

Appendix F Traffic Report

TRAFFIC REPORT

PROPOSED BRUNSWICK MEADOWS CONDOMINIUM COMMUNITY
NEW YORK STATE ROUTE 142 (GRANGE ROAD)
TOWN OF BRUNSWICK, RENSSELAER COUNTY, NEW YORK 12180

Prepared for:

J.P.J. Partnership
6 Century Hill Drive
Latham, NY 12110

Prepared by:

Erdman Anthony and Associates, Inc.
317 Brick Church Road
Troy, NY 12180

November, 2006
Revised: March, 2007

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I. INTRODUCTION

J.P.J. Partnership is proposing a 124 unit condominium community west of New York State Route 142 (Grange Road) the Town of Brunswick, Rensselaer County, New York.

The Brunswick Meadows Condominium Community that is proposed will consist of 124 units of residential housing contained within thirty-one buildings. Each of the units will be privately owned, and the road will be owned and maintained by the Home Owners Association.

The overall density of the proposed project will be approximately 6.8 units per acre.

This report evaluates the effects of the proposed development on the surrounding highway system.

II. PROJECT LOCATION AND DESCRIPTION

The Site (Town of Brunswick Tax Parcel I.D.#: 80-00-2-3.1) is located within the Town of Brunswick's R-15 and A-40 zoning districts. The Site is approximately 18 acres in size, and is situated just east of the City of Troy, Town of Brunswick Municipal Boundary.

The site's topography consists of rolling terrain with the land sloping to the west from New York State Route 142, toward the center of the property then rising in elevation to the tree-line at the west, the stream corridor along the western most boundaries is significantly lower in elevation than the area being developed for housing.

Adjoining the Site are primarily residential properties. This includes homes along Hialeah Drive and along New York State Route 142. The land to the south of the parcel consists of approximately 60 acres and is vacant farm land.

The condominium units will each have a two bedroom floor plan. Four units will be constructed per building with two on the ground floor and two on the second floor. Each unit will have an enclosed, attached garage unit and driveway for additional parking. Guest parking will be available in several small lots located through the community.

III. EXISTING HIGHWAY SYSTEM

NYS Route 142 (Grange Road) is a state road owned and maintained by the New York State Department of Transportation that connects New York State Route 7 with New York State Route 40. A 24-foot wide pavement section with 2-foot wide paved shoulders on both sides of the road is contained inside the 66-foot right-of-way width of NYS Route 142 (Grange Road). The road is striped with a double yellow line, with one through lane in each direction occupying the pavement width. The road extends from its intersection with New York State Route 7 in the Town of Brunswick to its termination at New York State Route 4 in the City of Troy. No roadside parking or sidewalks are provided along NYS Route 142 (Grange Road) in the vicinity of our project. The posted speed limit near the proposed site is 45 miles per hour, reducing to 30 miles per hour at the Troy City line approximately two hundred feet to the north of the project.

The proposed development entrance intersects NYS Route 142 (Grange Road) at a right (90 degree) angle.

Southwest of the project site there is a signal controlled intersection at the corner of NYS Route 142 (Grange Road) and New York State Route 40 (north bound). This intersection is approximately 0.3 miles from the project site.

The intersection of NYS Route 142 (Grange Road) and Liberty Road / Gypsy Lane is located 0.4 miles south of the site entrance, it is a two way un-signalized intersection.

There is sufficient queuing space both north and south of the subject parcel proposed intersection and the proposed design allows ample space for queuing in the interior road system before turning onto New York State Route 142 (Grange Road).

IV. EXISTING TRAFFIC DATA

The New York State Department of Transportation Traffic Volume Report contains traffic data for NYS Route 142 (Grange Road) in the year 2003, the report indicated that at the NYS Route 142 (Grange Road) the Average Annual Daily Traffic (AADT) was 5,444.

Supplementary data was collected by Erdman Anthony and Associates between August 21, 2006 and August 24, 2006 using road tubes and electronic counters along NYS Route 142 (Grange Road). The results are found in *Appendix C* of this report.

V. TRIP GENERATION AND TRAFFIC DISTRIBUTION

The additional traffic generated by the proposed development was estimated in order to assess capacity impacts to the adjacent street network. The construction will consist of a 124 units of housing, containing two bedroom Condominiums. Using the Institute of Transportation Engineers' *Trip Generation, 6th Edition*, traffic estimated to be generated to and from the area during the AM and PM peak traffic hours was determined. Table 1 displays the estimated trip generation. A breakdown of the trip generation analysis is included in *Appendix A*.

TABLE 1 – NUMBER OF NEW ENTERING AND EXITING VEHICLES				
	Weekday AM Peak Volume		Weekday PM Peak Volume	
	Entering	Exiting	Entering	Exiting
Number of Vehicles	11	50	49	27

Using existing traffic patterns and turning movement counts, the proposed traffic entering and exiting the site was distributed to the adjacent street network. The arrival/departure distribution pattern and traffic distribution of the estimated additional traffic is shown in *Appendix B* following this report.

VI. TRAFFIC IMPACTS

The concept of levels of service uses qualitative measures that characterize operational conditions within a traffic stream and their perception by motorists and passengers. The descriptions of individual levels of service characterize these conditions in terms of factors such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six levels of service are defined for each type of facility for which analysis procedures are available. They are given letter designations, from A to F, with level of service (LOS) A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions. The technique utilized to determine Level of Service is based upon the Transportation Research Board's *Highway Capacity Manual, Third Edition* 1994 and the related HCM computer software.

Level of Service for unsignalized intersections is defined in term of delay, measured in seconds. Total delay is defined as the total time elapsed from when a vehicle stops at the end of the queue until the vehicle departs from the stop. Stated in terms of average total delay, the LOS criteria for unsignalized intersections are shown in Table 2.

TABLE 2 - LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS	
LEVEL OF SERVICE	STOPPED DELAY PER VEHICLE
A	<10.0 sec.
B	>10.0 sec. And <15.0 sec.
C	>15.0 sec. And <25.0 sec.
D	>25.0 sec. And <35.0 sec.
E	>35.0 sec. And <50.0 sec.
F	>50.0 sec.

Reference: Highway Capacity Manual

Level of Service for two-way highway operations is defined in terms of percent time-spent-following. Stated in terms of percent time-spent-following, the LOS criteria for two-way highway operations are shown in Table 3.

TABLE 3 - LEVEL OF SERVICE CRITERIA FOR TWO LANE HIGHWAYS	
LEVEL OF SERVICE	PERCENT TIME-SPENT-FOLLOWING

TABLE 3 - LEVEL OF SERVICE CRITERIA FOR TWO LANE HIGHWAYS	
A	< 40
B	> 40-55
C	> 55-70
D	> 70-85
E	> 85

As indicated in the traffic volume drawings, the proposed site development will generate additional traffic on NYS Route 142 (Grange Road), thereby affecting the NYS Route 142 (Grange Road) intersections.

The two traffic conditions evaluated for the proposed Brunswick Meadow Drive intersection with NYS Route 142 (Grange Road) are as follows:

- 1) Existing traffic conditions
- 2) Existing plus proposed site generated traffic conditions

The levels of service analysis reports are included in *Appendix D*. Tables 4 and 5 summarize the results of this analysis.

TABLE 4 - UNSIGNALIZED INTERSECTION ANALYSIS					
Intersection	Move	Southbound		Northbound	
		LOS	DELAY (sec)	LOS	Delay
Brunswick Meadows Drive / NYS Route 142	AM Proposed	A	7.6	B	10.6
	PM Proposed	B	12.9	A	8.0

TABLE 5 – TWO-LANE HIGHWAY SEGMENT ANALYSIS (NYS Route 142)				
	Existing		Proposed	
	LOS	% Time-Spent-Following	LOS	% Time-Spent-Following
AM	A	26.1	A	27.8
PM	B	42.3	B	43.1

As shown in table 4, the NYS Route 142 / Brunswick Meadow driveway will operate at an acceptable level of service. There will be very minimal delay into and out of the proposed site driveway.

In addition, although the site will add some additional traffic to State Route 142, the LOS will not be altered from its current state as a result of full build out of the proposed Brunswick Meadows Community.

VII. GEOMETRICS AND TRAFFIC CONTROL

The project road will intersect NYS Route 142 (Grange Road) and will provide the only access to the site. One lane entering and one lane exiting the facility will be constructed. The sight distance from the site driveway intersection with NYS Route 142 (Grange Road) is 850 feet in the west (left) direction and 657 feet in the east (right) direction. The sight distances are greater than those required by the NYSDOT *Policy and Standards for Entrance to State Highways* (left (610 ft.) and right (530 ft)). The proposed site roadway does meet the requirements for a highway speed limit posted at 45 miles per hour.

The loop road within the development will provide a free flow of vehicles throughout the site.

Warrants for a left turn lane on NYS Route 142 (Grange Road) were evaluated in accordance with the Transportation Research Board's (TRB) *National Cooperative Research Program Report 279, Intersection Channelization Design Guide*. Using the same peak hour traffic volumes predicated for the Level of Service analyses, warrants for a left turn lane are not met on the analyzed intersection.

Transportation Research Board's (TRB) *National Cooperative Research Program Report 279, Intersection Channelization Design Guide* is summarized as follows:

At an un-signalized T-intersection, where a major two-lane roadway intersects a minor roadway, criteria that justify a left-turn lane on the major roadway are analyzed. Three criteria are considered: (a) probability that one or more waiting through vehicles are present on the approach; (b) delay (average delay to the "caught" through vehicles, average delay to all through vehicles, and delay savings due to the left-turn lane); and (c) degradation of the level of service. The volume combinations (through, left-turn, and opposing flow) that would justify a left-turn lane under each of the criteria are presented. The current AASHTO guidelines are based on the probability that one or more through vehicles are in the queue behind a waiting left-turn vehicle. The original mathematical formulation of the AASHTO guidelines is examined and corrected, and a new set of volume warrants is developed.... The warrant volumes based on the three criteria are different. Delay and the level of service are more easily understandable measures of traffic performance than probability, so the volume combinations based on these two criteria should also be considered. The result provides a range of volume combinations within which an engineering judgment should be made.

VIII. CONCLUSION

The proposed site development will have minimal overall impact on traffic conditions in the area. NYS Route 142 (Grange Road) is not expected to be negatively affected due to the low percentage volume increases at the projects full build out.

The scope of the project study area did not extend beyond the limits of the project boundary because the increase in peak vehicle trips was only fifty vehicles at its highest level. The Institute of Transportation Engineers 'Transportation and Land Development' 2nd Edition, identifies a study area (influence area) as "extending to the most distance intersection at which measurable which a measurable impact can be found – such as an increase in the approach volume of at least 100 vehicle trips per hour..."

The proposed site entrance is in conformance with the NYSDOT *Policy and Standards for Entrance to State Highways* for sight distances.

REFERENCES

1. Transportation Research board, National Research council, *Highway Capacity Manual, Special Report 209*, Washington, D.C., TRB, 1997.
2. National Cooperative Highway Research Program Report 279, *Intersection Channelization Design Guide Special Report 209*, Transportation Research Board, National Research Council, Washington, D.C. November, 1985.
3. Institute of Transportation Engineers, *Trip Generation, 6th Edition*, Washington, D.C. 1997.
4. NYSDOT, *Policy and Standards for Entrances to State Highways*, January 29, 2004.
5. State of New York, *New York State Manual of Uniform Traffic Control Devices*, Secretary of State, State of New York, 1999.

Draft Environmental Impact Statement

**Brunswick Meadows
Residential Condominium Community**
NYS Route 142
Town of Brunswick
Rensselaer County, New York

Dated: March 23, 2007

Volume 1 of 2

draft

Lead Agency:

Town of Brunswick Town Board
308 Town Office Road
Troy, NY 12180
Contact: Phillip Herrington, Supervisor
518.279.3461

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Prepared By:

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ERDMAN
ANTHONY 

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Residential Condominium Community**
NYS Route 142
Town of Brunswick
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Dated: March 23, 2007

Volume 2 of 2

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ANTHONY 

List of Abbreviations

BMP	Best Management Practices
DEIS	Draft Environmental Impact Statement
EAF	Environmental Impact Statement
EPM	NYS DOT Environmental Procedures Manual
GPM	Gallons Per Minute
GSF	Gross Square Feet
HOA	Home Owners Association
MGD	Million Gallons Per Day
NAAQS	National Ambient Air Quality Standards
NWI	National Wetlands Inventory
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
NYSOPRHP	New York State Office of Parks Recreation and Historic Preservation
PDD	Planned Development District
PSI	Pounds Per Square Inch
PUD	Planned Unit Development
ROW	Right of Way
SEQRA	State Environmental Quality Review Act
TPD	Trips Per Day
USACOE	United States Army Corp of Engineers

Appendix A Trip Generation Analysis

Land Use: 230

Residential Condominium/Townhouse

Description

Residential condominiums/townhouses are defined as ownership units that have at least one other owned unit within the same building structure. **Both condominiums and townhouses are included in this land use.** The studies in this land use did not identify whether the condominiums/townhouses were low-rise or high-rise. Low-rise residential condominium/townhouse (Land Use 231), high-rise residential condominium/townhouse (Land Use 232) and luxury condominium/townhouse (Land Use 233) are related land uses.

Additional Data

The number of vehicles and the number of residents had a high correlation with average weekday vehicle trip ends. The use of these variables was limited, however, because the number of vehicles and residents was often difficult to obtain or predict. The number of dwelling units was generally used as the independent variable of choice because it is usually readily available, easy to project and had a high correlation with average weekday vehicle trip ends.

The peak hour of the generator typically coincided with the peak hour of the adjacent street traffic.

The sites were surveyed from the mid-1970s to the 2000s throughout the United States and Canada.

Source Numbers

4, 92, 94, 95, 97, 100, 105, 106, 114, 168, 186, 204, 237, 253, 293, 319, 320, 321, 390, 412, 418, 561, 562, 583

Residential Condominium/Townhouse (230)

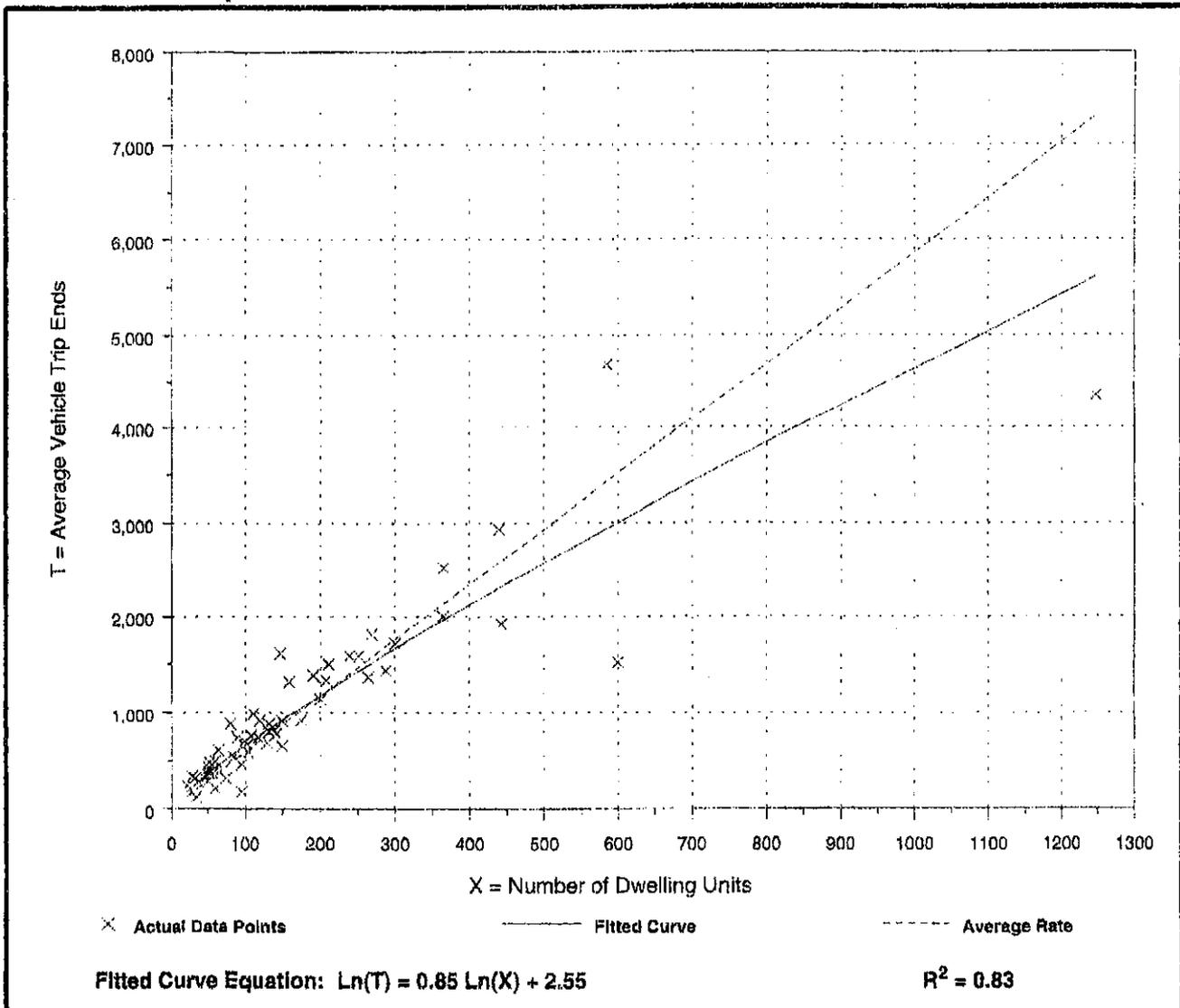
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 54
Avg. Number of Dwelling Units: 183
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
5.86	1.83 - 11.79	3.09

Data Plot and Equation



Residential Condominium/Townhouse (230)

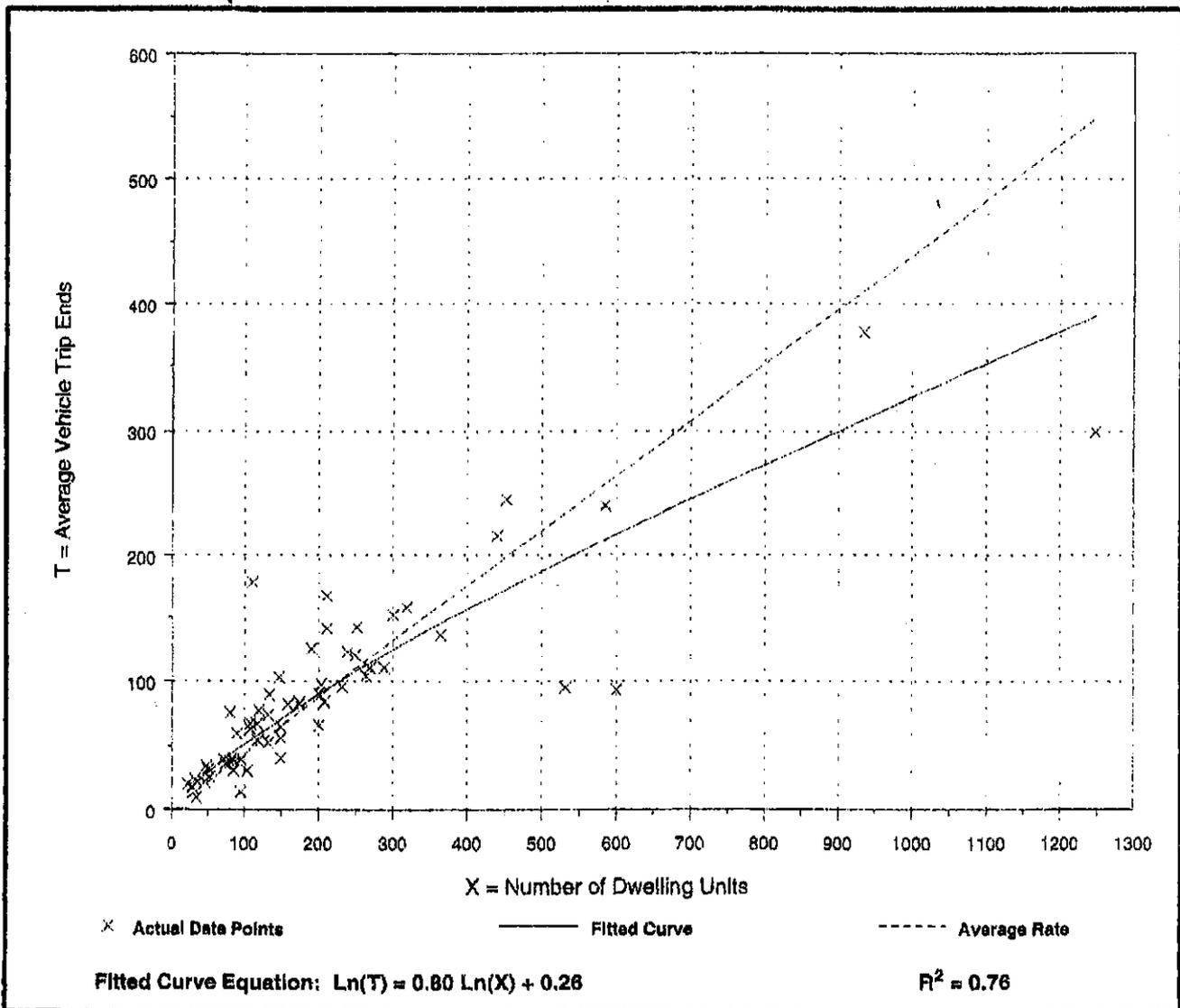
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 59
 Avg. Number of Dwelling Units: 213
 Directional Distribution: 17% entering, 83% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.15 - 1.61	0.69

Data Plot and Equation



Residential Condominium/Townhouse (230)

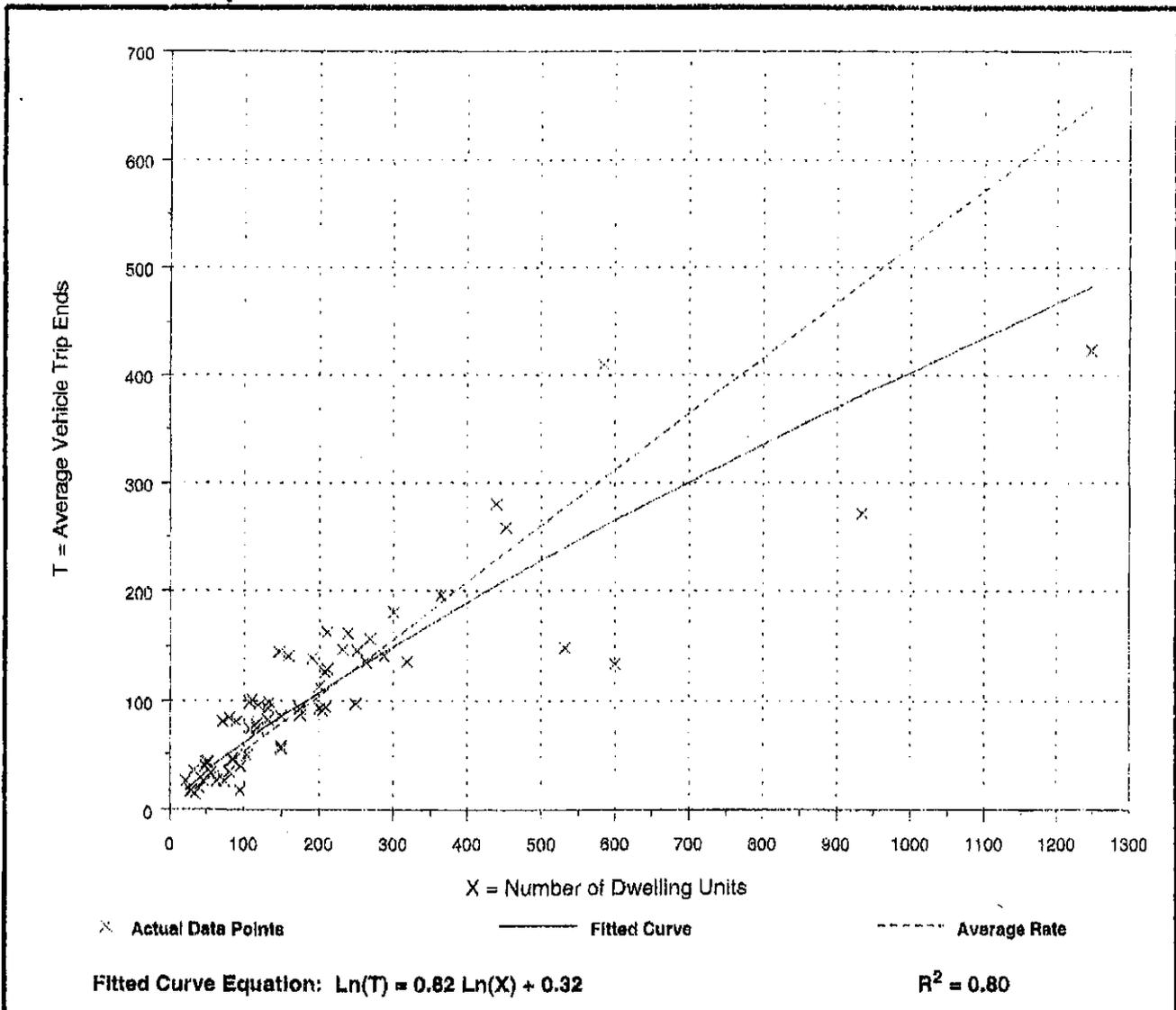
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

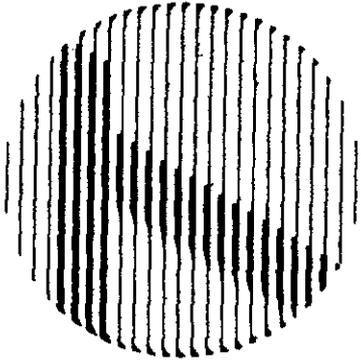
Number of Studies: 62
 Avg. Number of Dwelling Units: 205
 Directional Distribution: 67% entering, 33% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.52	0.18 - 1.24	0.75

Data Plot and Equation





**NEW YORK STATE
DEPARTMENT OF TRANSPORTATION**

2003

**TRAFFIC VOLUME
REPORT**

Route Number	Section Length	Beginning Description	Ending Description	Latest Count Year & Est.		Previous Counts		Previous Counts		Est AADT	Year	Est AADT	Year	Count Station Number
				Year	Est.	Year	Est.	Year	Est.					
142	0.69	RT 7 BRUNSWICK CTR	REGION 1 COUNTY 4 RENNELAER COUNTY	03	6253	03	6253	00	5005	97	4684	94	4721	0167
142	1.77	CR 144	CR 144	03	5444	03	5444	00	4611	96	4613	95	4114	0165
142	0.30	CITY OF TROY	TROY E CITY LN	**	6247	99	5856	97	5224	93	4968	89	4842	0030
142	0.08	START RT 40 OLAP	START RT 40 OLAP	**	14559	00	13865	97	14216	94	13070	92	13382	0164
142	0.81	END RT 40 OLAP	5TH AVE	**	10800	01	10451	98	11563	95	10550	91	10142	0034
142	0.18	5TH AVE	RT 4 END RT 142	**	8400	01	8129	98	8901	93	8476	90	7716	0052



Appendix B Distribution Pattern of Traffic

BRUNSWICK MEADOWS

EXISTING TRAFFIC—WEEKDAY

A.M.

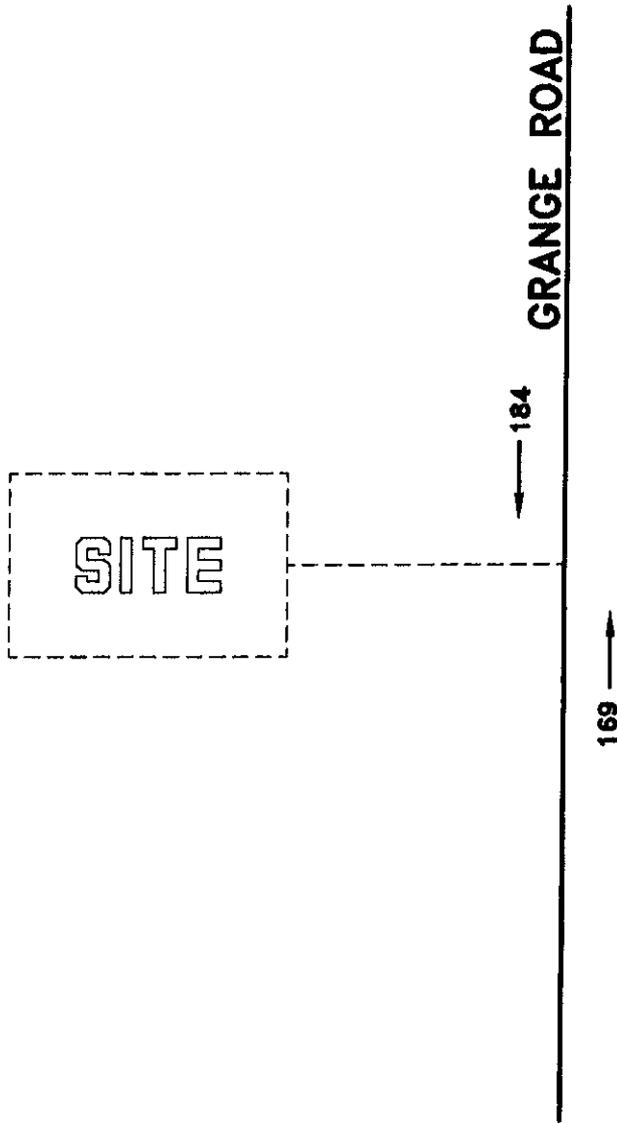
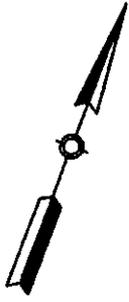


FIGURE 1

BRUNSWICK MEADOWS

EXISTING TRAFFIC—WEEKDAY

P.M.

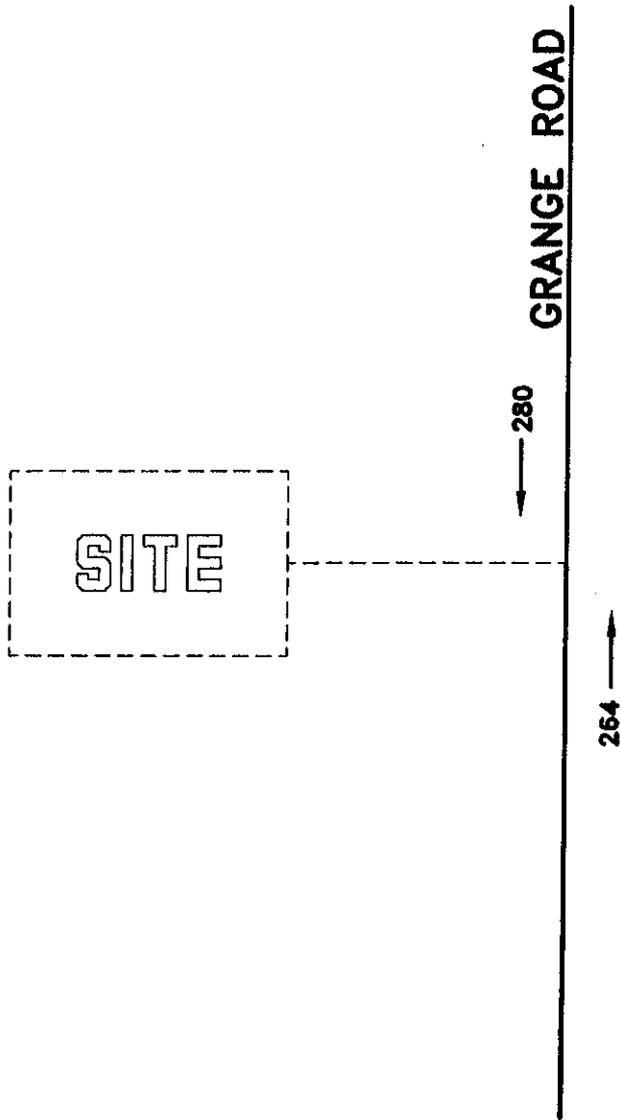
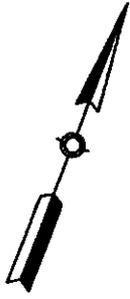


FIGURE 2

BRUNSWICK MEADOWS

**EXISTING TRAFFIC PLUS
SITE GENERATED TRAFFIC
WEEKDAY**

A.M.

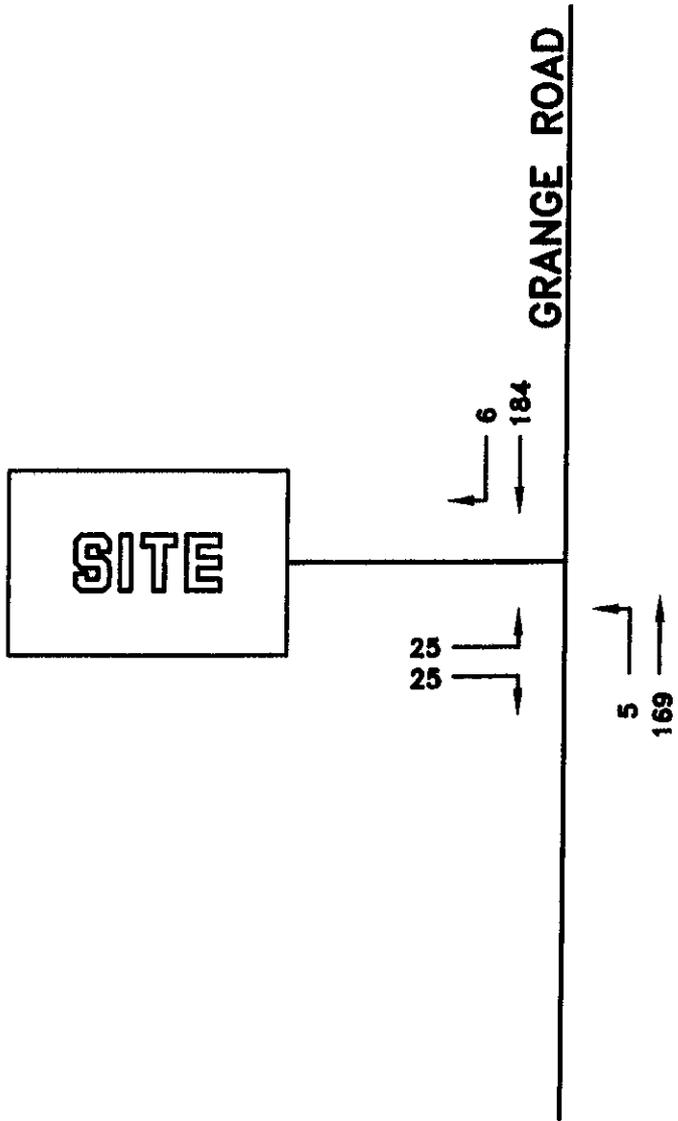
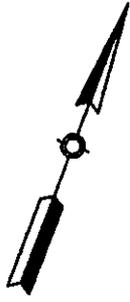


FIGURE 3

BRUNSWICK MEADOWS

**EXISTING TRAFFIC PLUS
SITE GENERATED TRAFFIC
WEEKDAY**

P.M.

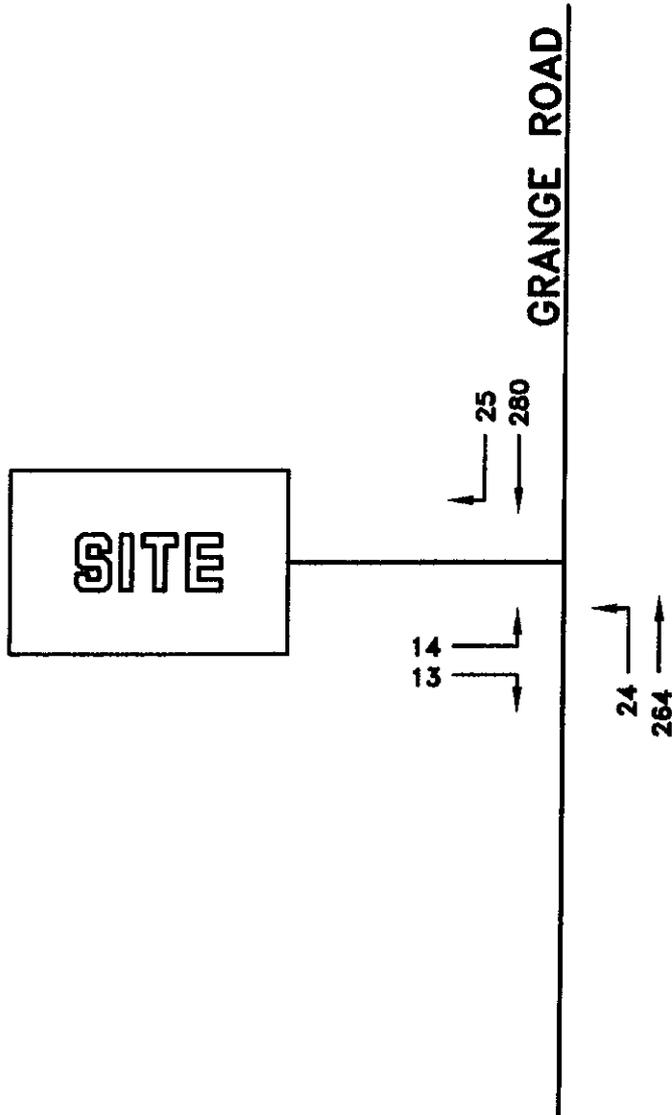
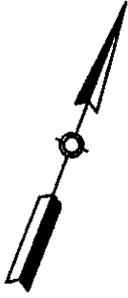


FIGURE 4

**Appendix C
August, 2006 Traffic Count**

Erdman Anthony and Associates
 317 Brick Church Road
 Troy, NY 12180
 518-279-0505

Station ID: SN:017204
 142 TRAFFIC-8-24-06SPEED
 Date Start: 21-Aug-06
 Date End: 24-Aug-06
 Site Code: 142 Troy

A to B

Start Time	0 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 9999	Total
08/21/06	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
00:15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
00:30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
00:45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Erdman Anthony and Associates
 317 Brick Church Road
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Station ID: SN:017204
 142 TRAFFIC-8-24-06SPEED
 Date Start: 21-Aug-06
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A to B

Start Time	0 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 9999	Total
12 PM															
12:15															
12:30															
12:45															
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15															
13:30															
13:45							0								
14:00									0						0
14:15															
14:30															
14:45	0	0	0	1	0	12	9	10	1	1	0	0	0	0	34
15:00	0	0	0	1	0	12	9	10	1	1	0	0	0	0	34
15:15	0	0	0	0	3	12	20	11	1	0	0	0	0	0	47
15:30	0	0	0	0	4	8	31	10	2	0	0	0	0	0	55
15:45	0	0	0	0	0	7	35	8	0	0	0	0	0	0	50
16:00	0	0	0	0	7	14	23	10	1	0	0	0	0	0	55
16:15	0	0	0	0	14	41	109	39	4	0	0	0	0	0	207
16:30	0	1	0	0	2	13	23	14	2	0	0	0	0	1	56
16:45	1	0	0	0	0	4	29	12	1	1	0	0	0	1	49
17:00	1	0	0	0	1	11	34	10	0	0	0	0	0	3	60
17:15	2	0	0	0	0	7	31	12	2	1	0	0	0	2	57
17:30	4	1	0	0	3	35	117	48	5	2	0	0	0	7	222
17:45	1	0	0	0	4	17	36	13	0	0	0	0	0	1	72
18:00	1	1	0	0	1	12	32	14	2	0	0	0	0	3	66
18:15	0	0	0	0	1	10	39	9	3	0	0	0	0	0	62
18:30	0	0	0	0	1	13	24	9	7	0	1	0	0	0	55
18:45	2	1	0	0	7	52	131	45	12	0	1	0	0	4	255
19:00	1	0	0	0	1	9	19	10	1	1	0	0	0	1	43
19:15	0	0	0	0	1	9	23	13	0	0	0	0	0	0	46
19:30	0	0	0	0	1	14	18	9	3	0	0	1	0	0	46
19:45	0	0	0	0	0	13	17	7	2	0	0	0	0	0	39
20:00	1	0	0	1	2	45	77	39	6	1	0	1	0	1	174
20:15	0	0	0	0	2	8	21	7	0	0	0	0	0	0	38
20:30	0	0	0	0	2	15	21	6	0	0	0	0	0	0	44
20:45	1	0	0	1	1	8	10	5	1	1	0	0	0	2	30
21:00	0	0	0	0	5	10	14	4	2	0	0	0	0	0	35
21:15	1	0	0	1	10	41	66	22	3	1	0	0	0	2	147
21:30	0	0	0	0	4	20	10	1	1	0	0	0	0	0	36
21:45	0	0	0	0	1	19	11	2	0	0	0	0	0	0	33
22:00	0	0	0	0	3	9	12	4	0	0	0	0	0	0	28
22:15	1	0	0	0	4	10	11	0	0	0	0	0	0	1	27
22:30	1	0	0	0	12	58	44	7	1	0	0	0	0	1	124
22:45	0	0	0	0	1	5	4	3	0	0	0	0	0	0	13
23:00	0	0	0	0	1	4	6	2	0	0	0	0	0	0	13
23:15	0	0	0	0	0	7	10	7	0	0	0	0	0	0	24
23:30	0	0	0	0	0	3	3	8	1	0	0	0	0	0	15
23:45	0	0	0	0	2	19	23	20	3	1	0	0	0	0	65
24:00	0	0	0	0	0	2	8	3	1	0	0	0	0	0	14
24:15	0	0	0	0	0	2	10	1	0	0	0	0	0	0	13
24:30	0	0	0	0	3	3	3	2	0	0	1	0	0	0	12
24:45	0	0	0	0	2	2	4	1	1	0	0	0	0	0	10
25:00	0	0	0	0	5	9	25	7	2	0	1	0	0	0	49
25:15	0	0	0	0	0	0	3	2	3	0	0	0	0	0	8
25:30	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
25:45	0	0	0	0	0	1	1	2	0	0	0	0	0	0	4
26:00	0	0	0	0	0	0	2	1	2	0	0	0	0	0	5
26:15	0	0	0	0	0	3	6	5	5	0	0	0	0	0	19
Total	9	2	0	3	55	315	607	242	40	5	2	1	0	15	1296

Erdman Anthony and Associates
 317 Brick Church Road
 Troy, NY 12180
 518-279-0505

Station ID: SN:017204
 142 TRAFFIC-8-24-06SPEED
 Date Start: 21-Aug-06
 Date End: 24-Aug-06
 Site Code: 142 Troy

A to B	0	16	21	26	31	36	41	46	51	56	61	66	71	76	Total
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	9999	
08/22/06	0	0	0	0	0	1	1	1	1	0	0	0	0	0	4
00:15	0	0	0	0	0	2	3	1	0	0	0	0	0	0	6
00:30	0	0	0	0	0	1	3	1	0	0	0	0	0	0	5
00:45	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2
01:00	0	0	0	0	0	5	8	3	1	0	0	0	0	0	17
01:15	0	0	0	0	0	3	1	1	0	0	0	0	0	0	5
01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	2	1	0	0	0	0	0	0	2
02:00	0	0	0	0	0	3	5	2	0	0	0	0	0	0	10
02:15	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
02:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2
03:00	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
03:15	0	0	0	0	0	3	1	2	0	0	0	0	0	0	6
03:30	0	0	0	0	0	1	1	1	0	0	0	0	0	0	3
03:45	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
04:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	3	1	0	0	0	0	0	0	0	4
05:00	0	0	0	0	0	4	2	0	0	0	0	0	0	0	6
05:15	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
05:30	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
05:45	0	0	0	0	0	1	1	1	0	0	0	0	0	0	3
06:00	0	0	0	0	1	1	10	5	0	0	0	0	0	0	17
06:15	0	0	0	0	1	2	12	4	0	1	0	0	0	0	20
06:30	0	0	0	0	1	7	6	0	1	0	0	0	0	0	15
06:45	0	0	0	2	3	8	6	2	0	0	0	0	0	0	21
07:00	0	0	0	0	1	5	11	9	3	0	0	0	0	0	29
07:15	0	0	0	2	6	22	35	15	4	1	0	0	0	0	85
07:30	0	0	0	0	0	4	14	3	1	0	0	0	0	0	22
07:45	1	0	0	4	3	5	15	5	0	0	0	0	0	0	29
08:00	1	0	1	3	3	9	15	6	4	0	2	0	0	0	35
08:15	0	0	0	3	3	9	15	6	4	0	2	0	0	0	43
08:30	0	0	0	0	1	23	59	22	5	0	2	0	0	0	129
08:45	0	0	0	0	1	16	18	6	2	0	0	0	0	1	44
09:00	0	0	0	1	4	9	21	10	1	1	0	0	1	0	48
09:15	0	0	0	0	1	7	15	14	3	2	0	0	0	1	43
09:30	0	1	0	1	4	14	18	8	1	0	0	0	0	3	50
09:45	0	1	0	1	4	14	18	8	1	0	0	0	0	0	50
10:00	0	1	0	2	10	46	72	38	7	3	0	0	1	5	185
10:15	1	0	0	0	3	7	9	6	1	0	0	0	0	1	28
10:30	0	0	0	0	1	6	21	6	1	0	0	0	0	1	36
10:45	0	0	0	0	0	8	21	5	1	0	0	0	0	0	31
11:00	2	0	0	0	5	27	68	21	3	1	0	0	0	3	130
11:15	0	0	0	0	2	8	15	5	1	1	0	0	0	0	32
11:30	1	0	0	1	3	14	19	6	2	0	0	0	0	1	47
11:45	0	0	0	0	1	4	28	3	3	0	0	0	0	0	37
12:00	0	0	0	1	5	11	29	5	2	0	0	0	0	0	53
12:15	1	0	1	1	11	37	89	19	8	1	0	0	0	1	169
12:30	0	0	0	0	1	6	13	6	1	0	0	0	0	0	29
12:45	0	0	0	0	0	17	17	5	0	0	0	1	0	1	41
13:00	1	0	0	0	0	8	13	7	3	0	0	0	0	1	33
13:15	1	0	0	0	1	4	28	11	3	0	0	0	0	1	49
13:30	2	0	0	0	2	35	71	31	7	0	0	1	0	3	152
Total	6	1	2	8	48	207	422	161	36	6	2	1	1	12	913

Erdman Anthony and Associates
 317 Brick Church Road
 Troy, NY 12180
 518-279-0505

Station ID: SN:017204
 142 TRAFFIC-8-24-06SPEED
 Date Start: 21-Aug-06
 Date End: 24-Aug-06
 Site Code: 142 Troy

A to B

Start Time	0 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 9999	Total
12 PM	0	0	0	0	0	6	17	9	1	0	0	0	0	0	33
12:15	0	0	0	0	0	12	12	16	0	0	0	0	0	1	41
12:30	1	0	0	0	2	8	23	6	0	0	0	0	0	1	41
12:45	0	0	0	0	7	12	22	11	3	0	0	0	0	0	55
13:00	1	0	0	0	9	38	74	42	4	0	0	0	0	2	170
13:15	0	0	0	0	0	11	23	16	0	0	0	0	0	3	53
13:30	0	0	0	0	1	10	28	8	1	0	0	0	0	1	49
13:45	0	0	0	0	6	5	11	11	4	0	0	0	0	0	37
14:00	0	0	0	0	6	12	22	10	1	1	0	0	0	0	52
14:15	0	0	0	0	13	38	84	45	6	1	0	0	0	4	191
14:30	0	0	0	0	5	6	16	9	4	0	0	0	0	0	40
14:45	1	0	1	1	7	16	16	10	0	0	0	0	0	1	53
15:00	1	1	0	0	0	5	19	10	1	0	0	0	0	1	38
15:15	0	0	0	0	1	5	22	15	15	0	0	0	0	0	59
15:30	2	1	1	2	17	49	66	44	5	1	0	0	0	2	190
15:45	0	0	0	0	2	11	19	15	6	0	0	0	0	0	53
16:00	0	0	0	0	2	12	28	10	1	0	0	0	0	2	55
16:15	0	1	0	2	3	22	27	15	3	2	1	0	0	1	77
16:30	1	0	0	0	1	15	29	20	1	0	0	0	0	1	68
16:45	1	1	0	2	8	60	103	60	11	2	1	0	0	4	253
17:00	0	0	0	1	6	17	22	9	2	0	0	1	1	0	59
17:15	0	0	0	0	1	2	22	9	6	1	0	0	0	0	41
17:30	1	0	0	0	1	13	22	15	2	1	0	0	0	1	56
17:45	0	0	0	0	2	13	46	15	2	0	0	0	0	0	76
18:00	1	0	0	1	10	45	112	48	12	2	0	1	1	1	234
18:15	0	0	0	2	0	18	47	8	2	0	0	0	0	0	75
18:30	2	0	5	1	1	14	27	18	3	0	0	0	0	0	71
18:45	0	0	0	0	3	17	26	22	0	0	0	0	0	0	68
19:00	1	0	0	0	0	15	28	11	4	2	0	0	0	1	62
19:15	3	0	5	3	4	64	128	57	9	2	0	0	0	1	276
19:30	0	0	0	0	0	16	24	13	0	0	0	0	1	0	54
19:45	0	0	0	0	0	9	27	13	0	0	0	0	0	0	49
20:00	0	0	0	1	1	19	42	2	1	0	0	0	0	0	66
20:15	0	0	1	0	4	19	21	8	3	0	0	0	0	1	57
20:30	0	0	1	1	5	63	114	36	4	0	0	0	1	1	226
20:45	0	0	0	0	1	6	20	6	0	0	0	0	0	0	33
21:00	0	0	0	0	0	12	18	3	1	0	0	0	0	0	34
21:15	0	1	0	0	0	16	13	8	1	0	0	0	0	0	37
21:30	0	0	0	0	2	11	13	3	0	0	0	0	0	0	29
21:45	0	1	0	0	3	45	64	18	2	0	0	0	0	0	133
22:00	0	0	0	0	2	8	9	3	2	0	0	0	0	0	24
22:15	0	0	0	0	2	13	15	1	0	0	1	0	0	2	34
22:30	0	0	0	0	1	9	18	3	0	0	0	0	0	0	31
22:45	0	0	0	0	2	7	7	4	0	0	0	0	0	0	20
23:00	0	0	0	0	7	37	49	11	2	0	1	0	0	2	109
23:15	0	0	0	0	3	8	5	2	1	0	0	0	0	0	19
23:30	0	0	0	0	0	7	7	8	0	0	0	0	0	0	22
23:45	0	0	0	0	0	4	7	3	0	0	0	0	0	0	14
24:00	0	0	0	0	3	2	8	0	0	0	0	0	0	0	13
24:15	0	0	0	0	6	21	27	13	1	0	0	0	0	0	68
24:30	0	0	0	0	1	12	5	3	0	0	0	0	0	0	21
24:45	0	0	0	0	1	3	7	1	0	0	0	0	0	0	12
25:00	0	0	0	0	1	2	3	2	1	0	0	0	0	0	9
25:15	0	0	0	0	1	6	3	1	1	1	0	0	0	0	13
25:30	0	0	0	0	4	23	18	7	2	1	0	0	0	0	55
25:45	0	0	0	0	1	1	6	1	0	1	0	0	0	0	10
26:00	0	0	0	0	2	3	7	2	0	0	0	0	0	0	14
26:15	0	0	0	0	0	1	1	4	1	0	0	0	0	0	7
26:30	0	0	0	0	0	2	5	0	0	0	0	0	0	0	7
26:45	0	0	0	0	3	7	19	7	1	1	0	0	0	0	38
Total	8	3	7	9	89	490	858	388	59	10	2	1	2	17	1943

Erdman Anthony and Associates
 317 Brick Church Road
 Troy, NY 12180
 518-279-0505

Station ID: SN:017204
 142 TRAFFIC-8-24-06SPEED
 Date Start: 21-Aug-06
 Date End: 24-Aug-06
 Site Code: 142 Troy

A to B	0	16	21	26	31	36	41	46	51	56	61	66	71	76	Total
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	9999	
08/23/06	0	0	0	0	1	1	2	1	0	0	0	0	0	0	5
00:15	0	0	0	0	0	0	1	4	1	0	0	0	0	0	6
00:30	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
00:45	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2
01:00	0	0	0	0	1	2	4	6	1	0	0	0	0	0	14
01:15	0	0	0	0	0	2	1	0	0	0	0	0	0	0	3
01:30	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
01:45	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
02:00	0	0	0	0	1	2	2	0	0	0	0	0	0	0	5
02:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
02:30	0	0	0	0	0	0	3	0	1	0	0	0	0	0	4
02:45	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
03:00	0	0	0	0	0	0	5	0	1	0	0	0	0	0	6
03:15	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
03:30	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
03:45	0	0	0	0	0	0	1	1	1	0	0	0	0	0	2
04:00	0	0	0	0	0	1	2	2	0	0	0	0	0	0	5
04:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	3	1	1	0	0	0	0	0	0	0	2
04:45	0	0	0	0	0	1	1	0	0	0	0	0	0	0	5
05:00	0	0	0	0	3	3	3	0	0	0	0	0	0	0	9
05:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	5	1	0	0	0	0	0	0	6
05:45	0	0	0	0	0	0	2	1	1	0	0	0	0	0	4
06:00	0	0	0	0	0	5	3	3	1	0	0	0	0	0	12
06:15	0	0	0	0	0	5	10	5	2	0	0	0	0	0	22
06:30	0	0	0	0	3	2	5	4	1	0	0	0	0	0	15
06:45	0	0	0	0	0	5	8	5	1	0	0	0	0	0	19
07:00	0	0	0	0	1	4	9	5	1	0	0	0	0	0	20
07:15	0	0	0	1	0	1	11	4	2	0	0	0	0	0	19
07:30	0	0	0	1	4	12	33	18	5	0	0	0	0	0	73
07:45	0	0	0	0	0	3	16	11	3	0	0	0	0	0	23
08:00	0	0	0	2	5	14	8	5	1	0	0	0	0	0	35
08:15	0	0	0	1	8	14	4	0	0	0	0	0	0	0	29
08:30	0	0	0	7	11	16	11	4	1	0	0	0	0	0	50
08:45	0	0	0	10	27	60	24	12	2	0	0	0	0	2	137
09:00	0	0	0	1	5	7	18	12	3	0	0	0	0	1	47
09:15	0	0	0	3	1	12	21	11	2	0	0	0	0	1	51
09:30	0	0	1	0	1	11	17	6	4	0	0	0	0	2	42
09:45	1	0	0	0	1	5	15	15	2	1	0	0	0	1	41
10:00	1	0	1	4	8	35	71	44	11	1	0	0	0	5	181
10:15	1	0	0	0	3	8	11	10	0	0	0	0	0	1	34
10:30	0	0	0	1	2	15	10	6	2	0	0	0	0	0	36
10:45	0	0	0	0	4	11	17	5	0	1	0	0	0	0	39
11:00	0	0	0	2	17	20	7	3	0	0	0	0	0	0	49
11:15	1	0	0	1	11	51	58	28	5	1	0	0	0	1	157
11:30	0	0	0	0	2	10	20	3	1	0	0	0	0	0	36
11:45	0	0	0	5	10	14	4	2	0	0	0	0	0	0	35
12:00	1	0	0	0	0	7	19	7	1	0	0	0	0	2	37
12:15	0	0	0	0	0	9	10	8	4	0	0	0	0	0	31
12:30	1	0	0	0	7	36	63	22	8	0	0	0	0	2	139
12:45	0	0	0	2	10	20	8	1	0	0	0	0	0	0	39
13:00	0	0	0	4	8	21	12	1	0	0	0	0	0	0	46
13:15	0	0	0	2	9	27	8	1	0	0	0	0	0	1	46
13:30	0	0	1	0	0	10	20	11	1	0	0	0	0	0	43
13:45	0	0	0	8	37	88	37	4	0	0	0	0	0	1	176
Total	3	0	2	6	53	211	399	186	49	4	0	0	0	11	924

Erdman Anthony and Associates
 317 Brick Church Road
 Troy, NY 12180
 518-279-0505

Station ID: SN:017204
 142 TRAFFIC-8-24-06SPEED
 Date Start: 21-Aug-06
 Date End: 24-Aug-06
 Site Code: 142 Troy

A to B	0	16	21	26	31	36	41	46	51	56	61	66	71	76	9999	Total
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75			
12 PM	0	0	0	1	3	11	15	11	0	0	0	0	0	0	0	41
12:15	0	0	0	0	3	5	18	10	3	0	0	0	0	0	0	39
12:30	0	0	0	0	3	6	21	11	2	0	0	0	0	0	0	43
12:45	0	0	0	0	0	8	16	10	1	0	0	0	0	0	0	35
13:00	0	0	0	1	9	30	70	42	6	0	0	0	0	0	0	158
13:15	0	0	1	1	3	10	18	2	1	0	0	0	0	0	0	36
13:30	0	0	0	0	1	19	19	7	1	0	0	0	0	0	1	48
13:45	0	0	0	0	4	13	17	14	2	0	0	0	0	0	0	50
14:00	0	0	0	0	3	11	14	7	2	0	0	0	0	0	0	37
14:15	0	0	1	1	11	53	68	30	6	0	0	0	0	0	1	171
14:30	0	0	0	0	0	10	22	7	0	0	0	0	0	0	0	39
14:45	0	0	1	0	1	22	16	6	1	0	0	0	0	0	0	47
15:00	0	0	0	1	8	13	19	4	1	0	0	0	0	0	1	47
15:15	2	0	0	0	1	14	19	5	2	0	0	0	0	0	1	44
15:30	2	0	1	1	10	59	76	22	4	0	0	0	0	0	2	177
15:45	0	0	0	0	2	6	31	6	1	0	0	0	0	0	0	46
16:00	1	0	0	0	0	18	31	7	1	1	0	0	0	0	1	60
16:15	0	0	0	0	2	20	24	8	1	0	0	0	0	0	2	57
16:30	0	0	0	0	0	14	26	5	0	0	0	0	0	0	1	46
16:45	1	0	0	0	4	58	112	26	3	1	0	0	0	0	4	209
17:00	0	0	0	0	0	12	34	16	2	1	0	1	0	1	1	67
17:15	1	0	0	0	0	18	25	12	3	0	1	0	0	0	4	64
17:30	0	0	0	0	2	12	28	13	2	0	1	0	0	0	0	58
17:45	2	0	0	0	5	5	27	12	2	0	0	0	0	0	4	57
18:00	3	0	0	0	7	47	114	53	9	1	2	1	0	0	9	246
18:15	0	0	0	0	0	15	30	13	4	2	0	0	0	0	0	64
18:30	0	0	0	0	2	8	49	12	0	1	0	1	0	0	0	73
18:45	0	0	0	0	3	14	26	20	3	0	0	0	0	0	4	73
19:00	2	1	0	0	1	5	24	11	3	1	0	0	0	0	1	46
19:15	2	1	0	0	6	42	129	56	10	4	0	1	0	0	5	258
19:30	1	0	0	1	1	18	22	4	3	0	0	0	0	0	1	51
19:45	0	0	0	0	4	13	19	8	3	0	0	0	0	0	1	48
20:00	0	1	0	0	1	4	39	4	3	0	1	0	0	0	0	53
20:15	1	0	0	0	1	12	22	12	0	1	0	0	0	0	1	50
20:30	2	1	0	1	7	47	102	28	9	1	1	0	0	0	3	202
20:45	0	0	0	0	3	11	18	5	4	0	0	0	0	0	0	39
21:00	1	0	0	0	1	5	28	3	0	0	1	0	0	0	1	40
21:15	0	0	0	0	1	8	8	1	1	0	0	0	0	0	0	19
21:30	0	0	0	0	0	12	18	6	1	0	0	0	0	0	0	37
21:45	1	0	0	0	5	36	70	15	6	0	1	0	0	0	1	135
22:00	1	0	0	0	2	17	10	2	0	1	0	0	0	0	1	34
22:15	0	0	0	0	1	8	27	5	2	0	0	0	0	0	0	43
22:30	0	0	0	0	4	12	6	3	0	0	0	0	0	0	0	25
22:45	0	0	0	0	4	11	15	0	1	0	0	0	0	0	0	31
23:00	1	0	0	0	11	48	58	10	3	1	0	0	0	0	1	133
23:15	0	0	0	0	3	14	11	2	1	0	0	0	0	0	0	31
23:30	0	0	0	0	1	7	5	4	1	0	0	0	0	0	0	18
23:45	0	0	0	0	0	6	14	4	1	0	0	0	0	0	0	25
24:00	0	0	0	0	2	6	10	1	2	1	0	0	0	0	0	22
24:15	0	0	0	0	6	33	40	11	5	1	0	0	0	0	0	96
24:30	0	0	0	0	1	3	9	1	0	0	0	0	0	0	0	14
24:45	0	0	0	0	0	3	8	4	0	0	0	0	0	0	0	15
25:00	0	0	0	0	1	3	4	1	0	0	0	0	0	0	0	9
25:15	0	0	0	0	0	1	3	1	0	0	0	0	0	0	0	5
25:30	0	0	0	0	2	10	24	7	0	0	0	0	0	0	0	43
25:45	0	0	0	0	0	0	4	0	1	0	0	0	0	0	0	5
26:00	0	0	0	0	1	0	7	1	0	0	0	0	0	0	0	9
26:15	0	0	0	0	0	5	5	1	0	0	0	0	0	0	0	11
26:30	0	0	0	0	1	0	2	1	0	0	0	0	0	0	0	4
26:45	0	0	0	0	2	5	18	3	1	0	0	0	0	0	0	29
Total	12	2	2	4	80	468	881	303	62	9	4	2	0	26	1855	

Erdman Anthony and Associates
 317 Brick Church Road
 Troy, NY 12180
 518-279-0505

Station ID: SN:017204
 142 TRAFFIC-8-24-06SPEED
 Date Start: 21-Aug-06
 Date End: 24-Aug-06
 Site Code: 142 Troy

A to B	0	16	21	26	31	36	41	46	51	56	61	66	71	76	Total
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	9999	
08/24/06	0	0	0	0	0	1	2	1	0	0	0	0	0	0	4
00:15	0	0	0	0	0	0	3	1	1	0	0	0	0	0	5
00:30	0	0	0	0	1	1	1	1	0	0	0	0	0	0	4
00:45	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
01:00	0	0	0	0	1	2	7	4	1	0	0	0	0	0	15
01:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
01:30	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
01:45	0	0	0	0	0	1	1	1	0	0	0	0	0	0	3
02:00	0	0	0	0	0	2	2	2	0	1	0	0	0	0	7
02:15	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
02:30	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
02:45	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
03:00	0	0	0	0	0	2	0	2	0	0	0	0	0	0	4
03:15	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2
03:30	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
03:45	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
04:00	0	0	0	0	0	1	4	1	0	0	0	0	0	0	6
04:15	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
04:30	0	0	0	0	1	3	0	0	0	0	0	0	0	0	4
04:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	1	1	3	2	0	0	0	0	0	0	0	7
05:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
05:30	0	0	0	0	1	1	2	0	0	0	0	0	0	0	4
05:45	0	0	0	0	0	1	1	3	1	0	0	0	0	0	6
06:00	0	0	0	1	1	2	4	4	1	1	0	0	0	0	13
06:15	0	0	0	0	1	4	8	7	2	1	0	0	0	0	24
06:30	0	0	0	0	2	4	4	5	3	0	0	0	0	0	18
06:45	0	0	0	0	0	6	5	4	2	0	0	0	0	0	17
07:00	0	0	0	0	0	9	3	2	2	0	0	0	0	0	16
07:15	0	0	0	0	0	7	13	3	2	0	0	0	0	0	25
07:30	0	0	0	0	2	26	25	14	9	0	0	0	0	0	78
07:45	0	0	0	0	0	0	19	5	2	0	0	0	0	2	28
08:00	1	0	0	1	2	4	11	7	2	0	0	0	0	1	28
08:15	0	0	0	0	0	5	13	6	0	0	0	0	0	0	24
08:30	0	0	0	0	0	3	21	15	3	1	2	0	0	0	46
08:45	1	0	0	1	2	12	64	33	7	1	2	0	0	3	128
09:00	0	0	1	0	1	12	13	9	4	0	0	0	0	1	41
09:15	0	0	0	0	3	6	23	17	3	0	0	0	0	0	51
09:30	0	0	0	0	1	9	18	14	2	0	0	0	0	0	44
09:45	1	1	0	0	8	2	14	11	2	1	1	0	0	1	40
10:00	1	1	1	0	11	28	68	51	11	1	1	0	0	2	176
10:15	0	0	0	0	1	3	14	11	4	0	0	0	0	0	33
10:30	0	0	0	0	0	16	12	9	1	0	0	0	0	0	38
10:45	0	0	0	0	1	1	13	10	1	1	1	0	0	0	29
11:00	1	0	0	0	2	13	16	9	0	0	0	1	0	0	41
11:15	1	0	0	0	4	33	55	39	6	1	1	1	0	0	141
11:30	1	0	0	0	0	10	18	3	1	0	0	0	0	1	33
11:45	1	0	0	0	2	6	22	3	2	0	0	0	0	1	37
12:00	0	0	0	0	4	4	24	9	0	0	0	0	0	0	41
12:15	1	0	0	1	4	11	10	7	0	0	0	0	0	1	35
12:30	2	0	0	1	10	31	74	22	3	0	0	0	0	3	148
12:45	0	0	0	0	1	12	18	2	1	0	0	0	0	0	34
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	5	1	1	4	33	166	327	177	40	5	4	1	0	8	762

Grand Total	43	9	14	34	358	1847	3494	1457	286	39	14	6	3	89	7693
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15th Percentile : 37 MPH
 50th Percentile : 43 MPH
 85th Percentile : 48 MPH
 95th Percentile : 51 MPH

Stats
 Mean Speed(Average) : 43 MPH
 10 MPH Pace Speed : 38-45 MPH
 Number in Pace : 5341
 Percent in Pace : 69.4%
 Number of Vehicles > 45 MPH : 1894
 Percent of Vehicles > 45 MPH : 24.6%

Erdman Anthony and Associates
 317 Brick Church Road
 Troy, NY 12180
 518-279-0505

Station ID: SN:017204
 142 TRAFFIC-8-24-06SPEED
 Date Start: 21-Aug-06
 Date End: 24-Aug-06
 Site Code: 142 Troy

B to A

Start Time	0 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 9999	Total
08/21/06	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
00:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
00:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
00:45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
01:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
01:45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
02:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
02:45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
03:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
03:45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
04:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
04:45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
05:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
05:45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
06:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
06:45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
07:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
07:45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
08:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
08:45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
09:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
09:45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10:45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11:45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Erdman Anthony and Associates
 317 Brick Church Road
 Troy, NY 12180
 518-279-0505

Station ID: SN:017204
 142 TRAFFIC-8-24-06SPEED
 Date Start: 21-Aug-06
 Date End: 24-Aug-06
 Site Code: 142 Troy

B to A	0	16	21	26	31	36	41	46	51	56	61	66	71	76	Total
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	9999	
12 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
12:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
12:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
12:45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13:45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
14:30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
14:45	0	0	0	0	0	1	13	14	9	3	1	0	0	0	41
15:00	0	0	0	0	0	1	13	14	9	3	1	0	0	0	41
15:15	1	0	1	2	1	4	24	20	2	0	0	1	0	0	56
15:30	1	0	0	0	0	3	21	25	7	0	0	0	0	1	59
15:45	2	0	0	0	0	4	17	21	6	0	0	0	0	2	52
16:00	5	0	1	2	1	12	77	83	23	0	0	1	0	3	208
16:15	0	1	0	0	0	3	10	20	10	1	1	0	0	2	48
16:30	2	0	0	0	0	6	20	30	6	1	0	0	0	2	67
16:45	0	0	0	0	0	8	16	29	6	0	0	0	0	1	60
17:00	0	0	0	0	0	1	23	24	10	1	0	0	0	1	60
17:15	2	1	0	0	0	18	69	103	32	3	1	0	0	6	235
17:30	0	0	0	1	0	3	16	23	8	1	0	0	0	2	54
17:45	1	0	0	0	0	1	10	33	13	1	2	0	0	1	62
18:00	1	0	0	1	1	3	23	13	6	0	1	0	0	0	49
18:15	2	0	0	0	0	0	23	27	7	0	0	0	0	4	63
18:30	4	0	0	2	1	7	72	96	34	2	3	0	0	7	228
18:45	0	0	0	0	1	2	17	19	12	0	1	0	0	0	52
19:00	0	2	0	0	0	2	16	22	9	4	0	0	0	1	56
19:15	0	0	0	0	0	4	13	14	4	1	1	0	0	0	37
19:30	0	0	0	0	0	2	16	16	6	0	1	0	0	0	43
19:45	0	2	0	0	1	10	62	71	33	5	3	0	0	1	188
20:00	0	0	0	0	1	4	2	16	5	2	0	0	0	0	30
20:15	0	0	0	0	0	5	13	11	5	1	0	0	0	0	35
20:30	1	0	0	0	1	3	10	18	7	1	0	0	0	1	43
20:45	1	0	0	0	1	4	19	6	3	0	0	0	0	1	35
21:00	2	0	0	0	3	16	44	52	20	4	0	0	0	2	143
21:15	0	0	0	0	5	5	25	9	3	2	0	0	0	0	49
21:30	0	0	0	0	2	13	17	4	3	0	0	0	0	1	40
21:45	0	0	0	0	0	2	8	15	3	0	0	0	0	0	28
22:00	0	0	0	0	1	5	8	5	3	0	0	0	0	0	22
22:15	0	0	0	0	8	25	58	33	12	2	0	0	0	1	139
22:30	0	0	0	0	5	5	8	4	3	0	0	0	0	0	18
22:45	0	0	0	0	3	3	9	6	2	0	0	0	0	0	20
23:00	0	0	0	0	0	0	10	6	0	0	0	0	0	0	16
23:15	0	0	0	0	1	0	2	2	2	0	0	0	0	0	5
23:30	0	0	0	0	9	25	18	7	0	0	0	0	0	0	59
23:45	0	0	0	0	2	4	4	1	1	0	1	0	0	0	13
24:00	0	0	0	0	2	3	2	1	0	0	0	0	0	0	8
24:15	0	0	0	0	1	4	5	2	0	0	0	0	0	0	12
24:30	0	0	0	0	0	1	2	3	0	0	0	0	0	0	6
24:45	0	0	0	0	6	13	14	4	4	1	0	1	0	0	39
25:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
25:15	0	0	0	0	0	3	3	1	1	0	0	0	0	0	8
25:30	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
25:45	0	0	0	0	1	0	2	1	0	0	0	0	0	0	4
Total	13	3	1	4	14	106	438	489	177	21	8	2	0	20	1296

Erdman Anthony and Associates
 317 Brick Church Road
 Troy, NY 12180
 518-279-0505

Station ID: SN:017204
 142 TRAFFIC-8-24-06SPEED
 Date Start: 21-Aug-06
 Date End: 24-Aug-06
 Site Code: 142 Troy

B to A

Start Time	0 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 9999	Total
08/22/06	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
00:15	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
00:30	0	0	0	0	0	0	4	0	0	1	0	0	0	0	5
00:45	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2
01:00	0	0	0	0	0	1	7	2	0	1	0	0	0	0	11
01:15	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
01:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
01:45	0	0	0	0	0	1	1	0	1	1	0	0	0	0	4
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15	0	0	0	0	0	3	1	0	2	1	0	0	0	0	7
02:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
03:15	0	0	0	0	0	1	0	3	2	0	0	0	0	0	6
03:30	0	0	0	0	0	0	1	1	0	0	0	0	1	0	3
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	2	1	0	0	0	0	0	0	3
04:15	0	0	0	0	0	0	4	3	0	0	0	0	1	0	8
04:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	1	4	2	5	1	0	0	0	0	13
05:15	0	0	0	0	0	0	2	3	1	0	1	0	0	0	8
05:30	0	0	0	0	1	0	2	2	0	0	0	0	0	0	8
05:45	0	0	0	0	0	1	4	5	1	0	0	0	0	0	11
06:00	0	0	0	1	1	5	12	15	6	0	1	0	0	0	14
06:15	0	0	0	0	0	4	2	1	1	2	0	0	0	0	10
06:30	0	0	0	1	0	9	4	7	4	1	0	0	0	0	26
06:45	0	0	0	0	0	4	19	11	2	0	0	0	0	0	36
07:00	0	0	0	1	1	18	15	18	3	0	0	0	0	0	38
07:15	0	0	0	0	0	1	40	37	10	3	0	0	0	0	110
07:30	0	0	0	0	0	3	11	10	3	0	0	0	0	0	27
07:45	0	0	0	0	0	4	17	19	2	0	0	0	0	1	43
08:00	0	0	0	0	0	9	15	12	5	1	0	0	0	0	36
08:15	0	0	0	0	0	2	14	19	6	2	0	0	0	0	43
08:30	0	0	0	0	0	12	57	60	16	3	0	0	0	1	149
08:45	0	0	0	0	0	2	6	13	6	3	0	0	0	0	30
09:00	0	0	0	0	0	12	10	12	4	2	0	0	0	0	40
09:15	0	0	0	0	0	5	14	17	9	0	0	0	0	2	47
09:30	0	0	0	0	0	2	7	15	4	1	0	0	0	0	29
09:45	0	0	0	0	0	21	37	57	23	6	0	0	0	2	146
10:00	0	0	0	0	0	6	20	11	1	0	0	0	0	0	38
10:15	0	0	0	1	0	3	10	11	2	0	0	0	0	1	28
10:30	0	0	0	0	2	2	14	16	2	0	1	0	0	1	38
10:45	0	0	0	0	0	2	18	7	2	0	0	0	0	0	29
11:00	0	0	0	1	2	13	62	45	7	0	1	0	0	2	133
11:15	0	0	0	0	0	1	16	12	2	2	0	0	0	0	33
11:30	0	0	0	0	1	5	17	5	3	0	1	0	1	0	33
11:45	0	0	0	0	0	3	12	12	3	1	0	0	0	0	31
Total	1	2	0	4	5	106	319	334	93	21	3	1	2	6	897

Erdman Anthony and Associates
 317 Brick Church Road
 Troy, NY 12180
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Station ID: SN:017204
 142 TRAFFIC-8-24-06SPEED
 Date Start: 21-Aug-06
 Date End: 24-Aug-06
 Site Code: 142 Troy

B to A																
Start Time	015	1620	2125	2630	3135	3640	4145	4650	5155	5660	6165	6670	7175	769999	Total	
12 PM	1	0	0	0	0	8	17	18	5	0	0	0	0	0	49	
12:15	0	0	0	0	0	4	10	19	8	0	1	0	0	1	41	
12:30	2	0	0	0	0	7	22	14	6	2	0	0	0	1	54	
12:45	0	0	0	0	0	7	17	19	3	2	1	0	0	0	43	
13:00	3	0	0	0	0	26	66	64	20	4	2	0	0	2	187	
13:15	0	0	0	0	0	9	24	8	5	0	1	0	0	0	47	
13:30	2	2	0	0	1	4	24	15	3	0	0	0	0	1	52	
13:45	0	0	0	0	0	7	11	17	6	0	0	0	0	1	42	
14:00	1	0	0	0	0	4	19	15	4	1	0	0	0	1	45	
14:15	3	2	0	0	1	24	78	55	18	1	1	0	0	3	186	
14:30	0	0	0	0	3	2	19	20	6	4	1	0	0	1	56	
14:45	0	0	0	0	0	4	20	16	7	2	0	0	0	1	50	
15:00	0	0	0	0	0	15	16	12	4	0	0	0	0	0	47	
15:15	1	0	0	1	2	4	18	18	7	0	0	0	0	1	52	
15:30	1	0	0	1	5	25	73	68	24	6	1	0	0	3	205	
15:45	0	0	0	0	0	2	9	23	5	3	1	0	0	0	49	
16:00	1	0	0	0	0	10	19	16	4	0	1	0	0	2	53	
16:15	1	0	0	0	0	2	17	22	3	0	0	0	0	1	46	
16:30	0	0	0	0	0	3	25	20	7	0	0	0	0	1	56	
16:45	2	0	0	0	0	17	70	81	19	3	2	0	0	4	198	
17:00	0	0	0	0	2	14	26	22	7	1	0	0	0	1	73	
17:15	2	0	0	0	0	5	28	20	10	0	0	0	0	2	85	
17:30	0	0	0	0	0	5	33	20	7	0	0	0	0	0	65	
17:45	1	0	0	0	0	2	12	27	18	3	0	0	0	1	64	
18:00	3	0	0	0	2	26	97	89	42	4	0	0	0	4	267	
18:15	0	0	0	0	0	1	28	27	9	4	1	0	0	1	69	
18:30	0	0	0	0	0	0	13	26	21	3	1	0	0	0	64	
18:45	0	0	0	0	0	2	15	24	9	2	1	0	0	0	59	
19:00	2	0	0	0	4	6	25	17	7	2	0	0	0	1	64	
19:15	2	0	0	0	4	9	79	94	46	11	3	0	0	2	250	
19:30	0	0	0	0	1	2	13	27	8	1	0	0	0	1	53	
19:45	0	0	1	0	0	2	14	15	8	5	1	0	0	0	48	
20:00	1	0	0	0	0	3	9	19	3	0	0	0	0	0	35	
20:15	1	0	0	2	0	3	11	20	9	1	0	0	0	3	50	
20:30	2	0	1	2	1	10	47	81	28	7	1	0	0	4	184	
20:45	0	0	0	0	0	3	18	19	7	3	0	0	0	0	44	
21:00	0	0	0	0	0	3	22	17	4	1	0	0	0	1	48	
21:15	0	0	0	0	0	11	11	14	6	3	0	0	0	1	45	
21:30	1	0	0	0	0	2	14	5	2	1	0	0	0	0	26	
21:45	1	0	0	0	0	19	65	49	19	8	0	0	0	2	183	
22:00	0	0	0	0	2	3	14	13	1	0	0	0	0	0	33	
22:15	0	0	0	1	0	13	12	8	6	0	0	0	0	2	42	
22:30	0	0	0	1	0	0	14	12	5	0	0	0	0	0	32	
22:45	0	0	0	0	0	3	14	24	3	0	0	0	0	0	44	
23:00	0	0	0	2	2	19	54	57	15	0	0	0	0	2	151	
23:15	0	0	0	0	0	0	8	12	0	0	0	0	0	0	20	
23:30	0	0	0	0	1	6	12	4	1	0	0	0	0	0	24	
23:45	0	0	0	0	2	13	8	1	0	0	0	0	0	0	23	
24:00	0	0	0	0	0	2	6	5	1	2	0	0	0	0	16	
24:15	0	0	0	0	1	5	33	35	6	3	0	0	0	0	83	
24:30	0	0	0	0	0	5	3	3	2	0	0	0	0	0	13	
24:45	0	0	0	0	0	3	6	2	0	1	0	0	0	0	11	
25:00	0	0	0	0	0	0	3	2	1	1	0	0	0	0	7	
25:15	0	0	0	0	1	0	3	3	1	0	0	0	0	0	8	
25:30	0	0	0	0	1	8	14	10	4	2	0	0	0	0	39	
25:45	0	0	0	1	1	2	7	3	2	1	0	0	0	0	17	
26:00	0	0	0	0	0	0	3	3	3	0	0	0	0	0	9	
26:15	0	0	0	0	0	4	1	1	0	2	0	0	0	0	8	
26:30	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	
26:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
Total	17	2	1	6	18	194	687	691	246	52	10	0	0	26	1950	

Erdman Anthony and Associates
 317 Brick Church Road
 Troy, NY 12180
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Station ID: SN:017204
 142 TRAFFIC-8-24-06SPEED
 Date Start: 21-Aug-06
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 Site Code: 142 Troy

B to A	0	16	21	26	31	36	41	46	51	56	61	66	71	76	Total
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	9999	
08/23/06	0	0	0	0	0	1	2	1	2	0	0	0	0	0	6
00:15	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
00:30	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
00:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	1	1	4	2	2	0	0	0	0	0	9
01:15	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3
01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	1	0	1	1	0	0	0	0	0	3
02:00	0	0	0	0	1	1	1	1	2	0	0	0	0	0	6
02:15	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
02:30	0	0	0	0	0	0	0	1	2	0	0	0	0	0	3
02:45	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	3	1	2	0	0	0	0	0	6
03:15	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
03:30	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1
03:45	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
04:00	0	0	0	0	0	1	1	3	1	0	0	0	0	0	6
04:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	1	0	1	1	0	0	0	0	0	0	2
04:45	0	0	0	0	0	1	3	4	1	0	0	0	0	0	3
05:00	0	0	0	0	1	1	5	6	1	0	0	0	0	0	9
05:15	0	0	0	0	1	1	4	2	3	0	0	0	0	0	14
05:30	0	0	0	0	0	1	1	2	1	1	0	0	0	0	7
05:45	0	0	0	0	1	2	3	4	5	1	0	1	0	0	12
06:00	0	0	0	0	2	8	9	10	12	3	0	1	0	0	17
06:15	1	0	0	0	0	1	5	4	1	1	0	0	0	1	45
06:30	0	0	0	0	0	3	7	10	4	1	0	0	0	0	14
06:45	0	0	0	0	1	0	13	17	0	2	0	0	0	0	25
07:00	1	0	0	0	1	5	37	50	11	7	0	0	0	1	33
07:15	0	0	0	0	0	5	16	10	10	0	0	0	0	0	113
07:30	0	0	0	0	1	2	13	13	3	2	0	0	0	1	37
07:45	0	0	0	0	0	6	15	15	10	0	0	0	0	0	37
08:00	0	0	0	0	1	6	16	20	11	3	1	2	0	0	43
08:15	0	0	0	0	1	13	60	58	34	5	1	2	0	1	59
08:30	0	0	0	0	0	2	14	10	10	0	0	0	0	0	175
08:45	0	0	0	0	0	8	19	8	7	0	0	0	0	3	36
09:00	0	0	0	0	3	5	12	14	0	1	1	0	0	0	45
09:15	0	0	0	0	3	17	55	50	22	2	2	0	0	3	37
09:30	0	0	0	0	0	1	9	18	6	0	0	0	0	0	38
09:45	1	0	0	0	2	2	9	6	0	0	1	0	0	0	32
10:00	0	0	0	0	0	3	12	13	5	1	0	0	0	0	21
10:15	0	0	0	0	0	0	14	8	5	0	0	0	0	0	34
10:30	1	0	0	2	0	6	44	43	16	1	1	0	0	0	27
10:45	3	0	0	0	0	8	20	7	5	1	0	0	0	0	114
11:00	0	0	0	0	0	4	15	14	4	1	0	0	0	0	42
11:15	2	0	0	1	0	3	24	10	3	0	0	0	0	0	38
11:30	1	0	0	0	0	2	15	18	7	1	0	0	0	1	43
11:45	3	0	0	1	0	17	74	49	19	3	0	0	0	2	45
Total	6	0	0	4	10	82	368	318	142	23	6	3	0	9	161

Erdman Anthony and Associates
 317 Brick Church Road
 Troy, NY 12180
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Station ID: SN:017204
 142 TRAFFIC-8-24-06SPEED
 Date Start: 21-Aug-06
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 Site Code: 142 Troy

B to A

Start Time	0 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 9999	Total
12 PM	0	0	0	0	0	8	22	15	1	0	0	0	0	0	46
12:15	0	0	0	0	0	2	18	12	2	1	0	0	0	0	35
12:30	0	0	0	0	0	1	10	21	8	1	0	0	0	0	41
12:45	0	0	0	0	0	1	10	18	12	1	0	0	0	0	42
	0	0	0	0	0	12	60	66	23	3	0	0	0	0	164
13:00	0	0	0	0	0	1	15	23	9	0	0	0	0	0	48
13:15	1	0	0	0	1	5	18	16	5	0	0	1	0	0	47
13:30	0	0	0	0	0	3	18	15	5	0	1	0	0	0	40
13:45	0	0	0	1	1	11	17	8	5	0	1	0	0	0	44
	1	0	0	1	2	20	66	62	24	0	2	1	0	0	179
14:00	1	0	0	0	0	4	17	13	4	0	0	0	0	0	39
14:15	0	0	0	0	2	8	21	16	3	0	0	0	0	0	50
14:30	0	0	0	0	2	8	25	12	3	0	0	0	0	0	50
14:45	0	0	1	2	0	2	17	17	11	3	0	0	0	3	56
	1	0	1	2	4	22	80	58	21	3	0	0	0	3	195
15:00	0	0	0	0	0	4	24	23	8	0	0	0	0	0	59
15:15	1	0	0	0	1	9	12	14	9	1	0	1	0	0	48
15:30	0	0	0	1	0	5	11	14	6	2	0	0	0	2	41
15:45	0	0	0	0	2	3	17	28	5	1	1	0	0	0	55
	1	0	0	1	3	21	64	77	28	4	1	1	0	2	203
16:00	1	0	1	0	0	8	21	14	5	1	0	0	0	1	52
16:15	0	0	1	0	0	3	14	17	9	1	0	0	0	0	45
16:30	0	0	0	0	1	3	29	23	12	2	0	0	0	2	72
16:45	1	0	0	0	0	6	18	18	12	3	0	0	0	1	57
	2	0	2	0	1	20	82	70	38	7	0	0	0	4	226
17:00	0	0	0	0	0	7	20	36	15	0	0	0	0	0	77
17:15	1	0	0	0	1	7	28	29	7	1	0	0	0	0	74
17:30	1	0	0	0	0	5	22	32	8	1	0	0	0	1	70
17:45	0	0	0	0	1	6	26	20	4	2	0	0	1	0	60
	2	0	0	0	2	25	96	116	34	4	0	0	1	1	281
18:00	0	0	0	0	0	11	15	24	12	2	1	0	0	0	65
18:15	1	0	0	1	6	8	8	25	6	1	0	0	0	0	64
18:30	0	0	1	1	2	4	10	13	13	0	0	0	0	2	46
18:45	0	0	1	0	0	1	15	28	6	1	0	0	0	0	60
	1	0	2	2	8	22	48	88	37	4	1	0	0	2	215
19:00	1	0	0	0	0	2	8	10	4	0	0	0	0	0	26
19:15	0	0	0	1	0	4	8	10	4	2	0	0	0	0	29
19:30	1	0	0	0	0	1	15	14	3	0	0	0	0	2	36
19:45	0	0	0	0	2	7	22	8	2	0	0	0	0	0	41
	2	0	0	1	2	14	53	42	13	2	0	0	0	2	131
20:00	1	0	0	0	2	8	8	13	6	1	0	0	0	1	40
20:15	0	0	0	0	5	10	9	14	4	0	0	0	0	0	32
20:30	0	0	0	0	0	2	9	7	2	0	0	0	0	0	20
20:45	0	0	0	0	0	5	8	6	1	1	1	0	0	0	20
	1	0	0	0	7	15	32	40	13	2	1	0	0	1	112
21:00	0	0	0	0	0	1	8	7	6	0	0	0	0	0	22
21:15	0	0	0	0	0	1	12	7	2	0	0	0	0	0	22
21:30	0	0	0	0	1	8	3	5	1	1	0	0	0	0	19
21:45	0	0	0	0	0	5	5	3	2	0	1	0	0	0	16
	0	0	0	0	1	15	28	22	11	1	1	0	0	0	79
22:00	0	0	0	0	1	2	3	5	0	0	1	0	0	0	12
22:15	0	0	0	1	0	2	4	0	0	0	0	0	0	0	7
22:30	0	0	0	0	0	0	5	5	0	1	0	0	0	0	11
22:45	0	0	0	0	0	1	2	2	1	0	0	0	0	0	6
	0	0	0	1	1	5	14	12	1	1	1	0	0	0	36
23:00	0	0	0	0	0	0	1	2	0	0	0	0	0	0	9
23:15	0	0	0	0	0	0	3	0	1	0	0	0	0	0	4
23:30	0	0	0	0	0	1	1	0	2	0	0	0	0	0	4
23:45	0	0	0	0	0	0	5	4	1	1	0	0	0	0	11
	0	0	0	0	0	1	10	6	4	1	0	0	0	0	22
Total	11	0	5	8	31	192	633	659	247	32	7	2	1	15	1843

Erdman Anthony and Associates
 317 Brick Church Road
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Station ID: SN:017204
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 Date Start: 21-Aug-06
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 Site Code: 142 Troy

B to A	0	16	21	26	31	36	41	46	51	56	61	66	71	76	Total
Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	9999	
08/24/06	0	0	0	0	0	0	1	1	1	0	0	0	0	0	3
00:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
00:30	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
00:45	0	0	0	0	0	0	1	1	0	1	0	0	0	0	3
01:00	0	0	0	0	1	0	4	2	1	1	0	0	0	0	9
01:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
01:45	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
02:00	0	0	0	0	0	0	1	2	0	1	0	0	0	0	4
02:15	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
02:30	0	0	0	0	0	2	0	1	0	1	0	0	0	0	4
02:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	3	3	2	2	1	0	0	0	0	11
03:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
03:30	0	0	0	0	0	0	1	1	1	0	0	0	0	0	3
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	2	1	1	0	0	0	0	0	4
04:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
04:30	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
04:45	0	0	0	0	0	0	0	1	1	0	1	0	0	0	3
05:00	0	0	0	0	0	0	4	1	1	0	1	0	0	0	7
05:15	0	0	0	0	1	0	0	2	1	0	0	0	0	0	4
05:30	0	0	0	0	0	4	4	1	2	0	1	0	0	0	12
05:45	0	0	0	0	0	2	3	2	1	0	1	0	0	0	9
06:00	0	0	0	0	0	3	1	6	2	0	0	0	0	0	12
06:15	0	0	0	0	1	9	8	11	6	0	2	0	0	0	37
06:30	0	0	0	0	0	2	8	7	0	1	0	0	0	0	18
06:45	0	0	0	0	0	2	13	5	3	0	0	0	0	0	23
07:00	0	0	0	0	0	2	19	13	8	1	0	0	1	0	44
07:15	0	0	0	0	1	1	22	16	7	0	0	0	0	0	47
07:30	0	0	0	0	1	7	62	41	18	2	0	0	1	0	132
07:45	0	0	0	0	0	2	10	8	6	1	0	0	0	1	28
08:00	0	0	0	0	0	0	12	17	5	0	0	0	0	0	34
08:15	0	0	0	0	0	5	14	10	2	0	0	0	0	0	31
08:30	0	0	0	0	0	2	8	18	8	1	0	0	0	0	37
08:45	0	0	0	0	0	9	44	53	21	2	0	0	0	1	130
09:00	0	0	0	0	0	3	9	18	4	1	0	0	0	0	35
09:15	0	0	0	0	0	6	24	11	8	1	0	0	0	0	50
09:30	0	0	0	0	0	4	12	13	3	2	0	0	0	1	35
09:45	0	0	0	1	4	2	9	15	4	1	0	0	0	0	38
10:00	0	0	0	1	4	15	54	57	19	5	0	0	0	1	156
10:15	0	0	0	0	0	9	10	12	1	0	0	0	0	0	32
10:30	0	0	0	0	2	5	13	9	5	0	0	0	0	0	34
10:45	0	0	0	0	1	3	15	11	0	0	0	0	0	1	31
11:00	0	0	0	0	0	4	12	16	3	0	0	0	0	1	36
11:15	0	0	0	0	3	21	50	48	9	0	0	0	0	2	133
11:30	1	0	0	0	1	0	14	12	2	0	0	0	0	1	31
11:45	0	0	0	0	1	0	20	16	4	0	0	0	0	0	41
Total	0	0	0	0	1	8	19	11	2	3	0	0	0	0	44
11:00	1	0	0	0	3	13	65	54	11	5	0	0	0	1	153
11:15	0	0	0	0	0	4	18	9	6	0	0	0	0	1	38
11:30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	1	0	0	1	13	81	315	281	95	17	3	0	1	6	814
Grand Total	49	7	7	27	91	781	2760	2772	1000	166	37	8	4	82	7771

15th Percentile : 41 MPH
 50th Percentile : 46 MPH
 85th Percentile : 51 MPH
 95th Percentile : 55 MPH

Stats
 Mean Speed(Average) : 46 MPH
 10 MPH Pace Speed : 41-50 MPH
 Number In Pace : 5532
 Percent in Pace : 71.2%
 Number of Vehicles > 45 MPH : 4069
 Percent of Vehicles > 45 MPH : 52.4%

Appendix D Level of Service Analysis

HCS2000: Unsignalized Intersections Release 4.1d

Phone:
E-Mail:

Fax:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: PJP
 Agency/Co.:
 Date Performed: 9/27/2006
 Analysis Time Period: AM Peak - Proposed
 Intersection: Grange / Site Driveway
 Jurisdiction:
 Units: U. S. Customary
 Analysis Year: 2006 - AM
 Project ID:
 East/West Street: Site Driveway
 North/South Street: Grange
 Intersection Orientation: NS

Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	5	169			184	6
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Peak-15 Minute Volume	1	47			51	2
Hourly Flow Rate, HFR	5	187			204	6
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT				TR	
Upstream Signal?	No				No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume				25	0	25
Peak Hour Factor, PHF				0.90	0.90	0.90
Peak-15 Minute Volume				7	0	7
Hourly Flow Rate, HFR				27	0	27
Percent Heavy Vehicles				0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		No /
RT Channelized?						
Lanes				0	1	0
Configuration				LTR		

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:	187	
Shared ln volume, major rt vehicles:	0	
Sat flow rate, major th vehicles:	1700	
Sat flow rate, major rt vehicles:	1700	
Number of major street through lanes:	1	

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)	4.1					7.1	6.5	6.2
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)	0					0	0	0
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Grade/100			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)	0.00					0.70	0.00	0.00
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage	4.1					6.4	6.5	6.2
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)	2.20					3.50	4.00	3.30
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)	0					0	0	0
t(f)	2.2					3.5	4.0	3.3

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

V prog	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

Total Saturation Flow Rate, s (vph)
 Arrival Type
 Effective Green, g (sec)
 Cycle Length, C (sec)
 R_p (from Exhibit 16-11)
 Proportion vehicles arriving on green P
 $g(q_1)$
 $g(q_2)$
 $g(q)$

Computation 2-Proportion of TWSC Intersection Time blocked

	Movement 2		Movement 5	
	$V(t)$	$V(l, prot)$	$V(t)$	$V(l, prot)$

alpha
 beta
 Travel time, $t(a)$ (sec)
 Smoothing Factor, F
 Proportion of conflicting flow, f
 Max platooned flow, $V(c, max)$
 Min platooned flow, $V(c, min)$
 Duration of blocked period, $t(p)$
 Proportion time blocked, p 0.000 0.000

Computation 3-Platoon Event Periods Result

$p(2)$ 0.000
 $p(5)$ 0.000
 $p(dom)$
 $p(subo)$
 Constrained or unconstrained?

Proportion unblocked for minor movements, $p(x)$	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Stage II
--------------------------------------------------	-----------------------------	-------------------------------------	-----------------

$p(1)$
 $p(4)$
 $p(7)$
 $p(8)$
 $p(9)$
 $p(10)$
 $p(11)$
 $p(12)$

Computation 4 and 5
 Single-Stage Process

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
$V_{c,x}$	210					404	404	207
s								
P_x								
$V_{c,u,x}$								

$C_{r,x}$
 $C_{plat,x}$

Two-Stage Process	7	8	10	11
-------------------	---	---	----	----

Stage1 Stage2 Stage1 Stage2 Stage1 Stage2 Stage1 Stage2

V(c, x)
 s 1500 1500
 P(x)
 V(c, u, x)

C(r, x)
 C(plat, x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St. 9 12

Conflicting Flows 207
 Potential Capacity 839
 Pedestrian Impedance Factor 1.00 1.00
 Movement Capacity 839
 Probability of Queue free St. 1.00 0.97

Step 2: LT from Major St. 4 1

Conflicting Flows 210
 Potential Capacity 1373
 Pedestrian Impedance Factor 1.00 1.00
 Movement Capacity 1373
 Probability of Queue free St. 1.00 1.00
 Maj L-Shared Prob Q free St. 1.00

Step 3: TH from Minor St. 8 11

Conflicting Flows 404
 Potential Capacity 539
 Pedestrian Impedance Factor 1.00 1.00
 Cap. Adj. factor due to Impeding mvmnt 1.00 1.00
 Movement Capacity 537
 Probability of Queue free St. 1.00 1.00

Step 4: LT from Minor St. 7 10

Conflicting Flows 404
 Potential Capacity 606
 Pedestrian Impedance Factor 1.00 1.00
 Maj. L, Min T Impedance factor 1.00
 Maj. L, Min T Adj. Imp Factor. 1.00
 Cap. Adj. factor due to Impeding mvmnt 0.96 1.00
 Movement Capacity 604

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St. 8 11

Part 1 - First Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity
 Probability of Queue free St.

Part 2 - Second Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 3 - Single Stage

Conflicting Flows		404
Potential Capacity		539
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity		537

Result for 2 stage process:

a
 y
 C t 537
 Probability of Queue free St. 1.00 1.00

Step 4: LT from Minor St. 7 10

Part 1 - First Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 2 - Second Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 3 - Single Stage

Conflicting Flows		404
Potential Capacity		606
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	1.00	
Maj. L, Min T Adj. Imp Factor.	1.00	
Cap. Adj. factor due to Impeding mvmnt	0.96	1.00
Movement Capacity		604

Results for Two-stage process:

a
 y
 C t 604

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)				27	0	27
Movement Capacity (vph)				604	537	839
Shared Lane Capacity (vph)					702	

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7	8	9	10	11	12
	L	T	R	L	T	R
C sep				604	537	839
Volume				27	0	27
Delay						
Q sep						
Q sep +1 round (Qsep +1)						
n max						
C sh					702	
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LTR	
v (vph)	5						54	
C(m) (vph)	1373						702	
v/c	0.00						0.08	
95% queue length	0.01						0.25	
Control Delay	7.6						10.6	
LOS	A						B	
Approach Delay							10.6	
Approach LOS							B	

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	1.00
v(i1), Volume for stream 2 or 5	187	
v(i2), Volume for stream 3 or 6	0	
s(i1), Saturation flow rate for stream 2 or 5	1700	
s(i2), Saturation flow rate for stream 3 or 6	1700	
P*(oj)	1.00	
d(M,LT), Delay for stream 1 or 4	7.6	
N, Number of major street through lanes	1	
d(rank,1) Delay for stream 2 or 5	0.0	

HCS2000: Unsignalized Intersections Release 4.1d

Phone:
E-Mail:

Fax:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: PJP
 Agency/Co.:
 Date Performed: 9/27/2006
 Analysis Time Period: PM Peak - Proposed
 Intersection: Grange / Site Driveway
 Jurisdiction:
 Units: U. S. Customary
 Analysis Year: 2006 - PM
 Project ID:
 East/West Street: Site Driveway
 North/South Street: Grange
 Intersection Orientation: NS

Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	24	262			277	25
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Peak-15 Minute Volume	7	73			77	7
Hourly Flow Rate, HFR	26	291			307	27
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT				TR	
Upstream Signal?	No				No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	0		0	14	0	13
Peak Hour Factor, PHF	0.90		0.90	0.90	0.90	0.90
Peak-15 Minute Volume	0		0	4	0	4
Hourly Flow Rate, HFR	0		0	15	0	14
Percent Heavy Vehicles	0		0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		No /
RT Channelized?						
Lanes	0		0	0	1	0
Configuration			LR		LTR	

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn Through							
S5 Left-Turn Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:	291	
Shared ln volume, major rt vehicles:	0	
Sat flow rate, major th vehicles:	1700	
Sat flow rate, major rt vehicles:	1700	
Number of major street through lanes:	1	

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)	4.1		7.1		6.2	7.1	6.5	6.2
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)	0		0		0	0	0	0
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Grade/100			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)	0.00		0.00		0.00	0.00	0.00	0.00
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage	4.1		7.1		6.2	7.1	6.5	6.2
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)	2.20		3.50		3.30	3.50	4.00	3.30
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)	0		0		0	0	0	0
t(f)	2.2		3.5		3.3	3.5	4.0	3.3

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

V prog

Total Saturation Flow Rate, s (vph)
 Arrival Type
 Effective Green, g (sec)
 Cycle Length, C (sec)
 Rp (from Exhibit 16-11)
 Proportion vehicles arriving on green P
 g(q1)
 g(q2)
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)

alpha
 beta
 Travel time, t(a) (sec)
 Smoothing Factor, F
 Proportion of conflicting flow, f
 Max platooned flow, V(c,max)
 Min platooned flow, V(c,min)
 Duration of blocked period, t(p)
 Proportion time blocked, p

	0.000	0.000
--	-------	-------

Computation 3-Platoon Event Periods Result

p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1)	(2)		(3)
	Single-stage Process	Two-Stage Process		Stage II
		Stage I		

p(1)
 p(4)
 p(7)
 p(8)
 p(9)
 p(10)
 p(11)
 p(12)

Computation 4 and 5
 Single-Stage Process

Movement	1	4	7	8	9	10	11	12
	L	L	L	T	R	L	T	R
V c,x	334		671		291	663	663	320
s								
Px								
V c,u,x								

C r,x
 C plat,x

Two-Stage Process

7	8	10	11
---	---	----	----

Part 2 - Second Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 3 - Single Stage
 Conflicting Flows 663
 Potential Capacity 384
 Pedestrian Impedance Factor 1.00 1.00
 Cap. Adj. factor due to Impeding mvmnt 0.97 0.97
 Movement Capacity 374

Result for 2 stage process:

a
 y
 C t 374
 Probability of Queue free St. 1.00 1.00

Step 4: LT from Minor St. 7 10

Part 1 - First Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 2 - Second Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 3 - Single Stage
 Conflicting Flows 671 663
 Potential Capacity 373 377
 Pedestrian Impedance Factor 1.00 1.00
 Maj. L, Min T Impedance factor 0.97 0.97
 Maj. L, Min T Adj. Imp Factor. 0.98 0.98
 Cap. Adj. factor due to Impeding mvmnt 0.96 0.98
 Movement Capacity 359 370

Results for Two-stage process:

a
 y
 C t 359 370

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	0		0	15	0	14
Movement Capacity (vph)	359		753	370	374	725
Shared Lane Capacity (vph)					485	

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	359		753	370	374	725
Volume	0		0	15	0	14
Delay						
Q sep						
Q sep +1 round (Qsep +1)						
n max						
C sh					485	
SUM C sep						
n						
C act						

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config	LT			LR			LTR	
v (vph)	26			0			29	
C(m) (vph)	1237						485	
v/c	0.02						0.06	
95% queue length	0.06						0.19	
Control Delay	8.0						12.9	
LOS	A						B	
Approach Delay							12.9	
Approach LOS							B	

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	0.98	1.00
v(i1), Volume for stream 2 or 5	291	
v(i2), Volume for stream 3 or 6	0	
s(i1), Saturation flow rate for stream 2 or 5	1700	
s(i2), Saturation flow rate for stream 3 or 6	1700	
P*(oj)	0.97	
d(M,LT), Delay for stream 1 or 4	8.0	
N, Number of major street through lanes	1	
d(rank,1) Delay for stream 2 or 5	0.2	

HCS2000: Two-Lane Highways Release 4.1d

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst PJP
Agency/Co.
Date Performed 9/27/2006
Analysis Time Period AM Existing
Highway Grange Road
From/To Brunswick Meadows
Jurisdiction
Analysis Year 2006 AM Existing
Description

Input Data

Highway class	Class 2	Peak-hour factor, PHF	0.90	
Shoulder width	6.0 ft	% Trucks and buses	10	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	0.1 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level	% Recreational vehicles	4	%
Grade: Length	mi	% No-passing zones	0	%
Up/down	%	Access points/mi	8	/mi

Analysis direction volume, Vd 184 veh/h
Opposing direction volume, Vo 169 veh/h

Average Travel Speed

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.7	1.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.935	0.935
Grade adj. factor, (note-1) fG	1.00	1.00
Directional flow rate, (note-2) vi	219 pc/h	201 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, (note-3) S FM	40	mi/h
Observed volume, (note-3) Vf	400	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, (note-3) BFFS	-	mi/h
Adj. for lane and shoulder width, (note-3) fLS	-	mi/h
Adj. for access points, (note-3) fA	-	mi/h
Free-flow speed, FFSd	43.3	mi/h

Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSD	39.2	mi/h

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)	
PCE for trucks, ET	1.1	1.1	
PCE for RVs, ER	1.0	1.0	
Heavy-vehicle adjustment factor, fHV	0.990	0.990	
Grade adjustment factor, (note-1) fG	1.00	1.00	
Directional flow rate, (note-2) vi	206 pc/h	190 pc/h	
Base percent time-spent-following, (note-4) BPTSFd	36.7	%	
Adjustment for no-passing zones, fnp	8.2		
Percent time-spent-following, PTSFd	44.9	%	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.13	
Peak 15-min vehicle-miles of travel, VMT15	5	veh-mi
Peak-hour vehicle-miles of travel, VMT60	18	veh-mi
Peak 15-min total travel time, TT15	0.1	veh-h

Notes:

1. If the highway is extended segment (level) or rolling terrain, fG = 1.0
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

Passing Lane Analysis

Total length of analysis segment, Lt	0.1	mi
Length of two-lane highway upstream of the passing lane, Lu	0.0	mi
Length of passing lane including tapers, Lpl	0.0	mi
Average travel speed, ATSD (from above)	39.2	mi/h
Percent time-spent-following, PTSFd (from above)	44.9	
Level of service, (note-1) LOSd (from above)	B	

Average Travel Speed

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	1.70	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-1.60	mi
Adj. factor for the effect of passing lane on average speed, fpl	1.08	
Average travel speed including passing lane, (note-2) ATSpl	42.2	

Percent Time-Spent-Following

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	12.85	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-12.75	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	0.58	
Percent time-spent-following including passing lane, (note-3) PTSFpl	26.1	%

Level of Service and Other Performance Measures (note-4)

Level of service including passing lane, LOSpl	A	
Peak 15-min total travel time, TT15	0.1	veh-h

Notes:

1. If LOSd = F, passing lane analysis cannot be performed.
 2. If Ld < 0, use alternative Equation 20-22.
 3. If Ld < 0, use alternative Equation 20-20.
 4. v/c, VMT15, and VMT60 are calculated on Directional Two-Lane Highway Segment Worksheet.
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Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst PJP
Agency/Co.
Date Performed 9/27/2006
Analysis Time Period PM Existing
Highway Grange Road
From/To Brunswick Meadows
Jurisdiction
Analysis Year 2006 PM Existing
Description

Input Data

Highway class	Class 2	Peak-hour factor, PHF	0.90	
Shoulder width	6.0 ft	% Trucks and buses	10	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	0.1 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level	% Recreational vehicles	4	%
Grade: Length	mi	% No-passing zones	0	%
Up/down	%	Access points/mi	8	/mi

Analysis direction volume, Vd 280 veh/h
Opposing direction volume, Vo 264 veh/h

Average Travel Speed

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.2	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.980	0.980
Grade adj. factor, (note-1) fG	1.00	1.00
Directional flow rate, (note-2) vi	317 pc/h	299 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, (note-3) S FM	40	mi/h
Observed volume, (note-3) Vf	400	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, (note-3) BFFS	-	mi/h
Adj. for lane and shoulder width, (note-3) fLS	-	mi/h
Adj. for access points, (note-3) fA	-	mi/h
Free-flow speed, FFSd	43.2	mi/h

Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSD	37.5	mi/h

Percent Time-Spent-Following

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.990	0.990
Grade adjustment factor, (note-1) fG	1.00	1.00
Directional flow rate, (note-2) vi	314 pc/h	296 pc/h
Base percent time-spent-following, (note-4) BPTSfd	61.0 %	
Adjustment for no-passing zones, fnp	8.1	
Percent time-spent-following, PTSFd	69.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.19	
Peak 15-min vehicle-miles of travel, VMT15	8	veh-mi
Peak-hour vehicle-miles of travel, VMT60	28	veh-mi
Peak 15-min total travel time, TT15	0.2	veh-h

Notes:

1. If the highway is extended segment (level) or rolling terrain, fG = 1.0
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

Passing Lane Analysis

Total length of analysis segment, Lt	0.1	mi
Length of two-lane highway upstream of the passing lane, Lu	0.0	mi
Length of passing lane including tapers, Lpl	0.0	mi
Average travel speed, ATSD (from above)	37.5	mi/h
Percent time-spent-following, PTSFd (from above)	69.2	
Level of service, (note-1) LOSd (from above)	C	

Average Travel Speed

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	1.70	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-1.60	mi
Adj. factor for the effect of passing lane on average speed, fpl	1.10	
Average travel speed including passing lane, (note-2) ATSpl	41.1	

Percent Time-Spent-Following

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	10.21	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-10.11	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	0.61	
Percent time-spent-following including passing lane, (note-3) PTSFpl	42.3	%

Level of Service and Other Performance Measures (note-4)

Level of service including passing lane, LOSpl B
Peak 15-min total travel time, TT15 0.2 veh-h

Notes:

1. If LOSd = F, passing lane analysis cannot be performed.
 2. If Ld < 0, use alternative Equation 20-22.
 3. If Ld < 0, use alternative Equation 20-20.
 4. v/c, VMT15 , and VMT60 are calculated on Directional Two-Lane Highway Segment Worksheet.
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Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst PJP
Agency/Co.
Date Performed 9/27/2006
Analysis Time Period AM Proposed
Highway Grange Road
From/To Brunswick Meadows
Jurisdiction
Analysis Year 2006 AM Proposed
Description

Input Data

Highway class	Class 2		Peak-hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	10	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length		mi	% No-passing zones	0	%
Up/down		%	Access points/mi	8	/mi
Analysis direction volume, Vd 209 veh/h					
Opposing direction volume, Vo 174 veh/h					

Average Travel Speed

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.7	1.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.935	0.935
Grade adj. factor, (note-1) fG	1.00	1.00
Directional flow rate, (note-2) vi	248 pc/h	207 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, (note-3) S FM	40	mi/h
Observed volume, (note-3) Vf	400	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, (note-3) BFFS	-	mi/h
Adj. for lane and shoulder width, (note-3) fLS	-	mi/h
Adj. for access points, (note-3) fA	-	mi/h
Free-flow speed, FFSD	43.3	mi/h

Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSD	38.9	mi/h

Percent Time-Spent-Following

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.990	0.990
Grade adjustment factor, (note-1) fG	1.00	1.00
Directional flow rate, (note-2) vi	235 pc/h	195 pc/h
Base percent time-spent-following, (note-4) BPTSFD	39.3 %	
Adjustment for no-passing zones, fnp	8.4	
Percent time-spent-following, PTSFD	47.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.15	
Peak 15-min vehicle-miles of travel, VMT15	6	veh-mi
Peak-hour vehicle-miles of travel, VMT60	21	veh-mi
Peak 15-min total travel time, TT15	0.2	veh-h

Notes:

1. If the highway is extended segment (level) or rolling terrain, fG = 1.0
2. If vi (vd or vo) \geq 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

Passing Lane Analysis

Total length of analysis segment, Lt	0.1	mi
Length of two-lane highway upstream of the passing lane, Lu	0.0	mi
Length of passing lane including tapers, Lpl	0.0	mi
Average travel speed, ATSD (from above)	38.9	mi/h
Percent time-spent-following, PTSFD (from above)	47.7	
Level of service, (note-1) LOSd (from above)	B	

Average Travel Speed

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	1.70	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-1.60	mi
Adj. factor for the effect of passing lane on average speed, fpl	1.08	
Average travel speed including passing lane, (note-2) ATSpl	41.9	

Percent Time-Spent-Following

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	12.14	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-12.04	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	0.58	
Percent time-spent-following including passing lane, (note-3) PTSFpl	27.8	%

Level of Service and Other Performance Measures (note-4)

Level of service including passing lane, LOSpl A
Peak 15-min total travel time, TT15 0.1 veh-h

Notes:

1. If LOSd = F, passing lane analysis cannot be performed.
 2. If Ld < 0, use alternative Equation 20-22.
 3. If Ld < 0, use alternative Equation 20-20.
 4. v/c, VMT15 , and VMT60 are calculated on Directional Two-Lane Highway Segment Worksheet.
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Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst PJP
Agency/Co.
Date Performed 9/27/2006
Analysis Time Period PM Proposed
Highway Grange Road
From/To Brunswick Meadows
Jurisdiction
Analysis Year 2006 PM Proposed
Description

Input Data

Highway class	Class 2		Peak-hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	10	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length		mi	% No-passing zones	0	%
Up/down		%	Access points/mi	8	/mi
Analysis direction volume, Vd			293	veh/h	
Opposing direction volume, Vo			288	veh/h	

Average Travel Speed

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.2	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.980	0.980
Grade adj. factor, (note-1) fG	1.00	1.00
Directional flow rate, (note-2) vi	332 pc/h	326 pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, (note-3) S FM	40	mi/h
Observed volume, (note-3) Vf	600	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, (note-3) BFFS	-	mi/h
Adj. for lane and shoulder width, (note-3) fLS	-	mi/h
Adj. for access points, (note-3) fA	-	mi/h
Free-flow speed, FFSD	44.7	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSD	38.7	mi/h

Percent Time-Spent-Following

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.990	0.990
Grade adjustment factor, (note-1) fG	1.00	1.00
Directional flow rate, (note-2) vi	329 pc/h	323 pc/h
Base percent time-spent-following, (note-4) BPTSFD	62.5 %	
Adjustment for no-passing zones, fnp	8.0	
Percent time-spent-following, PTSFD	70.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.20	
Peak 15-min vehicle-miles of travel, VMT15	8	veh-mi
Peak-hour vehicle-miles of travel, VMT60	29	veh-mi
Peak 15-min total travel time, TT15	0.2	veh-h

Notes:

1. If the highway is extended segment (level) or rolling terrain, fG = 1.0
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

Passing Lane Analysis

Total length of analysis segment, Lt	0.1	mi
Length of two-lane highway upstream of the passing lane, Lu	0.0	mi
Length of passing lane including tapers, Lpl	0.0	mi
Average travel speed, ATSD (from above)	38.7	mi/h
Percent time-spent-following, PTSFD (from above)	70.5	
Level of service, (note-1) LOSd (from above)	D	

Average Travel Speed

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	1.70	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-1.60	mi
Adj. factor for the effect of passing lane on average speed, fpl	1.10	
Average travel speed including passing lane, (note-2) ATSp1	42.5	

Percent Time-Spent-Following

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	9.84	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-9.74	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	0.61	
Percent time-spent-following including passing lane, (note-3) PTSFpl	43.1	%

Level of Service and Other Performance Measures (note-4)

Level of service including passing lane, LOSpl B
Peak 15-min total travel time, TT15 0.2 veh-h

Notes:

1. If LOSd = F, passing lane analysis cannot be performed.
 2. If Ld < 0, use alternative Equation 20-22.
 3. If Ld < 0, use alternative Equation 20-20.
 4. v/c, VMT15 , and VMT60 are calculated on Directional Two-Lane Highway Segment Worksheet.
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