

→ 09hr\_SC-TTFNR\_sb0265\_pt04



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(FORM UPDATED: 08/11/2010)

**WISCONSIN STATE LEGISLATURE ...  
PUBLIC HEARING - COMMITTEE RECORDS**

2009-10

(session year)

## Senate

(Assembly, Senate or Joint)

# Committee on ... Transportation, Tourism, Forestry, and Natural Resources (SC-TTFNR)

## **COMMITTEE NOTICES ...**

- Committee Reports ... **CR**
  - Executive Sessions ... **ES**
  - Public Hearings ... **PH**

## **INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL**

- Appointments ... **Appt** (w/Record of Comm. Proceedings)
  - Clearinghouse Rules ... **CRule** (w/Record of Comm. Proceedings)
  - Hearing Records ... bills and resolutions (w/Record of Comm. Proceedings)  
(**ab** = Assembly Bill)                    (**ar** = Assembly Resolution)                    (**ajr** = Assembly Joint Resolution)  
(**sb** = Senate Bill)                        (**sr** = Senate Resolution)                        (**sjr** = Senate Joint Resolution)
  - Miscellaneous ... **Misc**



Piecing together your  
financial puzzle

*Mayor of Sheboygan Falls*  
**RM Financial Resources, LLC**

Randy Meyer, ChFC CCPS  
Chartered Financial Consultant  
Certified College Planning Specialist

*Registered Representative*

500 Water Street  
Sheboygan Falls, WI 53085  
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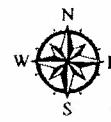
E-mail: [randy.meyer@charter.net](mailto:randy.meyer@charter.net)

Securities offered through Waudbury Financial Services, Inc., member NASD, SIPC  
PO Box 64284, St. Paul, MN 55164; tel: 1-800-333-2500

SB 265 ??  
Folder

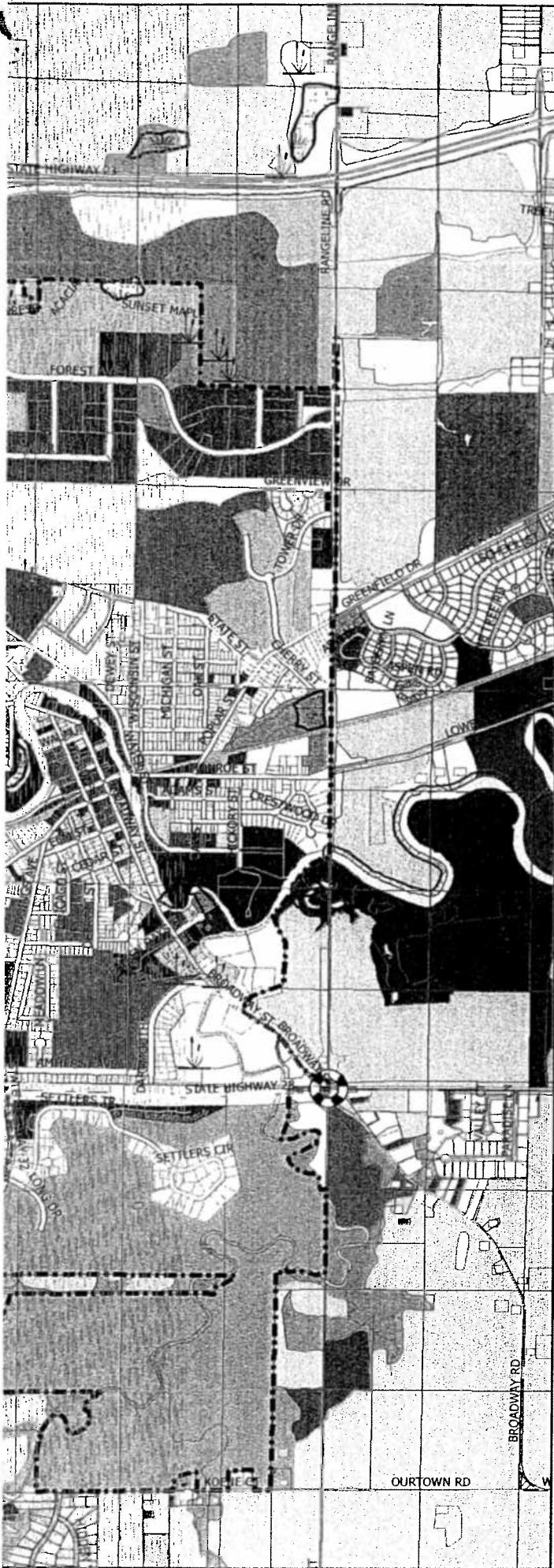
# City of Sheboygan Falls

## Land Use Plan



### Legend

- Single Family Residential
- Two Family
- Multi Family
- Retirement Housing
- Mobile Homes and Parks
- Commercial
- Business
- Industrial
- Rail Related
- Communication/Utilities
- Abandoned Landfill
- Public/Governmental
- Parks and Recreational
- Golf Courses
- Open Space
- Agricultural
- Open Water
- Natural Areas
- Woodlands
- River Conservancy Area
- WI DNR Wetlands
- Corporate Limits
- Proposed Roads
- Future Roundabout
- Preferred STH 23 Interchange
- Traffic Controlled Intersection

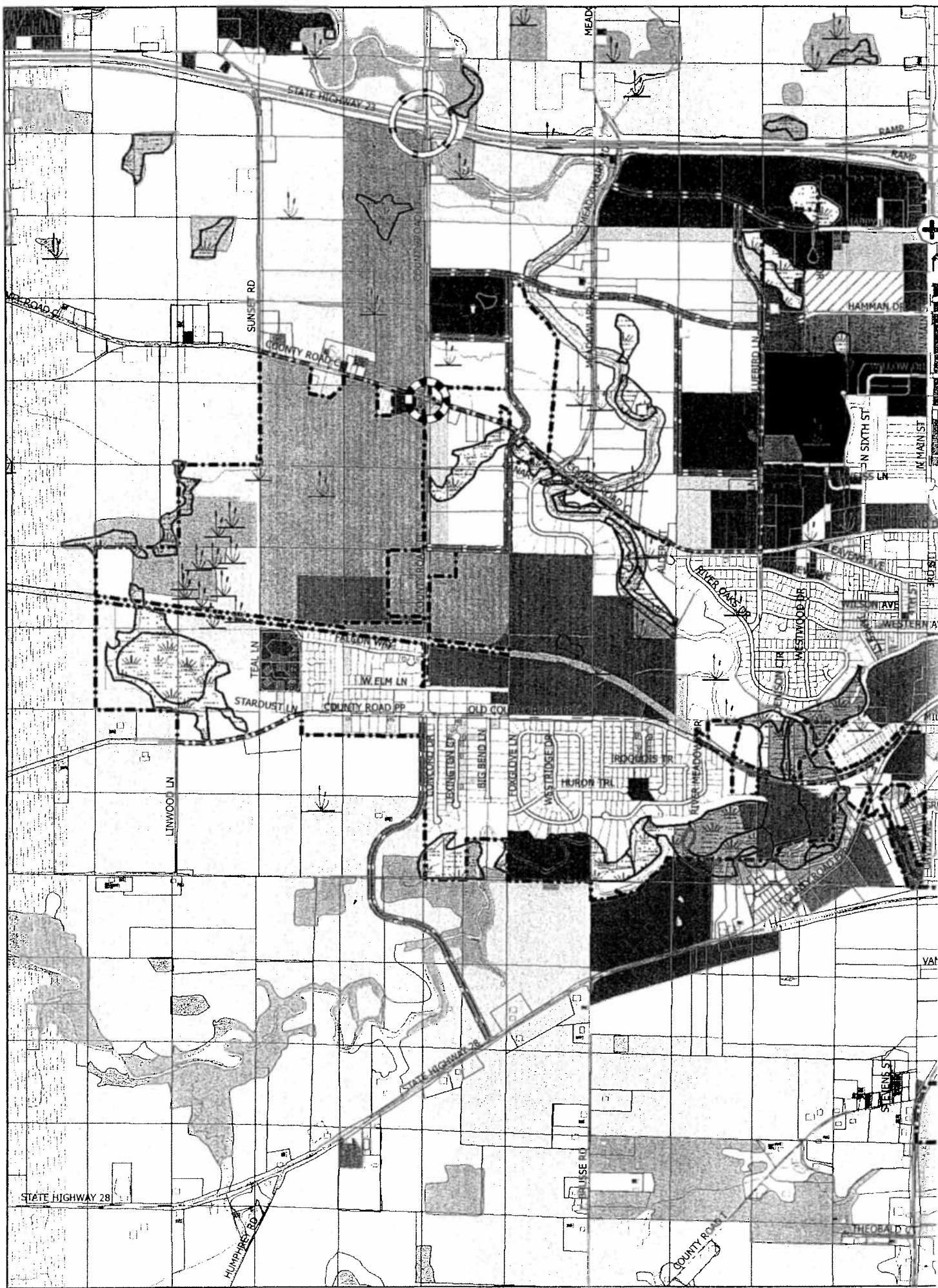


The base map data was created by Sheboygan County Planning Department who disclaim all liability regarding fitness of use of the information and any application by others, is the responsibility of the user. Revisions were made by Martenson and Eisele, Inc. in 2008 under the direction of the City of Sheboygan Falls.

**Martenson & Eisele, Inc.**

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Planning  
Environmental  
Surveying  
Engineering  
Architecture



# **SIGNAL INVESTIGATION STUDY**

Of The  
**STH "32" & Happy Lane Intersection**

Prepared For The

## **City Of Sheboygan Falls**

Wisconsin

Prepared By  
**McMahon Associates, Inc.**  
Neenah, Wisconsin

October 28, 2004  
McM. No. S0096-940645

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### **A. REASON / NEED FOR STUDY**

1. Recent development along Happy Lane, west of STH "32", has caused an increase in traffic and congestion at this location. Refer to Appendix A for the Project Location Map. Additional development that is currently under construction or planned for in the near future will result in further increases in traffic and congestion.
2. Current development along Happy Lane includes a McDonald's Restaurant / Convenience Store with gas pumps; an apartment complex and also a townhouse complex. At the time the manual traffic count was performed for this study, neither the apartment complex nor the townhouse complex were completed or occupied. There is also a strip commercial retail center under construction next to the McDonald's Restaurant building.
3. Refer to Appendix D - Future Traffic Conditions for a map of the existing and proposed development.

### **B. EXISTING PHYSICAL CONDITIONS & CONTROL DEVICES**

1. STH "32" is a two-lane roadway with 10-foot shoulders. STH "32" also has an additional lane for right-turns at both the north and south approaches to the intersection. The posted speed limit is 45 mph.

2. Happy Lane is a two-lane roadway with an urban typical section on the west approach to the intersection and a rural typical section at the east approach. The west approach is 40-feet wide (face of curb to face of curb). There are 2-foot wide shoulders on the east approach.
3. This intersection is currently controlled by stop signs at the Happy Lane approaches.
4. Refer to Appendix B - Photographs Of Intersection Approaches.

#### C. TRAFFIC CONDITIONS

1. Existing - A 15-hour manual traffic count was made at this intersection on Wednesday, August 18, 2004 and Thursday, August 19, 2004. The results of this traffic count are summarized in Appendix C - Existing Traffic Conditions.
2. Future - Future traffic conditions resulting from the proposed development are provided for informational purposes. Refer to Appendix D - Future Traffic Conditions.

#### D. ACCIDENT HISTORY

1. The construction of the west approach of the intersection did not occur until the McDonald's Restaurant/Convenience Store was constructed approximately 2-years ago. Since this intersection is relatively new, the accident history was not analyzed. Discussions with City Police indicate no accident problems at this location.

#### E. WARRANT EVALUATION - EXISTING CONDITIONS

1. The west approach volumes were used as the minor approach throughout this evaluation. Although the west approach is not marked as two exit lanes, observations indicate eastbound traffic is treating this approach as a two-lane approach. Since the through traffic volume is so low (67 vehicles over the 15-hour study), the approach typically operates as exclusive left-turn and right-turn lanes. Through traffic primarily uses the right-turn lane to complete their movement when another vehicle is waiting to make a left-hand turn. Due to the irregularity of lane usage, the warrants were analyzed both with and without right-turns included.

2. The following Signal Warrants were met with 100% of right-turns included in the analysis:
  - a. Warrant #1 8-Hour Vehicular Volume (Condition B & C)
  - b. Warrant #2 4-Hour Volume
  - c. Warrant #3 Peak Hour Volume
3. The following Signal Warrants were met with 0% of right-turns included in the analysis:
  - a. Warrant #1 8-Hour Vehicular Volume (Condition B)
  - b. Warrant #2 4-Hour Volume
4. Refer to Appendix E - Warrant Analysis For Existing Conditions.

## F. FUTURE TRAFFIC CONDITIONS

1. Future traffic conditions were analyzed, based upon the proposed development shown in Appendix D. Site trips were based upon ITE trip generation rates. Warrants were analyzed for future conditions both with and without right-turns for the west approach.
2. The following traffic Signal Warrants were met with both 100% and 0% of right-turns included in the analysis:
  - a. Warrant #1 8-Hour Vehicular Volume (Conditions A, B & C)
  - b. Warrant #2 4-Hour Volume
  - c. Warrant #3 Peak Hour Volume
3. Refer to Appendix F - Warrant Analysis For Future Conditions.

## G. OPERATIONAL ANALYSIS

1. Based upon existing traffic counts at the time of this study, with no geometric improvements, this intersection will operate at a Level Of Service (LOS) A during the peak hour period. The estimated traffic queue at the north approach is 135 linear feet and the queue at the south approach is estimated at 189 linear feet. The queue for the west approach would extend 63 linear feet. The off ramp for STH "32" is located approximately 500 linear feet north of Happy Lane (measured center line to center line). The nearest side street intersections south of Happy Lane on STH "32" are Forest Avenue (550 linear feet south) and Hamann Drive (680 linear feet south). There is a side street located approxi-

mately 400 linear feet to the west. This analysis is based upon marking the west approach as a right-turn only lane, plus a combination through/left-turn lane. A 70-second signal cycle was used for the capacity analysis. Refer to Appendix G - Operational Analysis.

2. The existing intersection, with no geometric improvements, will operate at high LOS C during the peak hour in 2014 (100% build out). However, traffic queues at the north approach will extend 395 linear feet. The queues to the south would extend 766 linear feet, and queue to the west would extend 443 linear feet. This will result in queues extending past the side streets at the west and south approaches. The capacity analysis was based upon an 80-second signal cycle. Refer to Appendix G - Operational Analysis.
3. By adding a left-turn lane at the south approach, the overall intersection LOS will be B. The traffic queues will be reduced to 225 linear feet to the north and 325 linear feet to the south. The queue at the west approach would extend 398 linear feet. Another improvement that would need to be made at this time is the extension of the right-turn lane at the north approach. The capacity analysis was based upon a 70-second signal cycle. Refer to Appendix G - Operational Analysis.
4. The analyses listed above are based upon all traffic from the development entering and exiting at the Happy Lane and STH "32" intersection. The extension of Bluebird Lane north to Happy Lane and Happy Lane east to Range Line Road are two possibilities for providing alternative access to the development. However, at this time, the lands required to extend these roadways are located beyond the City's corporate boundaries and are not currently mapped as future streets.

## **APPENDIX C**

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### **EXISTING TRAFFIC CONDITIONS**

- Detailed Hourly Traffic Count
- Graphic Summary Sheet Of Vehicle Volume Count
- Directional Distribution Graphic Of Eight Highest Hourly Volumes

**TRAFFIC COUNT FOR  
STH 32 AND HAPPY LANE  
SHEBOYGAN FALLS, WI**  
DATE OF STUDY= AUG. 18 AND AUG. 19 2004

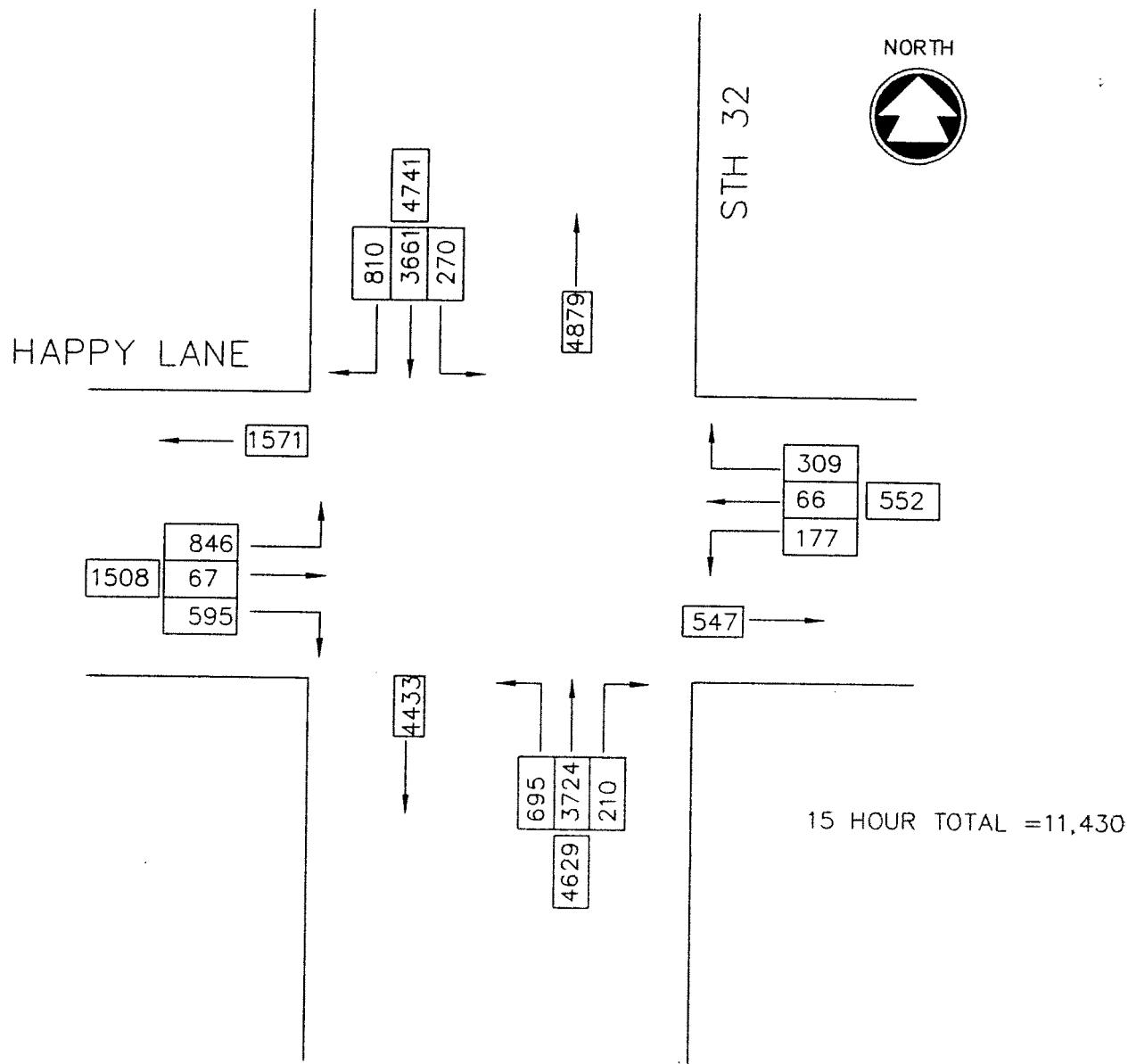
STH 32 FROM NORTH					HAPPY LANE FROM EAST				STH 32 FROM SOUTH				HAPPY LANE FROM WEST				INTER. TOTAL
START TIME	LEFT	THRU	RIGHT	APP. TOTAL	LEFT	THRU	RIGHT	APP. TOTAL	LEFT	THRU	RIGHT	APP. TOTAL	LEFT	THRU	RIGHT	APP. TOTAL	
FACTOR	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
6:30 AM																	0
6:45 AM																	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	36	10	46	4	0	5	9	6	50	1	57	12	0	2	14	126
7:15 AM	4	53	17	74	4	1	2	7	9	53	3	65	9	0	11	20	166
7:30 AM	1	79	20	100	6	0	8	14	16	78	0	94	24	0	5	29	237
7:45 AM	0	85	21	106	1	2	8	11	8	58	2	68	23	0	2	25	210
TOTAL	5	253	68	326	15	3	23	41	39	239	6	284	68	0	20	88	739
8:00 AM	2	74	17	93	1	4	3	8	8	57	1	66	16	1	11	28	195
8:15 AM	0	43	14	57	1	1	4	6	9	45	4	58	15	1	7	23	144
8:30 AM	1	48	8	57	2	1	14	17	13	61	2	76	11	1	7	19	169
8:45 AM	1	51	14	66	2	5	4	11	12	61	0	73	25	1	8	34	184
TOTAL	4	216	53	273	6	11	25	42	42	224	7	273	67	4	33	104	692
9:00 AM	1	40	10	51	1	1	6	8	8	34	2	44	14	0	7	21	124
9:15 AM	2	47	6	55	1	2	7	10	9	43	4	56	7	1	12	20	141
9:30 AM	2	54	16	72	2	0	5	7	8	54	1	63	19	0	9	28	170
9:45 AM	1	59	11	71	5	14	3	22	11	35	2	48	10	10	8	28	169
TOTAL	6	200	43	249	9	17	21	47	36	166	9	211	50	11	36	97	604
10:00 AM	4	48	16	68	1	1	2	4	6	54	2	62	18	0	9	27	161
10:15 AM	3	55	13	71	4	0	7	11	8	47	4	59	11	0	7	18	159
10:30 AM	2	71	10	83	2	0	7	9	20	70	2	92	12	0	8	20	204
10:45 AM	2	66	9	77	5	2	7	14	16	69	3	88	13	1	8	22	201
TOTAL	11	240	48	299	12	3	23	38	50	240	11	301	54	1	32	87	725
11:00 AM	2	60	9	71	8	4	7	19	12	67	3	82	14	1	9	24	196
11:15 AM	1	57	20	78	4	0	2	6	9	57	3	69	9	0	17	26	179
11:30 AM	2	66	20	88	2	0	3	5	25	63	5	93	19	0	10	29	215
11:45 AM	6	78	15	99	5	0	5	10	29	60	4	93	20	0	19	39	241
TOTAL	11	261	64	336	19	4	17	40	75	247	15	337	62	1	55	118	831
12:00 PM	4	57	26	87	3	1	2	6	44	74	4	122	19	1	30	50	265
12:15 PM	5	64	26	95	4	1	6	11	21	63	1	85	25	0	28	53	244
12:30 PM	1	65	21	87	1	0	6	7	14	81	1	96	23	2	10	35	225
12:45 PM	10	53	22	85	3	0	10	13	22	58	0	80	22	2	3	27	205
TOTAL	20	239	95	354	11	2	24	37	101	276	6	383	89	5	71	165	939
1:00 PM	6	66	23	95	4	0	5	9	16	60	3	79	28	0	9	37	220
1:15 PM	8	60	13	81	0	0	10	10	10	62	1	73	17	1	11	29	193
1:30 PM	3	86	16	105	2	0	4	6	12	61	2	75	20	0	9	29	215
1:45 PM	1	62	9	72	2	1	5	8	10	68	2	80	9	1	9	19	179
TOTAL	18	274	61	353	8	1	24	33	48	251	8	307	74	2	38	114	807
2:00 PM	7	97	16	120	1	0	4	5	18	66	2	86	20	1	3	24	235
2:15 PM	3	50	13	66	3	0	4	7	3	57	2	62	9	2	8	19	154
2:30 PM	6	63	20	89	5	1	11	17	9	94	7	110	11	2	13	26	242
2:45 PM	10	71	9	90	0	0	4	4	5	80	12	97	16	0	7	23	214
TOTAL	26	281	58	365	9	1	23	33	35	297	23	355	56	5	31	92	845
3:00 PM	8	92	16	116	1	0	5	6	15	86	4	105	17	1	5	23	250
3:15 PM	6	64	12	82	4	2	3	9	8	75	4	87	12	1	10	23	201
3:30 PM	5	75	15	95	6	0	9	15	10	106	6	122	15	2	12	29	261
3:45 PM	9	73	10	92	3	1	6	10	13	88	9	110	15	1	7	23	235
TOTAL	28	304	53	385	14	3	23	40	46	355	23	424	59	5	34	98	947

STH 32 FROM NORTH					HAPPY LANE FROM EAST				STH 32 FROM SOUTH				HAPPY LANE FROM WEST				INTER. TOTAL
START TIME	LEFT	THRU	RIGHT	APP. TOTAL	LEFT	THRU	RIGHT	APP. TOTAL	LEFT	THRU	RIGHT	APP. TOTAL	LEFT	THRU	RIGHT	APP. TOTAL	
FACTOR	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
4:00 PM	9	87	16	112	1	0	5	6	11	106	5	122	14	0	6	20	260
4:15 PM	9	77	12	98	4	3	2	9	13	92	6	111	16	1	13	30	248
4:30 PM	5	88	11	104	7	0	7	14	11	117	5	133	19	2	11	32	283
4:45 PM	9	75	11	95	5	2	7	14	15	97	7	119	14	1	6	21	249
TOTAL	32	327	50	409	17	5	21	43	50	412	23	485	63	4	36	103	1040
5:00 PM	13	86	7	106	8	1	7	16	11	107	9	127	12	1	11	24	273
5:15 PM	5	76	20	101	3	0	9	12	9	78	7	94	12	1	9	22	229
5:30 PM	9	81	15	105	5	1	4	10	19	79	4	102	18	1	9	28	245
5:45 PM	1	38	15	54	5	0	8	13	18	56	8	82	18	3	13	34	183
TOTAL	28	281	57	366	21	2	28	51	57	320	28	405	60	6	42	108	930
6:00 PM	9	60	7	76	2	2	2	6	6	64	6	76	19	1	16	36	194
6:15 PM	2	71	15	88	5	2	6	13	7	53	3	63	7	2	6	15	179
6:30 PM	5	67	21	93	1	1	10	12	8	64	3	75	16	3	8	27	207
6:45 PM	4	58	5	67	3	1	3	7	9	45	5	59	10	1	15	26	159
TOTAL	20	256	48	324	11	6	21	38	30	226	17	273	52	7	45	104	739
7:00 PM	4	62	15	81	2	0	3	5	8	55	3	66	13	2	9	24	176
7:15 PM	9	79	13	101	6	0	8	14	6	52	4	62	3	0	17	20	197
7:30 PM	6	30	10	46	5	0	2	7	7	30	2	39	9	0	8	17	109
7:45 PM	3	44	11	58	3	1	3	7	13	49	2	64	11	3	11	25	154
TOTAL	22	215	49	286	16	1	16	33	34	186	11	231	36	5	45	86	636
8:00 PM	8	49	12	69	0	1	4	5	7	45	4	56	14	0	8	22	152
8:15 PM	4	59	9	72	0	2	3	5	11	39	4	54	10	2	20	32	163
8:30 PM	4	42	9	55	0	1	3	4	8	40	3	51	5	2	12	19	129
8:45 PM	6	32	9	47	0	1	2	3	11	32	1	44	4	0	7	11	105
TOTAL	22	182	39	243	0	5	12	17	37	156	12	205	33	4	47	84	549
9:00 PM	9	36	9	54	0	0	1	1	2	48	2	52	7	2	11	20	127
9:15 PM	4	33	10	47	5	0	3	8	2	21	3	26	7	3	9	19	100
9:30 PM	2	39	3	44	1	2	3	6	8	40	3	51	6	2	5	13	114
9:45 PM	2	24	2	28	3	0	1	4	3	20	3	26	3	0	5	8	66
TOTAL	17	132	24	173	9	2	8	19	15	129	11	155	23	7	30	60	407
GRAND TOTAL	270	3661	810	4741	177	66	309	552	695	3724	210	4629	846	67	595	1508	11430
APPROACH %	5.7	77.2	17.1		32.1	12.0	56.0		15.0	80.4	4.5		56.1	4.4	39.5		
TOTAL %	2.4	32.0	7.1	41.5	1.5	0.6	2.7	4.8	6.1	32.6	1.8	40.5	7.4	0.6	5.2	13.2	

NOTE: COUNTS WERE TAKEN BY PAUL MUCK OVER AUGUST 18 AND AUGUST 19 2004 AND THE INFORMATION WAS COMBINED INTO ONE  
 COUNTS ON AUGUST 18 WERE FROM 7:00 A.M. TO 4:00 P.M.  
 COUNTS ON AUGUST 19 WERE FROM 4:00 P.M. TO 10:00 P.M.

**TRAFFIC SURVEY VEHICLE VOLUME COUNT  
GRAPHIC SUMMARY SHEET**

DATE: 8/18 AND 8/19, 2004 DAY: WED AND THUR TIME: 7 AM TO 10 PM  
 LOCATION: DISTRICT 3 COUNTY: SHEBOYGAN RURAL: YES CITY: SHEBOYGAN FALLS  
 INTERSECTION: STH 32 AND HAPPY LANE OBSERVER: PAUL MUCH



**McMAHON**  
ASSOCIATES, INC.

1445 McMahon Drive Neenah, WI 54956

■ ENGINEERS  
■ ARCHITECTS  
■ PROJ. MGRS.  
■ SURVEYORS

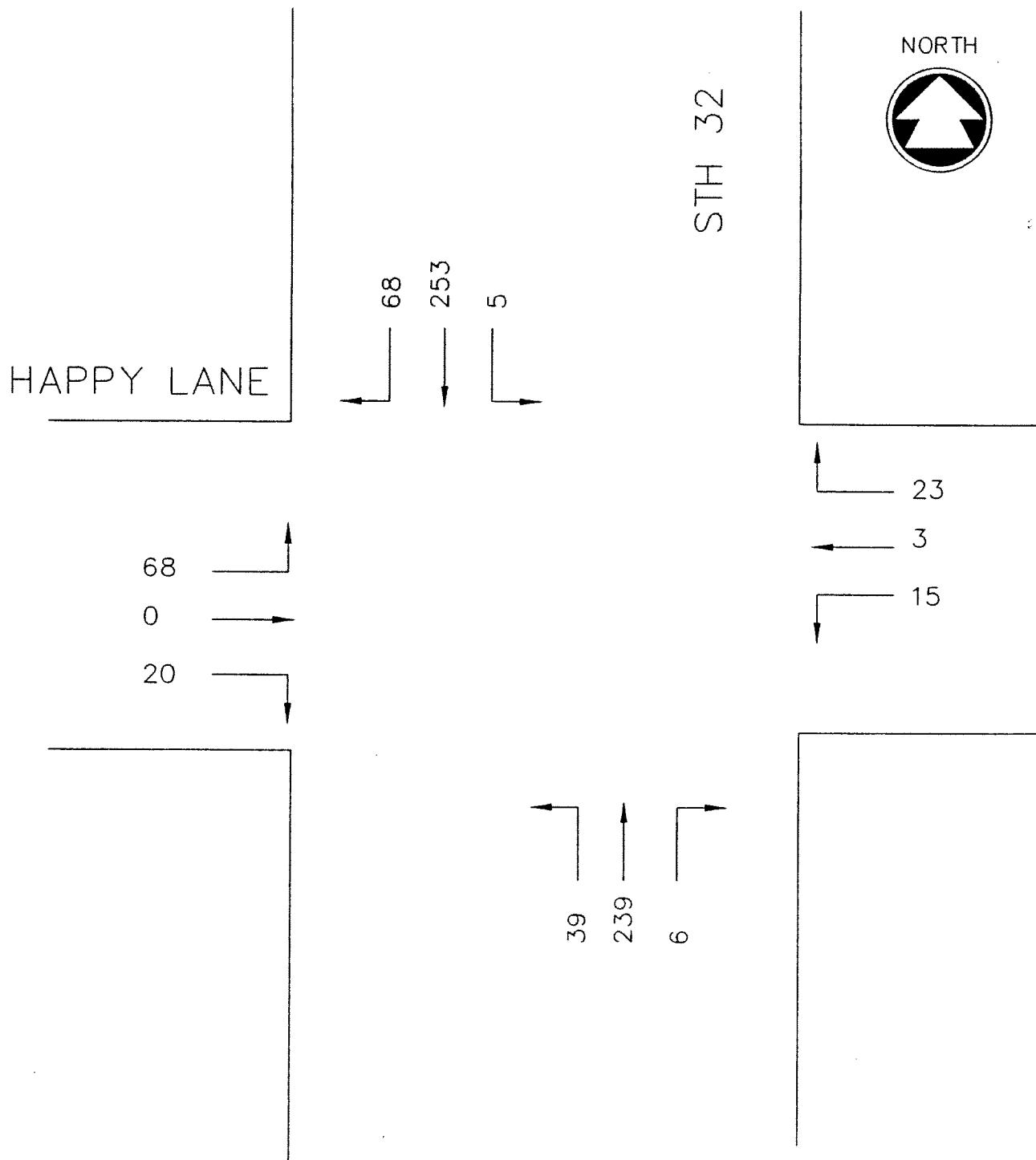
Project No. \_\_\_\_\_ Date OCT., 2004 Scale 1" = 1'

Drawn By \_\_\_\_\_ Field Book \_\_\_\_\_ Page \_\_\_\_\_

Mailing Address:  
P.O. Box 1025 Neenah, WI 54957-1025  
TEL: 920-751-4200 FAX: 920-751-4284

File No.  
CAD

DIRECTIONAL DISTRIBUTION OF 2004  
BACKGROUND TRAFFIC 7 A.M. - 8 A.M.



**McMAHON**  
ASSOCIATES, INC.

1445 McMahon Drive Neenah, WI 54956

- ENGINEERS
- ARCHITECTS
- PROJ. MGRS.
- SURVEYORS

Project No. \_\_\_\_\_ Date OCT., 2004 Scale 1" = 1'

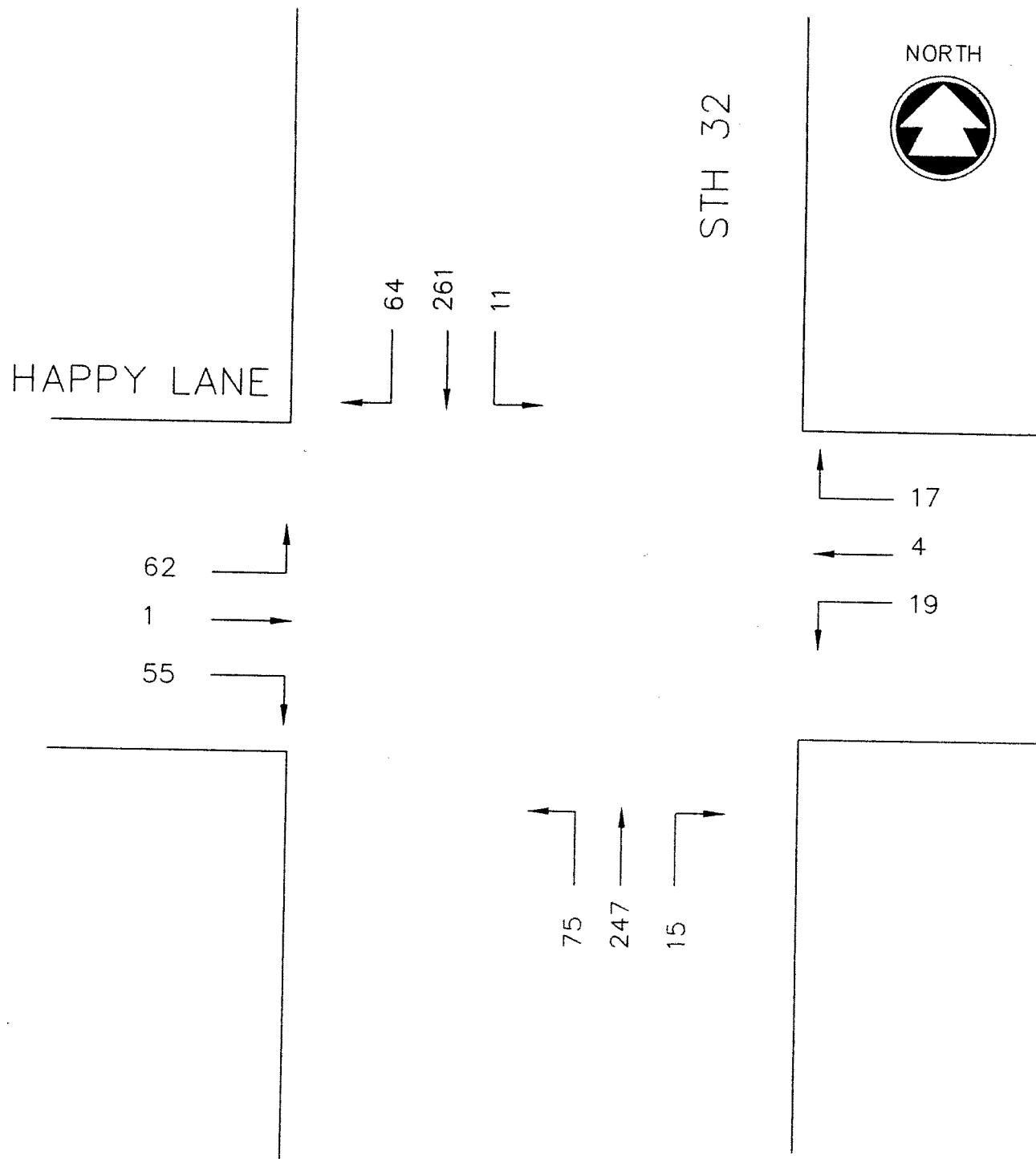
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File No.  
CAD

DIRECTIONAL DISTRIBUTION OF 2004  
BACKGROUND TRAFFIC 11 A.M. - 12 NOON



**McMAHON**  
ASSOCIATES, INC.

1445 McMahon Drive Neenah, WI 54956

- ENGINEERS
- ARCHITECTS
- PROJ. MGRS.
- SURVEYORS

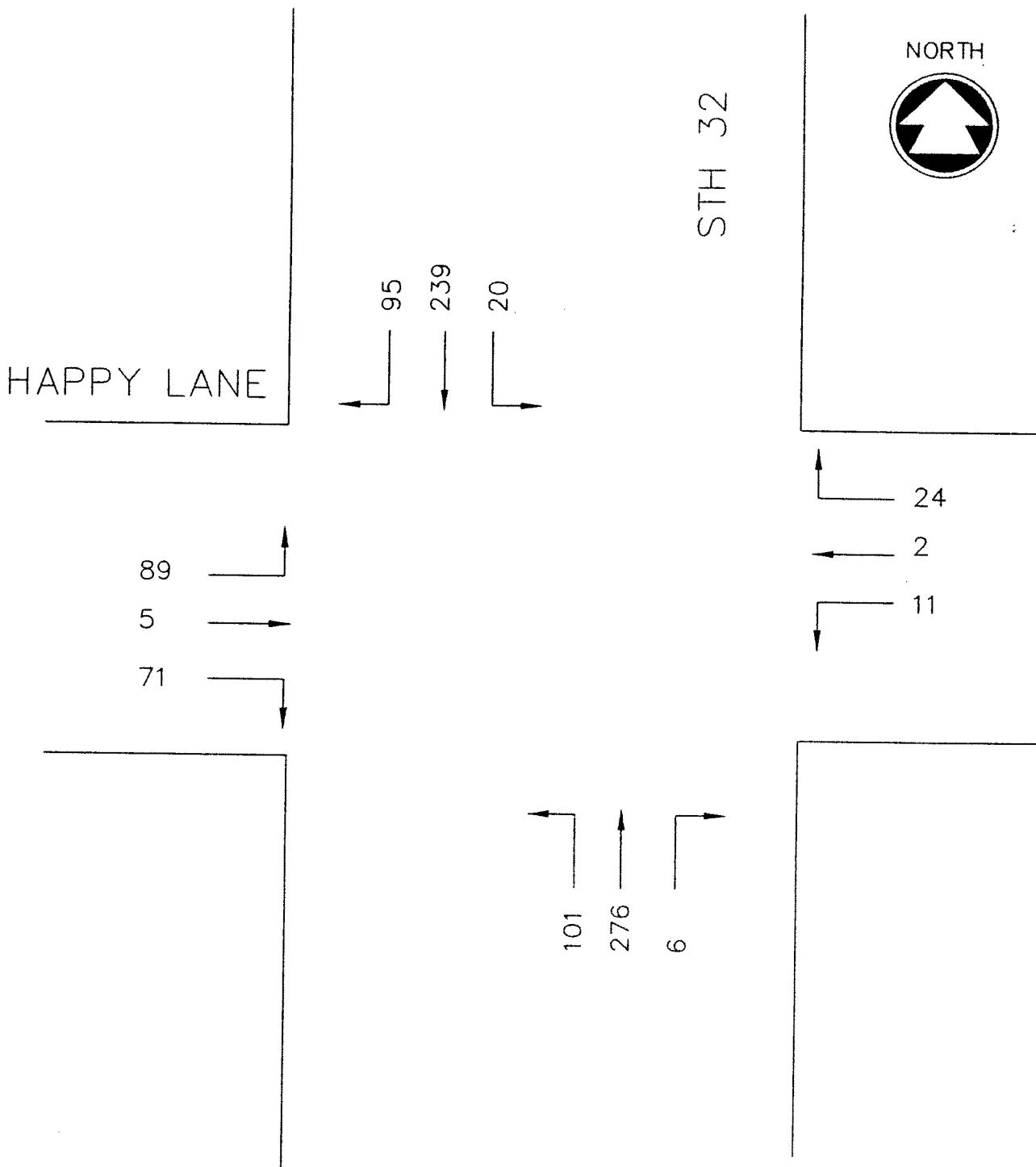
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DIRECTIONAL DISTRIBUTION OF 2004  
BACKGROUND TRAFFIC NOON - 1 P.M.



**McMAHON**

ASSOCIATES, INC.

1445 McMahon Drive Neenah, WI 54956

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■ ARCHITECTS  
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■ SURVEYORS

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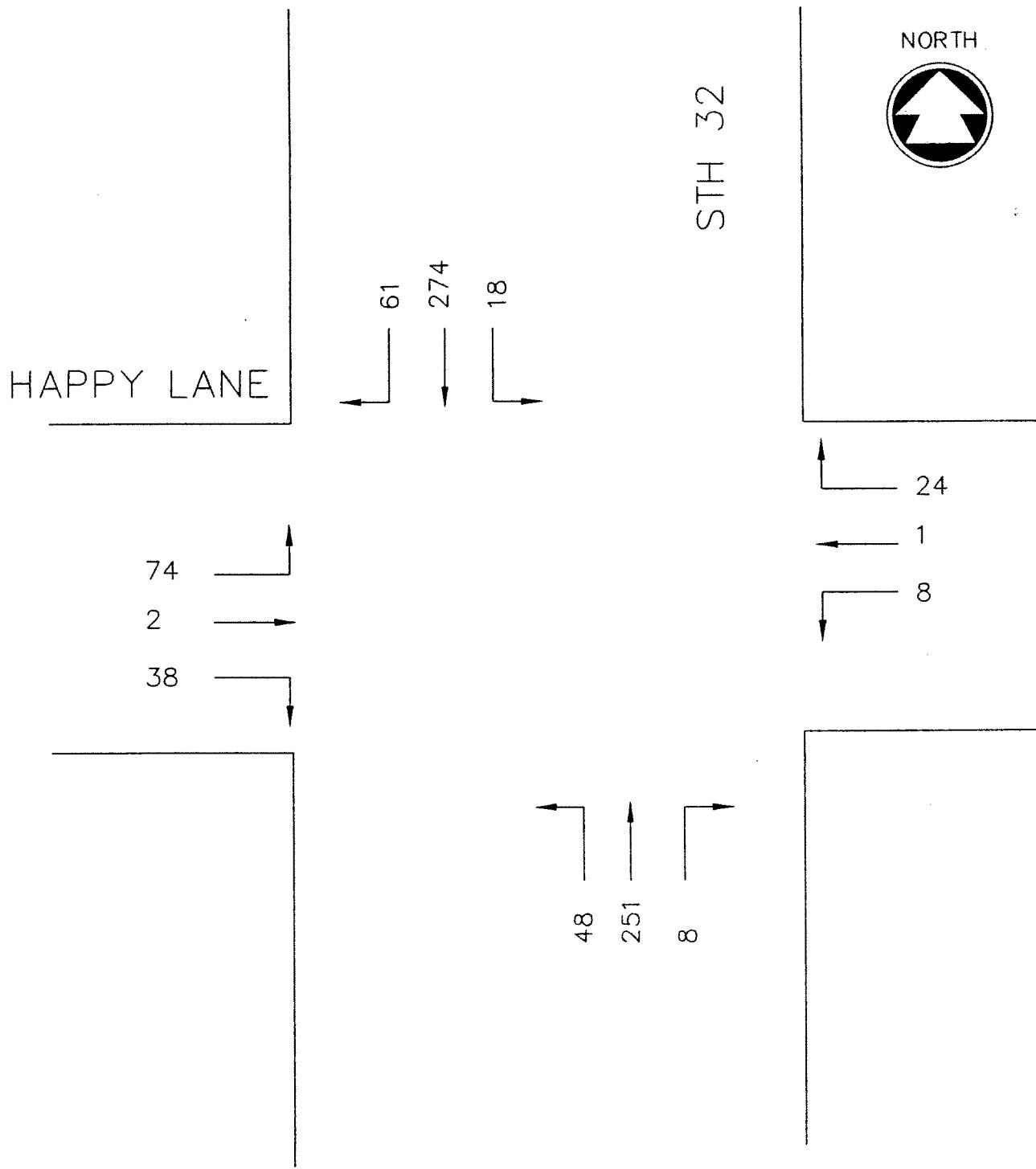
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Mailing Address:

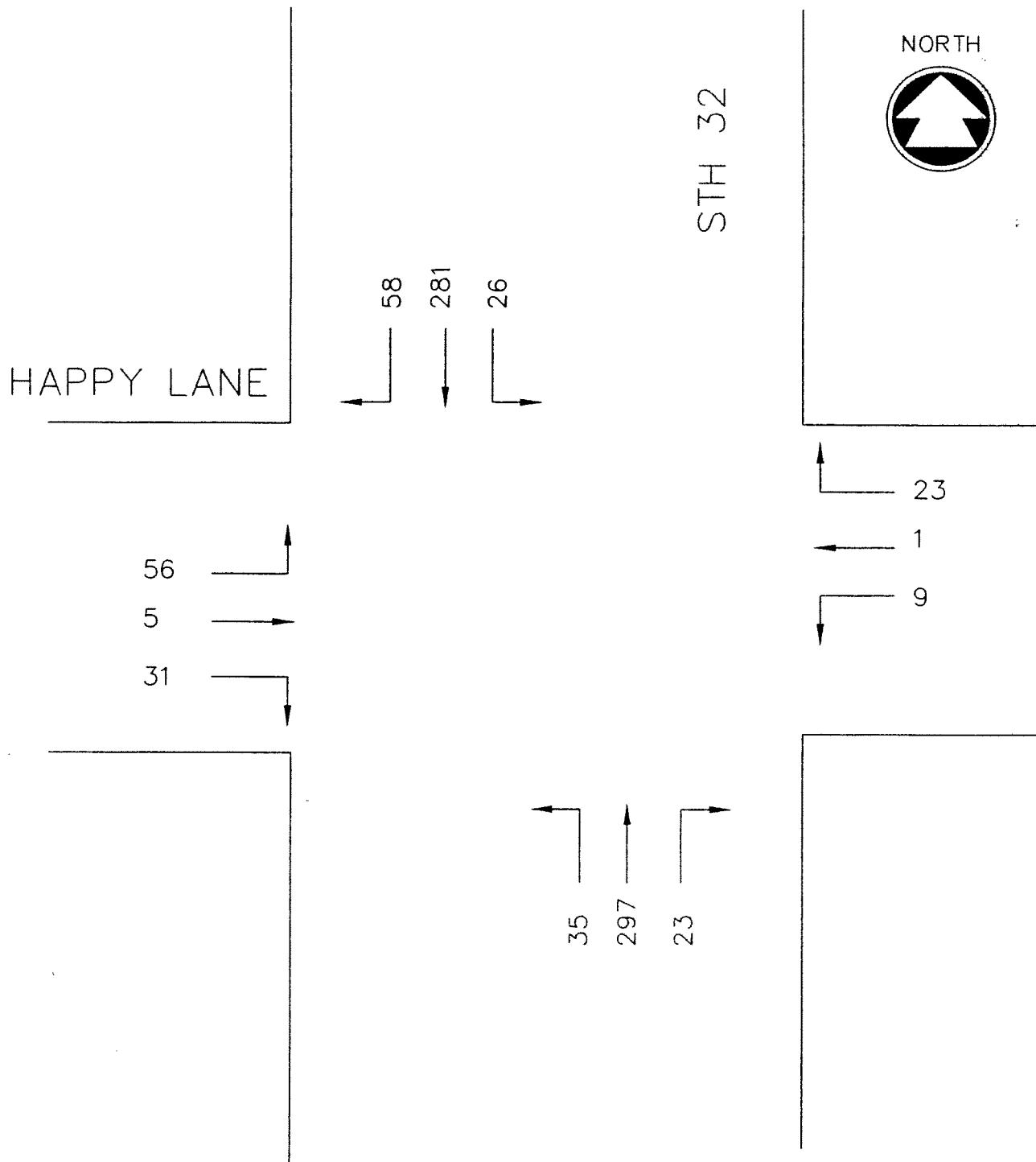
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TEL: 920-751-4200 FAX: 920-751-4284

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DIRECTIONAL DISTRIBUTION OF 2004  
BACKGROUND TRAFFIC 1 P.M. - 2 P.M.



DIRECTIONAL DISTRIBUTION OF 2004  
BACKGROUND TRAFFIC 2 P.M. - 3 P.M.



**McMAHON**

ASSOCIATES, INC.

1445 McMahon Drive Neenah, WI 54956

- ENGINEERS
- ARCHITECTS
- PROJ. MGRS.
- SURVEYORS

Project No. \_\_\_\_\_ Date OCT., 2004 Scale 1" = 1'

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Mailing Address:

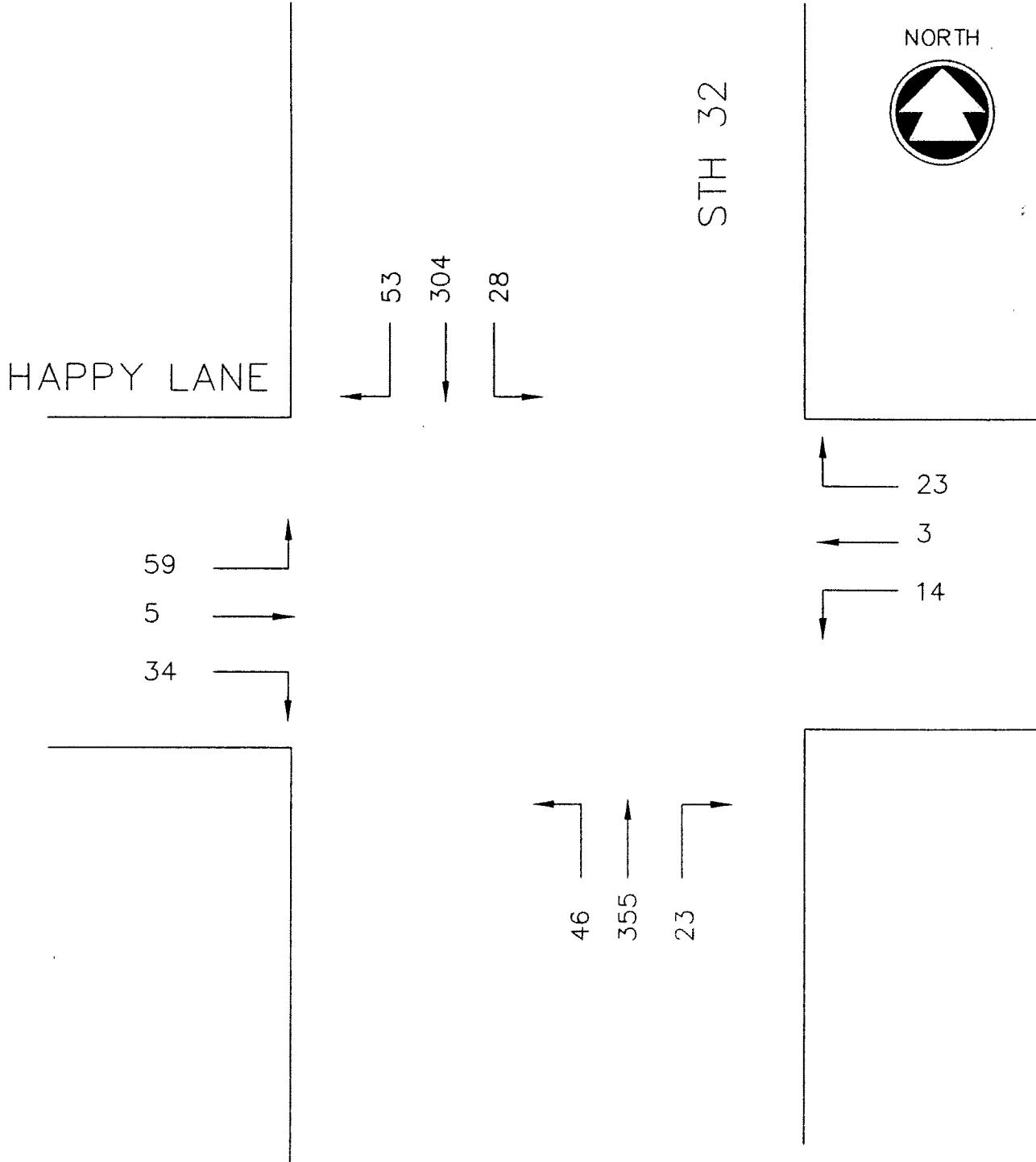
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DIRECTIONAL DISTRIBUTION OF 2004  
BACKGROUND TRAFFIC 3 P.M. - 4 P.M.

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**McMAHON**  
ASSOCIATES, INC. ■ ENGINEERS  
■ ARCHITECTS  
■ PROJ. MGRS.  
■ SURVEYORS  
1445 McMahon Drive Neenah, WI 54956

Project No. \_\_\_\_\_ Date OCT., 2004 Scale 1" = 1'

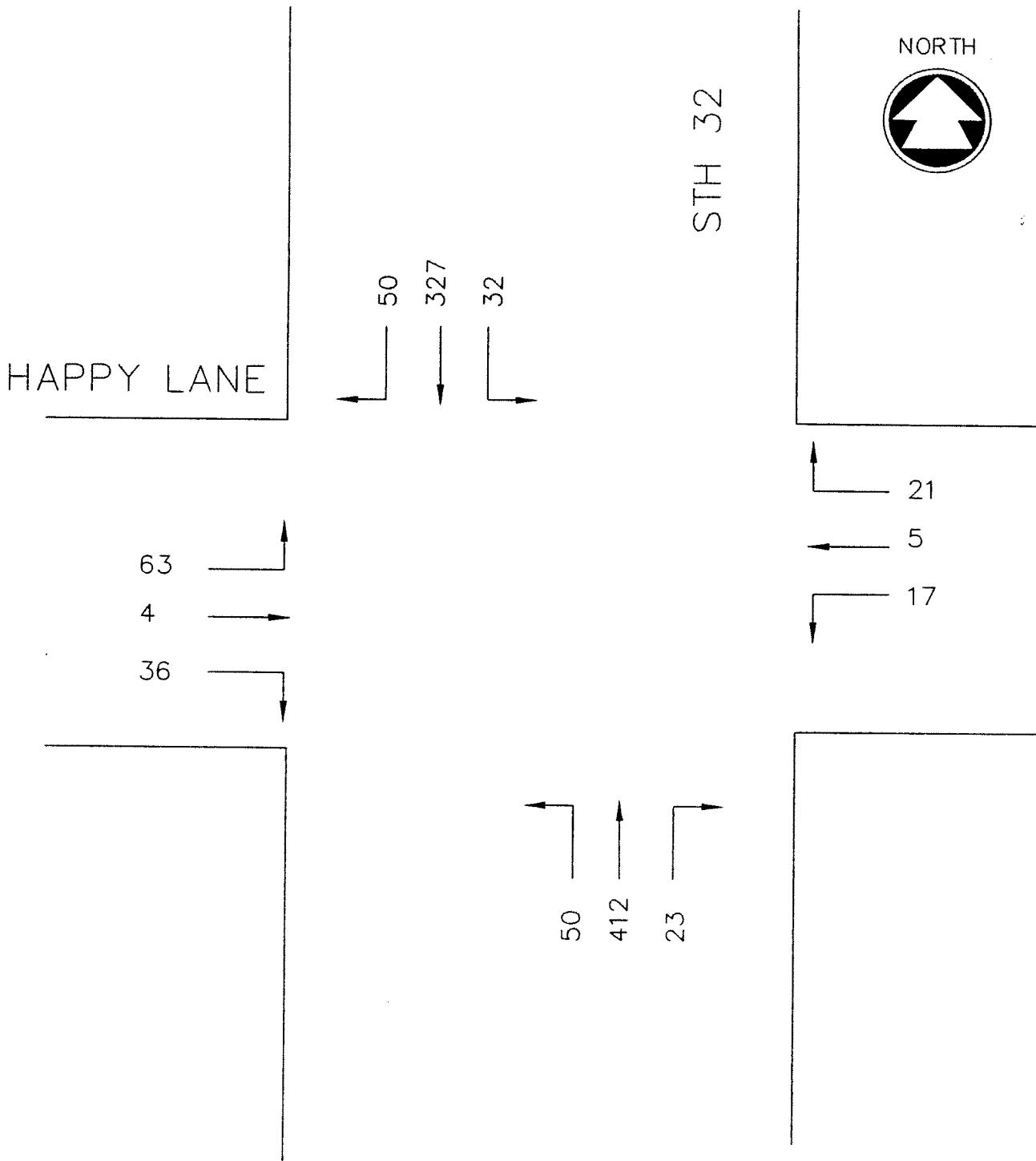
Drawn By \_\_\_\_\_ Field Book \_\_\_\_\_ Page \_\_\_\_\_

Mailing Address:  
P.O. Box 1025 Neenah, WI 54957-1025  
TEL: 920-751-4200 FAX: 920-751-4284

File No.  
CAD

DIRECTIONAL DISTRIBUTION OF 2004  
BACKGROUND TRAFFIC 4 P.M. - 5 P.M.

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**McMAHON**  
ASSOCIATES, INC.

1445 McMahon Drive Neenah, WI 54956

■ ENGINEERS  
■ ARCHITECTS  
■ PROJ. MGRS.  
■ SURVEYORS

Project No. \_\_\_\_\_ Date OCT., 2004 Scale 1" = 1'

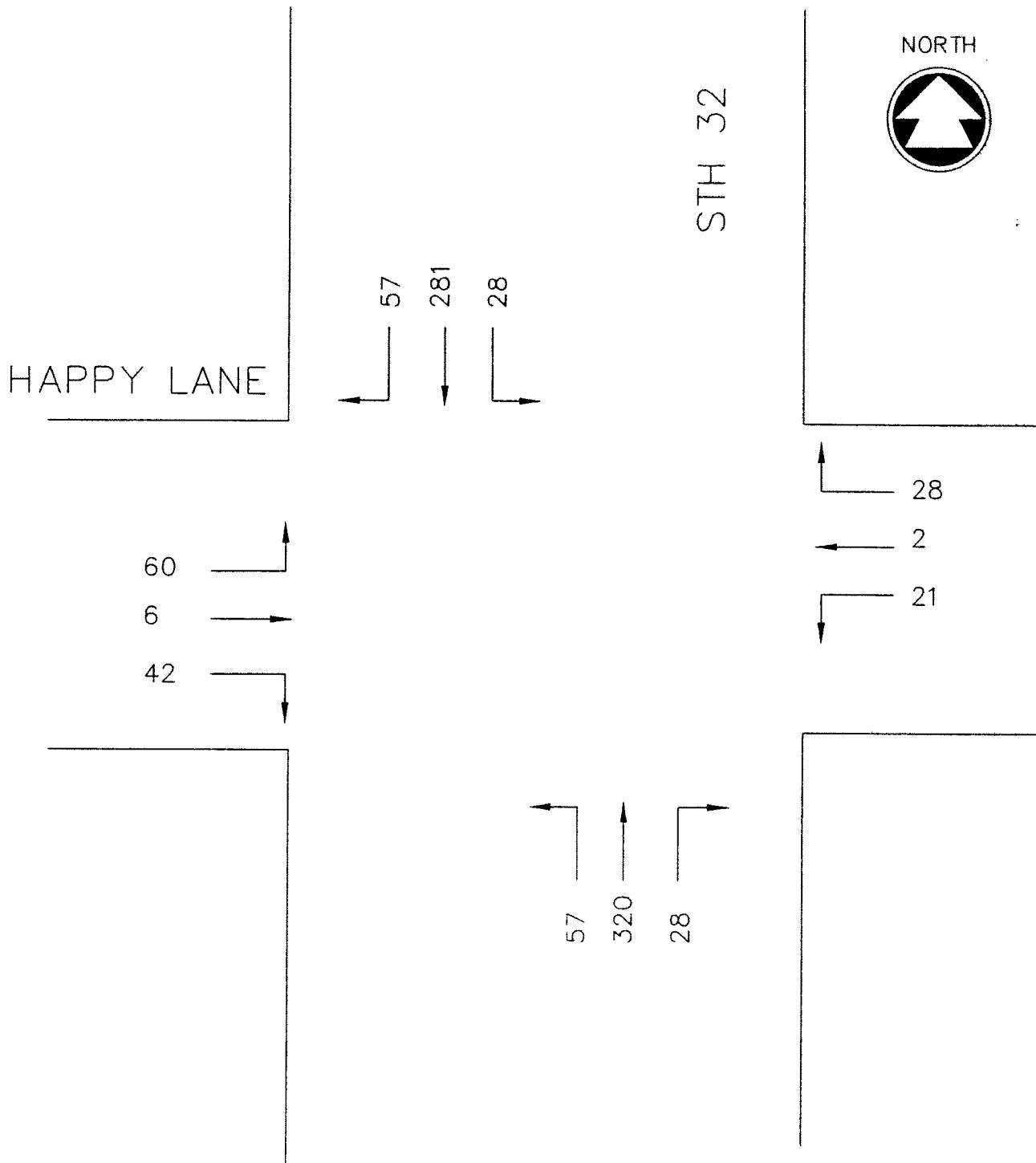
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DIRECTIONAL DISTRIBUTION OF 2004  
BACKGROUND TRAFFIC 5 P.M. - 6 P.M.



## **APPENDIX D**

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### **FUTURE TRAFFIC CONDITIONS**

- STH "32" Traffic Projections For Wisconsin Department Of Transportation
- Map Of Existing & Proposed Development
- Summary Of Total Trips By 2014 (100% Build Out)
- Trip Summary For Eight Highest Traffic Hours (2014)
- Hourly Trip Generation Estimates For Each Individual Parcel

# TRAFFIC FORECAST REPORT

PROJECT ID(S): TIA Base Forecast

ROUTE(S): STH 23 & STH 32

DISTRICT/COUNTY(IES): D # 3 Sheboygan Co

LOCATION: STH 23 & STH 32 Interchange (Sheboygan Falls)

COMPLETED: November 13, 2003

Traffic Forecasting Section; Bureau of State Highway Programs; Division of Transportation Investment Management

Developed by: Bill Gavinski  
Phone: (608) 266-3976  
FAX #: (608) 2367-0294  
E-Mail ID: william.gavinski@dot.state.wi.us

## Design Values (%'s)

ROUTE(S):	STH 23	STH 32	
Design Volume(s):			

K100			
K30			
P(PHV)			
T(DHV)			
T(PHV)			
D (Dsgn hr)			

## Truck Class %'s

Truck Class	Seg. 1	Seg 2.	Seg. 3
2D	1.5	1.6	
3AX	1.4	1.6	
2S1+2S2	0.7	0.8	
3-S2	1.2	1.4	
DBL-BTM	0.3	0.3	
<b>TOTAL</b>	<b>5.1%</b>	<b>5.7%</b>	

Specify Last Count & Forecast Years:

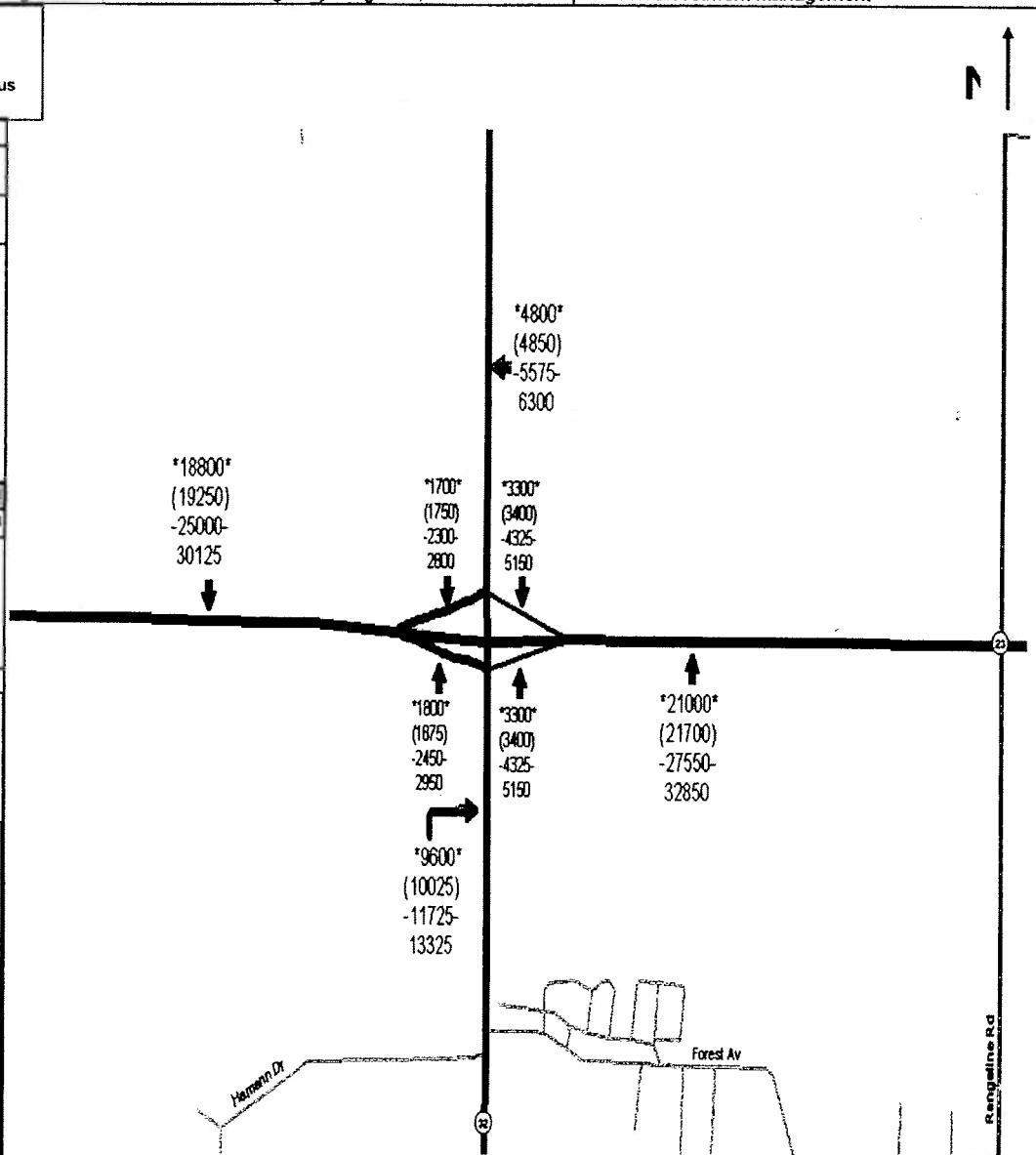
\*000\* 2002 Count  
(000) 2003 AADT  
-000- 2013 AADT  
000 2023 AADT

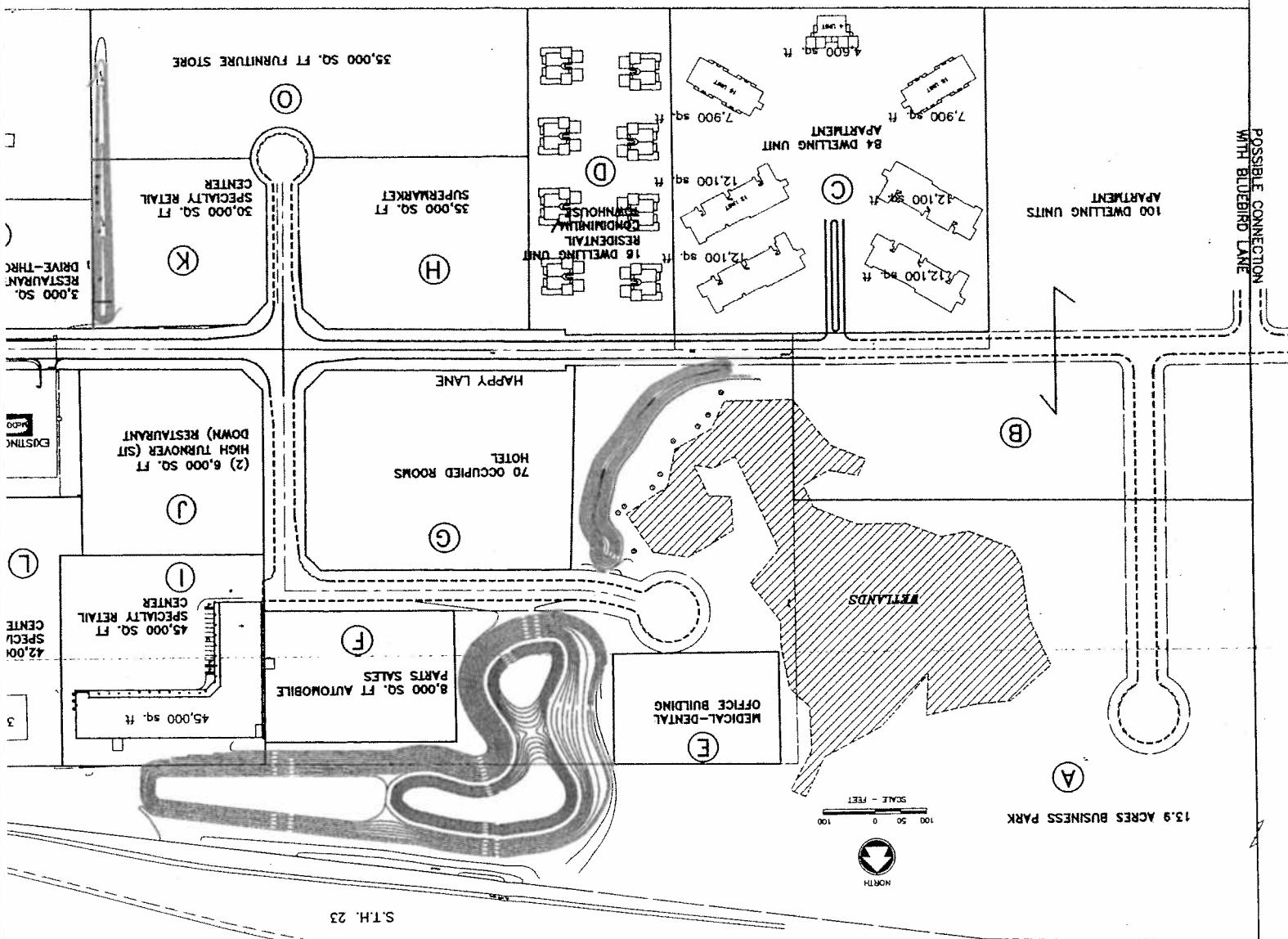
## Notes on the Forecast:

1. Mainline volumes were forecasted using historical traffic count data from the coverage count stations located in or adjacent to the project area.
2. Truck classification is based upon the truck classification of a similar highway facility.
3. Design data based upon similar highway facilities which have similar traffic volumes.
4. It is assumed that there will be no new traffic generators located along this highway facility during the forecast period. It is also assumed that there will not be any significant change in the land use activity near this project.

DISTRICT/COUNTY(IES): D # 3 Sheboygan Co  
LOCATION: STH 23 & STH 32 Interchange (Sheboygan Falls)  
COMPLETED: November 13, 2003

Traffic Forecasting Section; Bureau of State Highway Programs; Division of Transportation Investment Management





**DEVELOPMENT SUMMARY AT 100% BUILD-OUT  
2014**

<b>Generator Description</b>	<b>Total Trips in</b>	<b>Total Trips out</b>	<b>Total Trips</b>
Business Park	752	752	1504
Apartment	519	519	1038
Residential Condominium and Townhouse	40	40	80
Medical-Dental Office Building	30	30	60
Automobile Parts Sales	178	178	356
Hotel	265	265	530
Supermarket	1409	1409	2818
Specialty Retail Center	1718	1718	3436
High Turnover Sit Down Restaurant	567	567	1134
Fast Food Restaurant with Drive Through Window	443	443	886
Furniture Store	62	62	124
<b>Total</b>	<b>5983</b>	<b>5983</b>	<b>11966</b>

Note: These values have been corrected for linked trips and by pass trips

**Generation Trips Summary Sheet for 2014**

From-To	Hourly Rank	Trips In	Pass-By Trips In	Primary Trips In	Trips Out	Pass-By Trips Out	Primary Trips Out
7-8 a.m.	8	454	67	387	454	67	387
11 a.m.-12 noon	6	510	75	435	510	75	435
12 noon-1 p.m.	3	576	85	491	576	85	491
1-2 p.m.	7	495	72	423	495	72	423
2-3 p.m.	5	518	75	443	518	75	443
3-4 p.m.	2	581	85	496	581	85	496
4-5 p.m.	1	638	94	544	638	94	544
5-6 p.m.	4	570	84	486	570	84	486

\*Totals have been adjusted for linked trips

**Year 2014 Trip Generation For Business Park**

		2014 Traffic						50% Out					
		Adjusted		In-Bound		50% In		Out-Bound		Pass-By		Out-Bound	
		% Of ADT	Trips to Development	Trips Added	For Linked Trips (15%)	15%	In-Bound Primary	Out-Bound Primary	15%	Pass-By Primary	15%	Out-Bound Primary	15%
7 a.m.-8 a.m.	8	6.47	8.47	135	115	57	9	48	57	9	48	9	48
8 a.m.-9 a.m.	11	6.05	6.05	128	107	54	8	46	54	8	46	8	46
9 a.m.-10 a.m.	13	5.28	5.28	110	94	47	7	40	47	7	40	7	40
10 a.m.-11 a.m.	10	6.34	6.34	132	112	56	8	48	56	8	48	8	48
11 a.m.-12 Noon	6	7.27	7.27	151	128	64	10	54	64	10	54	10	54
12 Noon-1 p.m.	3	8.22	8.22	171	145	73	11	54	73	11	54	11	54
1 p.m.-2 p.m.	7	7.06	7.06	147	125	62	9	53	62	9	53	9	53
2 p.m.-3 p.m.	5	7.39	7.39	154	131	65	10	55	65	10	55	10	55
3 p.m.-4 p.m.	2	8.29	8.29	173	147	74	11	63	74	11	63	11	63
4 p.m.-5 p.m.	1	9.10	9.10	189	161	80	12	63	80	12	63	12	63
5 p.m.-6 p.m.	4	8.14	8.14	169	144	72	11	61	72	11	61	11	61
6 p.m.-7 p.m.	9	6.47	6.47	135	115	57	9	48	57	9	48	9	48
7 p.m.-8 p.m.	12	5.56	5.56	116	99	49	7	42	49	7	42	7	42
8 p.m.-9 p.m.	14	4.80	4.80	100	85	43	6	37	43	8	37	8	37
9 p.m.-10 p.m.	15	3.58	3.58	74	63	31	5	26	31	5	26	5	26
		100.00	100.00	2082	1770	885	133	752	885	133	752		

**Business Park A**  
 Assume 13.9 Acres  
 Total Trips = 149.79 X 13.9 = 2082  
 = 1041 Trips In  
 = 1041 Trips out

ITE Land Code = 770: Rate = 149.79 Trips per Number of Acres per Day  
 Assume 50% In and 50% Out

Linked Trips = 15%  
 Pass By = 15%

Year 2014 Trip Generation For Apartment

		2014 Traffic					
From - To	Hourly Rank	% Of ADT	% of Trips to Development	Trips Added	Adjusted For Linked Trips (15%)	50% In Primary	50% Out Primary
7 a.m.- 8 a.m.	8	6.47	6.47	79	67	34	34
8 a.m.- 9 a.m.	11	6.05	6.05	74	63	31	31
9 a.m.- 10 a.m.	13	5.28	5.28	64	55	27	27
10 a.m.- 11 a.m.	10	6.34	6.34	77	66	33	33
11 a.m.- 12 Noon	6	7.27	7.27	88	76	38	38
12 Noon- 1 p.m.	3	8.22	8.22	100	85	43	43
1 p.m.- 2 p.m.	7	7.06	7.08	88	73	37	37
2 p.m.- 3 p.m.	5	7.39	7.39	90	77	38	38
3 p.m.- 4 p.m.	2	8.29	8.29	101	86	43	43
4 p.m.- 5 p.m.	1	9.10	9.10	111	94	47	47
5 p.m.- 6 p.m.	4	8.14	8.14	99	84	42	42
6 p.m.- 7 p.m.	9	6.47	6.47	79	67	34	34
7 p.m.- 8 p.m.	12	5.58	5.58	88	58	29	29
8 p.m.- 9 p.m.	14	4.80	4.80	59	50	26	26
9 p.m.- 10 p.m.	15	3.56	3.56	43	37	18	18
		100.00	100.00	1220	1037	519	519

Apartment  
**B + C**  
 Assume 184 Dwelling Units  
 Total Trips =  $6.63 \times 184 = 1220$   
 = 610 Trips In  
 = 610 Trips out

ITE Land Code = 220: Rate = 6.63 Trips per Dwelling Unit per Day  
 Assume 50% In and 50% Out  
 Linked Trips = 15%  
 Pass By = 0%

**Year 2014 Trip Generation For Condominiums and Townhouses**

		2014 Traffic					
		% of Trips to Development		Adjusted For Linked Trips (15%)		50% In & 50% Out	
From - To	Hourly Rank	% Of ADT	Trips to Development	Trips Added	In-Bound Primary	Out-Bound Primary	
7 a.m.- 8 a.m.	8	6.47	6.47	6	5	3	3
8 a.m.- 9 a.m.	11	6.05	6.05	6	5	2	2
9 a.m.- 10 a.m.	13	5.28	5.28	6	4	2	2
10 a.m.- 11 a.m.	10	6.34	6.34	6	5	3	3
11 a.m.- 12 Noon	6	7.27	7.27	7	6	3	3
12 Noon- 1 p.m.	3	8.22	8.22	8	7	3	3
1 p.m.- 2 p.m.	7	7.06	7.06	7	8	3	3
2 p.m.- 3 p.m.	5	7.39	7.39	7	8	3	3
3 p.m.- 4 p.m.	2	8.29	8.29	8	7	3	3
4 p.m.- 5 p.m.	1	9.10	9.10	9	7	4	4
5 p.m.- 6 p.m.	4	8.14	8.14	8	7	3	3
6 p.m.- 7 p.m.	9	6.47	6.47	6	5	3	3
7 p.m.- 8 p.m.	12	5.56	5.56	5	4	2	2
8 p.m.- 9 p.m.	14	4.80	4.80	4	4	2	2
9 p.m.- 10 p.m.	15	3.56	3.56	3	3	1	1
		100.00	100.00	94	80	40	40

**R**esidential Condominium  
and Townhouse

D

Assume 16 Dwelling Units

Total Trips = 5.86 X 16 =

$$= 94$$

$$= 47 \text{ Trips In}$$

$$= 47 \text{ Trips out}$$

ITE Land Code = 230: Rate = 6.63 Trips per Dwelling Unit per Day  
Assume 50% In and 50% Out

Linked Trips = 15%  
Pass By = 0%

Year 2014 Trip Generation For Medical-Dental Office

		2014 Traffic									
		% of Trips to Development		Adjusted		For Linked Trips (15%)		50% In		50% Out	
From - To	Hourly Rank	% Of ADT		In-Bound	Pass-By	In-Bound	Pass-By	In-Bound	Pass-By	In-Bound	Pass-By
7 a.m.- 8 a.m.	8	6.47	6.47	5	2	1	1	1	1	2	1
8 a.m.- 9 a.m.	11	6.05	6.05	5	2	0	2	2	2	2	0
9 a.m.- 10 a.m.	13	5.28	5.28	4	2	0	2	2	2	2	0
10 a.m.- 11 a.m.	10	6.34	8.34	8	2	0	2	2	2	2	0
11 a.m.- 12 Noon	6	7.27	7.27	7	3	1	2	3	1	2	2
12 Noon- 1 p.m.	3	8.22	8.22	7	8	3	1	2	3	1	2
1 p.m.- 2 p.m.	7	7.06	7.06	6	5	3	1	2	3	1	2
2 p.m.- 3 p.m.	5	7.39	7.39	7	6	3	1	2	3	1	2
3 p.m.- 4 p.m.	2	8.29	8.29	7	6	3	0	3	3	0	3
4 p.m.- 5 p.m.	1	9.10	9.10	8	7	3	1	2	3	1	2
5 p.m.- 6 p.m.	4	8.14	8.14	7	8	3	1	2	3	1	2
6 p.m.- 7 p.m.	9	6.47	6.47	8	5	2	1	1	2	1	1
7 p.m.- 8 p.m.	12	5.56	5.56	5	4	2	0	2	2	0	2
8 p.m.- 9 p.m.	14	4.80	4.80	4	4	2	0	2	2	0	2
9 p.m.- 10 p.m.	15	3.56	3.56	3	3	1	0	1	0	1	0
		100.00	100.00	90	77	38	8	30	38	8	30

Medical-Dental Office Building

E

Assume 10 Employees

Total Trips = 8.91 X 10 =

$$= 46 \text{ Trips In}$$

$$= 45 \text{ Trips out}$$

ITE Land Code = 720; Rate = 8.91 Trips per employee per Day

Assume 50% In and 50% Out

Linked Trips = 15%

Pass By = 15% (use minimum of 1 per hour during highest 8-hours)

## Year 2014 Trip Generation For Automobile Parts Sales

		2014 Traffic									
From - To	Hourly Rank	% Of ADT	% of Trips to Development	Trips Added	Adjusted For Linked Trips (15%)	In-Bound	Pass-By	In-Bound	Out-Bound	Pass-By	50% Out
7 a.m.- 8 a.m.	8	6.47	6.47	32	27	14	2	12	14	2	12
8 a.m.- 9 a.m.	11	6.05	6.05	30	26	13	2	11	13	2	11
9 a.m.- 10 a.m.	13	5.28	5.28	26	22	11	2	9	11	2	9
10 a.m.- 11 a.m.	10	6.34	6.34	31	27	13	2	11	13	2	11
11 a.m.- 12 Noon	6	7.27	7.27	36	31	15	2	13	15	2	13
12 Noon- 1 p.m.	3	8.22	8.22	41	35	17	3	14	17	3	14
1 p.m.- 2 p.m.	7	7.06	7.06	35	30	15	2	13	15	2	13
2 p.m.- 3 p.m.	5	7.39	7.39	37	31	16	2	13	15	2	14
3 p.m.- 4 p.m.	2	8.29	8.29	41	35	17	3	14	16	2	14
4 p.m.- 5 p.m.	1	9.10	9.10	45	38	19	3	16	19	3	16
5 p.m.- 6 p.m.	4	8.14	8.14	40	34	17	3	14	17	3	14
6 p.m.- 7 p.m.	9	6.47	6.47	32	27	14	2	12	14	2	12
7 p.m.- 8 p.m.	12	5.56	5.56	28	23	12	2	10	12	2	10
8 p.m.- 9 p.m.	14	4.80	4.80	24	20	10	2	8	10	2	8
9 p.m.- 10 p.m.	15	3.56	3.56	18	15	8	1	7	8	1	7
		100.00	100.00	496	422	211	33	178	211	33	178

### Automobile Parts Sales

F

Assume 8,000 square feet  
Total Trips =  $61.91 \times 8 =$

$$\begin{aligned} &= 496 \\ &= 248 \text{ Trips In} \\ &= 248 \text{ Trips out} \end{aligned}$$

ITE Land Code = 843: Rate = 61.91 Trips per 1,000 square feet per Day  
Assume 50% In and 50% Out

Linked Trips = 15%  
Pass By = 15%

## Year 2014 Trip Generation For Supermarket

		2014 Traffic						50% Out					
		Adjusted		For Linked Trips (15%)		50% In		Pass-By		In-Bound	Out-Bound	Pass-By	Out-Bound Primary
From - To	Hourly Rank	% Of ADT	% of Trips to Development	Trips Added	Trips (15%)	15%	100	15%	Primary	107	100	15%	91
7 a.m.- 8 a.m.	8	6.47	6.47	252	215	107	16	91		107	100	15%	91
8 a.m.- 9 a.m.	11	6.05	6.05	236	201	100	15	85		107	100	15%	85
9 a.m.- 10 a.m.	13	5.28	5.28	206	175	88	13	75		88	88	13%	75
10 a.m.- 11 a.m.	10	6.34	6.34	247	210	105	16	89		105	105	16%	89
11 a.m.- 12 Noon	6	7.27	7.27	284	241	121	18	103		121	121	18%	103
12 Noon- 1p.m.	3	8.22	8.22	321	273	136	20	116		136	136	20%	116
1 p.m.- 2 p.m.	7	7.06	7.06	275	234	117	18	99		117	117	18%	99
2 p.m.- 3 p.m.	5	7.39	7.39	288	245	123	18	105		123	123	18%	105
3 p.m.- 4 p.m.	2	8.29	8.29	323	275	137	21	116		137	137	21%	116
4 p.m.- 5 p.m.	1	9.10	9.10	355	302	151	23	128		151	151	23%	128
5 p.m.- 6 p.m.	4	8.14	8.14	318	270	135	20	115		135	135	20%	115
6 p.m.- 7 p.m.	9	6.47	6.47	252	215	107	16	91		107	107	16%	91
7 p.m.- 8 p.m.	12	5.56	5.56	217	184	92	14	78		92	92	14%	78
8 p.m.- 9 p.m.	14	4.80	4.80	187	159	80	12	68		80	80	12%	68
9 p.m.- 10 p.m.	15	3.56	3.56	139	118	59	9	50		59	59	9%	50
		100.00	100.00	3902	3317	1658	249	1409		1658	1658	249%	1409

Supermarket

H

Assume 35,000 square feet  
Total Trips =  $111.51 \times 35 =$   
 $= 1951$  Trips In  
 $= 1951$  Trips out

ITE Land Code = 850: Rate = 111.51 Trips per 1,000 square feet per Day  
Assume 50% In and 50% Out

Linked Trips = 15%  
Pass By = 15%

## Year 2014 Trip Generation For Specialty Retail

		2014 Traffic						50% Out			
		Adjusted		For Linked Trips (15%)		50% In		In-Bound Primary		Pass-BY 15%	
From - To	Hourly Rank	% Of ADT	% of Trips to Development	Trips Added	In-Bound	Pass-BY 15%	In-Bound Primary	Out-Bound Primary	Pass-BY 15%	Out-Bound Primary	
7 a.m.- 8 a.m.	8	6.47	6.47	308	262	131	20	111	131	20	111
8 a.m.- 9 a.m.	11	6.05	6.05	288	245	122	18	104	122	18	104
9 a.m.- 10 a.m.	13	5.28	5.28	251	214	107	16	91	107	16	91
10 a.m.- 11 a.m.	10	6.34	6.34	302	256	128	19	109	128	19	109
11 a.m.- 12 Noon	6	7.27	7.27	346	294	147	22	125	147	22	125
12 Noon- 1p.m.	3	8.22	8.22	391	332	166	25	141	166	25	141
1 p.m.- 2 p.m.	7	7.06	7.06	336	286	143	21	122	143	21	122
2 p.m.- 3 p.m.	5	7.39	7.39	352	299	149	22	127	149	22	127
3 p.m.- 4 p.m.	2	8.29	8.29	394	335	168	25	143	168	25	143
4 p.m.- 5 p.m.	1	9.10	9.10	433	368	184	28	156	184	28	156
5 p.m.- 6 p.m.	4	8.14	8.14	387	329	165	25	140	165	25	140
6 p.m.- 7 p.m.	9	6.47	6.47	308	262	131	20	111	131	20	111
7 p.m.- 8 p.m.	12	5.56	5.56	265	225	112	17	95	112	17	95
8 p.m.- 9 p.m.	14	4.80	4.80	228	194	97	15	82	97	15	82
9 p.m.- 10 p.m.	15	3.56	3.56	169	144	72	11	61	72	11	61
		100.00	100.00	4758	4044	2022	304	1718	2022	304	1718

### Specialty Retail Center

I + K + L

Assume 117,000 square feet

Total Trips = 40.67 X 117 =

$$\begin{aligned} &= 4758 \\ &= 2379 \text{ Trips In} \\ &= 2379 \text{ Trips out} \end{aligned}$$

ITE Land Code = 814; Rate = 40.67 Trips per 1,000 square feet per Day  
Assume 50% In and 50% Out

Linked Trips = 15%  
Pass BY = 15%

## Year 2014 Trip Generation For High Turnover Sitdown Restaurant

From - To	Hourly Rank	% Of ADT	2014 Traffic			50% In			50% Out		
			% of Trips to Development	Adjusted For Linked Trips Added	Trips Added	In-Bound	Pass-By	In-Bound Primary	Out-Bound	Pass-By	Out-Bound Primary
7 a.m.- 8 a.m.	8	6.47	6.47	101	86	43	6	37	43	6	37
8 a.m.- 9 a.m.	11	6.05	6.05	95	80	40	6	34	40	6	34
9 a.m.- 10 a.m.	13	5.28	5.28	83	70	35	5	30	35	5	30
10 a.m.- 11 a.m.	10	6.34	6.34	99	84	42	6	36	42	6	36
11 a.m.- 12 Noon	6	7.27	7.27	114	97	48	7	41	48	7	41
12 Noon- 1p.m.	3	8.22	8.22	129	109	55	8	47	55	8	47
1 p.m.- 2 p.m.	7	7.06	7.06	110	94	47	7	40	47	7	40
2 p.m.- 3 p.m.	5	7.39	7.39	116	98	49	7	42	49	7	42
3 p.m.- 4 p.m.	2	8.29	8.29	130	110	55	8	47	55	8	47
4 p.m.- 5 p.m.	1	9.10	9.10	142	121	60	9	51	60	9	51
5 p.m.- 6 p.m.	4	8.14	8.14	127	108	54	8	46	54	8	46
6 p.m.- 7 p.m.	9	6.47	6.47	101	86	43	6	37	43	6	37
7 p.m.- 8 p.m.	12	5.56	5.56	87	74	37	6	31	37	6	31
8 p.m.- 9 p.m.	14	4.80	4.80	75	64	32	5	27	32	5	27
9 p.m.- 10 p.m.	15	3.56	3.56	56	47	24	4	20	24	4	20
		100.00	100.00	1564	1329	665	98	567	665	98	567

### High Turnover Sit Down Restaurant

J

Assume (2) at 6,000 square feet  
 Total Trips =  $130.34 \times 12 = 1564$   
                   = 782 Trips In  
                   = 782 Trips out

ITE Land Code = 832; Rate = 130.34 Trips per 1,000 square feet per Day  
 Assume 50% In and 50% Out

Linked Trips = 15%  
 Pass By = 15%

Year 2014 Trip Generation For Fast Food Restaurant with Drive Through Window

		2014 Traffic						50% Out			
		Adjusted For Linked Trips (15%)		50% In		Pass By		Out-Bound Primary		30% Out	
From - To	Hourly Rank	% Of ADT	% of Trips to Development	Trips Added	In-Bound	Pass By 30%	In-Bound Primary	Out-Bound	Pass By	Out-Bound Primary	
7 a.m.- 8 a.m.	8	6.47	6.47	96	82	41	29	41	12	29	
8 a.m.- 9 a.m.	11	6.05	6.05	90	77	38	11	27	11	27	
9 a.m.- 10 a.m.	13	5.28	5.28	79	67	33	10	23	10	23	
10 a.m.- 11 a.m.	10	6.34	6.34	94	80	40	12	28	12	28	
11 a.m.- 12 Noon	6	7.27	7.27	108	92	46	14	32	14	32	
12 Noon- 1p.m.	3	8.22	8.22	122	104	52	16	46	16	36	
1 p.m.- 2 p.m.	7	7.06	7.06	105	89	45	13	32	45	13	
2 p.m.- 3 p.m.	5	7.39	7.39	110	93	47	14	33	47	14	
3 p.m.- 4 p.m.	2	8.29	8.29	123	105	52	16	36	52	16	
4 p.m.- 5 p.m.	1	9.10	9.10	135	115	58	17	41	58	17	
5 p.m.- 6 p.m.	4	8.14	8.14	121	103	51	15	36	51	15	
6 p.m.- 7 p.m.	9	6.47	6.47	96	82	41	12	29	41	12	
7 p.m.- 8 p.m.	12	5.56	5.56	83	70	35	11	24	35	11	
8 p.m.- 9 p.m.	14	4.80	4.80	71	61	30	9	21	30	9	
9 p.m.- 10 p.m.	15	3.56	3.56	53	45	23	7	16	23	7	
		100.00	100.00	1488	1265	632	189	443	632	189	

Fast Food Restaurant with Drive Through

N

Assume 3,000 square feet  
Total Trips = 496.12 X 3 =

$$= 1488 \\ = 744 \text{ Trips In} \\ = 744 \text{ Trips out}$$

ITE Land Code = 834; Rate = 496.12 Trips per 1,000 square feet per Day  
Assume 50% In and 50% Out

$$\text{Linked Trips} = 15\% \\ \text{Pass By} = 30\%$$

## Year 2014 Trip Generation For Furniture Store

From - To	Hourly Rank	% Of ADT	2014 Traffic						Pass-By 15%	Out-Bound Primary 4
			% of Trips to Development	Trips Added	For Linked Trips (15%)	Adjusted	In-Bound	50% In		
7 a.m.- 8 a.m.	8	6.47	6.47	12	10	5	1	4	5	1
8 a.m.- 9 a.m.	11	6.05	6.05	11	9	5	1	4	5	1
9 a.m.- 10 a.m.	13	5.28	5.28	9	8	4	1	3	4	4
10 a.m.- 11 a.m.	10	6.34	6.34	11	10	5	1	4	5	1
11 a.m.- 12 Noon	6	7.27	7.27	13	11	5	1	4	5	1
12 Noon- 1p.m.	3	8.22	8.22	15	12	6	1	5	6	1
1 p.m.- 2 p.m.	7	7.06	7.06	13	11	5	1	4	5	1
2 p.m.- 3 p.m.	5	7.39	7.39	13	11	6	1	5	6	1
3 p.m.- 4 p.m.	2	8.29	8.29	15	13	6	1	5	6	1
4 p.m.- 5 p.m.	1	9.10	9.10	16	14	7	1	6	7	1
5 p.m.- 6 p.m.	4	8.14	8.14	14	12	6	1	5	6	1
6 p.m.- 7 p.m.	9	6.47	6.47	12	10	5	1	4	5	1
7 p.m.- 8 p.m.	12	5.56	5.56	10	8	4	1	3	4	1
8 p.m.- 9 p.m.	14	4.80	4.80	9	7	4	1	3	4	1
9 p.m.- 10 p.m.	15	3.56	3.56	6	5	3	0	3	3	0
		100.00	100.00	178	151	76	14	62	76	62

### Furniture Store

O  
Assume 35,000 square feet  
Total Trips =  $5.06 \times 35 =$

ITE Land Code = 890; Rate = 5.06 Trips per 1,000 square feet per Day  
Assume 50% In and 50% Out

Linked Trips = 15%  
Pass By = 15%  
= 89 Trips In  
= 89 Trips out