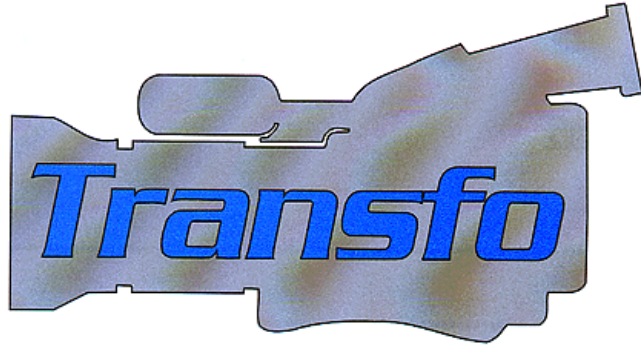


APPENDIX B

Origin Destination Study Data

REPORT



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AUTOMATED VIDEO-BASED INFORMATION

TRUNK HIGHWAY 14 MANKATO-TO-NEW ULM ORIGIN-DESTINATION STUDY VIDEO SURVEY

For

HOWARD R. GREEN COMPANY

**MINNESOTA DEPARTMENT OF
TRANSPORTATION**

November 22, 2002

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**TH 14 CORRIDOR (MANKATO-TO-NEW ULM, MINNESOTA)
ORIGIN-DESTINATION STUDY**

FINAL REPORT

EXECUTIVE SUMMARY

A video license plate study of vehicles moving between seven survey stations on TH 14 and associated highways in the vicinity of New Ulm, Nicollet and Courtland, Minnesota was conducted on August 14, 2002. The three-fold purpose of the study was to determine point-to-point origin-destination movements among the seven locations in order to distinguish the following:

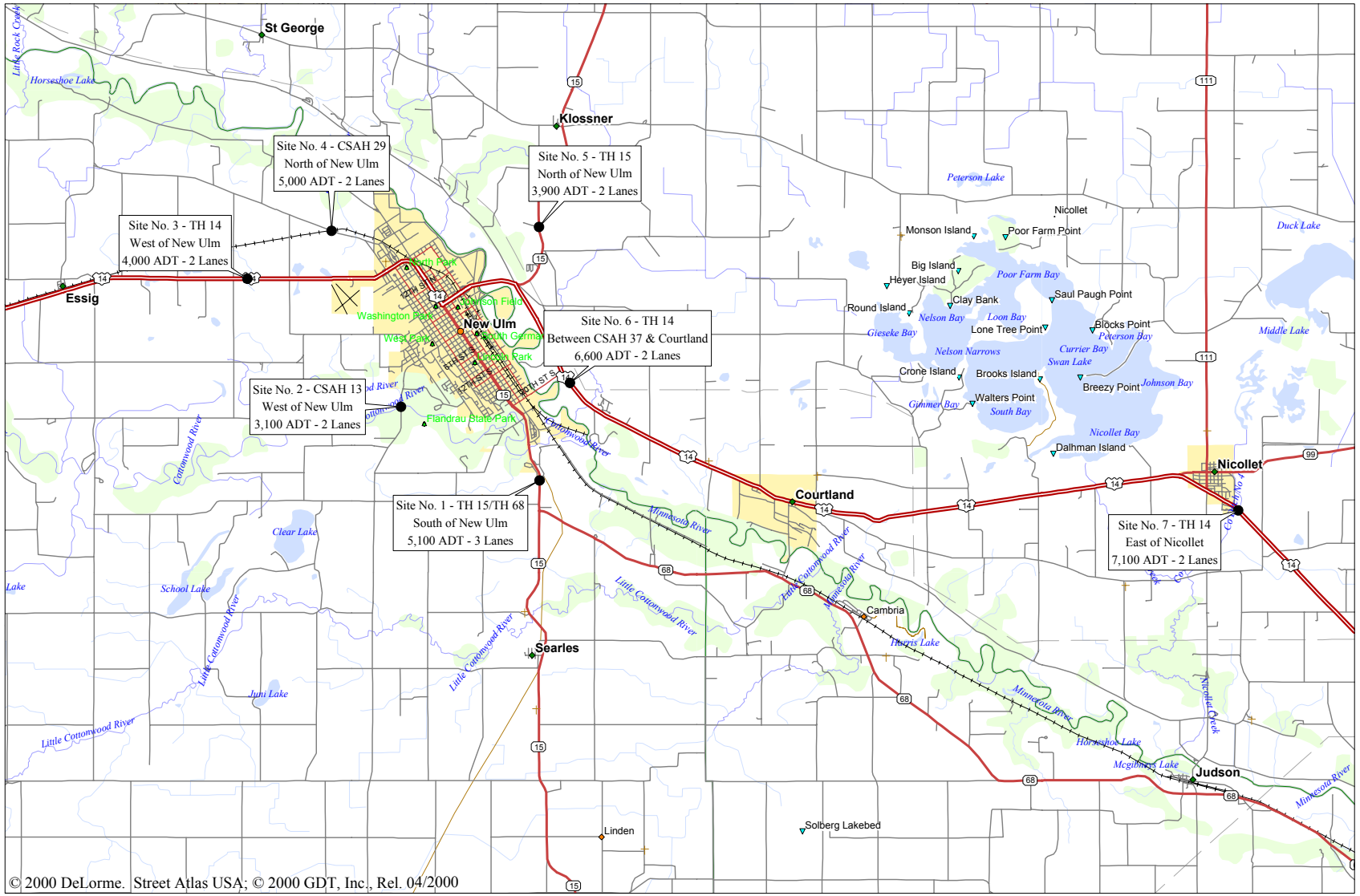
1. Through traffic passing through New Ulm.
2. Through traffic along TH 14 between Mankato and New Ulm.
3. Reverse Commute traffic from New Ulm to Mankato.

The license plates of vehicles passing each survey station were recorded on videotape. The plate records of vehicles passing a given station were matched against the plate records obtained at the other stations in order to determine the volume of movement from one station to another. The survey covered a twelve-hour period from 7:00 a.m. to 7:00 p.m. A total of 24,735 license plate records were collected, representing 88.6 percent of the 27,919 vehicle movements passing the three survey sites. (Please refer to a map of the study area with the location of these survey stations on the following page.)

About 20 percent of the passenger vehicle trips entering New Ulm pass directly through the town and about 80 percent of entering passenger vehicle trips stop in town for one or more purposes. The percentage of Through commercial vehicle trips is somewhat greater, about 31 percent. The distribution of Through and Local trips varies from station to station. The highest percentage of Through passenger vehicle trips is found entering at Station 3 and the lowest entering at Station 2. (Please refer to the table summarizing these results on the next following page.)

The number of Through trips along TH 14 from the farthest western point (Station 3) and the farthest eastern point (Station 7) was evenly balanced in both directions with approximately 215 passenger vehicles and 36 commercial vehicles making this trip. The mid-point location, Station 6 had many more “intermediate-through” trips for both passenger and commercial vehicles through to either Station 3 or to Station 7.

The “Reverse Commute” traffic, or percentage of passenger vehicles found to leave New Ulm towards Mankato in the morning and returning to re-enter the New Ulm area from the direction of Mankato in the afternoon was found to be approximately 28 percent of the leaving traffic during the 2-hour morning survey period from 7:00 a.m. to 9:00 p.m.



Summary Table for TH 14 Mankato-to-New Ulm Corridor Study

From Inbound Station	Passenger Vehicles					Commercial Vehicles				
	Inbound	Through		Local		Inbound	Through		Local	
	No.	No.	%	No.	%	No.	No.	%	No.	%
New Ulm Cordon Study										
1-IN	2,170	289	13.3%	1,881	86.7%	163	34	21.1%	129	78.9%
2-IN	800	52	6.5%	748	93.5%	22	0	0.0%	22	100.0%
3-IN	1,547	453	29.3%	1,094	70.7%	206	71	34.6%	135	65.4%
4-IN	794	227	28.6%	567	71.4%	42	9	22.6%	32	77.4%
5-IN	1,821	380	20.9%	1,441	79.1%	184	59	32.0%	125	68.0%
6-IN	2,877	569	19.8%	2,308	80.2%	351	130	37.0%	221	63.0%
Total	10,010	1,971	19.7%	8,039	80.3%	968	304	31.4%	665	68.6%
TH 14 Corridor Study (East-West Corridor)										
3-EB to 7-EB	1,547	216	13.9%	1,331	86.1%	206	35	16.7%	172	83.3%
7-WB to 3-WB	2,437	214	8.8%	2,223	91.2%	315	38	12.1%	276	87.9%
3-EB to 6-EB	1,547	319	20.6%	1,228	79.4%	206	34	16.6%	172	83.4%
6-WB to 3-WB	2,877	292	10.1%	2,586	89.9%	351	85	24.3%	266	75.7%
6-EB to 7-EB	3,180	1,628	51.2%	1,552	48.8%	180	90	50.0%	90	50.0%
7-WB to 6-WB	2,437	1,024	42.0%	1,413	58.0%	315	126	40.1%	188	59.9%
Total	14,027	3,694	26.3%	10,333	73.7%	1,572	409	26.0%	1,164	74.0%
Reverse Commute Study (New Ulm-to-Mankato)										
1-OUT	324	91	28.1%	233	71.9%	Not Applicable for Commercial Vehicles				
6-OUT	491	138	28.1%	353	71.9%					
7-OUT	539	203	37.7%	336	62.3%					
Total	1,354	432	31.9%	922	68.1%					

INTRODUCTION

A video license plate study of vehicles moving between seven survey stations on TH 14 and associated highways in the vicinity of New Ulm, Nicollet and Courtland, Minnesota was conducted on August 14, 2002. The study was conducted by **Transfo** for the Minnesota Department of Transportation (Mn/DOT) in cooperation with The Howard R. Green Company (HR Green).

The three-fold purpose of the study was to determine point-to-point origin-destination movements among the seven locations in order to distinguish the following:

1. Through traffic passing through New Ulm.
2. Through traffic along TH 14 between Mankato and New Ulm.
3. Reverse Commute traffic from New Ulm to Mankato.

The license plates of vehicles passing each survey station were recorded on videotape. The plate records of vehicles passing a given station were matched against the plate records obtained at the other stations in order to determine the volume of movement from one station to another.

The survey covered a twelve-hour period from 7:00 a.m. to 7:00 p.m. A total of 24,735 license plate records were collected, representing 88.6 percent of the 27,919 vehicle movements passing the three survey sites. (Please refer to a map of the study area with the location of these survey stations shown previously on page number 2.)

The following sections of this report provide information regarding the data collection and analysis procedures, and data summaries.

FIELD PROCEDURES

High-specification video camcorders mounted on tripods were positioned to record the rear license plates of vehicles passing within the camcorder's field of view. Each inbound and each outbound traffic lane was monitored by a single camcorder located on the highway shoulder. Each of the seven survey stations included 2 (or 3) video camcorders operated by an experienced **Transfo** Camera Operator, and these Operators were supervised by Team Leaders and a Field Supervisor to ensure each camcorder was operating properly and that the Operator consistently was capturing clear and concise images of vehicle license plates during the proper time periods and direction of travel.

In all, a total of 180 lane-hours of traffic were recorded over the twelve-hour survey period. (Please refer to the photos below for examples of these procedures used in another Mn/DOT video survey conducted earlier by **Transfo**.)



DATA PROCESSING

The license plate images recorded on the videotapes were transcribed into computer files using **Transfo's** image analysis system. Separate files were created for passenger vehicles and for commercial vehicles. In those instances where the license plate image could not be read – due primarily to a license plate being obscured by an object such as a trailer hitch or bicycle rack, or because the vehicle changed lanes at the point of observation – the presence of the vehicle was recorded so that an accurate count of the number of vehicles passing the camcorder location could be obtained. (Photographs illustrating the image analysis system are shown below.)



The number of passenger vehicle license plates read, number of commercial vehicle license plates read, total vehicle counts (based on video and tube counts – video counts were used for determining the OD movement counts and percentages because they are based on the actual number of vehicles passing each station) and license plate read rate for each survey station by direction and time of day are presented in Table 1. (Please refer to the next seven pages, page numbers 7 through 13 for Table 1.)

As shown in Table 1, the tube counts of vehicles are consistently higher than the video counts of vehicles (overall the tube counts are 19% higher than the video counts). This can be explained by the difference in how the two sets of count data were collected. The counts collected from the video counted each individual vehicle. In contrast, the counts collected using the tubes counted the total number of axles and was divided by two to obtain the number of vehicles. Because some vehicles have more than two axles, tube counts overstate the number of actual vehicles on the roadway. The more multi-axle vehicles there are, the greater the overstatement of vehicles.

In the case of station 4, the differences between the tube counts and the video counts are partially due to a tube counter malfunction at that station. Because of the malfunction, the tube count data shown in Table 1 for Station 4 was collected again on the same weekday during the following week.

Table 1: Site 1 Locations, Direction, Traffic Counts, Plates Read and Percentage of Plates Read.

Site No.	Site Location	Direction of Travel	No. of Lanes	Date of Shoot	Start Time	Passenger Plates	Commercial Plates	Total Vehicles	Total Vehicles (Tube Counts)	% Difference: Tube vs. Video	Total Plates	Plates % of Vehicles
1-IN	TH 15/TH 68 - South of New Ulm	NB	2	14-Aug-02	7:00-8:00AM	214	15	244	274	11%	229	93.9%
					8:00-9:00AM	168	10	198	223	11%	178	89.9%
					9:00-10:00AM	116	10	161	184	13%	126	78.3%
					10:00-11:00AM	149	20	182	224	19%	169	92.9%
					11:00AM-12:00PM	150	22	188	216	13%	172	91.5%
					12:00-1:00PM	147	20	188	237	21%	167	88.8%
					1:00-2:00PM	157	7	182	204	11%	164	90.1%
					2:00-3:00PM	167	7	197	238	17%	174	88.3%
					3:00-4:00PM	165	14	227	258	12%	179	78.9%
					4:00-5:00PM	156	9	202	246	18%	165	81.7%
5:00-6:00PM	163	8	186	201	7%	171	91.9%					
6:00-7:00PM	167	2	178	211	16%	169	94.9%					
Total for Site 1-IN (Northbound)						1,919	144	2,333	2,716	14%	2,063	88.4%
1-OUT	TH 15/TH 68 - South of New Ulm	SB	1	14-Aug-02	7:00-8:00AM	121	5	143	179	20%	126	88.0%
					8:00-9:00AM	125	34	181	186	3%	159	88.0%
					9:00-10:00AM	108	18	143	166	14%	126	88.0%
					10:00-11:00AM	150	20	193	212	9%	170	88.0%
					11:00AM-12:00PM	138	15	174	205	15%	153	88.0%
					12:00-1:00PM	208	9	247	251	2%	217	88.0%
					1:00-2:00PM	150	21	194	207	6%	171	88.0%
					2:00-3:00PM	114	10	141	237	41%	124	88.0%
					3:00-4:00PM	197	11	236	285	17%	208	88.0%
					4:00-5:00PM	235	9	277	312	11%	244	88.0%
5:00-6:00PM	244	8	286	320	11%	252	88.0%					
6:00-7:00PM	147	7	175	188	7%	154	88.0%					
Total for Site 1-OUT (Southbound)						1,937	167	2,391	2,748	13%	2,104	88.0%

Table 1 (con'td.): Site 2 Locations, Direction, Traffic Counts, Plates Read and Percentage of Plates Read.

Site No.	Site Location	Direction of Travel	No. of Lanes	Date of Shoot	Start Time	Passenger Plates	Commercial Plates	Total Vehicles	Total Vehicles (Tube Counts)	% Difference: Tube vs. Video	Total Plates	Plates % of Vehicles
2-IN	CSAH 13 - West of New Ulm	NB	1	14-Aug-02	7:00-8:00AM	115	0	117	122	4%	115	98.3%
					8:00-9:00AM	69	3	73	70	-4%	72	98.6%
					9:00-10:00AM	55	1	64	73	12%	53	82.8%
					10:00-11:00AM	56	2	65	66	2%	59	90.8%
					11:00AM-12:00PM	46	1	51	52	2%	47	92.2%
					12:00-1:00PM	44	0	52	76	32%	44	84.6%
					1:00-2:00PM	64	6	75	67	-12%	70	93.3%
					2:00-3:00PM	54	4	61	57	-7%	58	95.1%
					3:00-4:00PM	45	0	57	64	11%	45	78.9%
					4:00-5:00PM	48	1	56	75	25%	49	87.5%
5:00-6:00PM	69	1	71	70	-1%	70	98.6%					
6:00-7:00PM	75	2	78	66	-18%	77	98.7%					
Total for Site 2-IN (Northbound)						740	21	820	858	4%	759	92.6%
2-OUT	CSAH 13 - West of New Ulm	SB	1	14-Aug-02	7:00-8:00AM	31	2	46	59	22%	33	71.7%
					8:00-9:00AM	35	0	44	47	6%	35	79.5%
					9:00-10:00AM	37	2	48	50	4%	39	81.3%
					10:00-11:00AM	41	0	44	46	4%	41	93.2%
					11:00AM-12:00PM	52	0	54	58	7%	52	96.3%
					12:00-1:00PM	34	0	36	70	49%	34	94.4%
					1:00-2:00PM	51	4	57	59	3%	55	96.5%
					2:00-3:00PM	55	0	56	63	11%	55	98.2%
					3:00-4:00PM	68	0	72	87	17%	68	94.4%
					4:00-5:00PM	94	1	95	135	30%	95	100.0%
5:00-6:00PM	106	0	108	82	-32%	106	98.1%					
6:00-7:00PM	57	2	66	64	-3%	59	89.4%					
Total for Site 2-OUT (Southbound)						661	11	726	820	11%	672	92.6%

Table 1 (con'td.): Site 3 Locations, Direction, Traffic Counts, Plates Read and Percentage of Plates Read.

Site No.	Site Location	Direction of Travel	No. of Lanes	Date of Shoot	Start Time	Passenger Plates	Commercial Plates	Total Vehicles	Total Vehicles (Tube Counts)	% Difference: Tube vs. Video	Total Plates	Plates % of Vehicles
3-IN	TH 14 - West of New Ulm	EB	1	14-Aug-02	7:00-8:00AM	95	29	142	189	25%	124	87.3%
					8:00-9:00AM	100	19	129	171	25%	119	92.2%
					9:00-10:00AM	133	28	170	215	21%	161	94.7%
					10:00-11:00AM	98	23	130	178	27%	121	93.1%
					11:00AM-12:00PM	108	13	139	190	27%	121	87.1%
					12:00-1:00PM	111	5	134	171	22%	116	86.6%
					1:00-2:00PM	132	34	173	222	22%	166	96.0%
					2:00-3:00PM	139	17	174	215	19%	156	89.7%
					3:00-4:00PM	146	5	166	195	15%	151	91.0%
					4:00-5:00PM	146	11	168	204	18%	157	93.5%
					5:00-6:00PM	110	4	121	141	14%	114	94.2%
6:00-7:00PM	100	2	108	121	11%	102	94.4%					
Total for Site 3-IN (Eastbound)						1,418	190	1,754	2,212	21%	1,608	91.7%
3-OUT	TH 14 - West of New Ulm	WB	1	14-Aug-02	7:00-8:00AM	86	16	115	155	26%	102	88.7%
					8:00-9:00AM	98	26	141	178	21%	124	87.9%
					9:00-10:00AM	73	19	107	144	26%	92	86.0%
					10:00-11:00AM	93	18	140	203	31%	111	79.3%
					11:00AM-12:00PM	105	16	144	186	23%	121	84.0%
					12:00-1:00PM	115	17	151	205	26%	132	87.4%
					1:00-2:00PM	102	12	128	158	19%	114	89.1%
					2:00-3:00PM	113	17	148	198	25%	130	87.8%
					3:00-4:00PM	206	10	227	268	15%	216	95.2%
					4:00-5:00PM	173	10	190	238	20%	183	96.3%
					5:00-6:00PM	173	3	195	243	20%	176	90.3%
6:00-7:00PM	112	4	125	145	14%	116	92.8%					
Total for Site 3-OUT (Westbound)						1,449	168	1,811	2,321	22%	1,617	89.3%

Table 1 (con'td.): Site 4 Locations, Direction, Traffic Counts, Plates Read and Percentage of Plates Read.

Site No.	Site Location	Direction of Travel	No. of Lanes	Date of Shoot	Start Time	Passenger Plates	Commercial Plates	Total Vehicles	Total Vehicles (Tube Counts)	% Difference: Tube vs. Video	Total Plates	Plates % of Vehicles
4-IN	CSAH 29 - North of New Ulm	SB	1	14-Aug-02	7:00-8:00AM	81	2	90	72	-25%	83	92.2%
					8:00-9:00AM	66	5	84	88	5%	71	84.5%
					9:00-10:00AM	54	2	68	81	16%	56	82.4%
					10:00-11:00AM	75	7	89	95	6%	82	92.1%
					11:00AM-12:00PM	41	5	53	86	38%	46	86.8%
					12:00-1:00PM	41	4	55	74	26%	45	81.8%
					1:00-2:00PM	59	0	63	94	33%	59	93.7%
					2:00-3:00PM	62	3	75	87	14%	65	86.7%
					3:00-4:00PM	52	1	57	90	37%	53	93.0%
					4:00-5:00PM	57	3	69	89	22%	60	87.0%
5:00-6:00PM	49	4	63	89	29%	53	84.1%					
6:00-7:00PM	64	1	71	60	-18%	65	91.5%					
Total for Site 4-IN (Southbound)						701	37	837	1,005	17%	738	88.2%
4-OUT	CSAH 29 - North of New Ulm	NB	1	14-Aug-02	7:00-8:00AM	46	6	62	79	22%	52	83.9%
					8:00-9:00AM	42	13	59	73	19%	55	93.2%
					9:00-10:00AM	43	3	46	58	21%	46	100.0%
					10:00-11:00AM	51	4	60	76	21%	55	91.7%
					11:00AM-12:00PM	48	4	65	87	25%	52	80.0%
					12:00-1:00PM	59	2	70	82	15%	61	87.1%
					1:00-2:00PM	60	6	77	85	9%	66	85.7%
					2:00-3:00PM	60	8	73	90	19%	68	93.2%
					3:00-4:00PM	94	6	107	101	-6%	100	93.5%
					4:00-5:00PM	95	7	108	136	21%	102	94.4%
5:00-6:00PM	112	3	122	147	17%	115	94.3%					
6:00-7:00PM	55	1	56	74	24%	56	100.0%					
Total for Site 4-OUT (Northbound)						765	63	905	1,088	17%	828	91.5%

NOTE: The tube counts for Site 4 were obtained on Wednesday, August 21, 2002 which is exactly one week after the video survey was conducted.

Table 1 (con'td.): Site 5 Locations, Direction, Traffic Counts, Plates Read and Percentage of Plates Read.

Site No.	Site Location	Direction of Travel	No. of Lanes	Date of Shoot	Start Time	Passenger Plates	Commercial Plates	Total Vehicles	Total Vehicles (Tube Counts)	% Difference: Tube vs. Video	Total Plates	Plates % of Vehicles
5-IN	TH 15 - North of New Ulm	SB	1	14-Aug-02	7:00-8:00AM	148	11	170	174	2%	159	93.5%
					8:00-9:00AM	117	14	140	161	13%	131	93.6%
					9:00-10:00AM	119	17	154	176	13%	136	88.3%
					10:00-11:00AM	114	13	150	177	15%	127	84.7%
					11:00AM-12:00PM	122	19	164	197	17%	141	86.0%
					12:00-1:00PM	130	11	162	190	15%	141	87.0%
					1:00-2:00PM	132	7	156	193	19%	139	89.1%
					2:00-3:00PM	171	26	226	265	15%	197	87.2%
					3:00-4:00PM	176	13	212	251	16%	189	89.2%
					4:00-5:00PM	136	9	170	213	20%	145	85.3%
					5:00-6:00PM	148	14	187	229	18%	162	86.6%
6:00-7:00PM	94	8	114	156	27%	102	89.5%					
Total for Site 5-IN (Southbound)						1,607	162	2,005	2,382	16%	1,769	88.2%
5-OUT	TH 15 - North of New Ulm	NB	1	14-Aug-02	7:00-8:00AM	127	10	152	218	30%	137	90.1%
					8:00-9:00AM	112	16	139	204	32%	128	92.1%
					9:00-10:00AM	117	14	149	224	33%	131	87.9%
					10:00-11:00AM	121	8	139	187	26%	129	92.8%
					11:00AM-12:00PM	114	8	147	207	29%	122	83.0%
					12:00-1:00PM	141	4	170	206	17%	145	85.3%
					1:00-2:00PM	140	11	170	217	22%	151	88.8%
					2:00-3:00PM	123	12	165	239	31%	135	81.8%
					3:00-4:00PM	174	4	215	273	21%	178	82.8%
					4:00-5:00PM	195	11	235	306	23%	206	87.7%
					5:00-6:00PM	196	1	210	258	19%	197	93.8%
6:00-7:00PM	128	0	134	166	19%	128	95.5%					
Total for Site 5-OUT (Northbound)						1,688	99	2,025	2,705	25%	1,787	88.2%

Table 1 (con'td.): Site 6 Locations, Direction, Traffic Counts, Plates Read and Percentage of Plates Read.

Site No.	Site Location	Direction of Travel	No. of Lanes	Date of Shoot	Start Time	Passenger Plates	Commercial Plates	Total Vehicles	Total Vehicles (Tube Counts)	% Difference: Tube vs. Video	Total Plates	Plates % of Vehicles
6-IN	TH 14 - Between CSAH 37 and Courtland	WB	1	14-Aug-02	7:00-8:00AM	193	26	253	325	22%	219	86.6%
					8:00-9:00AM	166	38	237	337	30%	204	86.1%
					9:00-10:00AM	155	33	236	331	29%	188	79.7%
					10:00-11:00AM	166	32	246	354	31%	198	80.5%
					11:00AM-12:00PM	176	24	240	304	21%	200	83.3%
					12:00-1:00PM	214	23	286	381	25%	237	82.9%
					1:00-2:00PM	182	20	234	319	27%	202	86.3%
					2:00-3:00PM	215	23	300	401	25%	238	79.3%
					3:00-4:00PM	242	27	315	405	22%	269	85.4%
					4:00-5:00PM	223	24	292	370	21%	247	84.6%
5:00-6:00PM	287	10	346	374	7%	297	85.8%					
6:00-7:00PM	211	14	243	269	10%	225	92.6%					
Total for Site 6-IN (Westbound)						2,430	294	3,228	4,170	23%	2,724	84.4%
6-OUT	TH 14 - Between CSAH 37 and Courtland	EB	1	14-Aug-02	7:00-8:00AM	181	14	236	361	35%	195	82.6%
					8:00-9:00AM	226	21	297	335	11%	247	83.2%
					9:00-10:00AM	181	8	260	342	24%	189	72.7%
					10:00-11:00AM	196	1	261	333	22%	197	75.5%
					11:00AM-12:00PM	175	7	244	322	24%	182	74.6%
					12:00-1:00PM	192	0	256	316	19%	192	75.0%
					1:00-2:00PM	225	14	293	374	22%	239	81.6%
					2:00-3:00PM	186	24	276	363	24%	210	76.1%
					3:00-4:00PM	267	14	330	384	14%	281	85.2%
					4:00-5:00PM	290	8	349	419	17%	298	85.4%
5:00-6:00PM	271	21	331	383	14%	292	88.2%					
6:00-7:00PM	191	16	227	260	13%	207	91.2%					
Total for Site 6-OUT (Eastbound)						2,581	148	3,360	4,192	20%	2,729	81.2%

Table 1 (con'td.): Site 7 Locations, Direction, Traffic Counts, Plates Read and Percentage of Plates Read.

Site No.	Site Location	Direction of Travel	No. of Lanes	Date of Shoot	Start Time	Passenger Plates	Commercial Plates	Total Vehicles	Total Vehicles (Tube Counts)	% Difference: Tube vs. Video	Total Plates	Plates % of Vehicles
7-IN	TH 14 - East of Nicollet	WB	1	14-Aug-02	7:00-8:00AM	129	24	169	218	22%	153	90.5%
					8:00-9:00AM	116	48	178	248	28%	164	92.1%
					9:00-10:00AM	148	19	176	244	28%	167	94.9%
					10:00-11:00AM	108	38	162	280	42%	146	90.1%
					11:00AM-12:00PM	180	12	206	266	23%	192	93.2%
					12:00-1:00PM	127	7	150	266	44%	134	89.3%
					1:00-2:00PM	172	26	212	263	19%	198	93.4%
					2:00-3:00PM	223	28	263	334	21%	251	95.4%
					3:00-4:00PM	241	33	310	378	18%	274	88.4%
					4:00-5:00PM	326	24	367	438	16%	350	95.4%
5:00-6:00PM	314	7	337	375	10%	321	95.3%					
6:00-7:00PM	188	25	222	273	19%	213	95.9%					
Total for Site 7-IN (Westbound)						2,272	291	2,752	3,583	23%	2,563	93.1%
7-OUT	TH 14 - East of Nicollet	EB	1	14-Aug-02	7:00-8:00AM	313	25	368	419	12%	338	91.8%
					8:00-9:00AM	181	33	234	312	25%	214	91.5%
					9:00-10:00AM	180	12	217	293	26%	192	88.5%
					10:00-11:00AM	224	23	252	306	18%	247	98.0%
					11:00AM-12:00PM	167	25	206	254	19%	192	93.2%
					12:00-1:00PM	173	29	223	277	19%	202	90.6%
					1:00-2:00PM	207	26	246	308	20%	233	94.7%
					2:00-3:00PM	166	36	217	331	34%	202	93.1%
					3:00-4:00PM	214	33	258	343	25%	247	95.7%
					4:00-5:00PM	241	19	272	323	16%	260	95.6%
5:00-6:00PM	249	8	274	308	11%	257	93.8%					
6:00-7:00PM	169	21	205	244	16%	190	92.7%					
Total for Site 7-OUT (Eastbound)						2,484	290	2,972	3,718	20%	2,774	93.3%
Total for All 7 Sites (Both Directions)						22,652	2,085	27,919	34,518	19%	24,735	88.6%

DATA ANALYSIS

The license plate records associated with a given survey station was matched against the records associated with logically related stations to determine the pattern of movement among the several stations.

Through Traffic Passing Through New Ulm

The resulting origin-destination pairings for determining the Through vehicles passing through New Ulm are presented in Tables 2A-1 through 2A-7. Note that trips entering at each station are matched against trips exiting the area at all stations, excluding the one at which they entered. Thus, for example, of the 165 passenger vehicles observed entering northbound at Station 1 between 12:00 noon and 1:00 p.m. (Table 2A-1), 19 passenger vehicles were observed exiting Stations Numbers 2, 3, 4, 5 and 6 within a specified maximum travel time for that inbound time period. (Please refer to the next six following pages, page numbers 17 through 22 for Tables 2A-1 through 2A-6.)

The origin-destination pairings presented in Tables 2A-1 through 2A-6 provide an initial estimate of the actual number of vehicle movements between survey stations. These initial estimates need to be adjusted to take into account the fact that less than 100 percent of the license plates of vehicles passing a given survey station were read. The adjustment procedure is based on the license plate read rate at the two survey stations being paired. Consider the 13 passenger vehicle movements observed from Station 1 (TH 15/TH 68) to Station 5 (TH 15) for the 1:00 p.m. to 2:00 p.m. period, as presented in Table 2A-1. As shown in Table 1, 90.1 percent of the license plates of vehicles passing Station 1 inbound were read and 88.8 percent of the license plates of vehicles passing Station 2 outbound were read. The adjusted flow between these two stations during the time period in question is then calculated as:

$$13 \times [1/(0.901 \times 0.888)] = 16$$

Each observed origin-destination pairing is adjusted in this manner. The adjusted O-D pairings for the New Ulm Through traffic are presented as movement volumes in Tables 2B-1 through 2B-6 and as percentages of inbound volumes in Tables 2C-1 through 2C-6. (Please refer to page numbers 23 through 28 for Tables 2B-1 through 2B-6, and page numbers 29 through 34 for Tables 2C-1 through 2C-6.)

The breakdown between Local and Through trips from each inbound station to each outbound station was based on the nominal time it would take for a vehicle to travel from one station to another without stopping for any purpose other than for typical traffic conditions. The actual travel time measurements and the nominal non-stop times are presented in Table 1-B on the next following page, page number 16.

For example, each of the 13 passenger vehicles that passed both Station 1 inbound and Station 5 outbound during the 1:00 p.m. to 2:00 p.m. period (as shown in Table 2A-1) completed that journey in less than 21 minutes and were considered to be Through trips. All other observed trips were considered to be Local trips; that is: vehicles that were observed passing from Station 1 to Station 5 in more than 21 minutes and vehicles that were observed at one station but not at the other were considered to be Local trips.

Table 1-B: Travel Time Criteria for Determining Through Trips

TO/FROM STATION	FROM/TO STATION	Actual Travel Time Recorded in Minutes *	Maximum Travel Time Criteria in Minutes for Determining Through Trips
1	2	10	less than 16
1	3	12	less than 21
1	4	11	less than 21
1	5	11	less than 21
1	6	5	less than 11
1	7	19	less than 31
2	3	8	less than 16
2	4	9	less than 16
2	5	9	less than 16
2	6	10	less than 16
2	7	24	less than 36
3	4	5	less than 11
3	5	9	less than 16
3	6	10	less than 16
3	7	24	less than 36
4	5	8	less than 16
4	6	9	less than 16
4	7	23	less than 36
5	6	4	less than 11
5	7	18	less than 26
6	7	14	less than 21

* NOTE: Data collected by the Howard R. Green Company on 8/14/02

Table 2A-1: "Observed" O-D Matches from Site 1 Inbound - Northbound Direction

Passenger - Inbound From Site 1 - NB	Time of Day		Passenger Vehicle O-D Matches to Output Stations				
	Beginning	Inbound	Site 2 - SB Passenger	Site 3 - WB Passenger	Site 4 - NB Passenger	Site 5 - NB Passenger	Site 6 - EB Passenger
	7:00-8:00 am	228	0	0	0	8	0
	8:00-9:00 am	187	1	2	0	9	1
	9:00-10:00 am	148	0	4	2	18	0
	10:00-11:00 am	160	0	2	1	18	2
	11:00-12:00 pm	164	0	0	2	15	1
	12:00-1:00 pm	165	1	3	1	12	2
	1:00-2:00 pm	174	0	0	2	13	3
	2:00-3:00 pm	189	0	1	6	15	1
	3:00-4:00 pm	209	0	4	3	15	0
	4:00-5:00 pm	191	0	1	5	14	3
	5:00-6:00 pm	177	0	4	2	7	2
6:00-7:00 pm	176	0	1	2	12	0	
Total	2,170	2	22	26	156	15	

Commercial - Inbound From Site 1 - NB	Time of Day		Commercial Vehicle O-D Matches to Output Stations				
	Beginning	Inbound	Site 2 - SB Commerical	Site 3 - WB Commerical	Site 4 - NB Commerical	Site 5 - NB Commerical	Site 6 - EB Commerical
	7:00-8:00 am	16	0	1	0	2	0
	8:00-9:00 am	11	0	1	0	2	0
	9:00-10:00 am	13	0	0	0	0	0
	10:00-11:00 am	22	0	1	0	1	0
	11:00-12:00 pm	24	0	1	1	3	0
	12:00-1:00 pm	23	0	2	0	0	0
	1:00-2:00 pm	8	0	0	2	1	0
	2:00-3:00 pm	8	0	1	1	2	0
	3:00-4:00 pm	18	0	1	1	0	0
	4:00-5:00 pm	11	0	0	0	2	0
	5:00-6:00 pm	9	0	0	0	1	0
6:00-7:00 pm	2	0	0	0	0	0	
Total	163	0	8	5	14	0	

Table 2A-2: "Observed" O-D Matches from Site 2 Inbound - Northbound Direction

Passenger - Inbound From Site 2 - NB	Time of Day		Passenger Vehicle O-D Matches to Output Stations				
	Beginning	Inbound	Site 1 - SB Passenger	Site 3 - WB Passenger	Site 4 - NB Passenger	Site 5 - NB Passenger	Site 6 - EB Passenger
	7:00-8:00 am	117	0	1	0	1	2
8:00-9:00 am	70	0	0	0	5	1	
9:00-10:00 am	66	0	0	0	0	1	
10:00-11:00 am	62	1	1	0	1	4	
11:00-12:00 pm	50	0	0	0	1	1	
12:00-1:00 pm	52	1	1	0	0	0	
1:00-2:00 pm	69	2	0	0	2	1	
2:00-3:00 pm	57	1	1	0	2	0	
3:00-4:00 pm	57	0	1	0	0	1	
4:00-5:00 pm	55	0	1	0	0	0	
5:00-6:00 pm	70	1	0	0	2	1	
6:00-7:00 pm	76	1	1	0	2	0	
Total	800	7	7	0	16	12	

Commercial - Inbound From Site 2 - NB	Time of Day		Commercial Vehicle O-D Matches to Output Stations				
	Beginning	Inbound	Site 1 - SB Commerical	Site 3 - WB Commerical	Site 4 - NB Commerical	Site 5 - NB Commerical	Site 6 - EB Commerical
	7:00-8:00 am	0	0	0	0	0	0
8:00-9:00 am	3	0	0	0	0	0	
9:00-10:00 am	1	0	0	0	0	0	
10:00-11:00 am	2	0	0	0	0	0	
11:00-12:00 pm	1	0	0	0	0	0	
12:00-1:00 pm	0	0	0	0	0	0	
1:00-2:00 pm	6	0	0	0	0	0	
2:00-3:00 pm	4	0	0	0	0	0	
3:00-4:00 pm	0	0	0	0	0	0	
4:00-5:00 pm	1	0	0	0	0	0	
5:00-6:00 pm	1	0	0	0	0	0	
6:00-7:00 pm	2	0	0	0	0	0	
Total	22	0	0	0	0	0	

Table 2A-3: "Observed" O-D Matches from Site 3 Inbound - Eastbound Direction

Passenger - Inbound From Site 3 - EB	Time of Day		Passenger Vehicle O-D Matches to Output Stations				
	Beginning	Inbound	Site 1 - SB Passenger	Site 2 - SB Passenger	Site 4 - NB Passenger	Site 5 - NB Passenger	Site 6 - EB Passenger
	7:00-8:00 am	109	1	0	0	4	5
8:00-9:00 am	108	1	0	0	10	22	
9:00-10:00 am	140	1	2	0	5	25	
10:00-11:00 am	105	4	0	0	4	18	
11:00-12:00 pm	124	3	0	0	3	13	
12:00-1:00 pm	128	4	0	0	7	15	
1:00-2:00 pm	138	1	0	0	6	19	
2:00-3:00 pm	155	2	0	0	7	21	
3:00-4:00 pm	161	4	0	1	9	31	
4:00-5:00 pm	156	1	1	0	10	27	
5:00-6:00 pm	117	1	1	0	4	25	
6:00-7:00 pm	106	3	0	0	8	17	
Total	1,547	26	4	1	77	238	

Commercial - Inbound From Site 3 - EB	Time of Day		Commercial Vehicle O-D Matches to Output Stations				
	Beginning	Inbound	Site 1 - SB Commerical	Site 2 - SB Commerical	Site 4 - NB Commerical	Site 5 - NB Commerical	Site 6 - EB Commerical
	7:00-8:00 am	33	2	0	0	1	2
8:00-9:00 am	21	6	0	0	0	5	
9:00-10:00 am	30	6	0	0	0	1	
10:00-11:00 am	25	4	0	0	2	0	
11:00-12:00 pm	15	4	0	0	0	1	
12:00-1:00 pm	6	2	0	0	0	0	
1:00-2:00 pm	35	3	0	0	3	4	
2:00-3:00 pm	19	2	0	0	0	2	
3:00-4:00 pm	5	1	0	0	0	1	
4:00-5:00 pm	12	3	0	0	0	0	
5:00-6:00 pm	4	0	0	0	0	2	
6:00-7:00 pm	2	0	0	0	0	0	
Total	206	33	0	0	6	18	

Table 2A-4: "Observed" O-D Matches from Site 4 Inbound - Southbound Direction

Passenger - Inbound From Site 4 - SB	Time of Day		Passenger Vehicle O-D Matches to Output Stations				
	Beginning	Inbound	Site 1 - SB Passenger	Site 2 - SB Passenger	Site 3 - WB Passenger	Site 5 - NB Passenger	Site 6 - EB Passenger
	7:00-8:00 am	88	3	0	0	0	9
8:00-9:00 am	78	2	0	1	0	17	
9:00-10:00 am	66	1	0	0	1	14	
10:00-11:00 am	81	4	0	1	1	12	
11:00-12:00 pm	47	1	0	0	2	10	
12:00-1:00 pm	50	1	0	0	0	6	
1:00-2:00 pm	63	1	0	0	1	11	
2:00-3:00 pm	72	2	1	0	2	6	
3:00-4:00 pm	56	4	0	0	2	6	
4:00-5:00 pm	66	3	0	0	1	13	
5:00-6:00 pm	58	2	0	0	0	7	
6:00-7:00 pm	70	1	1	0	1	13	
Total	794	25	2	2	11	124	

Commercial - Inbound From Site 4 - SB	Time of Day		Commercial Vehicle O-D Matches to Output Stations				
	Beginning	Inbound	Site 1 - SB Commerical	Site 2 - SB Commerical	Site 3 - WB Commerical	Site 5 - NB Commerical	Site 6 - EB Commerical
	7:00-8:00 am	2	0	0	0	0	1
8:00-9:00 am	6	0	0	0	1	1	
9:00-10:00 am	2	0	0	0	0	0	
10:00-11:00 am	8	0	0	0	0	0	
11:00-12:00 pm	6	0	0	0	0	1	
12:00-1:00 pm	5	0	0	0	0	0	
1:00-2:00 pm	0	0	0	0	0	0	
2:00-3:00 pm	3	0	0	0	1	1	
3:00-4:00 pm	1	0	0	0	0	0	
4:00-5:00 pm	3	0	0	0	0	0	
5:00-6:00 pm	5	0	0	0	0	1	
6:00-7:00 pm	1	0	0	0	0	0	
Total	42	0	0	0	2	5	

Table 2A-5: "Observed" O-D Matches from Site 5 Inbound - Southbound Direction

Passenger - Inbound From Site 5 - SB	Time of Day		Passenger Vehicle O-D Matches to Output Stations				
	Beginning	Inbound	Site 1 - SB Passenger	Site 2 - SB Passenger	Site 3 - WB Passenger	Site 4 - NB Passenger	Site 6 - EB Passenger
	7:00-8:00 am	158	4	1	6	0	6
8:00-9:00 am	125	10	0	4	0	11	
9:00-10:00 am	135	14	1	6	1	9	
10:00-11:00 am	135	15	1	3	2	7	
11:00-12:00 pm	142	7	0	1	0	11	
12:00-1:00 pm	149	12	0	4	0	17	
1:00-2:00 pm	148	10	1	4	0	13	
2:00-3:00 pm	196	16	1	4	0	13	
3:00-4:00 pm	197	7	1	13	1	14	
4:00-5:00 pm	159	7	2	12	2	10	
5:00-6:00 pm	171	0	0	0	0	0	
6:00-7:00 pm	105	0	0	0	0	0	
Total	1,821	102	8	57	6	111	

Commercial - Inbound From Site 5 - SB	Time of Day		Commercial Vehicle O-D Matches to Output Stations				
	Beginning	Inbound	Site 1 - SB Commerical	Site 2 - SB Commerical	Site 3 - WB Commerical	Site 4 - NB Commerical	Site 6 - EB Commerical
	7:00-8:00 am	12	2	0	1	0	1
8:00-9:00 am	15	4	0	1	0	1	
9:00-10:00 am	19	7	0	1	0	0	
10:00-11:00 am	15	3	0	0	0	0	
11:00-12:00 pm	22	4	0	1	0	1	
12:00-1:00 pm	13	0	0	0	0	0	
1:00-2:00 pm	8	2	0	0	0	1	
2:00-3:00 pm	30	3	0	1	1	3	
3:00-4:00 pm	15	3	0	0	0	2	
4:00-5:00 pm	11	2	0	0	0	0	
5:00-6:00 pm	16	0	0	0	0	0	
6:00-7:00 pm	9	0	0	0	0	0	
Total	184	30	0	5	1	9	

Table 2A-6: "Observed" O-D Matches from Site 6 Inbound - Westbound Direction

Passenger - Inbound From Site 6 - WB	Time of Day		Passenger Vehicle O-D Matches to Output Stations				
	Beginning	Inbound	Site 1 - SB Passenger	Site 2 - SB Passenger	Site 3 - WB Passenger	Site 4 - NB Passenger	Site 5 - NB Passenger
	7:00-8:00 am	223	1	1	18	0	5
8:00-9:00 am	193	1	1	26	0	10	
9:00-10:00 am	195	0	0	20	10	6	
10:00-11:00 am	206	1	0	16	10	9	
11:00-12:00 pm	211	0	0	17	7	10	
12:00-1:00 pm	258	2	0	24	6	10	
1:00-2:00 pm	211	2	0	19	9	12	
2:00-3:00 pm	271	0	1	23	9	10	
3:00-4:00 pm	283	1	1	30	16	6	
4:00-5:00 pm	264	1	3	11	20	14	
5:00-6:00 pm	334	1	2	7	3	3	
6:00-7:00 pm	228	0	0	3	5	0	
Total	2,877	10	9	214	95	95	

Commercial - Inbound From Site 6 - WB	Time of Day		Commercial Vehicle O-D Matches to Output Stations				
	Beginning	Inbound	Site 1 - SB Commerical	Site 2 - SB Commerical	Site 3 - WB Commerical	Site 4 - NB Commerical	Site 5 - NB Commerical
	7:00-8:00 am	30	0	0	8	0	2
8:00-9:00 am	44	0	0	11	0	5	
9:00-10:00 am	41	0	0	7	0	2	
10:00-11:00 am	40	0	0	14	1	1	
11:00-12:00 pm	29	0	0	5	0	1	
12:00-1:00 pm	28	1	0	4	1	4	
1:00-2:00 pm	23	0	0	2	0	1	
2:00-3:00 pm	29	0	0	3	2	2	
3:00-4:00 pm	32	0	0	2	4	4	
4:00-5:00 pm	28	0	0	5	2	0	
5:00-6:00 pm	12	0	0	0	0	0	
6:00-7:00 pm	15	0	0	0	0	0	
Total	351	1	0	61	10	22	

Table 2B-1: "Adjusted" O-D Movement Counts from Site 1 Inbound - Northbound Direction

Passenger - Inbound From Site 1 - NB	Time of Day		Passenger Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 2 - SB Passenger	Site 3 - WB Passenger	Site 4 - NB Passenger	Site 5 - NB Passenger	Site 6 - EB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	228	0	0	0	9	0	9	219
	8:00-9:00 am	187	1	3	0	11	1	16	171
	9:00-10:00 am	148	0	6	3	26	0	35	114
	10:00-11:00 am	160	0	3	1	21	3	28	133
	11:00-12:00 pm	164	0	0	3	20	1	24	140
	12:00-1:00 pm	165	1	4	1	16	3	25	140
	1:00-2:00 pm	174	0	0	3	16	4	23	151
	2:00-3:00 pm	189	0	1	7	21	1	31	158
	3:00-4:00 pm	209	0	5	4	23	0	32	177
	4:00-5:00 pm	191	0	1	6	20	4	32	159
	5:00-6:00 pm	177	0	5	2	8	2	18	160
	6:00-7:00 pm	176	0	1	2	13	0	16	159
	Total	2,170	3	29	33	204	21	289	1,881
Commercial - Inbound From Site 1 - NB	Time of Day		Commercial Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 2 - SB Commerical	Site 3 - WB Commerical	Site 4 - NB Commerical	Site 5 - NB Commerical	Site 6 - EB Commerical	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	16	0	1	0	2	0	4	12
	8:00-9:00 am	11	0	1	0	2	0	4	7
	9:00-10:00 am	13	0	0	0	0	0	0	13
	10:00-11:00 am	22	0	1	0	1	0	3	19
	11:00-12:00 pm	24	0	1	1	4	0	7	17
	12:00-1:00 pm	23	0	3	0	0	0	3	20
	1:00-2:00 pm	8	0	0	3	1	0	4	4
	2:00-3:00 pm	8	0	1	1	3	0	5	3
	3:00-4:00 pm	18	0	1	1	0	0	2	15
	4:00-5:00 pm	11	0	0	0	3	0	3	8
	5:00-6:00 pm	9	0	0	0	1	0	1	8
	6:00-7:00 pm	2	0	0	0	0	0	0	2
	Total	163	0	10	7	18	0	34	129

Table 2B-3: "Adjusted" O-D Movement Counts from Site 3 Inbound - Eastbound Direction

Passenger - Inbound From Site 3 - EB	Time of Day		Passenger Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Passenger	Site 2 - SB Passenger	Site 4 - NB Passenger	Site 5 - NB Passenger	Site 6 - EB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	109	1	0	0	5	7	13	95
	8:00-9:00 am	108	1	0	0	12	29	42	67
	9:00-10:00 am	140	1	3	0	6	36	46	94
	10:00-11:00 am	105	5	0	0	5	26	35	70
	11:00-12:00 pm	124	4	0	0	4	20	28	96
	12:00-1:00 pm	128	5	0	0	9	23	38	90
	1:00-2:00 pm	138	1	0	0	7	24	32	105
	2:00-3:00 pm	155	3	0	0	10	31	43	112
3:00-4:00 pm	161	5	0	1	12	40	58	102	
4:00-5:00 pm	156	1	1	0	12	34	48	108	
5:00-6:00 pm	117	1	1	0	5	30	37	80	
6:00-7:00 pm	106	4	0	0	9	20	32	74	
Total	1,547	33	5	1	95	319	453	1,094	

Commercial - Inbound From Site 3 - EB	Time of Day		Commercial Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Commerical	Site 2 - SB Commerical	Site 4 - NB Commerical	Site 5 - NB Commerical	Site 6 - EB Commerical	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	33	3	0	0	1	3	7	27
	8:00-9:00 am	21	7	0	0	0	7	14	7
	9:00-10:00 am	30	7	0	0	0	1	9	21
	10:00-11:00 am	25	5	0	0	2	0	7	18
	11:00-12:00 pm	15	5	0	0	0	2	7	8
	12:00-1:00 pm	6	3	0	0	0	0	3	3
	1:00-2:00 pm	35	4	0	0	4	5	12	23
	2:00-3:00 pm	19	3	0	0	0	3	5	13
3:00-4:00 pm	5	1	0	0	0	1	2	3	
4:00-5:00 pm	12	4	0	0	0	0	4	8	
5:00-6:00 pm	4	0	0	0	0	2	2	2	
6:00-7:00 pm	2	0	0	0	0	0	0	2	
Total	206	40	0	0	0	7	24	71	135

Table 2B-4: "Adjusted" O-D Movement Counts from Site 4 Inbound - Southbound Direction

Passenger - Inbound From Site 4 - SB	Time of Day		Passenger Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Passenger	Site 2 - SB Passenger	Site 3 - WB Passenger	Site 5 - NB Passenger	Site 6 - EB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	88	4	0	0	0	12	16	72
	8:00-9:00 am	78	3	0	1	0	24	28	50
	9:00-10:00 am	66	1	0	0	1	23	26	39
	10:00-11:00 am	81	5	0	1	1	17	25	57
	11:00-12:00 pm	47	1	0	0	3	15	20	28
	12:00-1:00 pm	50	1	0	0	0	10	11	39
	1:00-2:00 pm	63	1	0	0	1	14	17	46
	2:00-3:00 pm	72	3	1	0	3	9	16	56
3:00-4:00 pm	56	5	0	0	3	8	15	41	
4:00-5:00 pm	66	4	0	0	1	18	23	43	
5:00-6:00 pm	58	3	0	0	0	9	12	46	
6:00-7:00 pm	70	1	1	0	1	16	19	51	
Total	794	32	2	3	14	175	227	567	

Commercial - Inbound From Site 4 - SB	Time of Day		Commercial Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Commerical	Site 2 - SB Commerical	Site 3 - WB Commerical	Site 5 - NB Commerical	Site 6 - EB Commerical	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	2	0	0	0	0	1	1	1
	8:00-9:00 am	6	0	0	0	1	1	3	3
	9:00-10:00 am	2	0	0	0	0	0	0	2
	10:00-11:00 am	8	0	0	0	0	0	0	8
	11:00-12:00 pm	6	0	0	0	0	2	2	4
	12:00-1:00 pm	5	0	0	0	0	0	0	5
	1:00-2:00 pm	0	0	0	0	0	0	0	0
	2:00-3:00 pm	3	0	0	0	1	2	3	0
3:00-4:00 pm	1	0	0	0	0	0	0	1	
4:00-5:00 pm	3	0	0	0	0	0	0	3	
5:00-6:00 pm	5	0	0	0	0	1	1	3	
6:00-7:00 pm	1	0	0	0	0	0	0	1	
Total	42	0	0	0	2	7	9	32	

Table 2B-5: "Adjusted" O-D Movement Counts from Site 5 Inbound - Southbound Direction

Passenger - Inbound From Site 5 - SB	Time of Day		Passenger Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Passenger	Site 2 - SB Passenger	Site 3 - WB Passenger	Site 4 - NB Passenger	Site 6 - EB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	158	5	1	7	0	8	21	137
	8:00-9:00 am	125	12	0	5	0	14	31	94
	9:00-10:00 am	135	18	1	8	1	14	42	92
	10:00-11:00 am	135	20	1	4	3	11	39	95
	11:00-12:00 pm	142	9	0	1	0	17	28	114
	12:00-1:00 pm	149	16	0	5	0	26	47	102
	1:00-2:00 pm	148	13	1	5	0	18	37	111
	2:00-3:00 pm	196	21	1	5	0	20	47	149
3:00-4:00 pm	197	9	1	15	1	18	45	152	
4:00-5:00 pm	159	9	2	15	2	14	42	117	
5:00-6:00 pm	171	0	0	0	0	0	0	171	
6:00-7:00 pm	105	0	0	0	0	0	0	105	
Total	1,821	132	10	71	7	160	380	1,441	

Commercial - Inbound From Site 5 - SB	Time of Day		Commercial Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Commerical	Site 2 - SB Commerical	Site 3 - WB Commerical	Site 4 - NB Commerical	Site 6 - EB Commerical	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	12	2	0	1	0	1	5	7
	8:00-9:00 am	15	5	0	1	0	1	7	8
	9:00-10:00 am	19	9	0	1	0	0	10	9
	10:00-11:00 am	15	4	0	0	0	0	4	11
	11:00-12:00 pm	22	5	0	1	0	2	8	14
	12:00-1:00 pm	13	0	0	0	0	0	0	13
	1:00-2:00 pm	8	3	0	0	0	1	4	4
	2:00-3:00 pm	30	4	0	1	1	5	11	19
3:00-4:00 pm	15	4	0	0	0	3	6	8	
4:00-5:00 pm	11	3	0	0	0	0	3	8	
5:00-6:00 pm	16	0	0	0	0	0	0	16	
6:00-7:00 pm	9	0	0	0	0	0	0	9	
Total	184	39	0	6	1	13	59	125	

Table 2B-6: "Adjusted" O-D Movement Counts from Site 6 Inbound - Westbound Direction

Passenger - Inbound From Site 6 - WB	Time of Day		Passenger Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Passenger	Site 2 - SB Passenger	Site 3 - WB Passenger	Site 4 - NB Passenger	Site 5 - NB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	223	1	2	23	0	6	33	190
	8:00-9:00 am	193	1	1	34	0	13	50	143
	9:00-10:00 am	195	0	0	29	13	9	50	144
	10:00-11:00 am	206	1	0	25	14	12	52	154
	11:00-12:00 pm	211	0	0	24	11	14	49	162
	12:00-1:00 pm	258	3	0	33	8	14	58	200
	1:00-2:00 pm	211	3	0	25	12	16	55	156
	2:00-3:00 pm	271	0	1	33	12	15	62	209
	3:00-4:00 pm	283	1	1	37	20	8	68	215
	4:00-5:00 pm	264	1	4	14	25	19	62	201
	5:00-6:00 pm	334	1	2	9	4	4	20	314
	6:00-7:00 pm	228	0	0	3	5	0	9	219
	Total	2,877	13	12	290	123	130	569	2,308

Commercial - Inbound From Site 6 - WB	Time of Day		Commercial Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Commerical	Site 2 - SB Commerical	Site 3 - WB Commerical	Site 4 - NB Commerical	Site 5 - NB Commerical	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	30	0	0	10	0	3	13	17
	8:00-9:00 am	44	0	0	15	0	6	21	23
	9:00-10:00 am	41	0	0	10	0	3	13	28
	10:00-11:00 am	40	0	0	22	1	1	25	15
	11:00-12:00 pm	29	0	0	7	0	1	9	20
	12:00-1:00 pm	28	1	0	6	1	6	14	14
	1:00-2:00 pm	23	0	0	3	0	1	4	19
	2:00-3:00 pm	29	0	0	4	3	3	10	19
	3:00-4:00 pm	32	0	0	2	5	6	13	18
	4:00-5:00 pm	28	0	0	6	3	0	9	20
	5:00-6:00 pm	12	0	0	0	0	0	0	12
	6:00-7:00 pm	15	0	0	0	0	0	0	15
	Total	351	1	0	85	13	30	130	221

Table 2C-1: "Adjusted" O-D Percentages from Site 1 Inbound - Northbound Direction (based on inbound traffic)

Passenger - Inbound From Site 1 - NB	Time of Day		Passenger Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 2 - SB Passenger	Site 3 - WB Passenger	Site 4 - NB Passenger	Site 5 - NB Passenger	Site 6 - EB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	228	0.0%	0.0%	0.0%	4.1%	0.0%	4.1%	95.9%
	8:00-9:00 am	187	0.7%	1.4%	0.0%	5.8%	0.7%	8.6%	91.4%
	9:00-10:00 am	148	0.0%	4.0%	1.7%	17.6%	0.0%	23.4%	76.6%
	10:00-11:00 am	160	0.0%	1.7%	0.7%	13.0%	1.8%	17.2%	82.8%
	11:00-12:00 pm	164	0.0%	0.0%	1.7%	12.0%	0.9%	14.6%	85.4%
	12:00-1:00 pm	165	0.7%	2.3%	0.8%	9.6%	1.8%	15.2%	84.8%
	1:00-2:00 pm	174	0.0%	0.0%	1.5%	9.3%	2.3%	13.2%	86.8%
	2:00-3:00 pm	189	0.0%	0.7%	3.9%	11.0%	0.8%	16.3%	83.7%
	3:00-4:00 pm	209	0.0%	2.5%	1.9%	11.0%	0.0%	15.5%	84.5%
	4:00-5:00 pm	191	0.0%	0.7%	3.4%	10.2%	2.3%	16.5%	83.5%
	5:00-6:00 pm	177	0.0%	2.7%	1.3%	4.6%	1.4%	10.0%	90.0%
	6:00-7:00 pm	176	0.0%	0.6%	1.2%	7.5%	0.0%	9.4%	90.6%
	Total	2,170	0.1%	1.3%	1.5%	9.4%	1.0%	13.3%	86.7%
Commercial - Inbound From Site 1 - NB	Time of Day		Commercial Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 2 - SB Commercial	Site 3 - WB Commercial	Site 4 - NB Commercial	Site 5 - NB Commercial	Site 6 - EB Commercial	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	16	0.0%	7.5%	0.0%	14.8%	0.0%	22.3%	77.7%
	8:00-9:00 am	11	0.0%	11.4%	0.0%	21.7%	0.0%	33.1%	66.9%
	9:00-10:00 am	13	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	10:00-11:00 am	22	0.0%	6.3%	0.0%	5.4%	0.0%	11.7%	88.3%
	11:00-12:00 pm	24	0.0%	5.4%	5.7%	16.4%	0.0%	27.5%	72.5%
	12:00-1:00 pm	23	0.0%	11.4%	0.0%	0.0%	0.0%	11.4%	88.6%
	1:00-2:00 pm	8	0.0%	0.0%	33.3%	16.1%	0.0%	49.4%	50.6%
	2:00-3:00 pm	8	0.0%	16.3%	15.3%	34.9%	0.0%	66.5%	33.5%
	3:00-4:00 pm	18	0.0%	5.6%	7.6%	0.0%	0.0%	13.3%	86.7%
	4:00-5:00 pm	11	0.0%	0.0%	0.0%	25.4%	0.0%	25.4%	74.6%
	5:00-6:00 pm	9	0.0%	0.0%	0.0%	13.3%	0.0%	13.3%	86.7%
	6:00-7:00 pm	2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	Total	163	0.0%	6.1%	4.0%	10.9%	0.0%	21.1%	78.9%

Table 2C-3: "Adjusted" O-D Percentages from Site 3 Inbound - Eastbound Direction (based on inbound traffic)

Passenger - Inbound From Site 3 - EB	Time of Day		Passenger Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Passenger	Site 2 - SB Passenger	Site 4 - NB Passenger	Site 5 - NB Passenger	Site 6 - EB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	109	1.2%	0.0%	0.0%	4.7%	6.4%	12.2%	87.8%
	8:00-9:00 am	108	1.1%	0.0%	0.0%	10.9%	26.5%	38.4%	61.6%
	9:00-10:00 am	140	0.9%	1.9%	0.0%	4.3%	25.9%	32.8%	67.2%
	10:00-11:00 am	105	4.6%	0.0%	0.0%	4.4%	24.3%	33.4%	66.6%
	11:00-12:00 pm	124	3.2%	0.0%	0.0%	3.3%	16.1%	22.6%	77.4%
	12:00-1:00 pm	128	4.1%	0.0%	0.0%	7.4%	18.0%	29.5%	70.5%
	1:00-2:00 pm	138	0.9%	0.0%	0.0%	5.1%	17.6%	23.6%	76.4%
	2:00-3:00 pm	155	1.6%	0.0%	0.0%	6.2%	19.9%	27.6%	72.4%
3:00-4:00 pm	161	3.1%	0.0%	0.7%	7.4%	24.9%	36.2%	63.8%	
4:00-5:00 pm	156	0.8%	0.7%	0.0%	7.8%	21.7%	30.9%	69.1%	
5:00-6:00 pm	117	1.0%	0.9%	0.0%	3.9%	25.8%	31.6%	68.4%	
6:00-7:00 pm	106	3.4%	0.0%	0.0%	8.4%	18.6%	30.4%	69.6%	
Total	1,547	2.1%	0.3%	0.1%	6.2%	20.6%	29.3%	70.7%	

Commercial - Inbound From Site 3 - EB	Time of Day		Commercial Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Commerical	Site 2 - SB Commerical	Site 4 - NB Commerical	Site 5 - NB Commerical	Site 6 - EB Commerical	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	33	7.8%	0.0%	0.0%	3.8%	8.3%	20.0%	80.0%
	8:00-9:00 am	21	35.9%	0.0%	0.0%	0.0%	31.6%	67.5%	32.5%
	9:00-10:00 am	30	24.4%	0.0%	0.0%	0.0%	4.9%	29.3%	70.7%
	10:00-11:00 am	25	19.8%	0.0%	0.0%	9.4%	0.0%	29.1%	70.9%
	11:00-12:00 pm	15	33.3%	0.0%	0.0%	0.0%	13.3%	46.7%	53.3%
	12:00-1:00 pm	6	45.5%	0.0%	0.0%	0.0%	0.0%	45.5%	54.5%
	1:00-2:00 pm	35	10.0%	0.0%	0.0%	9.9%	14.4%	34.4%	65.6%
	2:00-3:00 pm	19	13.4%	0.0%	0.0%	0.0%	15.5%	28.8%	71.2%
3:00-4:00 pm	5	20.0%	0.0%	0.0%	0.0%	20.0%	40.0%	60.0%	
4:00-5:00 pm	12	31.0%	0.0%	0.0%	0.0%	0.0%	31.0%	69.0%	
5:00-6:00 pm	4	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	
6:00-7:00 pm	2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
Total	206	19.6%	0.0%	0.0%	3.4%	11.5%	34.6%	65.4%	

Table 2C-4: "Adjusted" O-D Percentages from Site 4 Inbound - Southbound Direction (based on inbound traffic)

Passenger - Inbound From Site 4 - SB	Time of Day		Passenger Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Passenger	Site 2 - SB Passenger	Site 3 - WB Passenger	Site 5 - NB Passenger	Site 6 - EB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	88	4.2%	0.0%	0.0%	0.0%	13.4%	17.7%	82.3%
	8:00-9:00 am	78	3.4%	0.0%	1.7%	0.0%	31.0%	36.1%	63.9%
	9:00-10:00 am	66	2.1%	0.0%	0.0%	2.1%	35.7%	39.9%	60.1%
	10:00-11:00 am	81	6.1%	0.0%	1.7%	1.4%	21.2%	30.4%	69.6%
	11:00-12:00 pm	47	2.8%	0.0%	0.0%	5.9%	32.7%	41.3%	58.7%
	12:00-1:00 pm	50	2.8%	0.0%	0.0%	0.0%	19.5%	22.3%	77.7%
	1:00-2:00 pm	63	1.9%	0.0%	0.0%	1.9%	22.9%	26.7%	73.3%
	2:00-3:00 pm	72	3.7%	1.6%	0.0%	3.9%	12.7%	22.0%	78.0%
3:00-4:00 pm	56	8.7%	0.0%	0.0%	4.6%	13.6%	26.9%	73.1%	
4:00-5:00 pm	66	6.0%	0.0%	0.0%	2.0%	26.7%	34.7%	65.3%	
5:00-6:00 pm	58	4.6%	0.0%	0.0%	0.0%	16.2%	20.8%	79.2%	
6:00-7:00 pm	70	1.8%	1.7%	0.0%	1.6%	22.3%	27.4%	72.6%	
Total	794	4.0%	0.3%	0.3%	1.8%	22.1%	28.6%	71.4%	

Commercial - Inbound From Site 4 - SB	Time of Day		Commercial Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Commerical	Site 2 - SB Commerical	Site 3 - WB Commerical	Site 5 - NB Commerical	Site 6 - EB Commerical	Total Through Commerical	Local Traffic Commerical
	7:00-8:00 am	2	0.0%	0.0%	0.0%	0.0%	65.6%	65.6%	34.4%
	8:00-9:00 am	6	0.0%	0.0%	0.0%	21.7%	24.0%	45.8%	54.2%
	9:00-10:00 am	2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	10:00-11:00 am	8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	11:00-12:00 pm	6	0.0%	0.0%	0.0%	0.0%	26.8%	26.8%	73.2%
	12:00-1:00 pm	5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	1:00-2:00 pm	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2:00-3:00 pm	3	0.0%	0.0%	0.0%	33.3%	50.5%	83.9%	16.1%
3:00-4:00 pm	1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
4:00-5:00 pm	3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
5:00-6:00 pm	5	0.0%	0.0%	0.0%	0.0%	28.3%	28.3%	71.7%	
6:00-7:00 pm	1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
Total	42	0.0%	0.0%	0.0%	5.5%	17.1%	22.6%	77.4%	

Table 2C-5: "Adjusted" O-D Percentages from Site 5 Inbound - Southbound Direction (based on inbound traffic)

Passenger - Inbound From Site 5 - SB	Time of Day		Passenger Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Passenger	Site 2 - SB Passenger	Site 3 - WB Passenger	Site 4 - NB Passenger	Site 6 - EB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	158	3.1%	0.9%	4.6%	0.0%	4.9%	13.5%	86.5%
	8:00-9:00 am	125	9.7%	0.0%	3.9%	0.0%	11.3%	24.9%	75.1%
	9:00-10:00 am	135	13.4%	1.0%	5.9%	0.8%	10.4%	31.5%	68.5%
	10:00-11:00 am	135	15.0%	0.9%	3.3%	1.9%	8.1%	29.3%	70.7%
	11:00-12:00 pm	142	6.5%	0.0%	1.0%	0.0%	12.1%	19.6%	80.4%
	12:00-1:00 pm	149	10.5%	0.0%	3.5%	0.0%	17.4%	31.4%	68.6%
	1:00-2:00 pm	148	8.6%	0.8%	3.4%	0.0%	12.1%	24.9%	75.1%
	2:00-3:00 pm	196	10.6%	0.6%	2.7%	0.0%	10.0%	23.9%	76.1%
3:00-4:00 pm	197	4.5%	0.6%	7.8%	0.6%	9.3%	22.8%	77.2%	
4:00-5:00 pm	159	5.8%	1.5%	9.2%	1.6%	8.6%	26.6%	73.4%	
5:00-6:00 pm	171	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
6:00-7:00 pm	105	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
Total	1,821	7.2%	0.5%	3.9%	0.4%	8.8%	20.9%	79.1%	

Commercial - Inbound From Site 5 - SB	Time of Day		Commercial Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Commerical	Site 2 - SB Commerical	Site 3 - WB Commerical	Site 4 - NB Commerical	Site 6 - EB Commerical	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	12	20.7%	0.0%	10.2%	0.0%	11.0%	41.9%	58.1%
	8:00-9:00 am	15	32.5%	0.0%	8.1%	0.0%	8.6%	49.2%	50.8%
	9:00-10:00 am	19	46.8%	0.0%	6.8%	0.0%	0.0%	53.6%	46.4%
	10:00-11:00 am	15	26.2%	0.0%	0.0%	0.0%	0.0%	26.2%	73.8%
	11:00-12:00 pm	22	23.9%	0.0%	6.3%	0.0%	7.1%	37.2%	62.8%
	12:00-1:00 pm	13	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	1:00-2:00 pm	8	32.5%	0.0%	0.0%	0.0%	17.5%	50.0%	50.0%
	2:00-3:00 pm	30	13.1%	0.0%	4.4%	4.1%	15.2%	36.8%	63.2%
3:00-4:00 pm	15	26.2%	0.0%	0.0%	0.0%	18.1%	44.3%	55.7%	
4:00-5:00 pm	11	25.3%	0.0%	0.0%	0.0%	0.0%	25.3%	74.7%	
5:00-6:00 pm	16	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
6:00-7:00 pm	9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
Total	184	21.0%	0.0%	3.5%	0.7%	6.9%	32.0%	68.0%	

Table 2C-6: "Adjusted" O-D Percentages from Site 6 Inbound - Westbound Direction (based on inbound traffic)

Passenger - Inbound From Site 6 - WB	Time of Day		Passenger Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Passenger	Site 2 - SB Passenger	Site 3 - WB Passenger	Site 4 - NB Passenger	Site 5 - NB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	223	0.6%	0.7%	10.5%	0.0%	2.9%	14.7%	85.3%
	8:00-9:00 am	193	0.7%	0.8%	17.8%	0.0%	6.5%	25.8%	74.2%
	9:00-10:00 am	195	0.0%	0.0%	15.0%	6.5%	4.4%	25.9%	74.1%
	10:00-11:00 am	206	0.7%	0.0%	12.2%	6.6%	5.8%	25.3%	74.7%
	11:00-12:00 pm	211	0.0%	0.0%	11.5%	5.0%	6.8%	23.3%	76.7%
	12:00-1:00 pm	258	1.1%	0.0%	12.8%	3.2%	5.5%	22.6%	77.4%
	1:00-2:00 pm	211	1.2%	0.0%	11.7%	5.8%	7.4%	26.2%	73.8%
	2:00-3:00 pm	271	0.0%	0.5%	12.2%	4.5%	5.7%	22.8%	77.2%
3:00-4:00 pm	283	0.5%	0.4%	13.0%	7.1%	3.0%	24.0%	76.0%	
4:00-5:00 pm	264	0.5%	1.3%	5.1%	9.5%	7.2%	23.6%	76.4%	
5:00-6:00 pm	334	0.4%	0.7%	2.7%	1.1%	1.1%	6.0%	94.0%	
6:00-7:00 pm	228	0.0%	0.0%	1.5%	2.4%	0.0%	3.9%	96.1%	
Total	2,877	0.5%	0.4%	10.1%	4.3%	4.5%	19.8%	80.2%	

Commercial - Inbound From Site 6 - WB	Time of Day		Commercial Vehicle O-D Matches to Output Stations					Through	Local
	Beginning	Inbound	Site 1 - SB Commercial	Site 2 - SB Commercial	Site 3 - WB Commercial	Site 4 - NB Commercial	Site 5 - NB Commercial	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	30	0.0%	0.0%	34.7%	0.0%	8.5%	43.2%	56.8%
	8:00-9:00 am	44	0.0%	0.0%	32.9%	0.0%	14.3%	47.2%	52.8%
	9:00-10:00 am	41	0.0%	0.0%	24.7%	0.0%	6.9%	31.6%	68.4%
	10:00-11:00 am	40	0.0%	0.0%	55.2%	3.4%	3.4%	62.0%	38.0%
	11:00-12:00 pm	29	0.0%	0.0%	24.8%	0.0%	5.0%	29.8%	70.2%
	12:00-1:00 pm	28	4.9%	0.0%	19.9%	5.0%	20.4%	50.2%	49.8%
	1:00-2:00 pm	23	0.0%	0.0%	11.2%	0.0%	5.6%	16.9%	83.1%
	2:00-3:00 pm	29	0.0%	0.0%	14.8%	9.3%	10.6%	34.8%	65.2%
3:00-4:00 pm	32	0.0%	0.0%	7.8%	15.9%	17.9%	41.5%	58.5%	
4:00-5:00 pm	28	0.0%	0.0%	21.6%	8.8%	0.0%	30.5%	69.5%	
5:00-6:00 pm	12	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
6:00-7:00 pm	15	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
Total	351	0.4%	0.0%	24.3%	3.7%	8.6%	37.0%	63.0%	

Through Traffic Along TH 14 Between Mankato and New Ulm

The resulting origin-destination pairings for determining the Through vehicles passing along TH 14 from west of Mankato (Station 7) to west of New Ulm (Station 3) are presented in Tables 3A-3, 3A-6, 3D-6 and 3A-7. Station 7 located just east of Nicollet was the farthest eastern station, Station 3 located just west of New Ulm was the farthest western station, and Station 6 located between New Ulm and Courtland was picked as a mid-point station along the east-west TH 14 Corridor. (Please refer to the map previously shown on page number 2 for the location of these survey stations.)

Note that trips passing at each station are matched against trips passing another station in the same direction of travel. Thus, for example, of the 140 passenger vehicles observed passing eastbound at Station 3 between 9:00 a.m. and 10:00 a.m. (Table 3A-3), 25 passenger vehicles were observed passing eastbound at Station 6 and 16 passenger vehicles were observed passing eastbound at Station 7 within a specified maximum travel time for that inbound time period. (Please refer to the next four following pages, page numbers 36 through 39 for Tables 3A-3, 3A-6, 3D-6 and 3A-7.)

The origin-destination pairings presented in Tables 3A-3 through 3A-6 provide an initial estimate of the actual number of vehicle movements between survey stations. These initial estimates need to be adjusted to take into account the fact that less than 100 percent of the license plates of vehicles passing a given survey station were read. The adjustment procedure is identical to the adjustment procedure presented in the previous section on page number 14 and is based on the license plate read rate at the two survey stations being paired. Each observed origin-destination pairing is adjusted in this manner. The adjusted O-D pairings for the east-west TH 14 Corridor Through traffic study are presented as movement volumes in Tables 3B-3, 3B-6, 3E-6 and 3B-7 and as percentages of inbound volumes in Tables 3C-3, 3C-6, 3F-6 and 3C-7. (Please refer to the next following eight pages, page numbers 40 through 47 for these tables.)

The breakdown between Local and Through trips from each inbound station to each outbound station was based on the nominal time it would take for a vehicle to travel from one station to another without stopping for any purpose other than for typical traffic conditions. The actual travel time measurements and the nominal non-stop times are presented in Table 1-B previously shown on page number 16.

For example, each of the 140 passenger vehicles that passed both Station 3 eastbound and Station 7 eastbound during the 9:00 a.m. to 10:00 a.m. period (as shown in Table 3B-3) completed that journey in less than 36 minutes and were considered to be Through trips. All other observed trips were considered to be Local trips; that is: vehicles that were observed passing from Station 3 to Station 7 in more than 36 minutes and vehicles that were observed at one station but not at the other were considered to be Local trips.

Table 3A-3: "Observed" O-D Matches from Site 3 EB

Passenger - Inbound From Site 3 - EB	Time of Day		Passenger	
	Beginning	Eastbound	Site 6 - EB Passenger	Site 7 - EB Passenger
	7:00-8:00 am	109	5	10
8:00-9:00 am	108	22	20	
9:00-10:00 am	140	25	16	
10:00-11:00 am	105	18	20	
11:00-12:00 pm	124	13	12	
12:00-1:00 pm	128	15	13	
1:00-2:00 pm	138	19	15	
2:00-3:00 pm	155	21	17	
3:00-4:00 pm	161	31	19	
4:00-5:00 pm	156	27	19	
5:00-6:00 pm	117	25	17	
6:00-7:00 pm	106	17	7	
Total	1,547	238	185	

Commercial - Inbound From Site 3 - EB	Time of Day		Commercial	
	Beginning	Eastbound	Site 6 - EB Commercial	Site 7 - EB Commercial
	7:00-8:00 am	33	0	5
8:00-9:00 am	21	1	4	
9:00-10:00 am	30	6	3	
10:00-11:00 am	25	4	2	
11:00-12:00 pm	15	4	1	
12:00-1:00 pm	6	2	1	
1:00-2:00 pm	35	3	5	
2:00-3:00 pm	19	2	5	
3:00-4:00 pm	5	1	2	
4:00-5:00 pm	12	3	0	
5:00-6:00 pm	4	0	3	
6:00-7:00 pm	2	0	0	
Total	206	26	31	

Table 3A-6: "Observed" O-D Matches from Site 6 WB

Passenger - Inbound From Site 6 - WB	Time of Day		Passenger
	Beginning	Westbound	Site 3 - WB Passenger
	7:00-8:00 am	223	18
	8:00-9:00 am	193	26
	9:00-10:00 am	195	20
	10:00-11:00 am	206	16
	11:00-12:00 pm	211	17
	12:00-1:00 pm	258	24
	1:00-2:00 pm	211	19
	2:00-3:00 pm	271	24
	3:00-4:00 pm	283	30
	4:00-5:00 pm	264	11
	5:00-6:00 pm	334	7
6:00-7:00 pm	228	3	
Total	2,877	215	

Commercial - Inbound From Site 6 - WB	Time of Day		Commercial
	Beginning	Westbound	Site 3 - WB Commercial
	7:00-8:00 am	30	8
	8:00-9:00 am	44	11
	9:00-10:00 am	41	7
	10:00-11:00 am	40	14
	11:00-12:00 pm	29	5
	12:00-1:00 pm	28	4
	1:00-2:00 pm	23	2
	2:00-3:00 pm	29	3
	3:00-4:00 pm	32	2
	4:00-5:00 pm	28	5
	5:00-6:00 pm	12	0
6:00-7:00 pm	15	0	
Total	351	61	

Table 3D-6: "Observed" O-D Matches from Site 6 EB

Passenger - Outbound From Site 6 - EB	Time of Day		Passenger
	Beginning	Eastbound	Site 7 - EB Passenger
	7:00-8:00 am	219	107
	8:00-9:00 am	272	193
	9:00-10:00 am	249	91
	10:00-11:00 am	260	103
	11:00-12:00 pm	235	84
	12:00-1:00 pm	256	74
	1:00-2:00 pm	276	95
	2:00-3:00 pm	244	81
3:00-4:00 pm	314	110	
4:00-5:00 pm	340	120	
5:00-6:00 pm	307	107	
6:00-7:00 pm	209	63	
Total	3,180	1,228	

Commercial - Outbound From Site 6 - EB	Time of Day		Commercial
	Beginning	Eastbound	Site 7 - EB Commercial
	7:00-8:00 am	17	9
	8:00-9:00 am	25	10
	9:00-10:00 am	11	2
	10:00-11:00 am	1	0
	11:00-12:00 pm	9	3
	12:00-1:00 pm	0	0
	1:00-2:00 pm	17	7
	2:00-3:00 pm	32	12
3:00-4:00 pm	16	8	
4:00-5:00 pm	9	5	
5:00-6:00 pm	24	8	
6:00-7:00 pm	18	5	
Total	180	69	

Table 3A-7: "Observed" O-D Matches from Site 7 WB

Passenger - Inbound From Site 7 - WB	Time of Day		Passenger	
	Beginning	Inbound	Site 3 - WB Passenger	Site 6 - WB Passenger
	7:00-8:00 am	142	14	64
	8:00-9:00 am	126	10	58
	9:00-10:00 am	156	10	62
	10:00-11:00 am	120	9	61
	11:00-12:00 pm	193	8	51
	12:00-1:00 pm	142	22	97
	1:00-2:00 pm	184	14	70
	2:00-3:00 pm	234	21	104
3:00-4:00 pm	273	20	116	
4:00-5:00 pm	342	16	104	
5:00-6:00 pm	330	22	0	
6:00-7:00 pm	196	11	0	
Total	2,437	177	787	

Commercial - Inbound From Site 7 - WB	Time of Day		Commercial	
	Beginning	Inbound	Site 3 - WB Commercial	Site 6 - WB Commercial
	7:00-8:00 am	27	5	15
	8:00-9:00 am	52	4	13
	9:00-10:00 am	20	4	8
	10:00-11:00 am	42	8	19
	11:00-12:00 pm	13	0	1
	12:00-1:00 pm	8	2	5
	1:00-2:00 pm	28	2	7
	2:00-3:00 pm	29	0	5
3:00-4:00 pm	37	1	16	
4:00-5:00 pm	25	4	9	
5:00-6:00 pm	7	0	0	
6:00-7:00 pm	26	0	0	
Total	315	30	98	

Table 3B-3: "Adjusted" O-D Movement Counts from Site 3 EB

Passenger - Inbound From Site 3 - EB	Time of Day		Passenger		Through	Local
	Beginning	Eastbound	Site 6 - EB Passenger	Site 7 - EB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	109	7	12	12	96
	8:00-9:00 am	108	29	24	24	85
	9:00-10:00 am	140	36	19	19	121
	10:00-11:00 am	105	26	22	22	83
	11:00-12:00 pm	124	20	15	15	109
	12:00-1:00 pm	128	23	17	17	112
	1:00-2:00 pm	138	24	17	17	121
	2:00-3:00 pm	155	31	20	20	135
	3:00-4:00 pm	161	40	22	22	139
	4:00-5:00 pm	156	34	21	21	135
	5:00-6:00 pm	117	30	19	19	98
6:00-7:00 pm	106	20	8	8	98	
Total	1,547	319	216	216	1,331	

Commercial - Inbound From Site 3 - EB	Time of Day		Commercial		Through	Local
	Beginning	Eastbound	Site 6 - EB Commercial	Site 7 - EB Commercial	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	33	0	6	6	27
	8:00-9:00 am	21	1	5	5	16
	9:00-10:00 am	30	9	4	4	26
	10:00-11:00 am	25	6	2	2	23
	11:00-12:00 pm	15	2	1	1	14
	12:00-1:00 pm	6	3	1	1	5
	1:00-2:00 pm	35	4	6	6	30
	2:00-3:00 pm	19	3	6	6	13
	3:00-4:00 pm	5	1	2	2	3
	4:00-5:00 pm	12	4	0	0	12
	5:00-6:00 pm	4	2	2	2	2
6:00-7:00 pm	2	0	0	0	2	
Total	206	34	35	35	172	

Table 3B-6: "Adjusted" O-D Movement Counts from Site 6 WB

Passenger - Inbound From Site 6 - WB	Time of Day		Passenger	Through	Local
	Beginning	Westbound	Site 3 - WB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	223	23	23	200
	8:00-9:00 am	193	34	34	159
	9:00-10:00 am	195	29	29	165
	10:00-11:00 am	206	25	25	181
	11:00-12:00 pm	211	24	24	187
	12:00-1:00 pm	258	33	33	225
	1:00-2:00 pm	211	25	25	186
	2:00-3:00 pm	271	34	34	237
	3:00-4:00 pm	283	37	37	246
	4:00-5:00 pm	264	14	14	250
	5:00-6:00 pm	334	9	9	325
6:00-7:00 pm	228	3	3	224	
Total	2,877	292	292	2,586	

Commercial - Inbound From Site 6 - WB	Time of Day		Commercial	Through	Local
	Beginning	Westbound	Site 3 - WB Commerical	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	30	10	10	20
	8:00-9:00 am	44	15	15	30
	9:00-10:00 am	41	10	10	31
	10:00-11:00 am	40	22	22	18
	11:00-12:00 pm	29	7	7	22
	12:00-1:00 pm	28	6	6	22
	1:00-2:00 pm	23	3	3	21
	2:00-3:00 pm	29	4	4	25
	3:00-4:00 pm	32	2	2	29
	4:00-5:00 pm	28	6	6	22
	5:00-6:00 pm	12	0	0	12
6:00-7:00 pm	15	0	0	15	
Total	351	85	85	266	

Table 3E-6: "Adjusted" O-D Movement Counts from Site 6 EB

Passenger - Outbound From Site 6 - EB	Time of Day		Passenger	Through	Local
	Beginning	Eastbound	Site 7 - EB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	219	141	141	78
	8:00-9:00 am	272	254	254	18
	9:00-10:00 am	249	141	141	108
	10:00-11:00 am	260	139	139	120
	11:00-12:00 pm	235	121	121	114
	12:00-1:00 pm	256	109	109	147
	1:00-2:00 pm	276	123	123	153
	2:00-3:00 pm	244	114	114	130
	3:00-4:00 pm	314	135	135	179
	4:00-5:00 pm	340	147	147	193
	5:00-6:00 pm	307	129	129	178
6:00-7:00 pm	209	75	75	135	
Total	3,180	1,628	1,628	1,552	

Commercial - Outbound From Site 6 - EB	Time of Day		Commercial	Through	Local
	Beginning	Eastbound	Site 7 - EB Commerical	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	17	12	12	5
	8:00-9:00 am	25	13	13	12
	9:00-10:00 am	11	3	3	8
	10:00-11:00 am	1	0	0	1
	11:00-12:00 pm	9	4	4	5
	12:00-1:00 pm	0	0	0	0
	1:00-2:00 pm	17	9	9	8
	2:00-3:00 pm	32	17	17	15
	3:00-4:00 pm	16	10	10	7
	4:00-5:00 pm	9	6	6	3
	5:00-6:00 pm	24	10	10	14
6:00-7:00 pm	18	6	6	12	
Total	180	90	90	90	

Table 3B-7: "Adjusted" O-D Movement Counts from Site 7 WB

Passenger - Inbound From Site 7 - WB	Time of Day		Passenger		Through	Local
	Beginning	Inbound	Site 3 - WB Passenger	Site 6 - WB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	142	17	82	17	125
	8:00-9:00 am	126	12	73	12	114
	9:00-10:00 am	156	12	82	12	144
	10:00-11:00 am	120	13	84	13	107
	11:00-12:00 pm	193	10	66	10	183
	12:00-1:00 pm	142	28	131	28	114
	1:00-2:00 pm	184	17	87	17	167
	2:00-3:00 pm	234	25	137	25	209
3:00-4:00 pm	273	24	154	24	249	
4:00-5:00 pm	342	17	129	17	324	
5:00-6:00 pm	330	26	0	26	304	
6:00-7:00 pm	196	12	0	12	184	
Total	2,437	214	1,024	214	2,223	

Commercial - Inbound From Site 7 - WB	Time of Day		Commercial		Through	Local
	Beginning	Inbound	Site 3 - WB Commercial	Site 6 - WB Commercial	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	27	6	19	6	20
	8:00-9:00 am	52	5	16	5	47
	9:00-10:00 am	20	5	11	5	15
	10:00-11:00 am	42	11	26	11	31
	11:00-12:00 pm	13	0	1	0	13
	12:00-1:00 pm	8	3	5	3	5
	1:00-2:00 pm	28	2	9	2	25
	2:00-3:00 pm	29	0	7	0	29
3:00-4:00 pm	37	1	21	1	36	
4:00-5:00 pm	25	4	11	4	21	
5:00-6:00 pm	7	0	0	0	7	
6:00-7:00 pm	26	0	0	0	26	
Total	315	38	126	38	276	

Table 3C-3: "Adjusted" O-D Percentages from Site 3 EB

Passenger - Inbound From Site 3 - EB	Time of Day		Passenger		Through	Local
	Beginning	Eastbound	Site 6 - EB Passenger	Site 7 - EB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	109	6.4%	11.5%	11.5%	88.5%
	8:00-9:00 am	108	26.5%	21.9%	21.9%	78.1%
	9:00-10:00 am	140	25.9%	13.6%	13.6%	86.4%
	10:00-11:00 am	105	24.3%	20.8%	20.8%	79.2%
	11:00-12:00 pm	124	16.1%	11.9%	11.9%	88.1%
	12:00-1:00 pm	128	18.0%	12.9%	12.9%	87.1%
	1:00-2:00 pm	138	17.6%	12.0%	12.0%	88.0%
	2:00-3:00 pm	155	19.9%	13.1%	13.1%	86.9%
	3:00-4:00 pm	161	24.9%	13.6%	13.6%	86.4%
	4:00-5:00 pm	156	21.7%	13.6%	13.6%	86.4%
5:00-6:00 pm	117	25.8%	16.5%	16.5%	83.5%	
6:00-7:00 pm	106	18.6%	7.6%	7.6%	92.4%	
Total	1,547	20.6%	13.9%	13.9%	86.1%	

Commercial - Inbound From Site 3 - EB	Time of Day		Commercial		Through	Local
	Beginning	Eastbound	Site 6 - EB Commercial	Site 7 - EB Commercial	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	33	0.0%	18.8%	18.8%	81.2%
	8:00-9:00 am	21	6.3%	23.0%	23.0%	77.0%
	9:00-10:00 am	30	29.5%	12.1%	12.1%	87.9%
	10:00-11:00 am	25	23.0%	8.9%	8.9%	91.1%
	11:00-12:00 pm	15	13.3%	6.7%	6.7%	93.3%
	12:00-1:00 pm	6	53.3%	22.1%	22.1%	77.9%
	1:00-2:00 pm	35	10.8%	15.5%	15.5%	84.5%
	2:00-3:00 pm	19	15.5%	31.6%	31.6%	68.4%
	3:00-4:00 pm	5	20.0%	40.0%	40.0%	60.0%
	4:00-5:00 pm	12	31.9%	0.0%	0.0%	100.0%
5:00-6:00 pm	4	50.0%	50.0%	50.0%	50.0%	
6:00-7:00 pm	2	0.0%	0.0%	0.0%	100.0%	
Total	206	16.6%	16.7%	16.7%	83.3%	

Table 3C-6: "Adjusted" O-D Percentages from Site 6 WB

Passenger - Inbound From Site 6 - WB	Time of Day		Passenger	Through	Local
	Beginning	Westbound	Site 3 - WB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	223	10.5%	10.5%	89.5%
	8:00-9:00 am	193	17.8%	17.8%	82.2%
	9:00-10:00 am	195	15.0%	15.0%	85.0%
	10:00-11:00 am	206	12.2%	12.2%	87.8%
	11:00-12:00 pm	211	11.5%	11.5%	88.5%
	12:00-1:00 pm	258	12.8%	12.8%	87.2%
	1:00-2:00 pm	211	11.7%	11.7%	88.3%
	2:00-3:00 pm	271	12.7%	12.7%	87.3%
	3:00-4:00 pm	283	13.0%	13.0%	87.0%
	4:00-5:00 pm	264	5.1%	5.1%	94.9%
	5:00-6:00 pm	334	2.7%	2.7%	97.3%
6:00-7:00 pm	228	1.5%	1.5%	98.5%	
Total	2,877	10.1%	10.1%	89.9%	

Commercial - Inbound From Site 6 - WB	Time of Day		Commercial	Through	Local
	Beginning	Westbound	Site 3 - WB Commerical	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	30	34.7%	34.7%	65.3%
	8:00-9:00 am	44	32.9%	32.9%	67.1%
	9:00-10:00 am	41	24.7%	24.7%	75.3%
	10:00-11:00 am	40	55.2%	55.2%	44.8%
	11:00-12:00 pm	29	24.8%	24.8%	75.2%
	12:00-1:00 pm	28	19.9%	19.9%	80.1%
	1:00-2:00 pm	23	11.2%	11.2%	88.8%
	2:00-3:00 pm	29	14.8%	14.8%	85.2%
	3:00-4:00 pm	32	7.8%	7.8%	92.2%
	4:00-5:00 pm	28	21.6%	21.6%	78.4%
	5:00-6:00 pm	12	0.0%	0.0%	100.0%
6:00-7:00 pm	15	0.0%	0.0%	100.0%	
Total	351	24.3%	24.3%	75.7%	

Table 3F-6: "Adjusted" O-D Percentages from Site 6 EB

Passenger - Outbound From Site 6 - EB	Time of Day		Passenger	Through	Local
	Beginning	Eastbound	Site 7 - EB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	219	64.4%	64.4%	35.6%
	8:00-9:00 am	272	93.4%	93.4%	6.6%
	9:00-10:00 am	249	56.8%	56.8%	43.2%
	10:00-11:00 am	260	53.6%	53.6%	46.4%
	11:00-12:00 pm	235	51.5%	51.5%	48.5%
	12:00-1:00 pm	256	42.5%	42.5%	57.5%
	1:00-2:00 pm	276	44.6%	44.6%	55.4%
	2:00-3:00 pm	244	46.8%	46.8%	53.2%
	3:00-4:00 pm	314	43.0%	43.0%	57.0%
	4:00-5:00 pm	340	43.3%	43.3%	56.7%
	5:00-6:00 pm	307	42.1%	42.1%	57.9%
	6:00-7:00 pm	209	35.6%	35.6%	64.4%
	Total	3,180	51.2%	51.2%	48.8%
Commercial - Outbound From Site 6 - EB	Time of Day		Commercial	Through	Local
	Beginning	Eastbound	Site 7 - EB Commerical	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	17	70.0%	70.0%	30.0%
	8:00-9:00 am	25	52.1%	52.1%	47.9%
	9:00-10:00 am	11	28.3%	28.3%	71.7%
	10:00-11:00 am	1	0.0%	0.0%	100.0%
	11:00-12:00 pm	9	46.0%	46.0%	54.0%
	12:00-1:00 pm	0	NA	NA	NA
	1:00-2:00 pm	17	52.8%	52.8%	47.2%
	2:00-3:00 pm	32	53.7%	53.7%	46.3%
	3:00-4:00 pm	16	59.7%	59.7%	40.3%
	4:00-5:00 pm	9	65.4%	65.4%	34.6%
	5:00-6:00 pm	24	40.6%	40.6%	59.4%
	6:00-7:00 pm	18	33.7%	33.7%	66.3%
	Total	180	50.0%	50.0%	50.0%

Table 3C-7: "Adjusted" O-D Percentages from Site 7 WB

Passenger - Inbound From Site 7 - WB	Time of Day		Passenger		Through	Local
	Beginning	Inbound	Site 3 - WB Passenger	Site 6 - WB Passenger	Total Through Passenger	Local Traffic Passenger
	7:00-8:00 am	142	12.2%	57.3%	12.2%	87.8%
	8:00-9:00 am	126	9.8%	58.1%	9.8%	90.2%
	9:00-10:00 am	156	7.9%	52.6%	7.9%	92.1%
	10:00-11:00 am	120	10.5%	70.2%	10.5%	89.5%
	11:00-12:00 pm	193	5.3%	34.0%	5.3%	94.7%
	12:00-1:00 pm	142	19.8%	92.2%	19.8%	80.2%
	1:00-2:00 pm	184	9.1%	47.1%	9.1%	90.9%
	2:00-3:00 pm	234	10.7%	58.8%	10.7%	89.3%
	3:00-4:00 pm	273	8.7%	56.4%	8.7%	91.3%
	4:00-5:00 pm	342	5.1%	37.7%	5.1%	94.9%
	5:00-6:00 pm	330	7.8%	0.0%	7.8%	92.2%
6:00-7:00 pm	196	6.3%	0.0%	6.3%	93.7%	
Total	2,437	8.8%	42.0%	8.8%	91.2%	

Commercial - Inbound From Site 7 - WB	Time of Day		Commercial		Through	Local
	Beginning	Inbound	Site 3 - WB Commercial	Site 6 - WB Commercial	Total Through Commercial	Local Traffic Commercial
	7:00-8:00 am	27	23.5%	72.2%	23.5%	76.5%
	8:00-9:00 am	52	9.5%	31.5%	9.5%	90.5%
	9:00-10:00 am	20	24.5%	52.9%	24.5%	75.5%
	10:00-11:00 am	42	26.6%	62.1%	26.6%	73.4%
	11:00-12:00 pm	13	0.0%	10.0%	0.0%	100.0%
	12:00-1:00 pm	8	37.5%	62.5%	37.5%	62.5%
	1:00-2:00 pm	28	8.6%	31.2%	8.6%	91.4%
	2:00-3:00 pm	29	0.0%	22.5%	0.0%	100.0%
	3:00-4:00 pm	37	3.2%	56.8%	3.2%	96.8%
	4:00-5:00 pm	25	17.4%	44.6%	17.4%	82.6%
	5:00-6:00 pm	7	0.0%	0.0%	0.0%	100.0%
6:00-7:00 pm	26	0.0%	0.0%	0.0%	100.0%	
Total	315	12.1%	40.1%	12.1%	87.9%	

Reverse Commute Traffic from New Ulm to Mankato

The resulting origin-destination pairings for determining the “Reverse Commute” traffic, or percentage of passenger vehicles found to leave New Ulm towards Mankato in the morning 2-hour period (7:00 a.m. to 9:00 a.m.) and returning to re-enter the New Ulm area from the direction of Mankato in the afternoon 3-hour period (4:00 p.m. to 7:00 p.m.) are presented in Tables 4A-1, 4A-6 and 4A-7. Station 1 located just south of New Ulm, Station 6 located between New Ulm and Courtland (mid-point location), and Station 7 located just east of Nicollet were collectively assumed to be stations that would be most probable for commuters who may reside in the New Ulm area (or close to New Ulm) and work in the Mankato area (or close to Mankato). (Please refer to the map previously shown on page number 2 for the location of these survey stations.)

Note that trips leaving the study area in the morning 2-hour time period at each outbound station are matched against trips re-entering the study area in the afternoon 3-hour time period at the same inbound station . Thus, for example, of the 539 passenger vehicles observed leaving outbound at Station 7 between 7:00 a.m. and 9:00 a.m. (Table 4A), 178 passenger vehicles were observed re-entering inbound at Station 7 between 4:00 p.m. and 7:00 p.m.

The origin-destination pairings presented in Table 4A provide an initial estimate of the actual number of reverse commute movements amongst each of the 3 outbound survey stations. These initial estimates need to be adjusted to take into account the fact that less than 100 percent of the license plates of vehicles passing a given survey station were read. The adjustment procedure is identical to the adjustment procedure presented in a previous section on page number 14 and is based on the license plate read rate at the two survey stations being paired. Each observed origin-destination pairing is adjusted in this manner. The adjusted O-D pairings for the Reverse Commute traffic study are presented as movement volumes in Table 4B and as percentages of outbound volumes in Table 4C. (Please refer to the next following three pages, page numbers 49 through 51 for these tables.)

The breakdown between Reverse Commute trips from trips that stay outside the study area from each outbound station to the same inbound station was based on vehicles leaving early enough in the day to get to Mankato from New Ulm and return again in the afternoon towards the later portion of the survey time period.

For example, out of the 539 passenger vehicles that left Station 7 outbound in the 2-hour morning period and returned again at Station 7 inbound during the 3-hour afternoon period (as shown in Table 4B), 203 vehicles (or 37.7 percent of outbound volume) were considered “reverse commuters”. All other observed trips were considered to have stayed outside of the study area.

Table 4A: Reverse Commute Study - "Observed" OD Matches from Outbound Sites in AM and Inbound Sites in PM

Reverse Commute Study		Inbound Stations (passenger vehicles re-entering study area during afternoon period)		
		1-IN	6-IN	7-IN
Outbound Stations (passenger vehicles leaving study area during morning period)	1-OUT	69		
	6-OUT		100	
	7-OUT			178

Table 4B: Reverse Commute Study - "Adjusted" OD Movement Counts from Outbound Sites in AM and Inbound Sites in PM

Reverse Commute Study		Passenger Vehicles	Read rate	Inbound Stations (passenger vehicles re-entering study area during afternoon period)				Row Totals
				1-IN	6-IN	7-IN	Stay Outside Study Area	
Passenger Vehicles				545	826	867	922	NA
Read Rate				89.2%	87.3%	95.5%	NA	NA
Outbound Stations (passenger vehicles leaving study area during morning period)	1-OUT	324	85.0%	91			233	324
	6-OUT	491	82.9%		138		353	491
	7-OUT	539	91.7%			203	336	539

Table 4C: Reverse Commute Study - "Adjusted" OD Percentages from Outbound Sites in AM and Inbound Sites in PM

Reverse Commute Study		Passenger vehicles	Inbound Stations (passenger vehicles re-entering study area during afternoon period)				Row Totals
			1-IN	6-IN	7-IN	Stay Outside Study Area	
Passenger Vehicles			545	826	867	922	NA
Outbound Stations (passenger vehicles leaving study area during morning period)	1-OUT	324	28.1%			71.9%	100.0%
	6-OUT	491		28.1%		71.9%	100.0%
	7-OUT	539			37.7%	62.3%	100.0%
Summary of All 3 Sites		1,354	31.9%			68.1%	100.0%

FINDINGS

The three-fold purpose of the study was to determine point-to-point origin-destination movements among the seven locations in order to distinguish the following:

1. Through traffic passing through New Ulm.
2. Through traffic along TH 14 between Mankato and New Ulm.
3. Reverse Commute traffic from New Ulm to Mankato.

The hourly station-to-station movements detailed in Tables 2B-1 through 2B-6 and 2C-1 through 2C-6 are summarized for the New Ulm Through trips over the 12-hour survey period in Table 5 on the following page. The number of Through trips and Local trips entering at each of the six survey stations is provided as well as the percentage of Through and Local trips based on entering volumes. These data are summarized separately for passenger vehicles and for commercial vehicles. Table 5 also presents the summary distribution of total Through trips and total Local trips for passenger and commercial vehicles.

About 20 percent of the passenger vehicle trips entering New Ulm pass directly through the town and about 80 percent of entering passenger vehicle trips stop in town for one or more purposes. The percentage of Through commercial vehicle trips is somewhat greater, about 31 percent. The distribution of Through and Local trips varies from station to station. The highest percentage of Through passenger vehicle trips is found entering at Station 3 and the lowest entering at Station 2.

The number of Through trips along TH 14 from the farthest western point (Station 3) and the farthest eastern point (Station 7) was evenly balanced in both directions with approximately 215 passenger vehicles and 36 commercial vehicles making this trip. The mid-point location, Station 6 had many more “intermediate-through” trips for both passenger and commercial vehicles through to either Station 3 or to Station 7.

The “Reverse Commute” traffic, or percentage of passenger vehicles found to leave New Ulm towards Mankato in the morning and returning to re-enter the study area from the direction of Mankato in the afternoon was found to be approximately 28 percent of the leaving traffic during the 2-hour morning survey period from 7:00 a.m. to 9:00 p.m.

Table 5: Summary Table for TH 14 Mankato-to-New Ulm Corridor Study

From Inbound Station	Passenger Vehicles					Commercial Vehicles				
	Inbound	Through		Local		Inbound	Through		Local	
	No.	No.	%	No.	%	No.	No.	%	No.	%
New Ulm Cordon Study										
1-IN	2,170	289	13.3%	1,881	86.7%	163	34	21.1%	129	78.9%
2-IN	800	52	6.5%	748	93.5%	22	0	0.0%	22	100.0%
3-IN	1,547	453	29.3%	1,094	70.7%	206	71	34.6%	135	65.4%
4-IN	794	227	28.6%	567	71.4%	42	9	22.6%	32	77.4%
5-IN	1,821	380	20.9%	1,441	79.1%	184	59	32.0%	125	68.0%
6-IN	2,877	569	19.8%	2,308	80.2%	351	130	37.0%	221	63.0%
Total	10,010	1,971	19.7%	8,039	80.3%	968	304	31.4%	665	68.6%
TH 14 Corridor Study (East-West Corridor)										
3-EB to 7-EB	1,547	216	13.9%	1,331	86.1%	206	35	16.7%	172	83.3%
7-WB to 3-WB	2,437	214	8.8%	2,223	91.2%	315	38	12.1%	276	87.9%
3-EB to 6-EB	1,547	319	20.6%	1,228	79.4%	206	34	16.6%	172	83.4%
6-WB to 3-WB	2,877	292	10.1%	2,586	89.9%	351	85	24.3%	266	75.7%
6-EB to 7-EB	3,180	1,628	51.2%	1,552	48.8%	180	90	50.0%	90	50.0%
7-WB to 6-WB	2,437	1,024	42.0%	1,413	58.0%	315	126	40.1%	188	59.9%
Total	14,027	3,694	26.3%	10,333	73.7%	1,572	409	26.0%	1,164	74.0%
Reverse Commute Study (New Ulm-to-Mankato)										
1-OUT	324	91	28.1%	233	71.9%	Not Applicable for Commercial Vehicles				
6-OUT	491	138	28.1%	353	71.9%					
7-OUT	539	203	37.7%	336	62.3%					
Total	1,354	432	31.9%	922	68.1%					