. Based on Minnesota Statutes, section 169.80 and 169.87, the City may not ban trucks from state-aid routes for any reason other than weight (seasonal load restrictions).

SRF No. 0065863

MEMORANDUM

TO: Wayne D. Houle, P.E.
City Engineer/Director of Public Works
CITY OF EDINA

FROM: Adrian S. Potter, P.E., P.T.O.E., Associate

DATE: February 20, 2008

SUBJECT: WEST 70TH STREET AT WEST SHORE DRIVE
SIGNAL JUSTIFICATION MEMORANDUM

This memorandum is in regards to a proposed traffic signal at the intersection of West 70th Street and West Shore Drive in Edina. Justification of this proposed signal was studied with respect to the signal warrants outlined in the Minnesota Manual on Uniform Traffic Control Devices. Current traffic volumes do not satisfy any of the volume-based warrants. Even if it was assumed that all the traffic currently using nearby Wooddale Avenue to access West 70th Street would divert to West Shore Drive if a signal was constructed, the intersection still does not meet warrants (see attached Warrants Analysis and Approach Volumes).

Although the intersection does not meet warrants, there remains a need for a signal at West 70th Street and West Shore Drive. The basis for signal justification is to provide a more controlled access point for drivers exiting and entering the surrounding residential neighborhood. Current average daily traffic (ADT) along West 70th Street is 13,600 vehicles. A signal would give drivers turning onto West 70th Street from Wooddale Avenue an alternative to waiting for sufficient gaps to emerge in traffic at a side-street stop controlled intersection. By platooning traffic, a signal would also likely help to create gaps in traffic that would allow residents along West 70th Street to safely access the road from their driveways.

A signal would also assist drivers and pedestrians traveling to Arnenson Acres Park, as well as provide a controlled crossing location for pedestrians who want to cross West 70th Street. In addition, if specialized signal timing plans are created in conjunction with other signals along West 70th Street, a signal in this location could be used to promote less variable travel speeds along the corridor, which may help to maintain the residential nature of West 70th Street.

In conclusion, the West 70th Street/West Shore Drive intersection does not meet any of the volume-based signal warrants. However, signalization can be justified at the intersection to

better meet the needs of residential drivers from the surrounding neighborhood. A signal at this intersection would help to safely facilitate turning movements to and from the adjacent neighborhood and park, as well as help residents safely access West 70th Street from their driveways. With the use of signal timing, steps can also be taken to use a signal at this location to promote less variable travel speeds along the West 70th Street corridor.

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WARRANTS ANALYSIS

West 70th Street at West Shore Drive
 Signal Justification Memorandum
 City of Edina, Hennepin County

Background Information	Location :	City of Edina, Hennepin County	Speed (mph)	Lanes	Approach	
	Date:	2/11/2008	30	2	Major Approach 1:	Eastbound West 70th Street
	Analysis Prepared By:	Adrian S. Potter, P.E., P.T.O.E.	30	2	Major Approach 3:	Westbound West 70th Street
	Population Less than 10,000:	No	30	1	Minor Approach 2:	Northbound West Shore Drive
	Seventy Percent Factor Used:	No	30	1	Minor Approach 4:	Southbound West Shore Drive

	Hour	Major Approach 1	Major Approach 3	Total 1 + 3	Warrant Met		Minor Approach 2	Minor Approach 4	Largest Minor App.	Warrant Met		Met Same Hours		(80% Warrant)	
					600	900				150	75	Condition A	Condition B	Condition C	
Warrants Analysis: Warrants 1A, 1B and 1C	6 - 7 AM	190	187	377			23	5	23						
	7 - 8 AM	411	448	859	X		78	29	78		X				
	8 - 9 AM	523	485	1008	X	X	115	66	115		X		X		
	9 - 10 AM	492	376	868	X		95	82	95		X				
	10 - 11 AM	515	398	913	X	X	66	54	66						
	11 - 12 AM	611	444	1055	X	X	66	33	66						
	12 - 1 PM	631	566	1197	X	X	70	57	70						
	1 - 2 PM	514	610	1124	X	X	55	54	55						
	2 - 3 PM	488	535	1023	X	X	50	43	50						
	3 - 4 PM	572	593	1165	X	X	61	46	61						
	4 - 5 PM	744	638	1382	X	X	70	53	70						
	5 - 6 PM	888	611	1499	X	X	63	42	63						
	6 - 7 PM	536	521	1057	X	X	72	48	72						
	7 - 8 PM	364	409	773	X		71	48	71						
8 - 9 PM	281	377	658	X		49	32	49							
9 - 10 PM	231	363	594			31	29	31							
10 - 11 PM	132	189	321			16	16	16							
												0	1	0	
Warrant Summary	Warrant and Description						Hours Met			Hours Required		Met/Not Met			
	Warrant 1A: Minimum Vehicular Volume						0			8		Not Met			
	Warrant 1B: Interruption of Continuous Traffic						1			8		Not Met			
	Warrant 1C: Combination of Warrants						0			8		Not Met			
	Warrant 2: Four-Hour Vehicular Volume						0			4		Not Met			
	Warrant 3B: Peak Hour						0			1		Not Met			

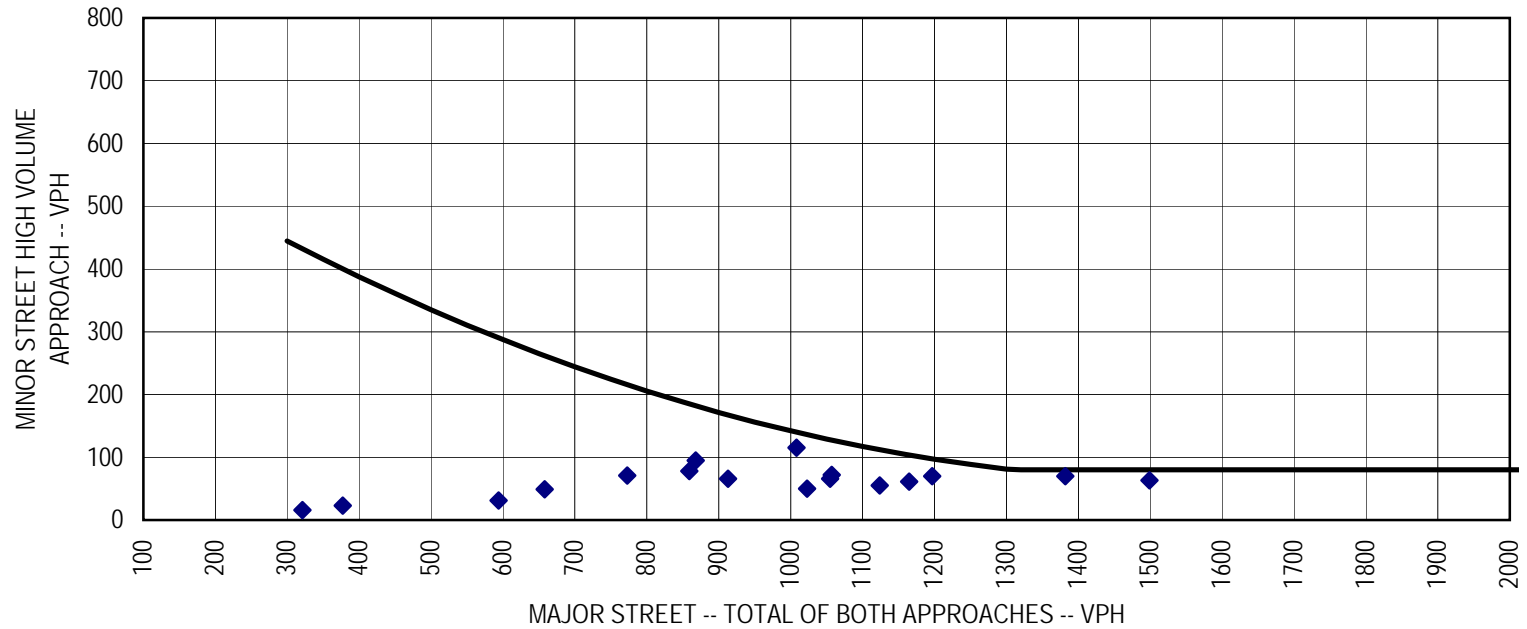


WARRANTS ANALYSIS

West 70th Street at West Shore Drive
 Signal Justification Memorandum
 City of Edina, Hennepin County

WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME

Warrants Analysis: Warrant 2



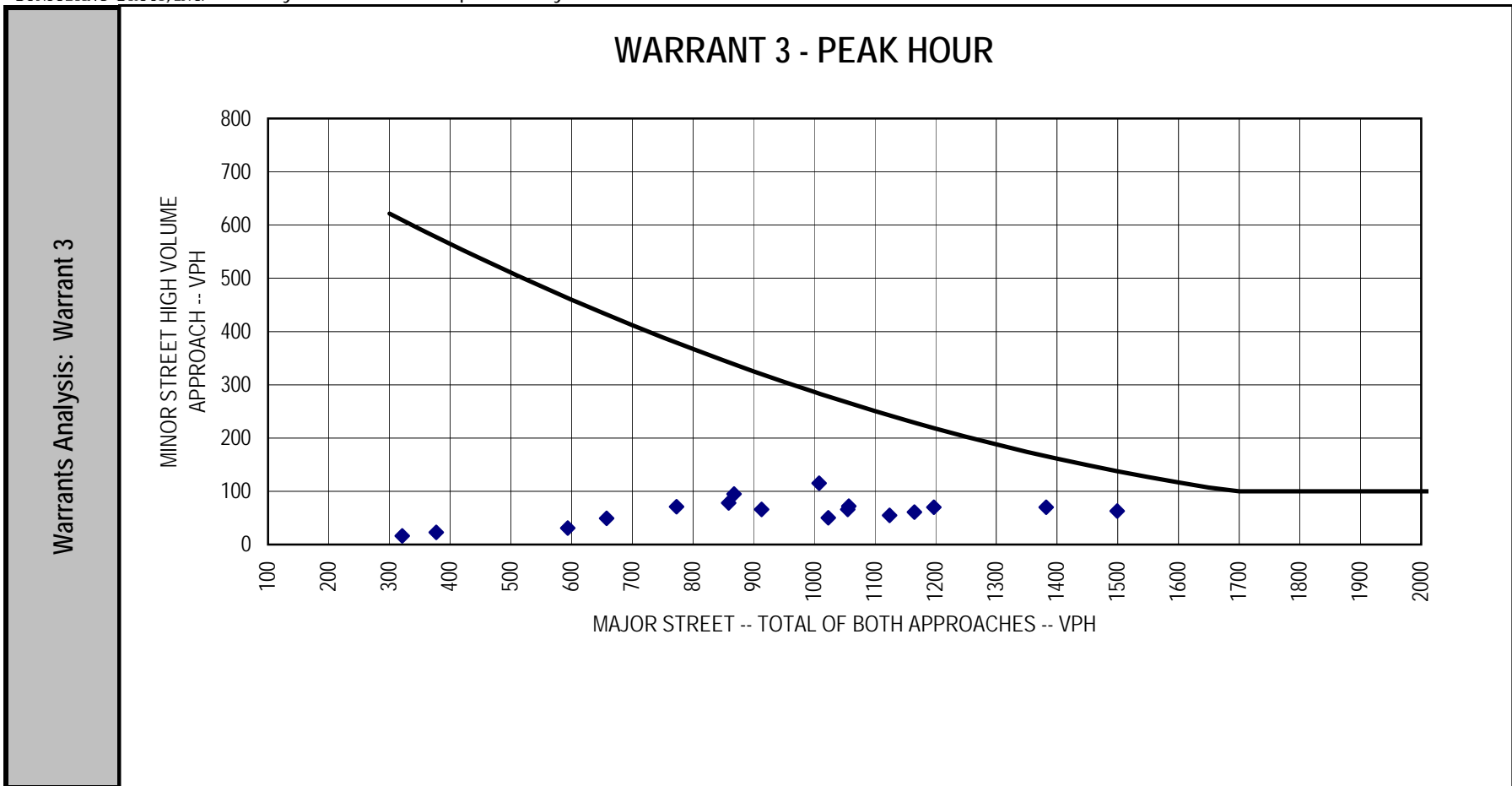
Number of Hours Satisfying Requirements:

Notes: 1. 115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.



WARRANTS ANALYSIS

West 70th Street at West Shore Drive
 Signal Justification Memorandum
 City of Edina, Hennepin County



Number of Hours Satisfying Requirements:

Notes: 1. 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.



APPROACH VOLUMES

West 70th Street at West Shore Drive
 Signal Justification Memorandum
 City of Edina, Hennepin County

Tues.	EB	NB	WB	SB	Wed.	EB	NB	WB	SB	Thurs.	EB	NB	WB	SB	Average	EB	NB	WB	SB
12:00 AM	39	2	30	4	12:00 AM	35	1	35	3	12:00 AM	45	1	43	3	12:00 AM	40	1	36	3
1:00 AM	14	1	19	1	1:00 AM	19	2	17	0	1:00 AM	20	1	12	3	1:00 AM	18	1	16	1
2:00 AM	11	0	9	0	2:00 AM	12	0	9	0	2:00 AM	5	2	6	0	2:00 AM	9	1	8	0
3:00 AM	5	0	5	0	3:00 AM	4	1	8	0	3:00 AM	3	3	6	0	3:00 AM	4	1	6	0
4:00 AM	8	1	10	0	4:00 AM	13	0	9	0	4:00 AM	9	2	9	0	4:00 AM	10	1	9	0
5:00 AM	36	0	57	1	5:00 AM	33	0	52	1	5:00 AM	42	0	57	2	5:00 AM	37	0	55	1
6:00 AM	187	7	191	4	6:00 AM	196	4	190	4	6:00 AM	186	5	179	3	6:00 AM	190	5	187	4
7:00 AM	400	20	434	23	7:00 AM	413	22	444	18	7:00 AM	420	21	466	20	7:00 AM	411	21	448	20
8:00 AM	561	70	480	39	8:00 AM	471	65	501	45	8:00 AM	536	61	474	50	8:00 AM	523	65	485	45
9:00 AM	491	62	341	61	9:00 AM	502	62	376	50	9:00 AM	483	55	412	53	9:00 AM	492	60	376	55
10:00 AM	534	36	399	36	10:00 AM	471	30	414	38	10:00 AM	540	45	380	43	10:00 AM	515	37	398	39
11:00 AM	591	38	453	21	11:00 AM	631	29	434	26	11:00 AM		38		21	11:00 AM	611	35	444	23
12:00 PM	628	43	548	75	12:00 PM	633	43	583	35	12:00 PM		36		28	12:00 PM	631	41	566	46
1:00 PM	524	23	593	38	1:00 PM	504	23	627	34	1:00 PM		37		42	1:00 PM	514	28	610	38
2:00 PM	453	31	536	33	2:00 PM	523	26	534	35	2:00 PM		20		18	2:00 PM	488	26	535	29
3:00 PM	606	28	558	38	3:00 PM	538	26	627	32	3:00 PM		29		19	3:00 PM	572	28	593	30
4:00 PM	711	41	681	37	4:00 PM	777	43	594	37	4:00 PM		43		31	4:00 PM	744	42	638	35
5:00 PM	898	29	614	27	5:00 PM	878	42	607	30	5:00 PM		36		29	5:00 PM	888	36	611	29
6:00 PM	529	26	516	34	6:00 PM	542	41	526	37	6:00 PM		39		30	6:00 PM	536	35	521	34
7:00 PM	376	38	417	34	7:00 PM	352	41	400	37	7:00 PM		44		27	7:00 PM	364	41	409	33
8:00 PM	278	34	356	20	8:00 PM	284	24	397	30	8:00 PM		32		17	8:00 PM	281	30	377	22
9:00 PM	231	29	381	34	9:00 PM	230	18	345	14	9:00 PM		17		14	9:00 PM	231	21	363	21
10:00 PM	128	6	169	14	10:00 PM	136	19	208	7	10:00 PM		11		10	10:00 PM	132	12	189	10
11:00 PM	70	4	73	7	11:00 PM	68	10	67	4	11:00 PM		4		6	11:00 PM	69	6	70	6

8310 574 7950 524

Approach volumes for southbound West Shore Drive from 10/31/06-11/2/06.
 Approach volumes for eastbound and westbound West 70th Street from 07/19/05-07/21/05.
 Approach volumes for northbound West Shore Drive from 9/12/06-9/14/06.

Note: Times shown are the beginning of the one hour counting interval.



APPROACH VOLUMES

Wooddale Avenue
 Signal Justification Memorandum
 City of Edina, Hennepin County

Tues.	NB	SB	Wed.	NB	SB	Thurs.	NB	SB	Average	NB	SB
12:00 AM	1	0	12:00 AM	1	1	12:00 AM	0	0	12:00 AM	1	0
1:00 AM	1	0	1:00 AM	1	0	1:00 AM	1	0	1:00 AM	1	0
2:00 AM	0	0	2:00 AM	1	0	2:00 AM	1	0	2:00 AM	1	0
3:00 AM	1	0	3:00 AM	0	0	3:00 AM	0	0	3:00 AM	0	0
4:00 AM	0	0	4:00 AM	1	0	4:00 AM	0	0	4:00 AM	0	0
5:00 AM	8	0	5:00 AM	6	0	5:00 AM	4	0	5:00 AM	6	0
6:00 AM	17	0	6:00 AM	21	2	6:00 AM	17	0	6:00 AM	18	1
7:00 AM	57	11	7:00 AM	49	9	7:00 AM	65	7	7:00 AM	57	9
8:00 AM	52	27	8:00 AM	45	18	8:00 AM	52	18	8:00 AM	50	21
9:00 AM	23	24	9:00 AM	31	21	9:00 AM	50	36	9:00 AM	35	27
10:00 AM	31	13	10:00 AM	19	14	10:00 AM	36	17	10:00 AM	29	15
11:00 AM	27	10	11:00 AM	25	11	11:00 AM	42	8	11:00 AM	31	10
12:00 PM	22	10	12:00 PM	21	9	12:00 PM	44	13	12:00 PM	29	11
1:00 PM	21	16	1:00 PM	31	13	1:00 PM	30	19	1:00 PM	27	16
2:00 PM	20	12	2:00 PM	23	12	2:00 PM	28	18	2:00 PM	24	14
3:00 PM	34	15	3:00 PM	27	21	3:00 PM	38	11	3:00 PM	33	16
4:00 PM	22	17	4:00 PM	30	16	4:00 PM	32	20	4:00 PM	28	18
5:00 PM	28	11	5:00 PM	22	14	5:00 PM	30	14	5:00 PM	27	13
6:00 PM	33	17	6:00 PM	36	9	6:00 PM	43	16	6:00 PM	37	14
7:00 PM	32	12	7:00 PM	27	18	7:00 PM	31	14	7:00 PM	30	15
8:00 PM	18	19	8:00 PM	24	7	8:00 PM	15	5	8:00 PM	19	10
9:00 PM	11	8	9:00 PM	6	6	9:00 PM	14	9	9:00 PM	10	8
10:00 PM	4	7	10:00 PM	5	3	10:00 PM	2	8	10:00 PM	4	6
11:00 PM	4	2	11:00 PM	4	2	11:00 PM	2	1	11:00 PM	3	2

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Approach volumes for southbound Wooddale Avenue from 10/31/06-11/2/06.
 Approach volumes for northbound Wooddale Avenue from 9/12/06-9/14/06.

Note: Times shown are the beginning of the one hour counting interval.