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STATE ROAD 686
EAST BAY PROJECT DEVELOPMENT
AND
ENVIRONMENTAL STUDIES
PINELLAS COUNTY, FLORIDA

STATE PROJECT NO. 15030-1523
WPI NO. 7116952
FEDERAL AID NO. M-1414-(5)

TRAFFIC ADDENDUM

SEGMENTS 2B & 3-49TH STREET TO U.S. 92 (GANDY BOULEVARD)

Submitted To

THE FLORIDA DEPARTMENT OF TRANSPORTATION

Submitted By

GREINER, INC.
Tampa, Florida

FEBRUARY 1990

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INTRODUCTION

Project Description

The Florida Department of Transportation (FDOT) is conducting a study to improve S.R. 686 (East Bay Drive/Roosevelt Boulevard) between Alternate U.S. 19 (Seminole Boulevard/Missouri Avenue) and U.S. 92 (Gandy Boulevard). For planning purposes, the project corridor is subdivided into three segments. Segment 1 extends 3.9 miles from Alternate U.S. 19 to U.S. 19, Segment 2 extends 3.1 miles from U.S. 19 to S.R. 688 (Ulmerton Road) and Segment 3 extends 4.5 miles from S.R. 688 to U.S. 92 (Gandy Boulevard) and includes the segment of Roosevelt Boulevard that is co-located with Ulmerton Road.

The Pinellas County Year 2010 Long-Range Transportation Plan was amended on April 22, 1988 to provide an expressway facility from the south end of the 49th Street Bridge (S.R. 686 and 49th Street) to I-275. The plan amendment included an expressway on 49th Street from S.R. 686 south to U.S. 19 and on C.R. 296 (118th Avenue) from U.S. 19 to I-275, including an interchange with I-275. Subsequent to the plan amendment, the potential of implementing the expressway along the S.R. 686 alignment from 49th Street to S.R. 688 and south of S.R. 688 via the Sunshine Stables and Speedway to 118th Avenue and via 118th Avenue to I-275 was identified as an alternative alignment.

To accommodate the optional expressway alignments, Segment 2 was subdivided into Segments 2A and 2B. Segment 2A extends from U.S. 19 to west of 49th Street, a distance of approximately 1.95 miles. Segment 2B, extends along Roosevelt Boulevard from west of 49th Street to S.R. 688 and south of Roosevelt Boulevard from S.R. 688

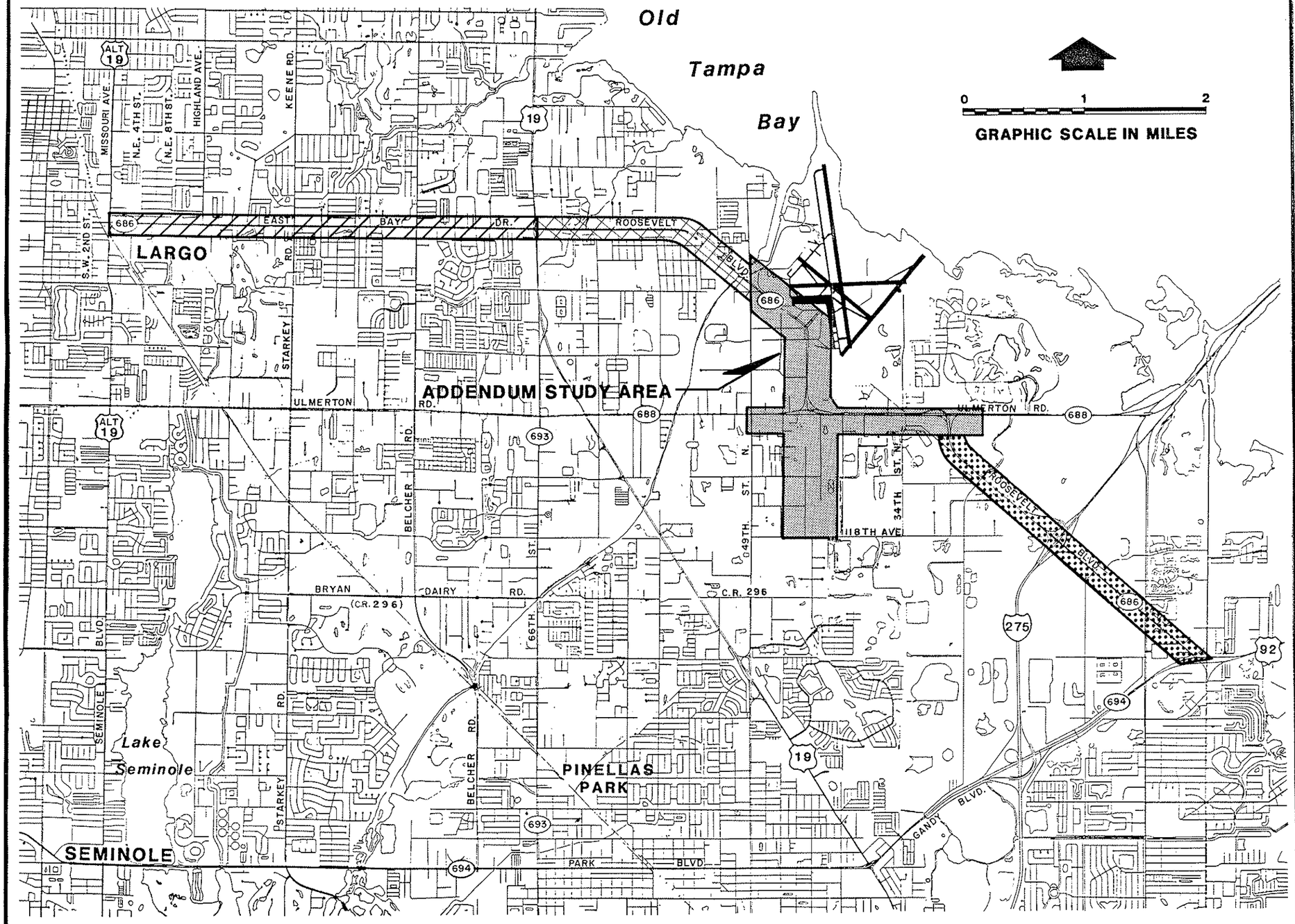
to C.R. 296 (118th Avenue). The study area and study segments are illustrated on Exhibit 1.

In its present configuration, S.R. 686 (Roosevelt Boulevard) is a four-lane divided rural roadway with left-turn lanes in the barrier median along some sections and grassy medians along others. North of S.R. 688, the existing right-of-way is approximately 150 feet. South of S.R. 688, the existing right-of-way is approximately 300 feet. Grade separated flyover ramps currently exist at the junction of S.R. 686 and S.R. 688. S.R. 688 (Ulmerton Road) is a six-lane divided rural roadway with left turns in the barrier median. A complete discussion of existing conditions (e.g., number of lanes, traffic volumes, traffic characteristics, levels of service, etc.) is documented in the original Traffic Memorandum (dated April, 1988).

The plan amendment to provide an expressway connection from the 49th Street Bridge to I-275 did not evaluate alternative expressway alignments. The purpose of this addendum is to document the future travel demand and evaluate the traffic impacts of the elements that changed from the initial submittal, specifically, the two expressway alignments. Only those aspects that are different than those documented in the original report are included in the addendum.

FUTURE CONDITIONS

The design year for S.R. 686 is 2010. The evaluation of future conditions included the development of design year daily and peak hour traffic volumes for both expressway alignments as well as an evaluation of traffic operations. The following sections discuss each of these elements.



LEGEND

- Addendum Study Area
- Segment 1
- Segment 2A
- Segment 3

FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC ADDENDUM

S.R. 686

(EAST BAY DR./ROOSEVELT BLVD.)

Pinellas County, Florida

STUDY AREA

EXHIBIT 1

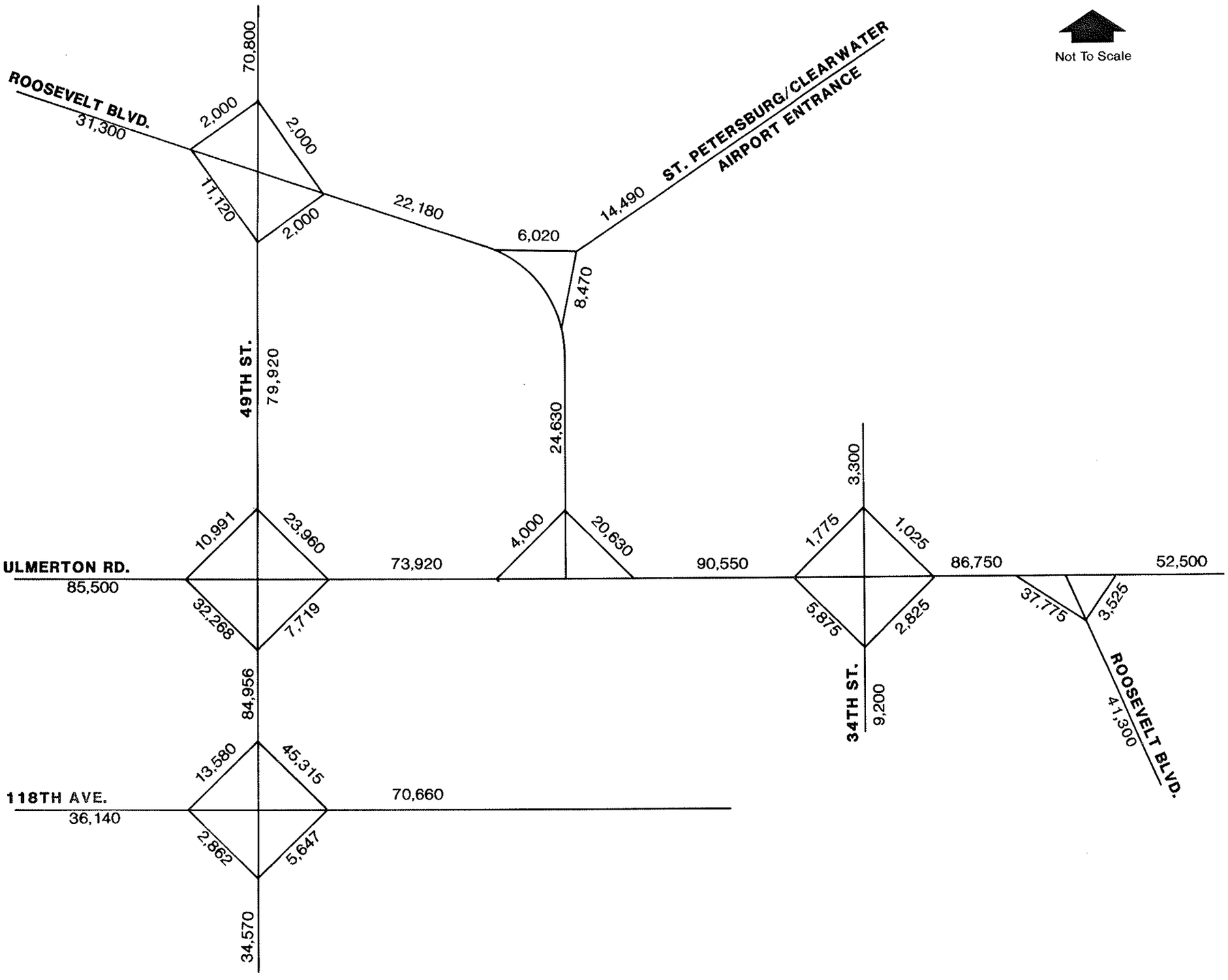
Greiner, Inc.

Traffic Projections

Traffic projections for the year 2010 were developed using the output from the current Pinellas Area Transportation Study (PATS) model provided by the Pinellas County Metropolitan Planning Organization (MPO) and projections developed for the County's on-going 49th Street Bridge Project. Average daily traffic projections were developed for the 49th Street expressway alternative (Alternative 2) and the S.R. 686 (Roosevelt Boulevard) expressway alternative (Alternative 3) and are illustrated on Exhibits 2 and 3, respectively.

Peak hour (a.m. and p.m.) traffic volumes were derived using a K-factor (percentage of daily traffic occurring during the peak hour) of 10.0 percent and a D-factor (directional distribution) of 55.0 percent. The peak directions of traffic flow were assumed to be eastbound and southbound in the a.m. peak hour and westbound and northbound in the p.m. peak hour.

For the 49th Street expressway alignment, two alternative interchange configurations were developed for the 49th Street/Ulmerton Road interchange. The first alternative configuration (Alternative 2A) provides a three-level urban interchange with elevated frontage roads on Ulmerton Road. The second interchange configuration (Alternative 2B) provides a three-level urban interchange with flyover ramps for the northbound 49th Street to westbound Ulmerton Road and the eastbound Ulmerton Road to southbound 49th Street movements. The a.m. and p.m. peak hour volumes for Alternative 2A are illustrated on Exhibits 4 and 5, respectively. The a.m. and p.m. peak hour volumes for Alternative 2B are illustrated on Exhibits 6 and 7, respectively.



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FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC ADDENDUM

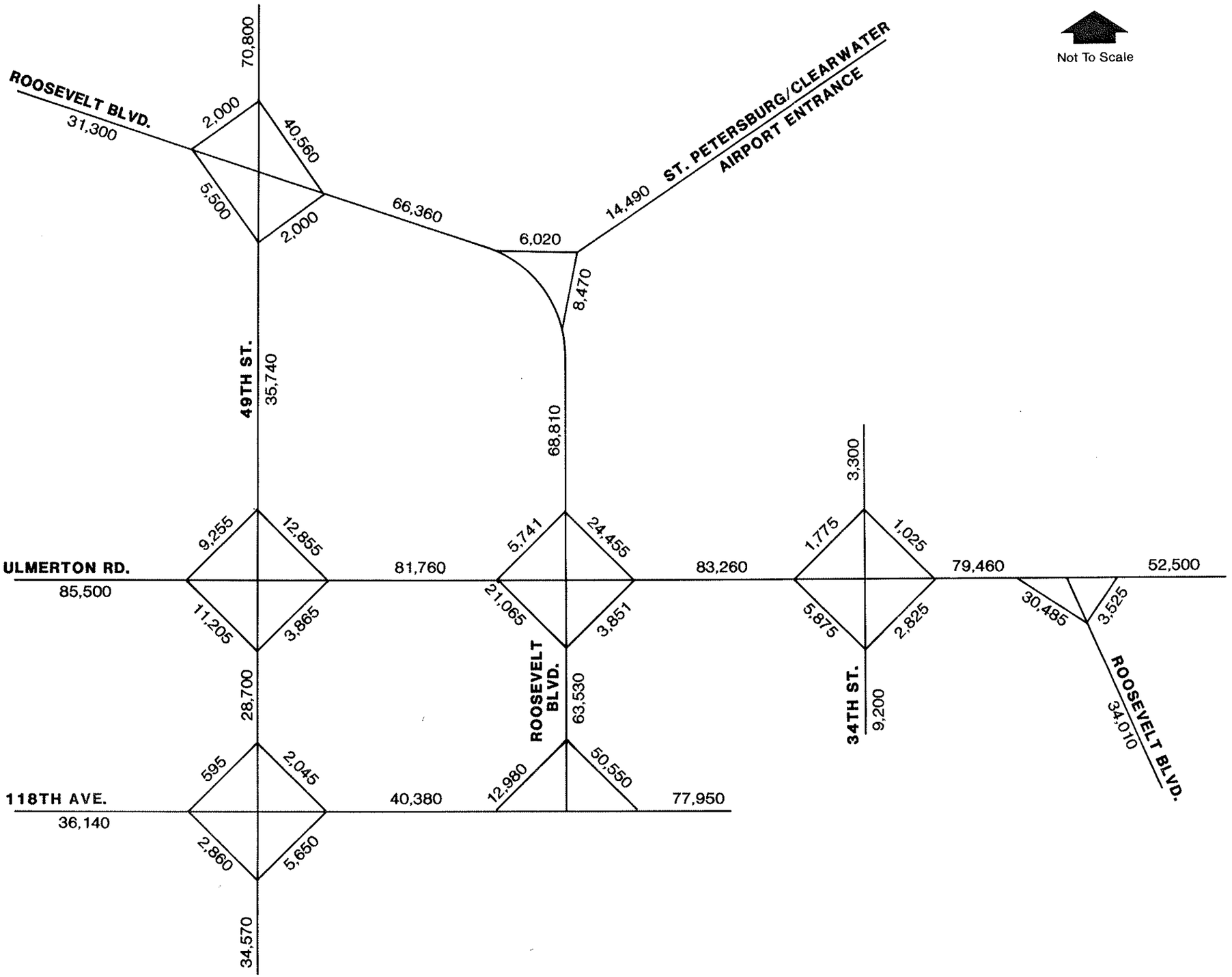
S.R. 686

(EAST BAY DR./ROOSEVELT BLVD.)

Pinellas County, Florida

YEAR 2010 AVERAGE DAILY TRAFFIC VOLUMES-ALTERNATIVES 2A/2B

EXHIBIT 2



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TRAFFIC ADDENDUM

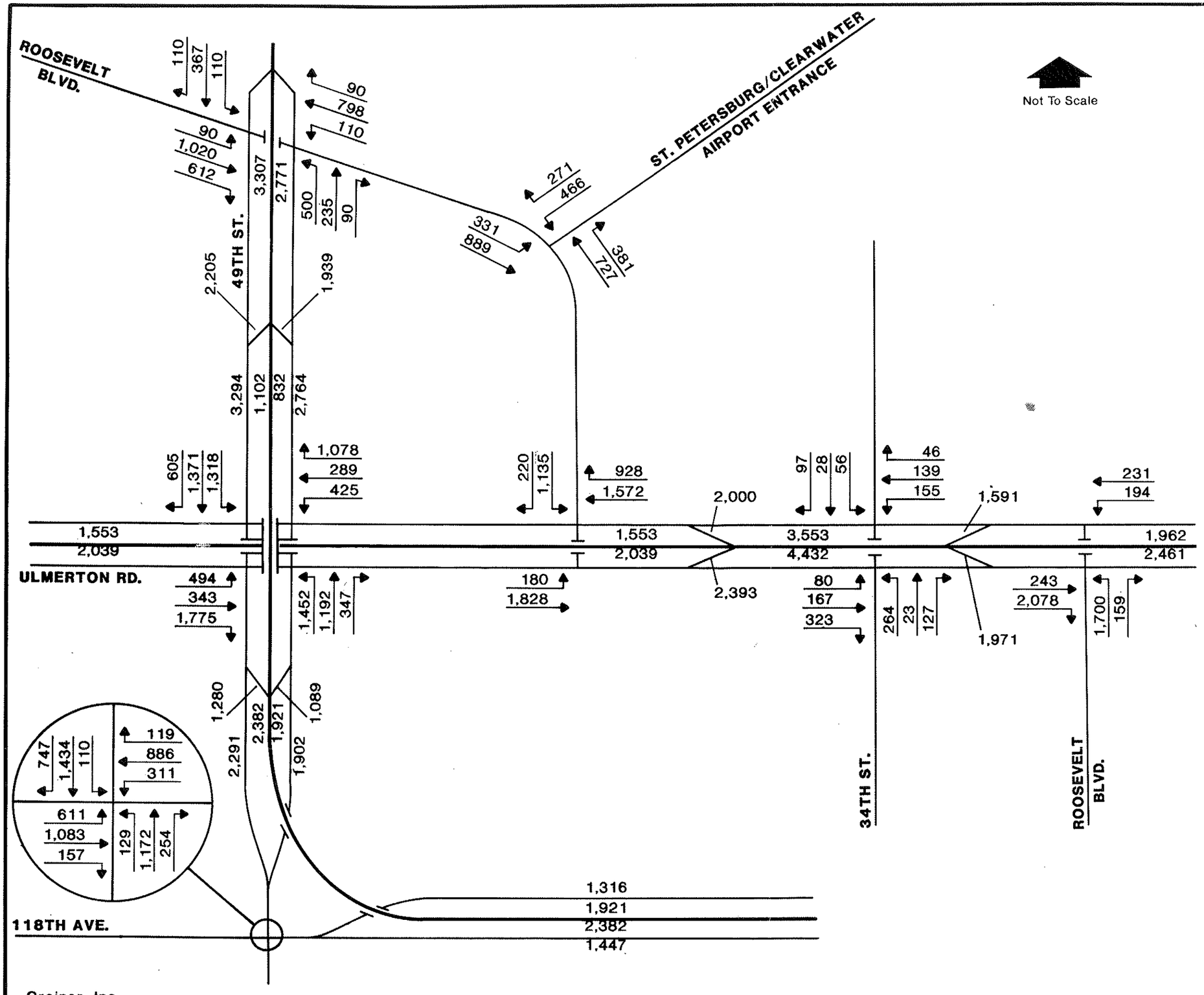
S.R. 686

(EAST BAY DR./ROOSEVELT BLVD.)

Pinellas County, Florida

YEAR 2010 AVERAGE DAILY TRAFFIC VOLUMES-ALTERNATIVES 3C/3D

EXHIBIT 3



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FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC ADDENDUM

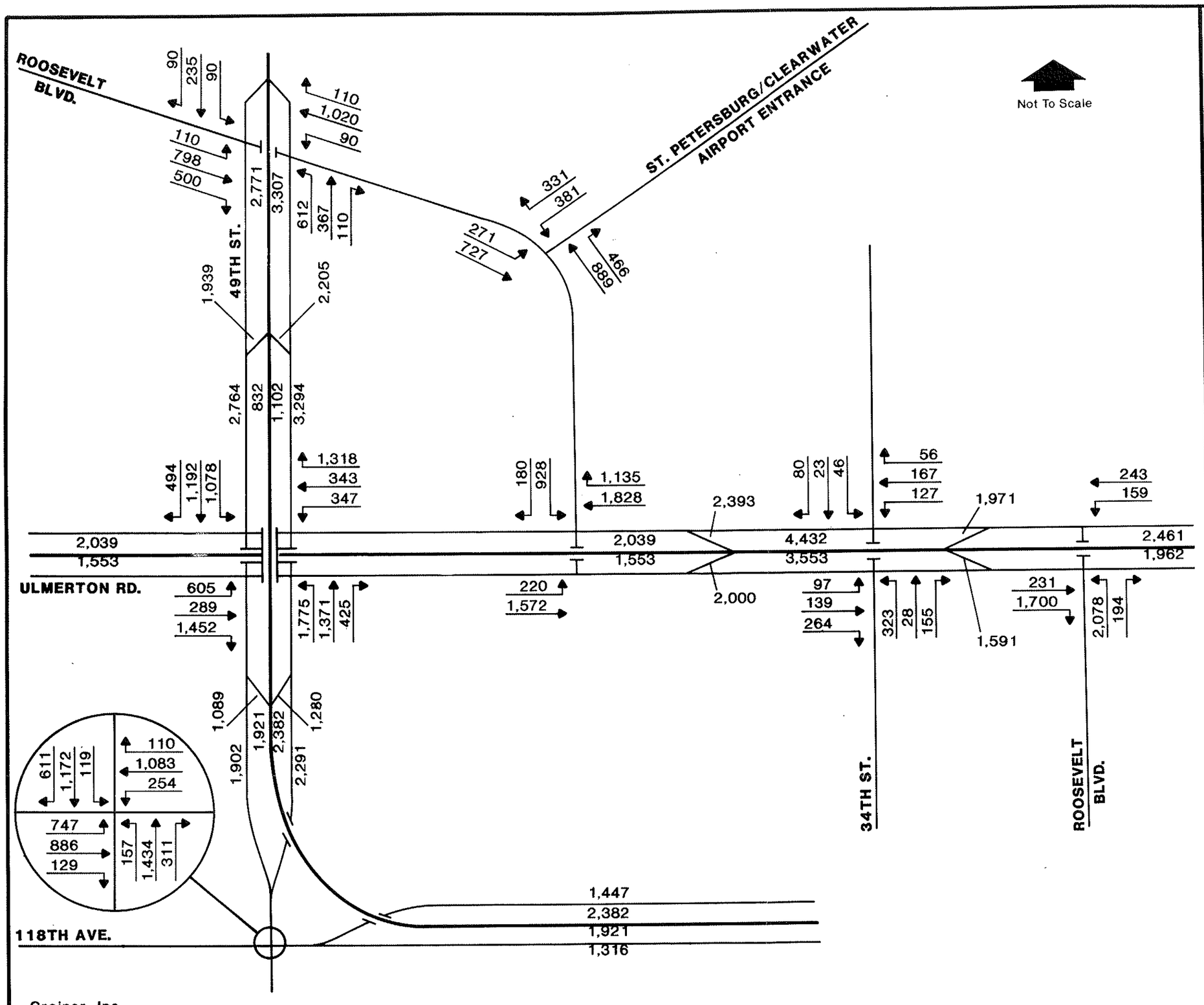
S.R. 686

(EAST BAY DR./ROOSEVELT BLVD.)

Pinellas County, Florida

YEAR 2010 AM PEAK HOUR TRAFFIC VOLUMES-ALTERNATIVE 2A

EXHIBIT 4



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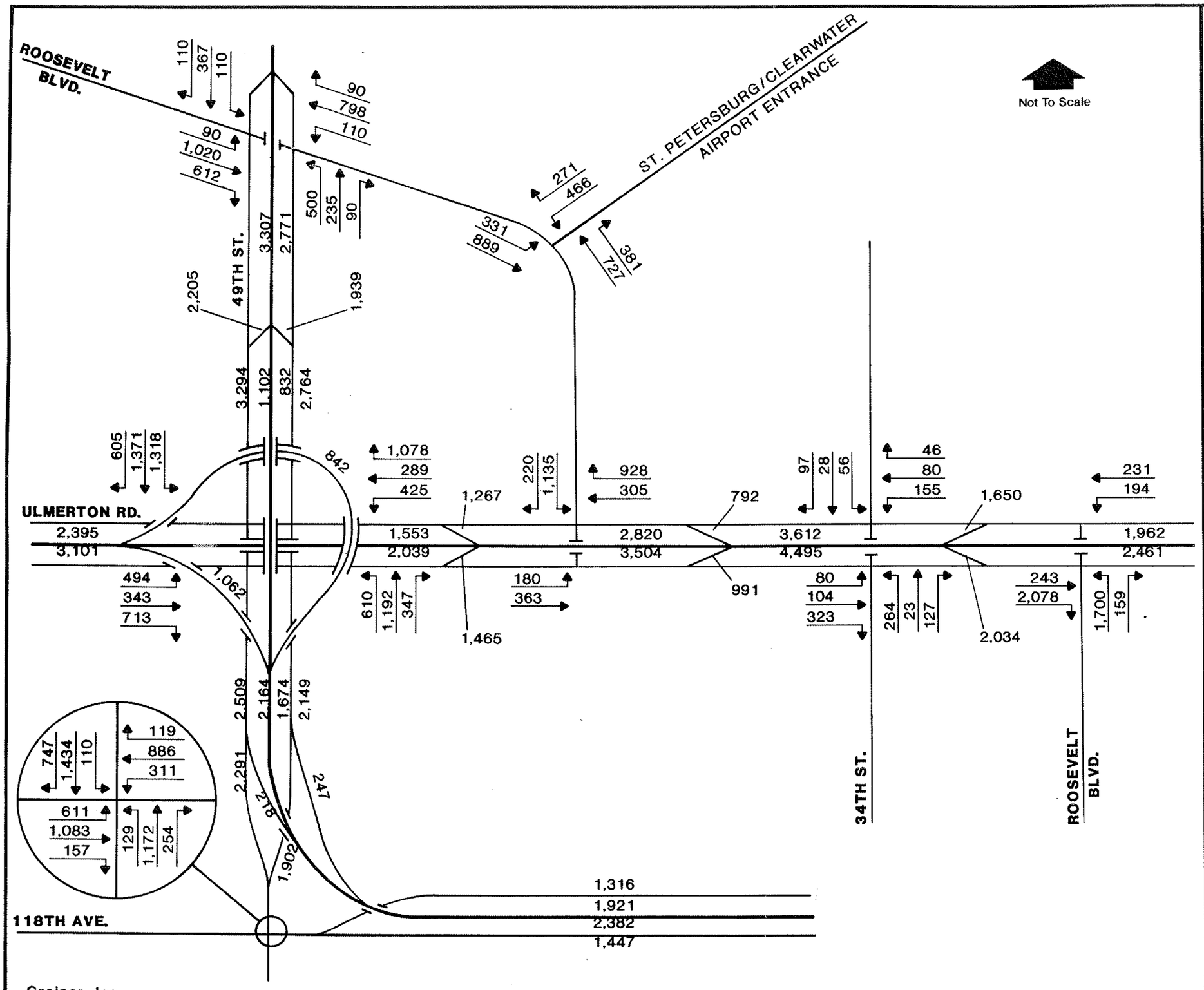
S.R. 686

(EAST BAY DR./ROOSEVELT BLVD.)

Pinellas County, Florida

YEAR 2010 PM PEAK HOUR TRAFFIC VOLUMES-ALTERNATIVE 2A

EXHIBIT 5



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FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC ADDENDUM

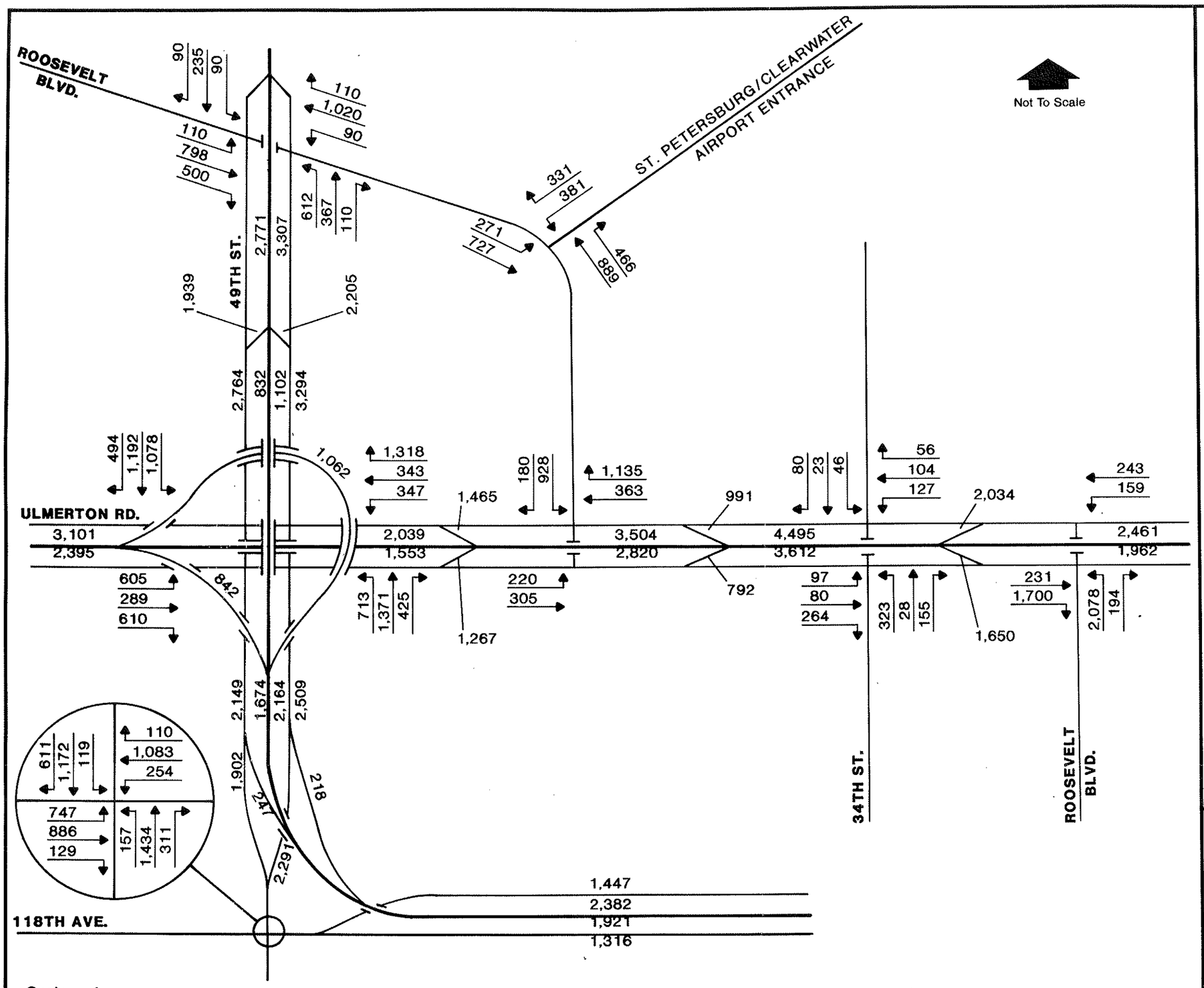
S.R. 686

(EAST BAY DR./ROOSEVELT BLVD.)

Pinellas County, Florida

YEAR 2010 AM PEAK HOUR TRAFFIC VOLUMES-ALTERNATIVE 2B

EXHIBIT 6



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FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC ADDENDUM

S.R. 686

(EAST BAY DR./ROOSEVELT BLVD.)

Pinellas County, Florida

YEAR 2010 PM PEAK HOUR TRAFFIC VOLUMES-ALTERNATIVE 2B

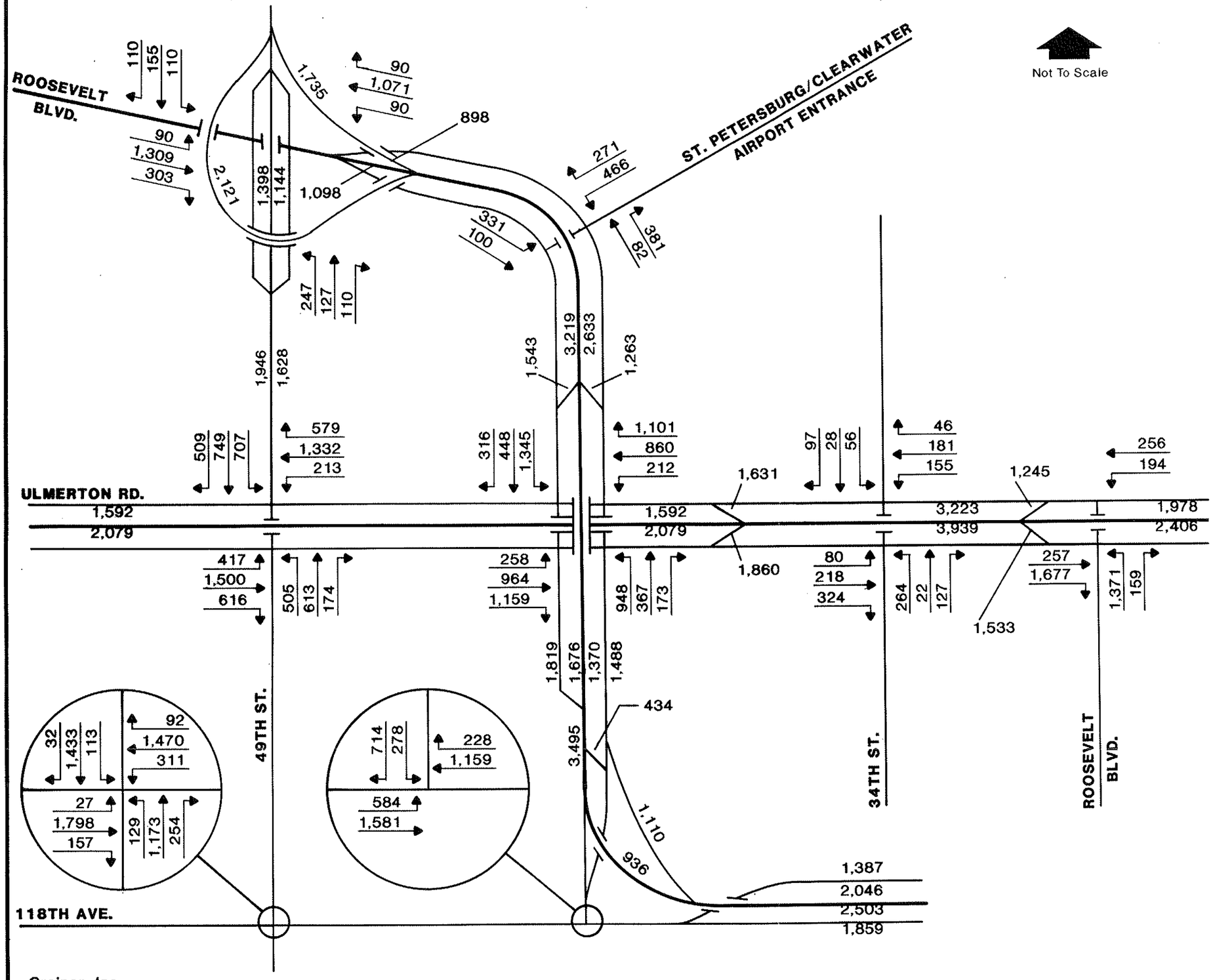
EXHIBIT 7

For the Roosevelt Boulevard expressway alignment, two alternative interchange configurations were developed for the S.R. 686/Ulmerton Road interchange. The first interchange configuration (Alternative 3C) provides a three-level urban interchange with elevated frontage roads on Ulmerton Road. The second interchange configuration (Alternative 3D) provides a three-level urban interchange with flyover ramps for the northbound Roosevelt Boulevard to westbound Ulmerton Road movement and the eastbound Ulmerton Road to southbound Roosevelt Boulevard movement. The a.m. and p.m. peak hour volumes for Alternative 3C are illustrated on Exhibits 8 and 9, respectively. Exhibits 10 and 11 illustrate the a.m. and p.m. peak hour volumes, respectively, for Alternative 3D.

Table 1 summarizes the expressway alignments and the alternative interchange configurations.

Traffic Operations Analysis

Using the 2010 a.m. and p.m. peak hour volumes presented on Exhibits 4 through 11, capacity calculations were conducted using the methodologies described in Chapter 4 - Weaving Areas, Chapter 5 - Ramps and Ramp Junctions and Chapter 10 - Signalized Intersections of the 1985 Highway Capacity Manual. Tables 2 and 3 summarize the results of the signalized intersection capacity analyses for Alternatives 2A and 2B, respectively. The intersection geometry for Alternatives 2A and 2B are illustrated on Exhibits 12 and 13, respectively. As presented in Tables 2 and 3, six of the seven intersections analyzed are projected to operate at an acceptable level of service (LOS D or better) with either of the two 49th Street expressway alternatives during both the a.m. and p.m. peak hours. Five of these six are projected to operate at LOS C while



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FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC ADDENDUM

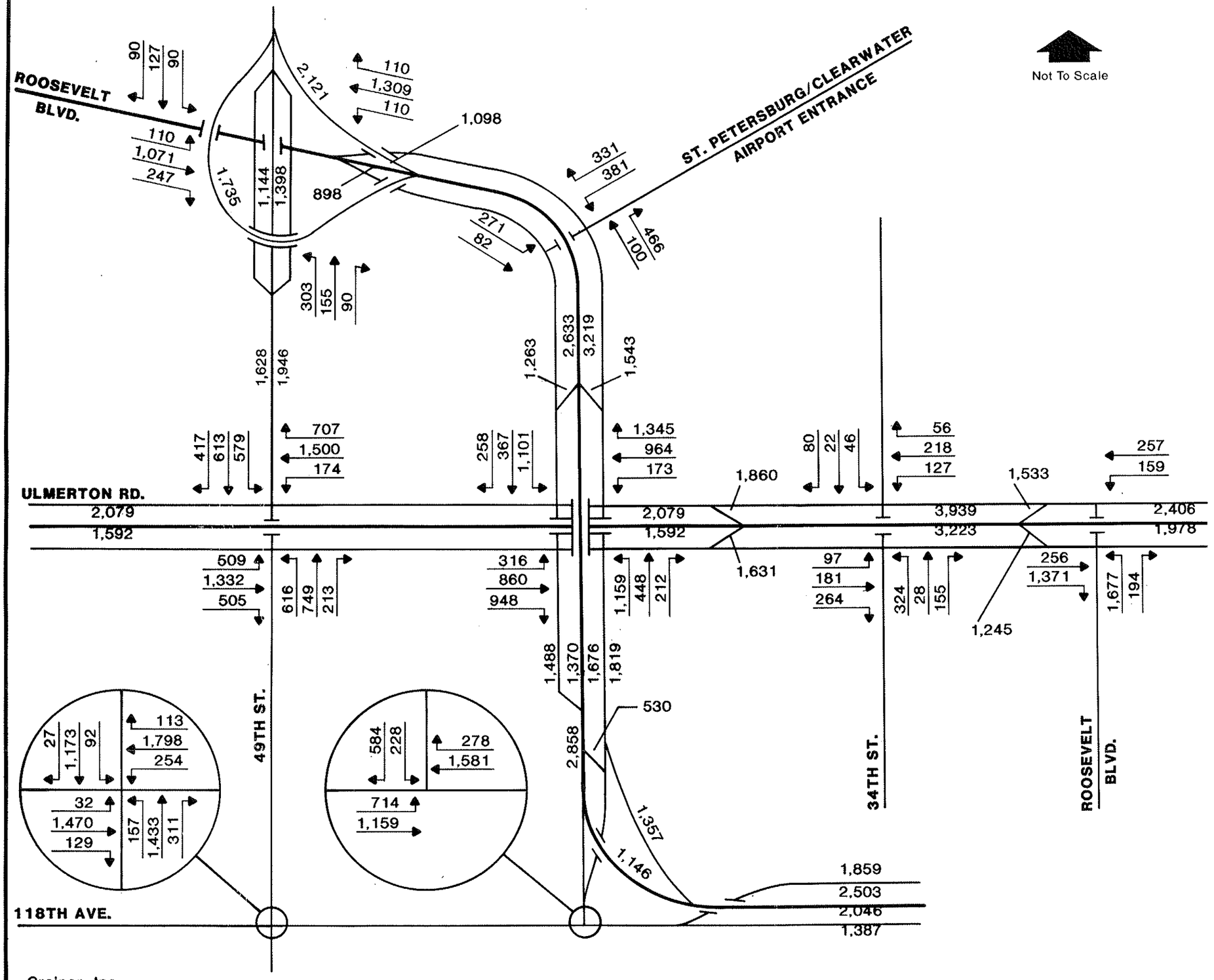
S.R. 686

(EAST BAY DR./ROOSEVELT BLVD.)

Pinellas County, Florida

YEAR 2010 AM PEAK HOUR TRAFFIC VOLUMES-ALTERNATIVE 3C

EXHIBIT 8



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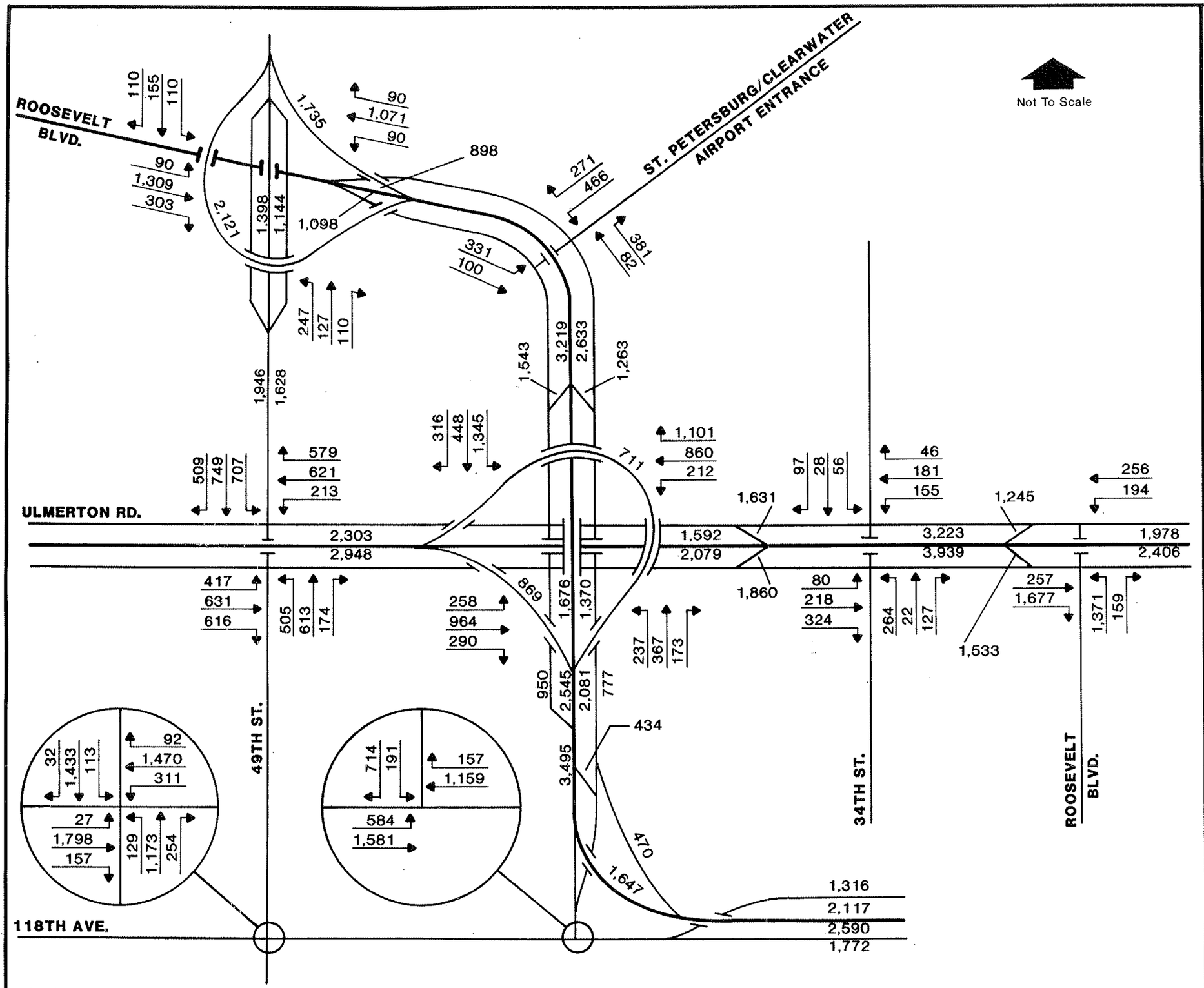
FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC ADDENDUM

S.R. 686
(EAST BAY DR./ROOSEVELT BLVD.)
Pinellas County, Florida

YEAR 2010 PM PEAK HOUR TRAFFIC VOLUMES-ALTERNATIVE 3C

EXHIBIT 9



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FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC ADDENDUM

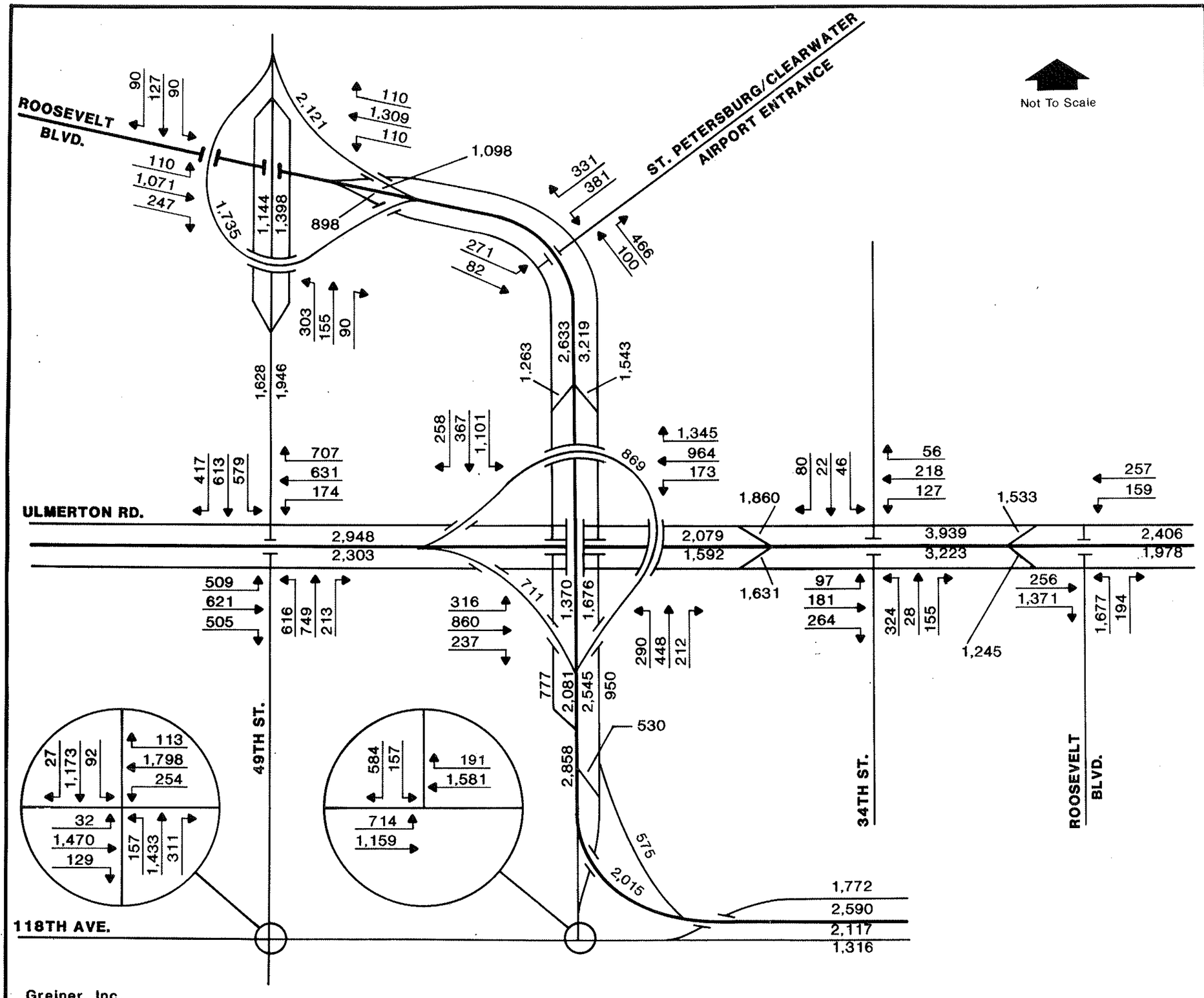
S.R. 686

(EAST BAY DR./ROOSEVELT BLVD.)

Pinellas County, Florida

YEAR 2010 AM PEAK HOUR TRAFFIC VOLUMES-ALTERNATIVE 3D

EXHIBIT 10



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FLORIDA DEPARTMENT OF TRANSPORTATION

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S.R. 686

(EAST BAY DR./ROOSEVELT BLVD.)

Pinellas County, Florida

YEAR 2010 PM PEAK HOUR TRAFFIC VOLUMES-ALTERNATIVE 3D

EXHIBIT 11

TABLE 1

ALTERNATIVE EXPRESSWAY ALIGNMENT SUMMARY
S.R. 686 (East Bay Drive/Roosevelt Boulevard)

Alternative Number	Roadway Type			Interchange Location and Type
	49th Street	Roosevelt Boulevard	118th Avenue	
2A	6-lane expressway from Roosevelt Blvd. to 118th Ave.	4-lane arterial from 49th St. to Ulmerton Rd.	6-lane arterial from U.S. 19 to 49th St. 6-lane expressway from 49th St. to I-275	Urban - Roosevelt Blvd./Ulmerton Rd. 3-level urban - 49th St./Ulmerton Rd. Diamond - Roosevelt Blvd./49th St.
2B	6-lane expressway from Roosevelt Blvd. to 118th Ave.	4-lane arterial from 49th St. to Ulmerton Rd.	6-lane arterial from U.S. 19 to 49th St. 6-lane expressway from 49th St. to I-275	Urban - Roosevelt Blvd./Ulmerton Rd. 3-level urban with flyovers - 49th St./Ulmerton Rd. Diamond - Roosevelt Blvd./49th St.
3C	6-lane arterial from Roosevelt Blvd. to 118th Ave.	6-lane expressway from 49th St. to 118th Ave.	6-lane arterial from U.S. 19 to Roosevelt Blvd. Extension. 6-lane expressway from Roosevelt Blvd. Extension to I-275.	3-level urban - Roosevelt Blvd./ Ulmerton Rd. Urban - 49th St./Ulmerton Rd. 3-level with flyover - Roosevelt Blvd./ 49th St.
3D	6-lane arterial from Roosevelt Blvd. to 118th Ave.	6-lane expressway from 49th St. to 118th Ave.	6-lane arterial from U.S. 19 to Roosevelt Blvd. Extension. 6-lane expressway from Roosevelt Blvd. Extension to I-275.	3-level urban with flyovers - Roosevelt Blvd./Ulmerton Rd. Urban - 49th St./Ulmerton Rd. 3-level with flyover - Roosevelt Blvd./ 49th St.

TABLE 2

2010 SIGNALIZED INTERSECTION OPERATIONS ANALYSIS SUMMARY - ALTERNATIVE 2A S.R. 686 (East Bay Drive/Roosevelt Boulevard)

Intersection	A.M. Peak Hour V/C[1]	A.M. Peak Hour Average[2] Delay	A.M. Peak Hour LOS[3]	P.M. Peak Hour V/C[1]	P.M. Peak Hour Average[2] Delay	P.M. Peak Hour LOS[3]
49th Street and Roosevelt Boulevard	0.55	21.2	C	0.47	20.7	C
49th Street and Ulmerton Road	1.18	*	*	1.24	72.9	F
49th Street and 118th Avenue	0.86	28.9	D	0.87	32.2	D
Roosevelt Boulevard and Airport Entrance	0.64	16.9	C	0.62	17.1	C
Roosevelt Boulevard (West) and Ulmerton Road	0.85	19.9	C	0.86	19.4	C
34th Street and Ulmerton Road	0.45	23.5	C	0.40	24.0	C
Roosevelt Boulevard (East) and Ulmerton Road	0.74	21.6	C	0.85	22.9	C

* Average delay and level of service is excessive and not meaningful.

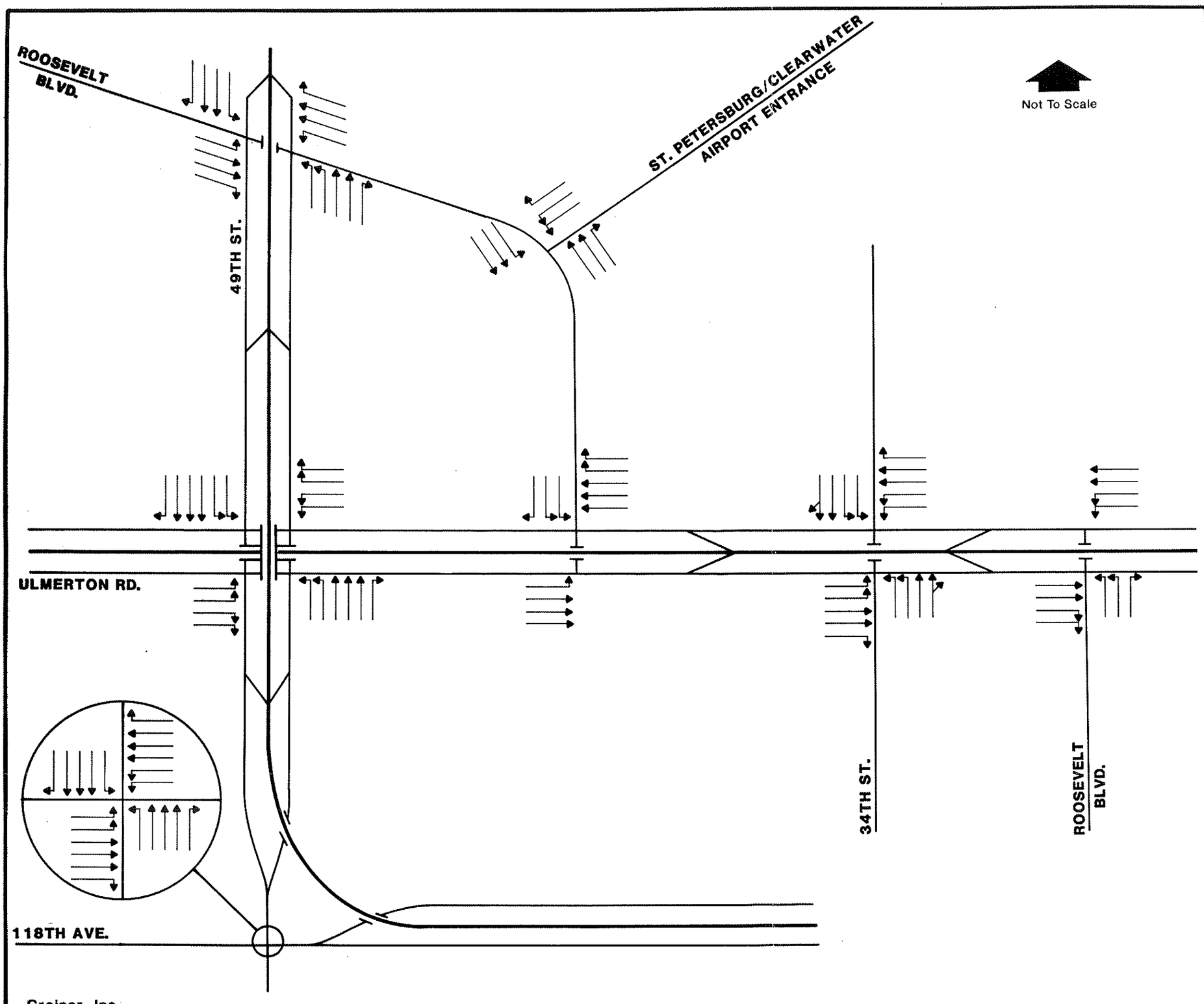
1 V/C = Volume-to-Capacity Ratio
2 Average Delay in Seconds per Vehicle
3 LOS = Level of Service

TABLE 3

2010 SIGNALIZED INTERSECTION
OPERATIONS ANALYSIS SUMMARY - ALTERNATIVE 2B
S.R. 686 (East Bay Drive/Roosevelt Boulevard)

Intersection	A.M. Peak Hour V/C[1]	A.M. Peak Hour Average[2] Delay	A.M. Peak Hour LOS[3]	P.M. Peak Hour V/C[1]	P.M. Peak Hour Average[2] Delay	P.M. Peak Hour LOS[3]
49th Street and Roosevelt Boulevard	0.55	21.2	C	0.47	20.7	C
49th Street and Ulmerton Road	0.95	30.8	D	0.99	38.5	D
49th Street and 118th Avenue	0.86	28.9	D	0.87	32.2	D
Roosevelt Boulevard and Airport Entrance	0.64	16.9	C	0.62	17.1	C
Roosevelt Boulevard (West) and Ulmerton Road	0.58	16.2	C	0.55	16.7	C
34th Street and Ulmerton Road	0.45	23.6	C	0.40	23.6	C
Roosevelt Boulevard (East) and Ulmerton Road	0.74	21.6	C	0.85	22.9	C

1 V/C = Volume-to-Capacity Ratio
2 Average Delay in Seconds per Vehicle
3 LOS = Level of Service



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FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC ADDENDUM

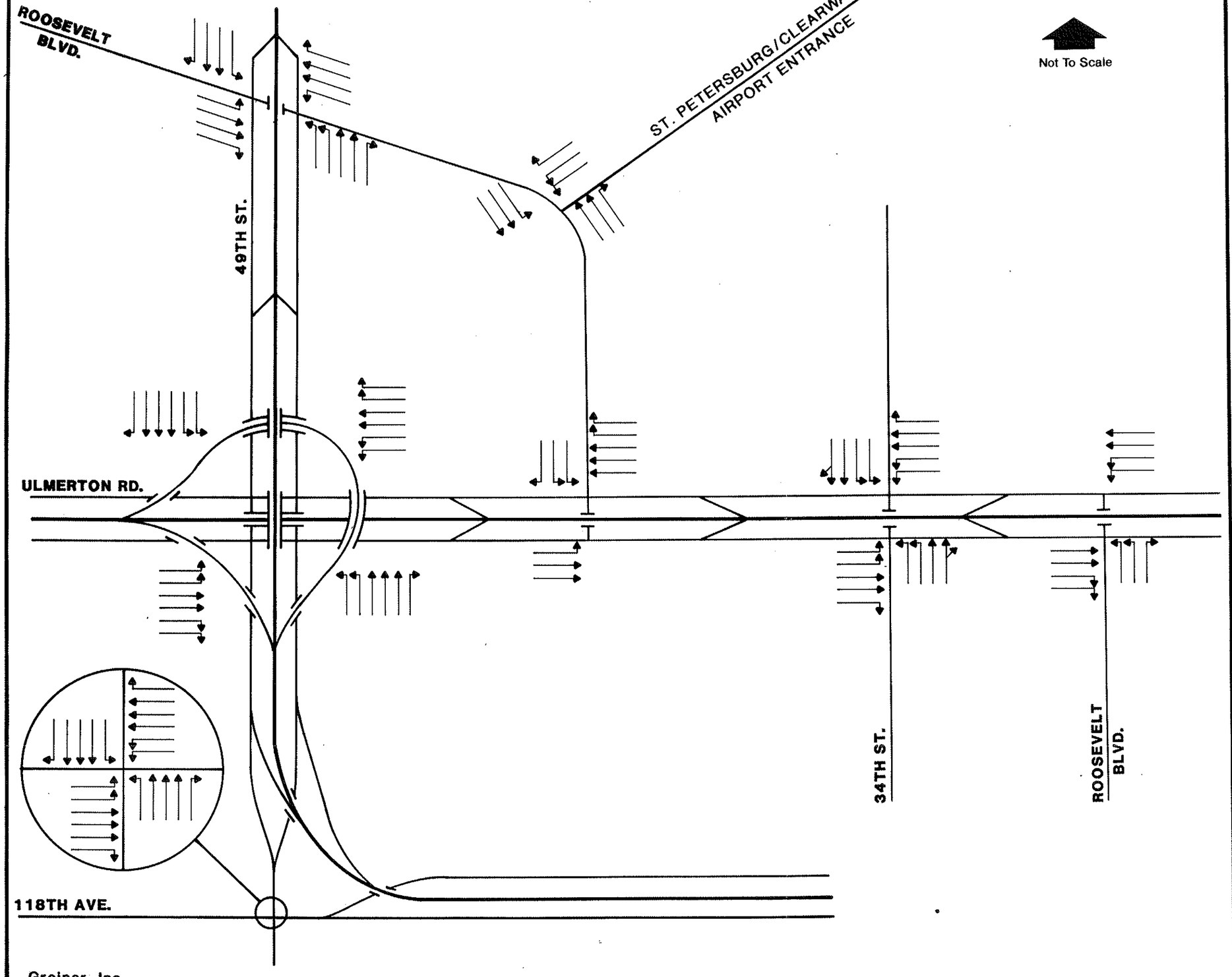
S.R. 686

(EAST BAY DR./ROOSEVELT BLVD.)

Pinellas County, Florida

YEAR 2010 INTERSECTION LANE GEOMETRY-ALTERNATIVE 2A

EXHIBIT 12



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FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC ADDENDUM

S.R. 686

(EAST BAY DR./ROOSEVELT BLVD.)

Pinellas County, Florida

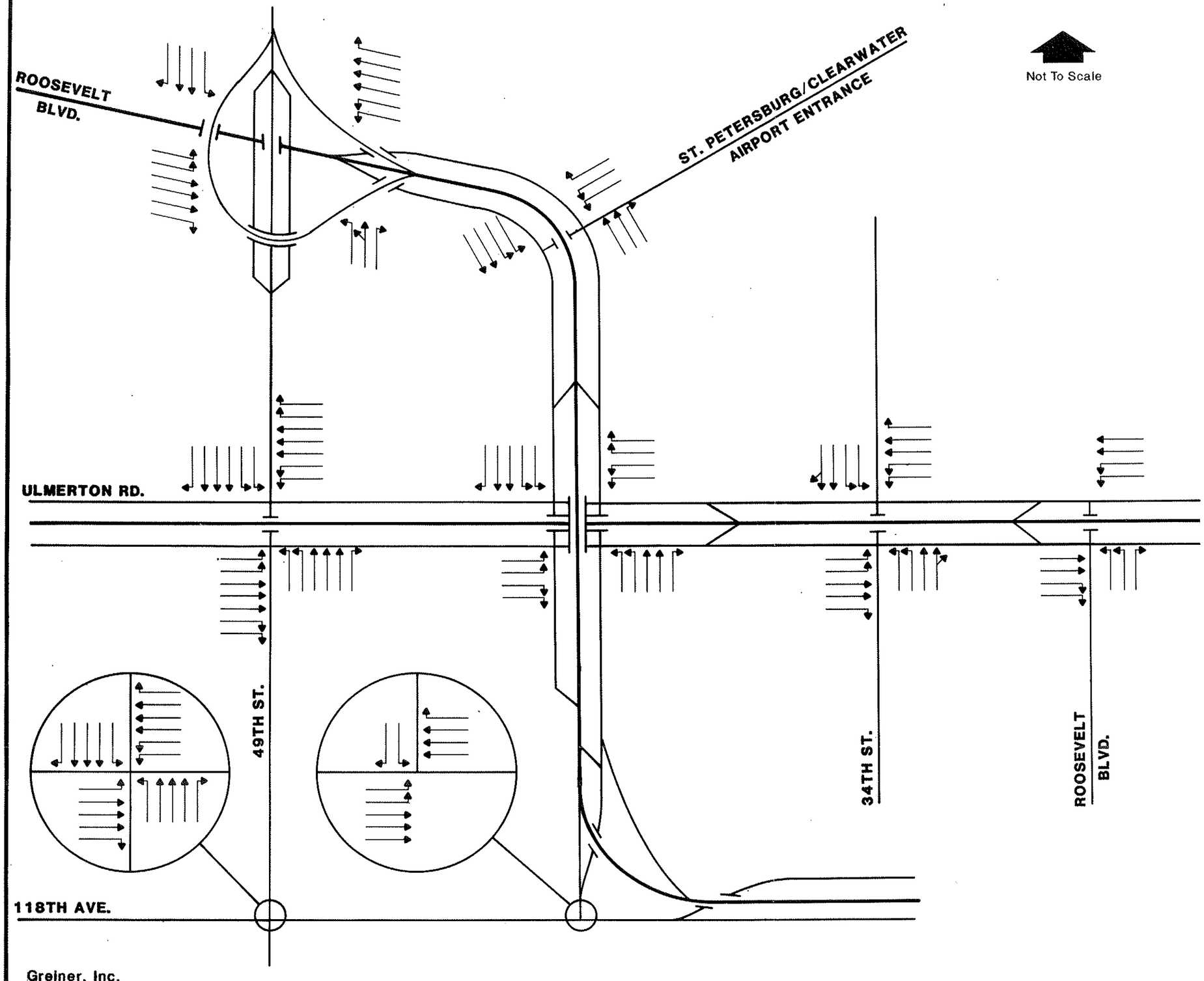
YEAR 2010 INTERSECTION LANE GEOMETRY - ALTERNATIVE 2B

EXHIBIT 13

the 49th Street/118th Avenue intersection is projected to operate at LOS D. Table 2 also indicates that the intersection of 49th Street and Ulmerton Road is projected to operate at an unacceptable level of service for Alternative 2A. Under Alternative 2B, the intersection is projected to operate at an acceptable level of service. The capacity calculations are included in Appendix A.

Tables 4 and 5 summarize the results of the signalized intersection capacity analyses for Alternatives 3C and 3D, respectively. The intersection geometry for Alternatives 3C and 3D are illustrated on Exhibits 14 and 15, respectively. As indicated in Tables 4 and 5, all eight of the intersections analyzed are projected to operate at acceptable levels of service in both the a.m. and p.m. peak hours for both alternatives. With Alternative 3C, six of the eight intersections are projected to operate at LOS C or better in the a.m. and p.m. peak hours while the other two (49th Street and Ulmerton Road and 49th Street and 118th Avenue) are projected to operate at LOS D. With Alternative 3D, six of the eight intersections are projected to operate at LOS C or better in both the a.m. and p.m. peak hours while the other two (49th Street and 118th Avenue and Roosevelt Boulevard (West) and Ulmerton Road) are projected to operate at LOS D. The capacity calculations are included in Appendix B.

Tables 6 and 7 summarize the results of the weaving and merge/diverge analyses conducted for Alternative 3C for the a.m. and p.m. peak hours, respectively. As indicated in the tables, three of the five weaving areas analyzed are projected to operate at LOS D during both the a.m. and p.m. peak hours. The eastbound and westbound weaving areas on Ulmerton Road between Roosevelt Boulevard (West) and Roosevelt Boulevard (East) are projected to operate at LOS E for the weaving vehicles and LOS D for the non-weaving vehicles. This LOS E projected for the weaving



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FLORIDA DEPARTMENT OF TRANSPORTATION
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S.R. 686
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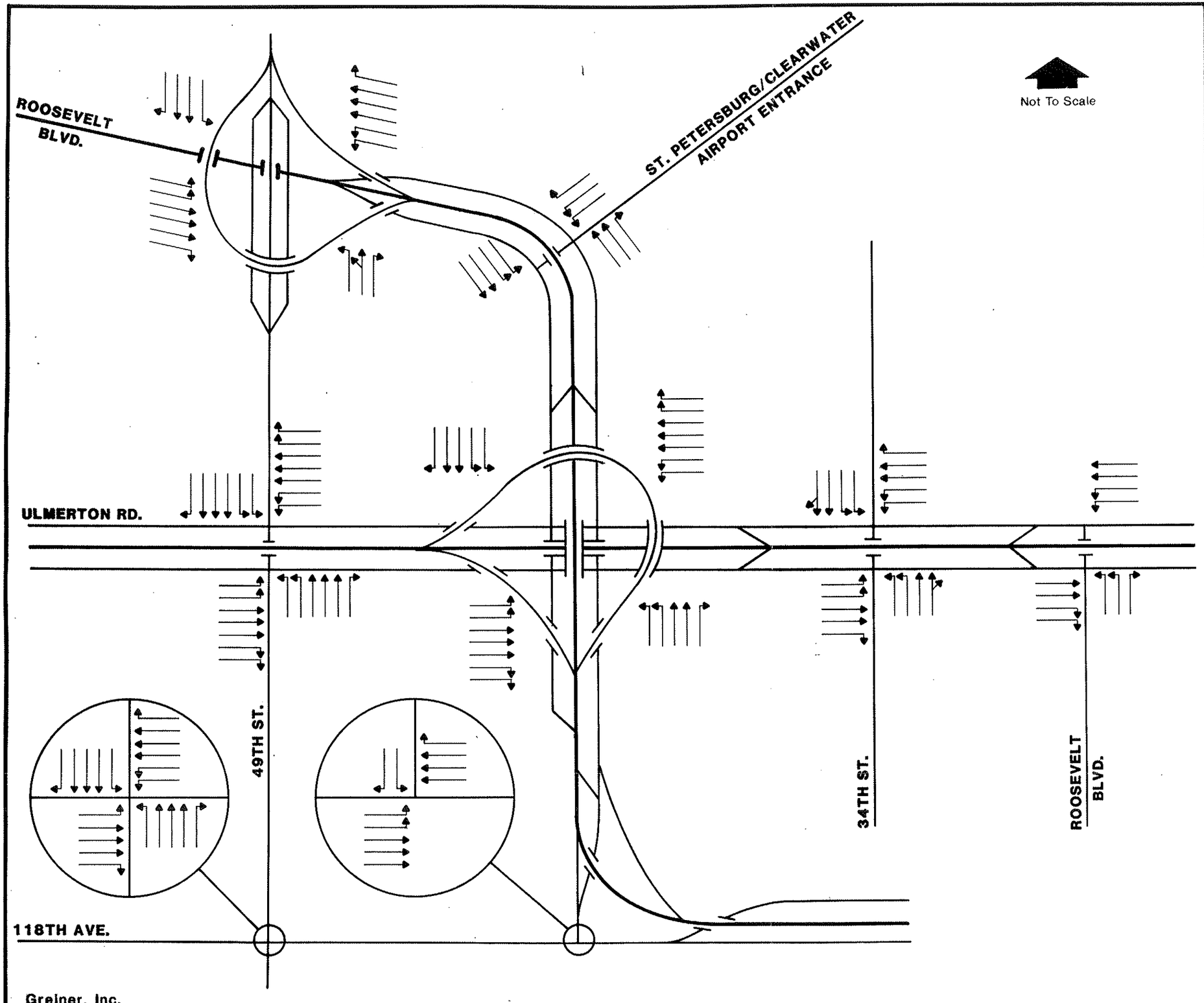
Pinellas County, Florida

YEAR 2010 INTERSECTION LANE GEOMETRY-ALTERNATIVE 3C

EXHIBIT 14



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TRAFFIC ADDENDUM

S.R. 686

(EAST BAY DR./ROOSEVELT BLVD.)

Pinellas County, Florida

YEAR 2010 INTERSECTION LANE GEOMETRY-ALTERNATIVE 3D

EXHIBIT 15

TABLE 4

2010 SIGNALIZED INTERSECTION OPERATIONS ANALYSIS SUMMARY - ALTERNATIVE 3C S.R. 686 (East Bay Drive/Roosevelt Boulevard)

Intersection	A.M. Peak Hour V/C[1]	A.M. Peak Hour Average[2] Delay	A.M. Peak Hour LOS[3]	P.M. Peak Hour V/C[1]	P.M. Peak Hour Average[2] Delay	P.M. Peak Hour LOS[3]
49th Street and Roosevelt Boulevard	0.52	23.8	C	0.52	23.3	C
49th Street and Ulmerton Road	0.80	27.5	D	0.85	28.8	D
49th Street and 118th Avenue	0.88	30.8	D	0.82	28.6	D
Roosevelt Boulevard and Airport Entrance	0.32	15.1	C	0.28	14.0	B
Roosevelt Boulevard (West) and Ulmerton Road	0.84	24.0	C	1.21	20.8	C
34th Street and Ulmerton Road	0.35	22.8	C	0.29	22.6	C
Roosevelt Boulevard (East) and Ulmerton Road	0.64	15.9	C	0.70	16.4	C
Roosevelt Boulevard and 118th Avenue	0.78	18.4	C	0.78	19.3	C

1 V/C = Volume-to-Capacity Ratio
2 Average Delay in Seconds per Vehicle
3 LOS = Level of Service

TABLE 5

2010 SIGNALIZED INTERSECTION OPERATIONS ANALYSIS SUMMARY - ALTERNATIVE 3D S.R. 686 (East Bay Drive/Roosevelt Boulevard)

Intersection	A.M. Peak Hour V/C[1]	A.M. Peak Hour Average[2] Delay	A.M. Peak Hour LOS[3]	P.M. Peak Hour V/C[1]	P.M. Peak Hour Average[2] Delay	P.M. Peak Hour LOS[3]
49th Street and Roosevelt Boulevard	0.52	23.8	C	0.52	23.3	C
49th Street and Ulmerton Road	0.65	24.2	C	0.66	24.9	C
49th Street and 118th Avenue	0.88	30.7	D	0.82	28.6	D
Roosevelt Boulevard and Airport Entrance	0.32	15.1	C	0.28	14.0	B
Roosevelt Boulevard (West) and Ulmerton Road	0.86	27.0	D	0.84	27.2	D
34th Street and Ulmerton Road	0.35	22.8	C	0.29	22.6	C
Roosevelt Boulevard (East) and Ulmerton Road	0.64	15.9	C	0.70	16.4	C
Roosevelt Boulevard and 118th Avenue	0.78	17.5	C	0.78	19.3	C

1 V/C = Volume-to-Capacity Ratio
2 Average Delay in Seconds per Vehicle
3 LOS = Level of Service

TABLE 6

2010 A.M. PEAK HOUR FREEWAY OPERATIONS ANALYSIS SUMMARY - ALTERNATIVE 3C
S.R. 686 (East Bay Drive/Roosevelt Boulevard)

		Merge Area			Diverge Area			Weaving Area				
Location	Freeway Volume (in vph)	Ramp Volume (in vph)	Merge Volume (in pcph)	Merge Level of Service	Ramp Volume (in vph)	Diverge Volume (in pcph)	Diverge Level of Service	Type/Length of Weave (in feet)	Weaving Speed (in mph)	Weaving Level of Service	Non-Weaving Speed (in mph)	Non-Weaving Level of Service
SB Roosevelt Blvd. between 49th St. and Ulmerton Rd.	3,219							B/1,650	41	D	42	D
SB Roosevelt Blvd. between Ulmerton Rd. and 118th Ave.	3,495							B/1,420	42	D	43	D
WB 118th Ave. Major Fork to NB Roosevelt Blvd. Mainline and Frontage Rd.	2,046				1,110	776/858	B/B					
NB Roosevelt Blvd. On-ramp from NB frontage road	936	434	905	B								
NB Roosevelt Blvd. between Ulmerton Rd. and 49th St.	2,633							B/1,650	43	D	45	D
WB Ulmerton Rd. between Roosevelt Blvd. (East) and Roosevelt Blvd. (West)	3,223							A/1,030	38	E	46	D
EB Ulmerton Rd. between Roosevelt Blvd. (West) and Roosevelt Blvd. (East)	3,939							A/1,030	36	E	44	D

TABLE 7

2010 P.M. PEAK HOUR FREEWAY OPERATIONS ANALYSIS SUMMARY - ALTERNATIVE 3C
S.R. 686 (East Bay Drive/Roosevelt Boulevard)

		Merge Area			Diverge Area			Weaving Area				
Location	Freeway Volume (in vph)	Ramp Volume (in vph)	Merge Volume (in pcph)	Merge Level of Service	Ramp Volume (in vph)	Diverge Volume (in pcph)	Diverge Level of Service	Type/Length of Weave (in feet)	Weaving Speed (in mph)	Weaving Level of Service	Non-Weaving Speed (in mph)	Non-Weaving Level of Service
SB Roosevelt Blvd. between 49th St. and Ulmerton Rd.	2,633							B/1,650	43	D	45	D
SB Roosevelt Blvd. between Ulmerton Rd. and 118th Ave.	2,858							B/1,420	44	D	47	D
WB 118th Ave. Major Fork to NB Roosevelt Blvd. Mainline and Frontage Rd.	2,503				1,357	923/1,036	B/B					
NB Roosevelt Blvd. On-ramp from NB frontage road	1,146	530	1,074	C								
NB Roosevelt Blvd. between Ulmerton Rd. and 49th St.	3,219							B/1,650	41	D	42	D
WB Ulmerton Rd. between Roosevelt Blvd. (East) and Roosevelt Blvd. (West)	3,939							A/1,030	36	E	44	D
EB Ulmerton Rd. between Roosevelt Blvd. (West) and Roosevelt Blvd. (East)	3,223							A/1,030	38	E	46	D

vehicles is due to the large volume of weaving vehicles and the short weaving length (1,030 feet for both directions). The major fork on 118th Avenue in the westbound direction that diverges to both the northbound Roosevelt Boulevard mainline and the northbound frontage road is projected to operate at LOS B in both the a.m. and p.m. peak hours. The northbound Roosevelt Boulevard merge from the northbound frontage road is projected to operate at LOS B in the a.m. peak hour and LOS C in the p.m. peak hour. The capacity calculations are included in Appendix C.

Tables 8 and 9 summarize the results of the weaving and merge/diverge analyses conducted for Alternative 3D for the a.m. and p.m. peak hours, respectively. As indicated in the tables, all six of the weaving areas analyzed are projected to operate at LOS D or better in both the a.m. and p.m. peak hours. The eastbound and westbound weaving areas on Ulmerton Road between Roosevelt Boulevard (West) and Roosevelt Boulevard (East) are projected to operate at LOS C during both peak hours with this alternative due to the greater length of the weaving areas (2,620 feet and 2,740 feet, respectively). All three of the merge/diverge areas analyzed for this alternative are projected to operate at LOS C or better in the a.m. peak hour and LOS B or better in the p.m. peak hour. The capacity calculations are included in Appendix C.

SUMMARY

The Pinellas County Year 2010 Long-Range Transportation Plan was amended on April 22, 1988 to provide an expressway facility from the south end of the 49th Street Bridge (S.R. 686 and 49th Street) to I-275. The plan amendment included an expressway on 49th Street from S.R. 686 south to U.S. 19 and on C.R. 296 (118th Avenue) from U.S. 19 to I-275, including an interchange with I-275. Subsequent to the

TABLE 8

2010 A.M. PEAK HOUR FREEWAY OPERATIONS ANALYSIS SUMMARY - ALTERNATIVE 3D
S.R. 686 (East Bay Drive/Roosevelt Boulevard)

		Merge Area			Diverge Area			Weaving Area				
Location	Freeway Volume (in vph)	Ramp Volume (in vph)	Merge Volume (in pcph)	Merge Level of Service	Ramp Volume (in vph)	Diverge Volume (in pcph)	Diverge Level of Service	Type/Length of Weave (in feet)	Weaving Speed (in mph)	Weaving Level of Service	Non-Weaving Speed (in mph)	Non-Weaving Level of Service
SB Roosevelt Blvd. between 49th St. and Ulmerton Rd.	3,219							B/1,650	41	D	42	D
SB Roosevelt Blvd. between Ulmerton Rd. and 118th Ave.	3,495							B/1,270 B/1,420	43 43	D D	44 45	D D
WB 118th Ave. Major Fork to NB Roosevelt Blvd. Mainline and Frontage Rd.	2,117				470	409/787	A/B					
NB Roosevelt Blvd. between 118th Ave. and Ulmerton Rd.	2,081							B/1,470	46	C	49	C
NB Roosevelt Blvd. between Ulmerton Rd. and 49th St.	2,633							B/1,650	43	D	45	D
WB Ulmerton Rd. between Roosevelt Blvd. (East) and Roosevelt Blvd. (West)	3,223							A/2,740	49	C	52	C
WB Ulmerton Rd. On-Ramp from NB Roosevelt Blvd.	1,592	711	756	B								
EB Ulmerton Rd. Off-Ramp to SB Roosevelt Blvd.	2,948				869	648/1,100	A/C					
EB Ulmerton Rd. between Roosevelt Blvd. (West) and Roosevelt Blvd. (East)	3,939							A/2,620	46	C	51	C

TABLE 9

2010 P.M. PEAK HOUR FREEWAY OPERATIONS ANALYSIS SUMMARY - ALTERNATIVE 3D
S.R. 686 (East Bay Drive/Roosevelt Boulevard)

Location	Freeway Volume (in vph)	Merge Area			Diverge Area			Weaving Area				
		Ramp Volume (in vph)	Merge Volume (in pcph)	Merge Level of Service	Ramp Volume (in vph)	Diverge Volume (in pcph)	Diverge Level of Service	Type/Length of Weave (in feet)	Weaving Speed (in mph)	Weaving Level of Service	Non-Weaving Speed (in mph)	Non-Weaving Level of Service
SB Roosevelt Blvd. between 49th St. and Ulmerton Rd.	2,633							B/1,650	43	D	45	D
SB Roosevelt Blvd. between Ulmerton Rd. and 118th Ave.	2,858							B/1,270 B/1,420	45 45	C C	47 49	D C
WB 118th Ave. Major Fork to NB Roosevelt Blvd. Mainline and Frontage Rd.	2,590				575	475/946	A/B					
NB Roosevelt Blvd. between 118th Ave. and Ulmerton Rd.	2,545							B/1,470	44	D	46	D
NB Roosevelt Blvd. between Ulmerton Rd. and 49th St.	3,219							B/1,650	41	D	42	D
WB Ulmerton Rd. between Roosevelt Blvd. (East) and Roosevelt Blvd. (West)	3,939							A/2,740	47	C	51	C
WB Ulmerton Rd. On-Ramp from NB Roosevelt Blvd.	2,078	869	924	B								
EB Ulmerton Rd. Off-Ramp to SB Roosevelt Blvd.	2,303				711	550/879	A/B					
EB Ulmerton Rd. between Roosevelt Blvd. (West) and Roosevelt Blvd. (East)	3,223							A/2,620	48	C	52	C

plan amendment, the potential of implementing the expressway along the S.R. 686 alignment from 49th Street to S.R. 688 and south of S.R. 688 via the Sunshine Stables and Speedway to 118th Avenue and via 118th Avenue to I-275 was identified as an alternative alignment. To evaluate the impacts associated with the alternative alignments, average daily traffic (ADT) volumes and peak hour volumes were estimated for each expressway alignment for year 2010. Traffic operations (capacity) analyses were conducted to determine the required roadway geometry and evaluate the resulting levels of service. Results of the capacity calculations indicate that only Alternative 3D is projected to provide acceptable levels of service at all locations analyzed. Alternative 3D provides an expressway along S.R. 686 (Roosevelt Boulevard) and provides for a three-level urban interchange at the intersection of Ulmerton Road and Roosevelt Boulevard with flyover ramps for the northbound Roosevelt Boulevard to westbound Ulmerton Road and eastbound Ulmerton Road to southbound Roosevelt Boulevard movements.

APPENDIX A

SIGNALIZED INTERSECTION CAPACITY ANALYSES - 49TH STREET EXPRESSWAY ALTERNATIVES 2A AND 2B

****

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ROOSEVELT BLVD.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA/FILE NAME-49XROSA

DATE OF THE ANALYSIS.....8/25/89

TIME PERIOD ANALYZED.....2010 AM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY ALT.

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	90	110	500	110
THRU	1020	798	235	367
RIGHT	612	90	90	110
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 4 WESTBOUND = 4 NORTHBOUND = 5 SOUTHBOUND = 4

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	T	12.0	T	12.0	L	12.0	T	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	R	12.0	R	12.0	T	12.0	R	12.0
5		12.0		12.0	R	12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/h

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	31.8	3
WESTBOUND	50	N	31.8	3
NORTHBOUND	50	N	31.8	3
SOUTHBOUND	50	N	31.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 12.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X	X		
THRU		X		
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X	X		
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X	X	X	
THRU		X	X	
RIGHT		X	X	
PEDS				
SOUTHBOUND				
LEFT	X		X	
THRU			X	
RIGHT			X	
PEDS				
EASTBOUND RT	X	X		
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	41.00
Protected	10.00
THRU	41.00
RIGHT	
Permitted	0.00
Protected	68.00
WESTBOUND	
LEFT	
Permitted	41.00
Protected	10.00
THRU	41.00
RIGHT	
Permitted	0.00
Protected	51.00
NORTHBOUND	
LEFT	
Permitted	30.00
Protected	27.00
THRU	47.00
RIGHT	
Permitted	0.00
Protected	47.00
SOUTHBOUND	
LEFT	
Permitted	30.00
Protected	10.00
THRU	30.00
RIGHT	
Permitted	0.00
Protected	30.00

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB											
LT	90	0.95	95	L	95	1	1.000	1.000	95	1.00	0.00
TH	1020	0.95	1074	T	1074	2	1.000	1.000	1074	0.00	0.00
RT	612	0.95	644	R	644	1	1.000	1.000	644	0.00	1.00
WB											
LT	110	0.95	116	L	116	1	1.000	1.000	116	1.00	0.00
TH	798	0.95	840	T	840	2	1.000	1.000	840	0.00	0.00
RT	90	0.95	95	R	95	1	1.000	1.000	95	0.00	1.00
NB											
LT	500	0.95	526	L	526	2	1.000	1.000	526	1.00	0.00
TH	235	0.95	247	T	247	2	1.000	1.000	247	0.00	0.00
RT	90	0.95	95	R	95	1	1.000	1.000	95	0.00	1.00
SB											
LT	110	0.95	116	L	116	1	1.000	1.000	116	1.00	0.00
TH	367	0.95	386	T	386	2	1.000	1.000	386	0.00	0.00
RT	110	0.95	116	R	116	1	1.000	1.000	116	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ SAT FLOW
EB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	165
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	151
WB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	169
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	356
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	151
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	327
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	151
SB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	169
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	356
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	151

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
Lperm.	85						
Lprot.	10	1693	0.006	0.083	141	0.071	
T	1074	3564	0.301 *	0.342	1218	0.882	
R	644	1515	0.425	0.567	858	0.751	*
WB							
Lperm.	106						
Lprot.	10	1693	0.006 *	0.083	141	0.071	*
T	840	3564	0.236	0.342	1218	0.690	
R	95	1515	0.063	0.425	644	0.147	
NB							
Lperm.	253						
Lprot.	273	3279	0.083 *	0.225	738	0.370	*
T	247	3564	0.069	0.392	1396	0.177	
R	95	1515	0.063	0.392	593	0.160	
SB							
Lperm.	106						
Lprot.	10	1693	0.006	0.083	141	0.071	
T	386	3564	0.108 *	0.250	891	0.434	*
R	116	1515	0.076	0.250	379	0.306	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.623~~ 0.498

Lost Time Per Cycle, L = 12.0 sec. X critical = ~~0.692~~ 0.553

LEVEL-OF-SERVICE WORKSHEET

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.071	0.425	120.0	15.5	141	0.0	1.00	15.5	C	23.2	C
T	0.882	0.342	120.0	28.3	1218	5.6	0.85	28.8	D		
R	0.751	0.567	120.0	14.9	858	2.6	0.85	14.9	B		
WB											
L	0.071	0.425	120.0	15.5	141	0.0	1.00	15.5	C	21.3	C
T	0.690	0.342	120.0	25.9	1218	1.2	0.85	23.0	C		
R	0.147	0.425	120.0	16.1	644	0.0	0.85	13.7	B		
NB											
L	0.370	0.475	120.0	15.2	738	0.1	1.00	15.4	C	15.4	C
T	0.177	0.392	120.0	18.1	1396	0.0	0.85	15.4	C		
R	0.160	0.392	120.0	18.0	593	0.0	0.85	15.3	C		
SB											
L	0.071	0.333	120.0	20.8	141	0.0	1.00	20.8	C	23.7	C
T	0.434	0.250	120.0	28.8	891	0.2	0.85	24.6	C		
R	0.306	0.250	120.0	27.8	379	0.1	0.85	23.7	C		

Intersection Delay = 21.2 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....AIRPORT ENTRANCE

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA/FILE NAME-49XAIRA

DATE OF THE ANALYSIS.....8/25/89

TIME PERIOD ANALYZED.....2010 AM PEAK HOUR

OTHER INFORMATION:
49TH ST EXPWAY. ALT.

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	466	0	331
THRU	0	0	727	889
RIGHT	0	271	381	0
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 0 WESTBOUND = 3 NORTHBOUND = 3 SOUTHBOUND = 3

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1		12.0	L	12.0	T	12.0	L	12.0
2		12.0	L	12.0	T	12.0	T	12.0
3		12.0	R	12.0	R	12.0	T	12.0
4								
5								
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	BUSES (Nm)	(Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	25.8	3
WESTBOUND	50	N	25.8	3
NORTHBOUND	50	N	14.3	3
SOUTHBOUND	50	N	14.3	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
WESTBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT				

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
EASTBOUND RT				
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	30.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	73.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	38.00
RIGHT	
Permitted	0.00
Protected	68.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	43.00
THRU	81.00
RIGHT	
Permitted	0.00
Protected	0.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								
WB												
	LT	466	0.95	491	L	491	2	1.050	1.000	515	1.00	0.00
	TH	0	0.95	0								
	RT	271	0.95	285	R	285	1	1.000	1.000	285	0.00	1.00
NB												
	LT	0	0.95	0								
	TH	727	0.95	765	T	765	2	1.050	1.000	804	0.00	0.00
	RT	381	0.95	401	R	401	1	1.000	1.000	401	0.00	1.00
SB												
	LT	331	0.95	348	L	348	1	1.000	1.000	348	1.00	0.00
	TH	889	0.95	936	T	936	2	1.050	1.000	983	0.00	0.00
	RT	0	0.95	0								

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
WB							
L	515	3279	0.157	0.250	820	0.628	
R	285	1515	0.188	0.608	921	0.310	*
NB							
T	804	3564	0.225	0.317	1129	0.712	*
R	401	1515	0.265	0.567	858	0.467	
SB							
L	348	1693	0.206	0.358	607	0.574	*
T	983	3564	0.276	0.675	2406	0.408	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.620~~ 0.588
Lost Time Per Cycle, L = 9.0 sec. X critical = ~~0.670~~ 0.636

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
WB											
L	0.628	0.250	120.0	30.4	820	1.1	1.00	31.5	D	22.9	C
R	0.310	0.608	120.0	8.6	921	0.1	0.85	7.4	B		
NB											
T	0.712	0.317	120.0	27.5	1129	1.5	0.85	24.6	C	19.8	C
R	0.467	0.567	120.0	11.6	858	0.3	0.85	10.2	B		
SB											
L	0.574	0.358	120.0	23.6	607	1.0	1.00	24.6	C	10.7	B
T	0.408	0.675	120.0	6.6	2406	0.1	0.85	5.7	B		

Intersection Delay = 16.9 (sec/veh) Intersection LOS = C

****

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR/FILE NAME-49XULA1

DATE OF THE ANALYSIS.....10/25/89

TIME PERIOD ANALYZED.....2010 AM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY ALT.(ELVT. FR. RD. ALT.)

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	494	425	1452	1318
THRU	0	0	1192	1371
RIGHT	1775	1078	347	605
RTOR	100	60	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 4 WESTBOUND = 4 NORTHBOUND = 6 SOUTHBOUND = 6

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	R	12.0	R	12.0	T	12.0	T	12.0
4	R	12.0	R	12.0	T	12.0	T	12.0
5		12.0		12.0	T	12.0	T	12.0
6		12.0		12.0	R	12.0	R	12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	37.8	3
WESTBOUND	50	N	37.8	3
NORTHBOUND	50	N	31.8	3
SOUTHBOUND	50	N	31.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU				
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU				
RIGHT		X		
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
EASTBOUND RT	X			
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	57.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	57.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	57.00
THRU	30.00
RIGHT	
Permitted	0.00
Protected	54.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	57.00
THRU	30.00
RIGHT	
Permitted	0.00
Protected	54.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	494	0.95	520	L	520	2	1.000	1.000	520	1.00	0.00
	TH	0	0.95	0								
	RT	1775	0.95	1763	R	1763	2	1.000	1.000	1763	0.00	1.00
WB												
	LT	425	0.95	447	L	447	2	1.000	1.000	447	1.00	0.00
	TH	0	0.95	0								
	RT	1078	0.95	1072	R	1072	2	1.000	1.000	1072	0.00	1.00
NB												
	LT	1452	0.95	1528	L	1528	2	1.000	1.000	1528	1.00	0.00
	TH	1192	0.95	1255	T	1255	3	1.000	1.000	1255	0.00	0.00
	RT	347	0.95	365	R	365	1	1.000	1.000	365	0.00	1.00
SB												
	LT	1318	0.95	1387	L	1387	2	1.000	1.000	1387	1.00	0.00
	TH	1371	0.95	1443	T	1443	3	1.000	1.000	1443	0.00	0.00
	RT	605	0.95	637	R	637	1	1.000	1.000	637	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	520	3279	0.159	0.200	656	0.793	*
R	1763	2673	0.660	0.475	1270	1.389	*
WB							
L	447	3279	0.136	0.200	656	0.682	
R	1072	2673	0.401	0.475	1270	0.844	
NB							
L	1528	3279	0.466	0.475	1557	0.981	*
T	1255	5346	0.235	0.250	1337	0.939	
R	365	1515	0.241	0.450	682	0.536	
SB							
L	1387	3279	0.423	0.475	1557	0.891	
T	1443	5346	0.270	0.250	1337	1.080	
R	637	1515	0.420	0.450	682	0.934	*

Cycle Length, C = 120.0 sec.
Lost Time Per Cycle, L = 9.0 sec.

Sum (v/s) critical = ~~1.705~~ 1.089
X critical = ~~1.843~~ 1.177

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.793	0.200	120.0	34.7	656	4.6	1.00	39.3	D	*	*
R	1.389	0.475	120.0	*	1270	*	0.85	*	*		
WB											
L	0.682	0.200	120.0	33.8	656	2.0	1.00	35.8	D	25.4	D
R	0.844	0.475	120.0	21.0	1270	3.8	0.85	21.1	C		
NB											
L	0.981	0.475	120.0	23.5	1557	13.9	1.00	37.5	D	34.6	D
T	0.939	0.250	120.0	33.5	1337	9.3	0.85	36.4	D		
R	0.536	0.450	120.0	18.2	682	0.7	0.85	16.0	C		
SB											
L	0.891	0.475	120.0	21.8	1557	4.9	1.00	26.7	D	44.7	E
T	1.080	0.250	120.0	35.1	1337	44.1	0.85	67.4	F		
R	0.934	0.450	120.0	23.8	682	14.5	0.85	32.6	D		

Intersection Delay = * (sec/veh) Intersection LOS = *

* Delay and LOS not meaningful when any v/c is greater than 1.2

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IDENTIFYING INFORMATION

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NAME OF THE EAST/WEST STREET.....118TH AVE.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA/FILE NAME-49X118A

DATE OF THE ANALYSIS.....8/25/89

TIME PERIOD ANALYZED.....2010 AM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY. ALT.

TRAFFIC VOLUMES

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	EB	WB	NB	SB
LEFT	611	311	129	110
THRU	1083	886	1172	1434
RIGHT	157	119	254	747
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 6 WESTBOUND = 6 NORTHBOUND = 5 SOUTHBOUND = 5

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	T	12.0	T	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	T	12.0	T	12.0
5	T	12.0	T	12.0	R	12.0	R	12.0
6	R	12.0	R	12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	37.8	3
WESTBOUND	50	N	37.8	3
NORTHBOUND	50	N	43.8	3
SOUTHBOUND	50	N	43.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 12.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
WESTBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X	X		

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
EASTBOUND RT	X			
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	31.00
THRU	36.00
RIGHT	
Permitted	0.00
Protected	53.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	18.00
THRU	23.00
RIGHT	
Permitted	0.00
Protected	40.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	17.00
THRU	37.00
RIGHT	
Permitted	0.00
Protected	55.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	17.00
THRU	37.00
RIGHT	
Permitted	0.00
Protected	68.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	611	0.95	643	L	643	2	1.000	1.000	643	1.00	0.00
	TH	1083	0.95	1140	T	1140	3	1.000	1.000	1140	0.00	0.00
	RT	157	0.95	165	R	165	1	1.000	1.000	165	0.00	1.00
WB												
	LT	311	0.95	327	L	327	2	1.000	1.000	327	1.00	0.00
	TH	886	0.95	933	T	933	3	1.000	1.000	933	0.00	0.00
	RT	119	0.95	125	R	125	1	1.000	1.000	125	0.00	1.00
NB												
	LT	129	0.95	136	L	136	1	1.000	1.000	136	1.00	0.00
	TH	1172	0.95	1234	T	1234	3	1.000	1.000	1234	0.00	0.00
	RT	254	0.95	267	R	267	1	1.000	1.000	267	0.00	1.00
SB												
	LT	110	0.95	116	L	116	1	1.000	1.000	116	1.00	0.00
	TH	1434	0.95	1509	T	1509	3	1.000	1.000	1509	0.00	0.00
	RT	747	0.95	786	R	786	1	1.000	1.000	786	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	643	3279	0.196	0.258	847	0.759	*
T	1140	5346	0.213	0.300	1604	0.711	
R	165	1515	0.109	0.442	669	0.247	
WB							
L	327	3279	0.100	0.150	492	0.666	
T	933	5346	0.174	0.192	1025	0.910	*
R	125	1515	0.083	0.333	505	0.248	
NB							
L	136	1693	0.080	0.142	240	0.566	*
T	1234	5346	0.231	0.308	1648	0.748	
R	267	1515	0.177	0.458	694	0.385	
SB							
L	116	1693	0.068	0.142	240	0.483	
T	1509	5346	0.282	0.308	1648	0.916	
R	786	1515	~~0.519~~ 0,323	0.567	858	0.916	*

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.970~~ 0,773

Lost Time Per Cycle, L = 12.0 sec. X critical = ~~1.078~~ 0,859

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.759	0.258	120.0	31.2	847	2.8	1.00	34.0	D	27.0	D
T	0.711	0.300	120.0	28.4	1604	1.0	0.85	25.0	D		
R	0.247	0.442	120.0	16.0	669	0.0	0.85	13.6	B		
WB											
L	0.666	0.150	120.0	36.6	492	2.4	1.00	39.0	D	36.4	D
T	0.910	0.192	120.0	36.1	1025	8.5	0.85	37.9	D		
R	0.248	0.333	120.0	22.1	505	0.1	0.85	18.8	C		
NB											
L	0.566	0.142	120.0	36.5	240	2.3	1.00	38.8	D	24.5	C
T	0.748	0.308	120.0	28.4	1648	1.4	0.85	25.3	D		
R	0.385	0.458	120.0	16.2	694	0.2	0.85	14.0	B		
SB											
L	0.483	0.142	120.0	36.1	240	1.2	1.00	37.3	D	29.0	D
T	0.916	0.308	120.0	30.4	1648	6.1	0.85	31.0	D		
R	0.916	0.567	120.0	17.8	858	10.4	0.85	23.9	C		

Intersection Delay = 28.9 (sec/veh) Intersection LOS = D

****

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD. (WEST)

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR/FILE NAME-ROSULA1

DATE OF THE ANALYSIS.....10/25/89

TIME PERIOD ANALYZED.....2010 AM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY ALT. (ELVT. FR. RD. ALT.)

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	180	0	0	1135
THRU	1828	1572	0	0
RIGHT	0	928	0	220
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 4 WESTBOUND = 5 NORTHBOUND = 0 SOUTHBOUND = 3

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	T	12.0		12.0	L	12.0
2	T	12.0	T	12.0		12.0	L	12.0
3	T	12.0	T	12.0		12.0	R	12.0
4	T	12.0	R	12.0		12.0		12.0
5		12.0	R	12.0		12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	14.3	3
WESTBOUND	50	N	14.3	3
NORTHBOUND	50	N	34.8	3
SOUTHBOUND	50	N	34.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
WESTBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
SOUTHBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
EASTBOUND RT				
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	20.00
THRU	62.00
RIGHT	
Permitted	0.00
Protected	0.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	42.00
RIGHT	
Permitted	0.00
Protected	91.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	49.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	69.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	180	0.95	189	L	189	1	1.000	1.000	189	1.00	0.00
	TH	1828	0.95	1924	T	1924	3	1.000	1.000	1924	0.00	0.00
	RT	0	0.95	0								
WB												
	LT	0	0.95	0								
	TH	1572	0.95	1655	T	1655	3	1.000	1.000	1655	0.00	0.00
	RT	928	0.95	977	R	977	2	1.000	1.000	977	0.00	1.00
NB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								
SB												
	LT	1135	0.95	1195	L	1195	2	1.000	1.000	1195	1.00	0.00
	TH	0	0.95	0								
	RT	220	0.95	232	R	232	1	1.000	1.000	232	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
WB												
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	189	1693	0.112	0.167	282	0.672	*
T	1924	5346	0.360	0.517	2762	0.697	
WB							
T	1655	5346	0.310	0.350	1871	0.884	*
R	977	2673	0.365	0.758	2027	0.482	
NB							
SB							
L	1195	3279	0.364	0.408	1339	0.892	*
R	232	1515	0.153	0.575	871	0.266	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.786
Lost Time Per Cycle, L = 9.0 sec. X critical = 0.850

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.672	0.167	120.0	35.7	282	4.2	1.00	39.8	D	16.9	C
T	0.697	0.517	120.0	16.6	2762	0.6	0.85	14.6	B		
WB											
T	0.884	0.350	120.0	27.9	1871	3.9	0.85	27.1	D	18.4	C
R	0.482	0.758	120.0	4.2	2027	0.1	0.85	3.7	A		
NB											
SB											
L	0.892	0.408	120.0	25.1	1339	5.7	1.00	30.8	D	27.2	D
R	0.266	0.575	120.0	9.7	871	0.0	0.85	8.3	B		

Intersection Delay = 19.9 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....34TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR/FILE NAME-34ULAIB

DATE OF THE ANALYSIS.....10/25/89

TIME PERIOD ANALYZED.....2010 AM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY ALT.(ELVT. FR. RD. ALT.)

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	80	155	264	56
THRU	167	139	23	28
RIGHT	323	46	127	97
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 5 WESTBOUND = 5 NORTHBOUND = 4 SOUTHBOUND = 4

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	TR	12.0	TR	12.0
5	R	12.0	R	12.0		12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	26.5	3
WESTBOUND	50	N	26.5	3
NORTHBOUND	50	N	32.5	3
SOUTHBOUND	50	N	32.5	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 12.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
SOUTHBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
EASTBOUND RT	X	X		
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	32.00
RIGHT	
Permitted	0.00
Protected	57.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	32.00
RIGHT	
Permitted	0.00
Protected	49.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	25.00
THRU	35.00
RIGHT	
Permitted	0.00
Protected	35.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	17.00
THRU	27.00
RIGHT	
Permitted	0.00
Protected	27.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	80	0.95	84	L	84	2	1.000	1.000	84	1.00	0.00
	TH	167	0.95	176	T	176	2	1.000	1.000	176	0.00	0.00
	RT	323	0.95	340	R	340	1	1.000	1.000	340	0.00	1.00
WB												
	LT	155	0.95	163	L	163	2	1.000	1.000	163	1.00	0.00
	TH	139	0.95	146	T	146	2	1.000	1.000	146	0.00	0.00
	RT	46	0.95	48	R	48	1	1.000	1.000	48	0.00	1.00
NB												
	LT	264	0.95	278	L	278	2	1.000	1.000	278	1.00	0.00
	TH	23	0.95	24	TR	158	2	1.000	1.000	158	0.00	0.85
	RT	127	0.95	134								
SB												
	LT	56	0.95	59	L	59	2	1.000	1.000	59	1.00	0.00
	TH	28	0.95	29	TR	132	2	1.000	1.000	132	0.00	0.78
	RT	97	0.95	102								

* Denotes a Defacto Left Turn Lane Group

	IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB											
L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
WB											
L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB											
L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
TR	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.873	1.000	3111
SB											
L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
TR	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.884	1.000	3149

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	84	3279	0.026	0.200	656	0.128	
T	176	3564	0.049	0.267	950	0.185	
R	340	1515	0.224	0.475	719	0.473	*
WB							
L	163	3279	0.050	0.200	656	0.249	*
T	146	3564	0.041	0.267	950	0.154	
R	48	1515	0.032	0.408	619	0.078	
NB							
L	278	3279	0.085	0.208	683	0.407	*
TR	158	3111	0.051	0.292	907	0.174	
SB							
L	59	3279	0.018	0.142	465	0.127	
TR	132	3149	0.042	0.225	709	0.186	*

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.401
Lost Time Per Cycle, L = 12.0 sec. X critical = 0.445

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.128	0.200	120.0	30.0	656	0.0	1.00	30.0	D	18.6	C
T	0.185	0.267	120.0	25.8	950	0.0	0.85	21.9	C		
R	0.473	0.475	120.0	16.2	719	0.4	0.85	14.1	B		
WB											
L	0.249	0.200	120.0	30.7	656	0.0	1.00	30.8	D	24.8	C
T	0.154	0.267	120.0	25.6	950	0.0	0.85	21.7	C		
R	0.078	0.408	120.0	16.5	619	0.0	0.85	14.0	B		
NB											
L	0.407	0.208	120.0	31.2	683	0.2	1.00	31.5	D	27.5	D
TR	0.174	0.292	120.0	24.1	907	0.0	0.85	20.5	C		
SB											
L	0.127	0.142	120.0	34.2	465	0.0	1.00	34.2	D	27.4	D
TR	0.186	0.225	120.0	28.6	709	0.0	0.85	24.3	C		

Intersection Delay = 23.5 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD. (EAST)

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR/FILE NAME-ROSEULA

DATE OF THE ANALYSIS.....10/25/89

TIME PERIOD ANALYZED.....2010 AM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY ALT.

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	194	1700	0
THRU	243	231	0	0
RIGHT	2078	0	159	0
RTOR	60	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 4 WESTBOUND = 4 NORTHBOUND = 3 SOUTHBOUND = 0

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	T	12.0	L	12.0	L	12.0		12.0
2	T	12.0	L	12.0	L	12.0		12.0
3	R	12.0	T	12.0	R	12.0		12.0
4	R	12.0	T	12.0		12.0		12.0
5								
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT Y/N	PKG (Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	14.3	3
WESTBOUND	50	N	14.3	3
NORTHBOUND	50	N	31.8	3
SOUTHBOUND	50	N	31.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT				

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
SOUTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
EASTBOUND RT	X			
WESTBOUND RT				

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	26.00
RIGHT	
Permitted	0.00
Protected	96.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	15.00
THRU	41.00
RIGHT	
Permitted	0.00
Protected	0.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	70.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	85.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	0	0.95	0								
	TH	243	0.95	256	T	256	2	1.000	1.000	256	0.00	0.00
	RT	2078	0.95	2124	R	2124	2	1.000	1.000	2124	0.00	1.00
WB												
	LT	194	0.95	204	L	204	2	1.000	1.000	204	1.00	0.00
	TH	231	0.95	243	T	243	2	1.000	1.000	243	0.00	0.00
	RT	0	0.95	0								
NB												
	LT	1700	0.95	1789	L	1789	2	1.000	1.000	1789	1.00	0.00
	TH	0	0.95	0								
	RT	159	0.95	167	R	167	1	1.000	1.000	167	0.00	1.00
SB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
T	256	3564	0.072	0.217	772	0.331	*
R	2124	2673	0.795	0.800	2138	0.993	
WB							
L	204	3279	0.062	0.125	410	0.498	*
T	243	3564	0.068	0.342	1218	0.200	
NB							
L	1789	3279	0.546	0.583	1913	0.936	*
R	167	1515	0.110	0.708	1073	0.156	
SB							

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.680
Lost Time Per Cycle, L = 9.0 sec. X critical = 0.735

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
T	0.331	0.217	120.0	30.1	772	0.1	0.85	25.7	D	19.9	C
R	0.993	0.800	120.0	8.9	2138	13.6	0.85	19.1	C		
WB											
L	0.498	0.125	120.0	37.2	410	0.8	1.00	38.0	D	27.2	D
T	0.200	0.342	120.0	21.2	1218	0.0	0.85	18.0	C		
NB											
L	0.936	0.583	120.0	17.4	1913	6.8	1.00	24.2	C	22.5	C
R	0.156	0.708	120.0	4.4	1073	0.0	0.85	3.7	A		
SB											

Intersection Delay = 21.6 (sec/veh) Intersection LOS = C

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IDENTIFYING INFORMATION

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NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR/FILE NAME-49XULA2

DATE OF THE ANALYSIS.....11/18/89

TIME PERIOD ANALYZED.....2010 AM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY ALT.(FLYOVER ALT.)

TRAFFIC VOLUMES

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	EB	WB	NB	SB
LEFT	494	425	610	1318
THRU	343	289	1192	1371
RIGHT	713	1078	347	605
RTOR	0	60	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 6 WESTBOUND = 6 NORTHBOUND = 6 SOUTHBOUND = 6

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	T	12.0	T	12.0
5	R	12.0	R	12.0	T	12.0	T	12.0
6	R	12.0	R	12.0	R	12.0	R	12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	32.5	3
WESTBOUND	50	N	32.5	3
NORTHBOUND	50	N	38.5	3
SOUTHBOUND	50	N	38.5	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 6.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
WESTBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X	X		

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
SOUTHBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
EASTBOUND RT	X			
WESTBOUND RT	X	X		

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	22.70
THRU	13.90
RIGHT	
Permitted	0.00
Protected	51.70
WESTBOUND	
LEFT	
Permitted	0.00
Protected	20.70
THRU	11.90
RIGHT	
Permitted	0.00
Protected	71.50
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	29.00
THRU	28.60
RIGHT	
Permitted	0.00
Protected	40.50
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	50.80
THRU	50.40
RIGHT	
Permitted	0.00
Protected	64.30

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	494	0.95	520	L	520	2	1.000	1.000	520	1.00	0.00
	TH	343	0.95	361	T	361	2	1.000	1.000	361	0.00	0.00
	RT	713	0.95	751	R	751	2	1.000	1.000	751	0.00	1.00
WB												
	LT	425	0.95	447	L	447	2	1.000	1.000	447	1.00	0.00
	TH	289	0.95	304	T	304	2	1.000	1.000	304	0.00	0.00
	RT	1078	0.95	1072	R	1072	2	1.000	1.000	1072	0.00	1.00
NB												
	LT	610	0.95	642	L	642	2	1.000	1.000	642	1.00	0.00
	TH	1192	0.95	1255	T	1255	3	1.000	1.000	1255	0.00	0.00
	RT	347	0.95	365	R	365	1	1.000	1.000	365	0.00	1.00
SB												
	LT	1318	0.95	1387	L	1387	2	1.000	1.000	1387	1.00	0.00
	TH	1371	0.95	1443	T	1443	3	1.000	1.000	1443	0.00	0.00
	RT	605	0.95	637	R	637	1	1.000	1.000	637	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	520	3279	0.159	0.189	620	0.838	*
T	361	3564	0.101	0.116	413	0.875	
R	751	2673	0.281	0.431	1152	0.652	
WB							
L	447	3279	0.136	0.172	566	0.791	
T	304	3564	0.085	0.099	353	0.861	*
R	1072	2673	0.401	0.596	1593	0.673	
NB							
L	642	3279	0.196	0.242	792	0.810	
T	1255	5346	0.235	0.238	1274	0.985	*
R	365	1515	0.241	0.338	511	0.715	
SB							
L	1387	3279	0.423	0.423	1388	1.000	*
T	1443	5346	0.270	0.420	2245	0.643	
R	637	1515	0.420	0.536	812	0.785	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.902
Lost Time Per Cycle, L = 6.0 sec. X critical = 0.949

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.838	0.189	120.0	35.6	620	6.9	1.00	42.5	E	31.8	D
T	0.875	0.116	120.0	39.7	413	12.9	0.85	44.7	E		
R	0.652	0.431	120.0	20.5	1152	0.9	0.85	18.3	C		
WB											
L	0.791	0.172	120.0	36.2	566	5.2	1.00	41.4	E	24.4	C
T	0.861	0.099	120.0	40.5	353	13.1	0.85	45.5	E		
R	0.673	0.596	120.0	12.4	1593	0.8	0.85	11.2	B		
NB											
L	0.810	0.242	120.0	32.6	792	4.4	1.00	37.1	D	38.6	D
T	0.985	0.238	120.0	34.6	1274	16.3	0.85	43.2	E		
R	0.715	0.338	120.0	26.4	511	3.2	0.85	25.2	D		
SB											
L	1.000	0.423	120.0	26.3	1388	18.5	1.00	44.8	E	28.7	D
T	0.643	0.420	120.0	21.0	2245	0.5	0.85	18.2	C		
R	0.785	0.536	120.0	17.0	812	3.6	0.85	17.4	C		

Intersection Delay = 30.8 (sec/veh) Intersection LOS = D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD. (WEST)

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR/FILE NAM3-ROSULA2

DATE OF THE ANALYSIS.....11/18/89

TIME PERIOD ANALYZED.....2010 AM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY ALT. (FLYOVER ALT.)

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	180	0	0	1135
THRU	363	305	0	0
RIGHT	0	928	0	220
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 3 WESTBOUND = 5 NORTHBOUND = 0 SOUTHBOUND = 3

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	T	12.0		12.0	L	12.0
2	T	12.0	T	12.0		12.0	L	12.0
3	T	12.0	T	12.0		12.0	R	12.0
4		12.0	R	12.0		12.0		12.0
5		12.0	R	12.0		12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	14.3	3
WESTBOUND	50	N	14.3	3
NORTHBOUND	50	N	34.8	3
SOUTHBOUND	50	N	34.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
WESTBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
SOUTHBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
EASTBOUND RT				
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	29.00
THRU	56.00
RIGHT	
Permitted	0.00
Protected	0.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	27.00
RIGHT	
Permitted	0.00
Protected	82.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	55.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	84.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	180	0.95	189	L	189	1	1.000	1.000	189	1.00	0.00
	TH	363	0.95	382	T	382	2	1.000	1.000	382	0.00	0.00
	RT	0	0.95	0								
WB												
	LT	0	0.95	0								
	TH	305	0.95	321	T	321	3	1.000	1.000	321	0.00	0.00
	RT	928	0.95	977	R	977	2	1.000	1.000	977	0.00	1.00
NB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								
SB												
	LT	1135	0.95	1195	L	1195	2	1.000	1.000	1195	1.00	0.00
	TH	0	0.95	0								
	RT	220	0.95	232	R	232	1	1.000	1.000	232	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
WB												
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	189	1693	0.112	0.242	409	0.463	*
T	382	3564	0.107	0.467	1663	0.230	
WB							
T	321	5346	0.060	0.225	1203	0.267	*
R	977	2673	0.365	0.683	1827	0.535	
NB							
SB							
L	1195	3279	0.364	0.458	1503	0.795	*
R	232	1515	0.153	0.700	1060	0.218	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.536
Lost Time Per Cycle, L = 9.0 sec. X critical = 0.580

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.463	0.242	120.0	29.5	409	0.6	1.00	30.1	D	18.3	C
T	0.230	0.467	120.0	14.5	1663	0.0	0.85	12.4	B		
WB											
T	0.267	0.225	120.0	29.1	1203	0.0	0.85	24.8	C	10.9	B
R	0.535	0.683	120.0	7.2	1827	0.2	0.85	6.3	B		
NB											
SB											
L	0.795	0.458	120.0	21.0	1503	2.2	1.00	23.2	C	20.1	C
R	0.218	0.700	120.0	4.8	1060	0.0	0.85	4.1	A		

Intersection Delay = 16.2 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....34TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR FILE:34ULA2B

DATE OF THE ANALYSIS.....11/30/89

TIME PERIOD ANALYZED.....2010 AM PEAK

OTHER INFORMATION:
49TH ST. EXPWAY. ALT. (FLYOVER ALT.)

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	80	155	264	56
THRU	104	80	23	28
RIGHT	323	46	127	97
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 5 WESTBOUND = 5 NORTHBOUND = 4 SOUTHBOUND = 4

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	TR	12.0	TR	12.0
5	R	12.0	R	12.0		12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT Y/N	PKG (Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	31.8	3
WESTBOUND	50	N	31.8	3
NORTHBOUND	50	N	31.8	3
SOUTHBOUND	50	N	31.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 12.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
SOUTHBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
EASTBOUND RT	X	X		
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	32.00
RIGHT	
Permitted	0.00
Protected	57.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	32.00
RIGHT	
Permitted	0.00
Protected	49.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	25.00
THRU	35.00
RIGHT	
Permitted	0.00
Protected	35.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	17.00
THRU	27.00
RIGHT	
Permitted	0.00
Protected	27.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	80	0.95	84	L	84	2	1.000	1.000	84	1.00	0.00
	TH	104	0.95	109	T	109	2	1.000	1.000	109	0.00	0.00
	RT	323	0.95	340	R	340	1	1.000	1.000	340	0.00	1.00
WB												
	LT	155	0.95	163	L	163	2	1.000	1.000	163	1.00	0.00
	TH	80	0.95	84	T	84	2	1.000	1.000	84	0.00	0.00
	RT	46	0.95	48	R	48	1	1.000	1.000	48	0.00	1.00
NB												
	LT	264	0.95	278	L	278	2	1.000	1.000	278	1.00	0.00
	TH	23	0.95	24	TR	158	2	1.000	1.000	158	0.00	0.85
	RT	127	0.95	134								
SB												
	LT	56	0.95	59	L	59	2	1.000	1.000	59	1.00	0.00
	TH	28	0.95	29	TR	132	2	1.000	1.000	132	0.00	0.78
	RT	97	0.95	102								

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	TR	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.873	1.000	3111
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	TR	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.884	1.000	3149

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	84	3279	0.026	0.200	656	0.128	
T	109	3564	0.031	0.267	950	0.115	
R	340	1515	0.224	0.475	719	0.473	*
WB							
L	163	3279	0.050	0.200	656	0.249	*
T	84	3564	0.024	0.267	950	0.089	
R	48	1515	0.032	0.408	619	0.078	
NB							
L	278	3279	0.085	0.208	683	0.407	*
TR	158	3111	0.051	0.292	907	0.174	
SB							
L	59	3279	0.018	0.142	465	0.127	
TR	132	3149	0.042	0.225	709	0.186	*

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.401
Lost Time Per Cycle, L = 12.0 sec. X critical = 0.445

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.128	0.200	120.0	30.0	656	0.0	1.00	30.0	D	18.1	C
T	0.115	0.267	120.0	25.3	950	0.0	0.85	21.5	C		
R	0.473	0.475	120.0	16.2	719	0.4	0.85	14.1	B		
WB											
L	0.249	0.200	120.0	30.7	656	0.0	1.00	30.8	D	25.3	D
T	0.089	0.267	120.0	25.1	950	0.0	0.85	21.3	C		
R	0.078	0.408	120.0	16.5	619	0.0	0.85	14.0	B		
NB											
L	0.407	0.208	120.0	31.2	683	0.2	1.00	31.5	D	27.5	D
TR	0.174	0.292	120.0	24.1	907	0.0	0.85	20.5	C		
SB											
L	0.127	0.142	120.0	34.2	465	0.0	1.00	34.2	D	27.4	D
TR	0.186	0.225	120.0	28.6	709	0.0	0.85	24.3	C		

Intersection Delay = 23.6 (sec/veh) Intersection LOS = C

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IDENTIFYING INFORMATION

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NAME OF THE EAST/WEST STREET.....ROOSEVELT BLVD.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA/FILE NAME-49XROSP

DATE OF THE ANALYSIS.....8/25/89

TIME PERIOD ANALYZED.....2010 PM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY. ALT.

TRAFFIC VOLUMES

==========

	EB	WB	NB	SB
LEFT	110	90	612	90
THRU	798	1020	367	235
RIGHT	500	110	110	90
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 4 WESTBOUND = 4 NORTHBOUND = 5 SOUTHBOUND = 4

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	T	12.0	T	12.0	L	12.0	T	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	R	12.0	R	12.0	T	12.0	R	12.0
5		12.0		12.0	R	12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/h

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	31.8	3
WESTBOUND	50	N	31.8	3
NORTHBOUND	50	N	31.8	3
SOUTHBOUND	50	N	31.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 12.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X	X		
THRU		X		
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X	X		
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X	X	X	
THRU		X	X	
RIGHT		X	X	
PEDS				
SOUTHBOUND				
LEFT	X		X	
THRU			X	
RIGHT			X	
PEDS				
EASTBOUND RT	X	X		
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	41.00
Protected	10.00
THRU	41.00
RIGHT	
Permitted	0.00
Protected	68.00
WESTBOUND	
LEFT	
Permitted	41.00
Protected	10.00
THRU	41.00
RIGHT	
Permitted	0.00
Protected	51.00
NORTHBOUND	
LEFT	
Permitted	30.00
Protected	27.00
THRU	47.00
RIGHT	
Permitted	0.00
Protected	47.00
SOUTHBOUND	
LEFT	
Permitted	30.00
Protected	10.00
THRU	30.00
RIGHT	
Permitted	0.00
Protected	30.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	110	0.95	116	L	116	1	1.000	1.000	116	1.00	0.00
	TH	798	0.95	840	T	840	2	1.000	1.000	840	0.00	0.00
	RT	500	0.95	526	R	526	1	1.000	1.000	526	0.00	1.00
WB												
	LT	90	0.95	95	L	95	1	1.000	1.000	95	1.00	0.00
	TH	1020	0.95	1074	T	1074	2	1.000	1.000	1074	0.00	0.00
	RT	110	0.95	116	R	116	1	1.000	1.000	116	0.00	1.00
NB												
	LT	612	0.95	644	L	644	2	1.000	1.000	644	1.00	0.00
	TH	367	0.95	386	T	386	2	1.000	1.000	386	0.00	0.00
	RT	110	0.95	116	R	116	1	1.000	1.000	116	0.00	1.00
SB												
	LT	90	0.95	95	L	95	1	1.000	1.000	95	1.00	0.00
	TH	235	0.95	247	T	247	2	1.000	1.000	247	0.00	0.00
	RT	90	0.95	95	R	95	1	1.000	1.000	95	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ SAT FLOW
EB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	169
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	151
WB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	169
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	356
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	151
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	327
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	151
SB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	169
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	356
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	151

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
Lperm.	106						
Lprot.	10	1693	0.006	0.108	141	0.071	
T	840	3564	0.236 *	0.342	1218	0.690	
R	526	1515	0.347	0.567	858	0.613	*
WB							
Lperm.	85						
Lprot.	10	1693	0.006 *	0.108	141	0.071	*
T	1074	3564	0.301	0.342	1218	0.882	
R	116	1515	0.076	0.425	644	0.180	
NB							
Lperm.	288						
Lprot.	356	3279	0.109 *	0.250	738	0.483	*
T	386	3564	0.108	0.392	1396	0.277	
R	116	1515	0.076	0.392	593	0.195	
SB							
Lperm.	85						
Lprot.	10	1693	0.006	0.083	141	0.071	
T	247	3564	0.069 *	0.250	891	0.278	*
R	95	1515	0.063	0.250	379	0.250	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.531~~ 0.420
Lost Time Per Cycle, L = 12.0 sec. X critical = ~~0.590~~ 0.467

LEVEL-OF-SERVICE WORKSHEET

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.071	0.425	120.0	15.5	141	0.0	1.00	15.5	C	18.5	C
T	0.690	0.342	120.0	25.9	1218	1.2	0.85	23.0	C		
R	0.613	0.567	120.0	13.1	858	0.9	0.85	12.0	B		
WB											
L	0.071	0.425	120.0	15.5	141	0.0	1.00	15.5	C	26.5	D
T	0.882	0.342	120.0	28.3	1218	5.6	0.85	28.8	D		
R	0.180	0.425	120.0	16.3	644	0.0	0.85	13.9	B		
NB											
L	0.483	0.475	120.0	16.3	738	0.4	1.00	16.7	C	16.4	C
T	0.277	0.392	120.0	18.9	1396	0.0	0.85	16.1	C		
R	0.195	0.392	120.0	18.3	593	0.0	0.85	15.5	C		
SB											
L	0.071	0.333	120.0	20.8	141	0.0	1.00	20.8	C	22.8	C
T	0.278	0.250	120.0	27.6	891	0.0	0.85	23.5	C		
R	0.250	0.250	120.0	27.4	379	0.1	0.85	23.3	C		

Intersection Delay = 20.7 (sec/veh) Intersection LOS = C

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IDENTIFYING INFORMATION

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NAME OF THE EAST/WEST STREET.....AIRPORT ENTRANCE

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA/FILE NAME-49XAIRP

DATE OF THE ANALYSIS.....8/25/89

TIME PERIOD ANALYZED.....2010 PM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY. ALT.

TRAFFIC VOLUMES

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	EB	WB	NB	SB
LEFT	0	381	0	271
THRU	0	0	889	727
RIGHT	0	331	466	0
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 0 WESTBOUND = 3 NORTHBOUND = 3 SOUTHBOUND = 3

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1		12.0	L	12.0	T	12.0	L	12.0
2		12.0	L	12.0	T	12.0	T	12.0
3		12.0	R	12.0	R	12.0	T	12.0
4								
5								
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	25.8	3
WESTBOUND	50	N	25.8	3
NORTHBOUND	50	N	14.3	3
SOUTHBOUND	50	N	14.3	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
WESTBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT				

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
EASTBOUND RT				
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	29.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	69.50
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	41.50
RIGHT	
Permitted	0.00
Protected	70.50
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	40.50
THRU	82.00
RIGHT	
Permitted	0.00
Protected	0.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								
WB												
	LT	381	0.95	401	L	401	2	1.050	1.000	421	1.00	0.00
	TH	0	0.95	0								
	RT	331	0.95	348	R	348	1	1.000	1.000	348	0.00	1.00
NB												
	LT	0	0.95	0								
	TH	889	0.95	936	T	936	2	1.050	1.000	983	0.00	0.00
	RT	466	0.95	491	R	491	1	1.000	1.000	491	0.00	1.00
SB												
	LT	271	0.95	285	L	285	1	1.000	1.000	285	1.00	0.00
	TH	727	0.95	765	T	765	2	1.050	1.000	804	0.00	0.00
	RT	0	0.95	0								

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
WB							
L	421	3279	0.128	0.242	792	0.531	
R	348	1515	0.230	0.579	877	0.397	*
NB							
T	983	3564	0.276	0.346	1233	0.797	*
R	491	1515	0.324	0.587	890	0.551	
SB							
L	285	1693	0.169	0.338	571	0.499	*
T	804	3564	0.225	0.683	2435	0.330	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.674~~ 0.573
Lost Time Per Cycle, L = 9.0 sec. X critical = ~~0.729~~ 0.619

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
WB											
L	0.531	0.242	120.0	30.1	792	0.6	1.00	30.6	D	20.9	C
R	0.397	0.579	120.0	10.5	877	0.2	0.85	9.1	B		
NB											
T	0.797	0.346	120.0	26.9	1233	2.6	0.85	25.2	D	20.2	C
R	0.551	0.587	120.0	11.5	890	0.6	0.85	10.2	B		
SB											
L	0.499	0.338	120.0	24.1	571	0.6	1.00	24.7	C	10.2	B
T	0.330	0.683	120.0	5.9	2435	0.0	0.85	5.0	B		

Intersection Delay = 17.1 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR/FILE NAME-49XULP1

DATE OF THE ANALYSIS.....10/25/89

TIME PERIOD ANALYZED.....2010 PM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY. ALT. (ELVT. FR. RD. ALT.)

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	605	347	1775	1078
THRU	0	0	1371	1192
RIGHT	1452	1318	425	494
RTOR	100	100	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 4 WESTBOUND = 4 NORTHBOUND = 6 SOUTHBOUND = 6

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	R	12.0	R	12.0	T	12.0	T	12.0
4	R	12.0	R	12.0	T	12.0	T	12.0
5		12.0		12.0	T	12.0	T	12.0
6		12.0		12.0	R	12.0	R	12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	37.8	3
WESTBOUND	50	N	37.8	3
NORTHBOUND	50	N	31.8	3
SOUTHBOUND	50	N	31.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU				
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU				
RIGHT		X		
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
SOUTHBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
EASTBOUND RT	X	X		
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	63.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	48.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	57.00
THRU	39.00
RIGHT	
Permitted	0.00
Protected	69.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	42.00
THRU	24.00
RIGHT	
Permitted	0.00
Protected	54.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	605	0.95	637	L	637	2	1.000	1.000	637	1.00	0.00
	TH	0	0.95	0								
	RT	1452	0.95	1423	R	1423	2	1.000	1.000	1423	0.00	1.00
WB												
	LT	347	0.95	365	L	365	2	1.000	1.000	365	1.00	0.00
	TH	0	0.95	0								
	RT	1318	0.95	1282	R	1282	2	1.000	1.000	1282	0.00	1.00
NB												
	LT	1775	0.95	1868	L	1868	2	1.000	1.000	1868	1.00	0.00
	TH	1371	0.95	1443	T	1443	3	1.000	1.000	1443	0.00	0.00
	RT	425	0.95	447	R	447	1	1.000	1.000	447	0.00	1.00
SB												
	LT	1078	0.95	1135	L	1135	2	1.000	1.000	1135	1.00	0.00
	TH	1192	0.95	1255	T	1255	3	1.000	1.000	1255	0.00	0.00
	RT	494	0.95	520	R	520	1	1.000	1.000	520	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	637	3279	0.194	0.200	656	0.971	*
R	1423	2673	0.533	0.525	1403	1.014	*
WB							
L	365	3279	0.111	0.200	656	0.557	
R	1282	2673	0.480 ~~0.346~~ 0.134 *	0.400	1069	1.199	
NB							
L	1868	3279	0.570 *	0.475	1557	1.200	*
T	1443	5346	0.270	0.325	1737	0.831	
R	447	1515	0.295	0.575	871	0.514	
SB							
L	1135	3279	0.346	0.350	1148	0.989	
T	1255	5346	0.235 *	0.200	1069	1.174	*
R	520	1515	0.343	0.450	682	0.763	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~1.531~~ 1.133

Lost Time Per Cycle, L = 9.0 sec. X critical = ~~1.655~~ 1.225

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.971	0.200	120.0	36.2	656	20.8	1.00	57.1	E	43.4	E
R	1.014	0.525	120.0	22.0	1403	21.9	0.85	37.3	D		
WB											
L	0.557	0.200	120.0	32.8	656	0.8	1.00	33.7	D	100.7	F
R	1.199	0.400	120.0	31.6	1069	109.4	0.85	119.8	F		
NB											
L	1.200	0.475	120.0	29.2	1557	106.6	1.00	135.8	F	78.8	F
T	0.831	0.325	120.0	28.5	1737	2.5	0.85	26.3	D		
R	0.514	0.575	120.0	11.7	871	0.4	0.85	10.3	B		
SB											
L	0.989	0.350	120.0	29.5	1148	18.1	1.00	47.5	E	70.5	F
T	1.174	0.200	120.0	38.1	1069	93.4	0.85	111.8	F		
R	0.763	0.450	120.0	21.0	682	3.5	0.85	20.9	C		

Intersection Delay = 72.9 (sec/veh) Intersection LOS = F

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....118TH AVE.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA/FILE NAME-49X118P

DATE OF THE ANALYSIS.....8/25/89

TIME PERIOD ANALYZED.....2010 PM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY ALT.

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	747	254	157	119
THRU	886	1083	1434	1172
RIGHT	129	110	311	611
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 6 WESTBOUND = 6 NORTHBOUND = 5 SOUTHBOUND = 5

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	T	12.0	T	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	T	12.0	T	12.0
5	T	12.0	T	12.0	R	12.0	R	12.0
6	R	12.0	R	12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT Y/N	PKG (Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	37.8	3
WESTBOUND	50	N	37.8	3
NORTHBOUND	50	N	43.8	3
SOUTHBOUND	50	N	43.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 12.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
WESTBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X	X		

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
EASTBOUND RT	X			
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	30.50
THRU	46.50
RIGHT	
Permitted	0.00
Protected	62.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	11.50
THRU	27.50
RIGHT	
Permitted	0.00
Protected	43.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	15.50
THRU	34.50
RIGHT	
Permitted	0.00
Protected	46.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	15.50
THRU	34.50
RIGHT	
Permitted	0.00
Protected	65.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	747	0.95	786	L	786	2	1.000	1.000	786	1.00	0.00
	TH	886	0.95	933	T	933	3	1.000	1.000	933	0.00	0.00
	RT	129	0.95	136	R	136	1	1.000	1.000	136	0.00	1.00
WB												
	LT	254	0.95	267	L	267	2	1.000	1.000	267	1.00	0.00
	TH	1083	0.95	1140	T	1140	3	1.000	1.000	1140	0.00	0.00
	RT	110	0.95	116	R	116	1	1.000	1.000	116	0.00	1.00
NB												
	LT	157	0.95	165	L	165	1	1.000	1.000	165	1.00	0.00
	TH	1434	0.95	1509	T	1509	3	1.000	1.000	1509	0.00	0.00
	RT	311	0.95	327	R	327	1	1.000	1.000	327	0.00	1.00
SB												
	LT	119	0.95	125	L	125	1	1.000	1.000	125	1.00	0.00
	TH	1172	0.95	1234	T	1234	3	1.000	1.000	1234	0.00	0.00
	RT	611	0.95	643	R	643	1	1.000	1.000	643	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f P	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	786	3279	0.240	0.254	833	0.944	*
T	933	5346	0.174	0.387	2072	0.450	
R	136	1515	0.090	0.517	783	0.174	
WB							
L	267	3279	0.082	0.096	314	0.851	
T	1140	5346	0.213	0.229	1225	0.931	*
R	116	1515	0.076	0.358	543	0.213	
NB							
L	165	1693	0.098	0.129	219	0.756	*
T	1509	5346	0.282	0.287	1537	0.982	
R	327	1515	0.216	0.383	581	0.564	
SB							
L	125	1693	0.074	0.129	219	0.573	
T	1234	5346	0.231	0.287	1537	0.803	
R	643	1515	0.425	0.542	820	0.784	*

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.975~~ 0,782

Lost Time Per Cycle, L = 12.0 sec. X critical = ~~1.084~~ 0,869

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.944	0.254	120.0	33.4	833	13.8	1.00	47.1	E	29.6	D
T	0.450	0.387	120.0	20.7	2072	0.1	0.85	17.7	C		
R	0.174	0.517	120.0	11.7	783	0.0	0.85	10.0	B		
WB											
L	0.851	0.096	120.0	40.6	314	13.4	1.00	54.0	E	38.5	D
T	0.931	0.229	120.0	34.4	1225	9.1	0.85	37.0	D		
R	0.213	0.358	120.0	20.3	543	0.0	0.85	17.3	C		
NB											
L	0.756	0.129	120.0	38.3	219	9.4	1.00	47.7	E	36.9	D
T	0.982	0.287	120.0	32.3	1537	14.1	0.85	39.4	D		
R	0.564	0.383	120.0	22.1	581	1.0	0.85	19.6	C		
SB											
L	0.573	0.129	120.0	37.3	219	2.6	1.00	40.0	D	24.9	C
T	0.803	0.287	120.0	30.1	1537	2.2	0.85	27.5	D		
R	0.784	0.542	120.0	16.6	820	3.5	0.85	17.1	C		

Intersection Delay = 32.2 (sec/veh) Intersection LOS = D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD. (WEST)

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR/FILE NAME-ROSULP1

DATE OF THE ANALYSIS.....10/25/89

TIME PERIOD ANALYZED.....2010 PM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY ALT. (ELVT. FR. RD. ALT.)

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	220	0	0	928
THRU	1572	1828	0	0
RIGHT	0	1135	0	180
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 4 WESTBOUND = 5 NORTHBOUND = 0 SOUTHBOUND = 3

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	T	12.0		12.0	L	12.0
2	T	12.0	T	12.0		12.0	L	12.0
3	T	12.0	T	12.0		12.0	R	12.0
4	T	12.0	R	12.0		12.0		12.0
5		12.0	R	12.0		12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	14.3	3
WESTBOUND	50	N	14.3	3
NORTHBOUND	50	N	34.8	3
SOUTHBOUND	50	N	34.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
WESTBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
SOUTHBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
EASTBOUND RT				
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	71.00
RIGHT	
Permitted	0.00
Protected	0.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	47.00
RIGHT	
Permitted	0.00
Protected	87.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	40.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	64.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	220	0.95	232	L	232	1	1.000	1.000	232	1.00	0.00
	TH	1572	0.95	1655	T	1655	3	1.000	1.000	1655	0.00	0.00
	RT	0	0.95	0								
WB												
	LT	0	0.95	0								
	TH	1828	0.95	1924	T	1924	3	1.000	1.000	1924	0.00	0.00
	RT	1135	0.95	1195	R	1195	2	1.000	1.000	1195	0.00	1.00
NB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								
SB												
	LT	928	0.95	977	L	977	2	1.000	1.000	977	1.00	0.00
	TH	0	0.95	0								
	RT	180	0.95	189	R	189	1	1.000	1.000	189	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
WB												
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	232	1693	0.137	0.200	339	0.684	*
T	1655	5346	0.310	0.592	3163	0.523	
WB							
T	1924	5346	0.360	0.392	2094	0.919	*
R	1195	2673	0.447	0.725	1938	0.617	
NB							
SB							
L	977	3279	0.298	0.333	1093	0.894	*
R	189	1515	0.125	0.533	808	0.235	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.795
Lost Time Per Cycle, L = 9.0 sec. X critical = 0.859

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.684	0.200	120.0	33.8	339	3.8	1.00	37.7	D	12.9	B
T	0.523	0.592	120.0	11.0	3163	0.1	0.85	9.5	B		
WB											
T	0.919	0.392	120.0	26.4	2094	5.2	0.85	26.8	D	18.7	C
R	0.617	0.725	120.0	6.2	1938	0.4	0.85	5.7	B		
NB											
SB											
L	0.894	0.333	120.0	28.9	1093	6.9	1.00	35.8	D	31.5	D
R	0.235	0.533	120.0	11.4	808	0.0	0.85	9.7	B		

Intersection Delay = 19.4 (sec/veh) Intersection LOS = C

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IDENTIFYING INFORMATION

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NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....34TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR/FILE NAME-34ULP1

DATE OF THE ANALYSIS.....10/25/89

TIME PERIOD ANALYZED.....2010 PM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY ALT.(ELVT. FR. RD. ALT.)

TRAFFIC VOLUMES

==========

	EB	WB	NB	SB
LEFT	97	127	323	46
THRU	139	167	28	23
RIGHT	264	56	155	80
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 5 WESTBOUND = 5 NORTHBOUND = 4 SOUTHBOUND = 4

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	TR	12.0	TR	12.0
5	R	12.0	R	12.0		12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	BUSES (Nm)	(Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	25.8	3
WESTBOUND	50	N	25.8	3
NORTHBOUND	50	N	25.8	3
SOUTHBOUND	50	N	25.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 12.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
SOUTHBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
EASTBOUND RT	X	X		
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	32.00
RIGHT	
Permitted	0.00
Protected	57.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	32.00
RIGHT	
Permitted	0.00
Protected	49.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	25.00
THRU	35.00
RIGHT	
Permitted	0.00
Protected	35.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	17.00
THRU	27.00
RIGHT	
Permitted	0.00
Protected	27.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	97	0.95	102	L	102	2	1.000	1.000	102	1.00	0.00
	TH	139	0.95	146	T	146	2	1.000	1.000	146	0.00	0.00
	RT	264	0.95	278	R	278	1	1.000	1.000	278	0.00	1.00
WB												
	LT	127	0.95	134	L	134	2	1.000	1.000	134	1.00	0.00
	TH	167	0.95	176	T	176	2	1.000	1.000	176	0.00	0.00
	RT	56	0.95	59	R	59	1	1.000	1.000	59	0.00	1.00
NB												
	LT	323	0.95	340	L	340	2	1.000	1.000	340	1.00	0.00
	TH	28	0.95	29	TR	193	2	1.000	1.000	193	0.00	0.85
	RT	155	0.95	163								
SB												
	LT	46	0.95	48	L	48	2	1.000	1.000	48	1.00	0.00
	TH	23	0.95	24	TR	108	2	1.000	1.000	108	0.00	0.78
	RT	80	0.95	84								

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	TR	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.873	1.000	3111
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	TR	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.883	1.000	3149

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	102	3279	0.031	0.200	656	0.156	
T	146	3564	0.041	0.267	950	0.154	
R	278	1515	0.183	0.475	719	0.386	*
WB							
L	134	3279	0.041	0.200	656	0.204	*
T	176	3564	0.049	0.267	950	0.185	
R	59	1515	0.039	0.408	619	0.095	
NB							
L	340	3279	0.104	0.208	683	0.498	*
TR	193	3111	0.062	0.292	907	0.212	
SB							
L	48	3279	0.015	0.142	465	0.104	
TR	108	3149	0.034	0.225	708	0.153	*

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.362
Lost Time Per Cycle, L = 12.0 sec. X critical = 0.403

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.156	0.200	120.0	30.1	656	0.0	1.00	30.1	D	18.9	C
T	0.154	0.267	120.0	25.6	950	0.0	0.85	21.7	C		
R	0.386	0.475	120.0	15.4	719	0.2	0.85	13.2	B		
WB											
L	0.204	0.200	120.0	30.4	656	0.0	1.00	30.4	D	23.8	C
T	0.185	0.267	120.0	25.8	950	0.0	0.85	21.9	C		
R	0.095	0.408	120.0	16.6	619	0.0	0.85	14.1	B		
NB											
L	0.498	0.208	120.0	31.9	683	0.5	1.00	32.4	D	28.2	D
TR	0.212	0.292	120.0	24.4	907	0.0	0.85	20.7	C		
SB											
L	0.104	0.142	120.0	34.1	465	0.0	1.00	34.1	D	27.2	D
TR	0.153	0.225	120.0	28.4	708	0.0	0.85	24.1	C		

Intersection Delay = 24.0 (sec/veh) Intersection LOS = C

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IDENTIFYING INFORMATION

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NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD. (EAST)

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR/FILE NAME-ROSEULP

DATE OF THE ANALYSIS.....10/25/89

TIME PERIOD ANALYZED.....2010 PM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY ALT.

TRAFFIC VOLUMES

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	EB	WB	NB	SB
LEFT	0	159	2078	0
THRU	231	243	0	0
RIGHT	1700	0	194	0
RTOR	60	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 4 WESTBOUND = 4 NORTHBOUND = 3 SOUTHBOUND = 0

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	T	12.0	L	12.0	L	12.0		12.0
2	T	12.0	L	12.0	L	12.0		12.0
3	R	12.0	T	12.0	R	12.0		12.0
4	R	12.0	T	12.0		12.0		12.0
5								
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	14.3	3
WESTBOUND	50	N	14.3	3
NORTHBOUND	50	N	31.8	3
SOUTHBOUND	50	N	31.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT				

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
SOUTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
EASTBOUND RT	X			
WESTBOUND RT				

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	12.00
RIGHT	
Permitted	0.00
Protected	91.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	20.00
THRU	32.00
RIGHT	
Permitted	0.00
Protected	0.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	79.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	99.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00

VOLUME ADJUSTMENT WORKSHEET

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	0	0.95	0								
	TH	231	0.95	243	T	243	2	1.000	1.000	243	0.00	0.00
	RT	1700	0.95	1726	R	1726	2	1.000	1.000	1726	0.00	1.00
WB												
	LT	159	0.95	167	L	167	2	1.000	1.000	167	1.00	0.00
	TH	243	0.95	256	T	256	2	1.000	1.000	256	0.00	0.00
	RT	0	0.95	0								
NB												
	LT	2078	0.95	2187	L	2187	2	1.000	1.000	2187	1.00	0.00
	TH	0	0.95	0								
	RT	194	0.95	204	R	204	1	1.000	1.000	204	0.00	1.00
SB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
T	243	3564	0.068	0.100	356	0.682	*
R	1726	2673	0.646	0.758	2027	0.852	
WB							
L	167	3279	0.051	0.167	546	0.306	*
T	256	3564	0.072	0.267	950	0.269	
NB							
L	2187	3279	0.667	0.658	2159	1.013	*
R	204	1515	0.135	0.825	1250	0.163	
SB							

Cycle Length, C = 120.0 sec.
Lost Time Per Cycle, L = 9.0 sec.

Sum (v/s) critical = 0.786
X critical = 0.850

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
T	0.682	0.100	120.0	39.6	356	3.6	0.85	36.8	D	12.1	B
R	0.852	0.758	120.0	7.5	2027	2.7	0.85	8.7	B		
WB											
L	0.306	0.167	120.0	33.4	546	0.1	1.00	33.5	D	26.8	D
T	0.269	0.267	120.0	26.4	950	0.0	0.85	22.5	C		
NB											
L	1.013	0.658	120.0	16.0	2159	17.9	1.00	33.9	D	31.2	D
R	0.163	0.825	120.0	1.6	1250	0.0	0.85	1.4	A		
SB											

Intersection Delay = 22.9 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR/FILE NAME-49XULP2

DATE OF THE ANALYSIS.....11/18/89

TIME PERIOD ANALYZED.....2010 PM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY ALT. (FLYOVER ALT.)

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	605	347	713	1078
THRU	289	343	1371	1192
RIGHT	610	1318	425	494
RTOR	0	100	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 6 WESTBOUND = 6 NORTHBOUND = 6 SOUTHBOUND = 6

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	T	12.0	T	12.0
5	R	12.0	R	12.0	T	12.0	T	12.0
6	R	12.0	R	12.0	R	12.0	R	12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT Y/N	PKG (Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	32.5	3
WESTBOUND	50	N	32.5	3
NORTHBOUND	50	N	38.5	3
SOUTHBOUND	50	N	38.5	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
WESTBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X	X		

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT		X		
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
EASTBOUND RT		X		
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	18.00
RIGHT	
Permitted	0.00
Protected	50.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	20.00
THRU	14.00
RIGHT	
Permitted	0.00
Protected	55.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	32.00
THRU	32.00
RIGHT	
Permitted	0.00
Protected	52.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	41.00
THRU	41.00
RIGHT	
Permitted	0.00
Protected	65.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	605	0.95	637	L	637	2	1.000	1.000	637	1.00	0.00
	TH	289	0.95	304	T	304	2	1.000	1.000	304	0.00	0.00
	RT	610	0.95	642	R	642	2	1.000	1.000	642	0.00	1.00
WB												
	LT	347	0.95	365	L	365	2	1.000	1.000	365	1.00	0.00
	TH	343	0.95	361	T	361	2	1.000	1.000	361	0.00	0.00
	RT	1318	0.95	1282	R	1282	2	1.000	1.000	1282	0.00	1.00
NB												
	LT	713	0.95	751	L	751	2	1.000	1.000	751	1.00	0.00
	TH	1371	0.95	1443	T	1443	3	1.000	1.000	1443	0.00	0.00
	RT	425	0.95	447	R	447	1	1.000	1.000	447	0.00	1.00
SB												
	LT	1078	0.95	1135	L	1135	2	1.000	1.000	1135	1.00	0.00
	TH	1192	0.95	1255	T	1255	3	1.000	1.000	1255	0.00	0.00
	RT	494	0.95	520	R	520	1	1.000	1.000	520	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	637	3279	0.194	0.200	656	0.971	*
T	304	3564	0.085	0.150	535	0.569	
R	642	2673	0.240	0.417	1114	0.577	
WB							
L	365	3279	0.111	0.167	546	0.668	
T	361	3564	0.101	0.117	416	0.868	*
R	1282	2673	0.480	0.458	1225	1.047	
NB							
L	751	3279	0.229	0.267	874	0.858	
T	1443	5346	0.270	0.267	1426	1.012	
R	447	1515	0.295	0.433	656	0.682	*
SB							
L	1135	3279	0.346	0.342	1120	1.013	*
T	1255	5346	0.235	0.342	1827	0.687	
R	520	1515	0.343	0.542	820	0.634	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.937~~ 0.911
Lost Time Per Cycle, L = 9.0 sec. X critical = ~~1.013~~ 0.985

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.971	0.200	120.0	36.2	656	20.8	1.00	57.1	E	36.2	D
T	0.569	0.150	120.0	36.0	535	1.1	0.85	31.5	D		
R	0.577	0.417	120.0	20.4	1114	0.6	0.85	17.8	C		
WB											
L	0.668	0.167	120.0	35.6	546	2.2	1.00	37.8	D	46.5	E
T	0.868	0.117	120.0	39.6	416	12.2	0.85	44.0	E		
R	1.047	0.458	120.0	25.7	1225	32.7	0.85	49.7	E		
NB											
L	0.858	0.267	120.0	31.8	874	6.1	1.00	37.9	D	39.5	D
T	1.012	0.267	120.0	33.6	1426	21.2	0.85	46.6	E		
R	0.682	0.433	120.0	20.8	656	2.0	0.85	19.4	C		
SB											
L	1.013	0.342	120.0	30.2	1120	23.8	1.00	54.0	E	33.2	D
T	0.687	0.342	120.0	25.8	1827	0.8	0.85	22.6	C		
R	0.634	0.542	120.0	14.6	820	1.1	0.85	13.4	B		

Intersection Delay = 38.5 (sec/veh) Intersection LOS = D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD. (WEST)

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR/FILE NAME-ROSULP2

DATE OF THE ANALYSIS.....11/18/89

TIME PERIOD ANALYZED.....2010 PM PEAK HOUR

OTHER INFORMATION:
49TH ST. EXPWAY ALT. (FLYOVER ALT.)

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	220	0	0	928
THRU	305	363	0	0
RIGHT	0	1135	0	180
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 3 WESTBOUND = 5 NORTHBOUND = 0 SOUTHBOUND = 3

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	T	12.0		12.0	L	12.0
2	T	12.0	T	12.0		12.0	L	12.0
3	T	12.0	T	12.0		12.0	R	12.0
4		12.0	R	12.0		12.0		12.0
5		12.0	R	12.0		12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	14.3	3
WESTBOUND	50	N	14.3	3
NORTHBOUND	50	N	34.8	3
SOUTHBOUND	50	N	34.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
WESTBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
SOUTHBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
EASTBOUND RT				
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	33.00
THRU	63.00
RIGHT	
Permitted	0.00
Protected	0.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	30.00
RIGHT	
Permitted	0.00
Protected	78.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	48.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	81.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	220	0.95	232	L	232	1	1.000	1.000	232	1.00	0.00
	TH	305	0.95	321	T	321	2	1.000	1.000	321	0.00	0.00
	RT	0	0.95	0								
WB												
	LT	0	0.95	0								
	TH	363	0.95	382	T	382	3	1.000	1.000	382	0.00	0.00
	RT	1135	0.95	1195	R	1195	2	1.000	1.000	1195	0.00	1.00
NB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								
SB												
	LT	928	0.95	977	L	977	2	1.000	1.000	977	1.00	0.00
	TH	0	0.95	0								
	RT	180	0.95	189	R	189	1	1.000	1.000	189	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
WB												
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	232	1693	0.137	0.275	466	0.497	*
T	321	3564	0.090	0.525	1871	0.172	
WB							
T	382	5346	0.071	0.250	1337	0.286	*
R	1195	2673	0.447	0.650	1737	0.688	
NB							
SB							
L	977	3279	0.298	0.400	1312	0.745	*
R	189	1515	0.125	0.675	1022	0.185	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.506
Lost Time Per Cycle, L = 9.0 sec. X critical = 0.547

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.497	0.275	120.0	27.8	466	0.7	1.00	28.5	D	17.5	C
T	0.172	0.525	120.0	11.3	1871	0.0	0.85	9.6	B		
WB											
T	0.286	0.250	120.0	27.6	1337	0.0	0.85	23.5	C	12.7	B
R	0.688	0.650	120.0	10.1	1737	0.8	0.85	9.3	B		
NB											
SB											
L	0.745	0.400	120.0	23.4	1312	1.7	1.00	25.0	D	21.7	C
R	0.185	0.675	120.0	5.5	1022	0.0	0.85	4.7	A		

Intersection Delay = 16.7 (sec/veh) Intersection LOS = C

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IDENTIFYING INFORMATION

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NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....34TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR FILE:34ULP2B

DATE OF THE ANALYSIS.....11/30/89

TIME PERIOD ANALYZED.....2010 PM PEAK

OTHER INFORMATION:
49TH ST. EXPWAY. ALT. (FLYOVER ALT.)

TRAFFIC VOLUMES

==========

	EB	WB	NB	SB
LEFT	97	127	323	46
THRU	80	104	28	23
RIGHT	264	56	155	80
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 5 WESTBOUND = 5 NORTHBOUND = 4 SOUTHBOUND = 4

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	TR	12.0	TR	12.0
5	R	12.0	R	12.0		12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	31.8	3
WESTBOUND	50	N	31.8	3
NORTHBOUND	50	N	31.8	3
SOUTHBOUND	50	N	31.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 12.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
SOUTHBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
EASTBOUND RT	X	X		
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	28.00
RIGHT	
Permitted	0.00
Protected	57.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	28.00
RIGHT	
Permitted	0.00
Protected	49.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	29.00
THRU	35.00
RIGHT	
Permitted	0.00
Protected	35.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	21.00
THRU	27.00
RIGHT	
Permitted	0.00
Protected	27.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	97	0.95	102	L	102	2	1.000	1.000	102	1.00	0.00
	TH	80	0.95	84	T	84	2	1.000	1.000	84	0.00	0.00
	RT	264	0.95	278	R	278	1	1.000	1.000	278	0.00	1.00
WB												
	LT	127	0.95	134	L	134	2	1.000	1.000	134	1.00	0.00
	TH	104	0.95	109	T	109	2	1.000	1.000	109	0.00	0.00
	RT	56	0.95	59	R	59	1	1.000	1.000	59	0.00	1.00
NB												
	LT	323	0.95	340	L	340	2	1.000	1.000	340	1.00	0.00
	TH	28	0.95	29	TR	193	2	1.000	1.000	193	0.00	0.85
	RT	155	0.95	163								
SB												
	LT	46	0.95	48	L	48	2	1.000	1.000	48	1.00	0.00
	TH	23	0.95	24	TR	108	2	1.000	1.000	108	0.00	0.78
	RT	80	0.95	84								

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	TR	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.873	1.000	3111
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	TR	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.883	1.000	3149

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	102	3279	0.031	0.200	656	0.156	
T	84	3564	0.024	0.233	832	0.101	
R	278	1515	0.183	0.475	719	0.386	*
WB							
L	134	3279	0.041	0.200	656	0.204	*
T	109	3564	0.031	0.233	832	0.132	
R	59	1515	0.039	0.408	619	0.095	
NB							
L	340	3279	0.104	0.242	792	0.429	*
TR	193	3111	0.062	0.292	907	0.212	
SB							
L	48	3279	0.015	0.175	574	0.084	
TR	108	3149	0.034	0.225	708	0.153	*

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.362
Lost Time Per Cycle, L = 12.0 sec. X critical = 0.403

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.156	0.200	120.0	30.1	656	0.0	1.00	30.1	D	18.8	C
T	0.101	0.233	120.0	27.5	832	0.0	0.85	23.3	C		
R	0.386	0.475	120.0	15.4	719	0.2	0.85	13.2	B		
WB											
L	0.204	0.200	120.0	30.4	656	0.0	1.00	30.4	D	24.7	C
T	0.132	0.233	120.0	27.7	832	0.0	0.85	23.5	C		
R	0.095	0.408	120.0	16.6	619	0.0	0.85	14.1	B		
NB											
L	0.429	0.242	120.0	29.3	792	0.2	1.00	29.5	D	26.3	D
TR	0.212	0.292	120.0	24.4	907	0.0	0.85	20.7	C		
SB											
L	0.084	0.175	120.0	31.5	574	0.0	1.00	31.5	D	26.4	D
TR	0.153	0.225	120.0	28.4	708	0.0	0.85	24.1	C		

Intersection Delay = 23.6 (sec/veh) Intersection LOS = C

APPENDIX B

SIGNALIZED INTERSECTION CAPACITY ANALYSES - ROOSEVELT BOULEVARD EXPRESSWAY ALTERNATIVES 3C AND 3D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ROOSEVELT BLVD.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA FILE:R049AG

DATE OF THE ANALYSIS.....8/31/89

TIME PERIOD ANALYZED.....A.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVES 3C/3D

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	90	90	247	110
THRU	1309	1071	127	155
RIGHT	303	90	110	110
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 6 WESTBOUND = 6 NORTHBOUND = 3 SOUTHBOUND = 4

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	LT	12.0	T	12.0
3	T	12.0	T	12.0	R	12.0	T	12.0
4	T	12.0	T	12.0		12.0	R	12.0
5	T	12.0	T	12.0		12.0		12.0
6	R	12.0	R	12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	28.8	3
WESTBOUND	50	N	28.8	3
NORTHBOUND	50	N	43.8	3
SOUTHBOUND	50	N	43.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 12.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
SOUTHBOUND				
LEFT		X		
THRU		X		
RIGHT		X		
PEDS				
EASTBOUND RT	X			
WESTBOUND RT		X		

EFFECTIVE GREENS - DESIGN ANALYSIS

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	10.00
THRU	38.00
RIGHT	
Permitted	0.00
Protected	70.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	10.00
THRU	38.00
RIGHT	
Permitted	0.00
Protected	66.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	32.00
THRU	32.00
RIGHT	
Permitted	0.00
Protected	42.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	28.00
THRU	28.00
RIGHT	
Permitted	0.00
Protected	38.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	90	0.95	95	L	95	2	1.000	1.000	95	1.00	0.00
	TH	1309	0.95	1378	T	1378	3	1.000	1.000	1378	0.00	0.00
	RT	303	0.95	319	R	319	1	1.000	1.000	319	0.00	1.00
WB												
	LT	90	0.95	95	L	95	2	1.000	1.000	95	1.00	0.00
	TH	1071	0.95	1127	T	1127	3	1.000	1.000	1127	0.00	0.00
	RT	90	0.95	95	R	95	1	1.000	1.000	95	0.00	1.00
NB												
	LT	247	0.95	260	L	195	1	1.000	1.000	195	1.00	0.00
	TH	127	0.95	134	LT	199	1	1.000	1.000	199	0.33	0.00
	RT	110	0.95	116	R	116	1	1.000	1.000	116	0.00	1.00
SB												
	LT	110	0.95	116	L	116	1	1.000	1.000	116	1.00	0.00
	TH	155	0.95	163	T	163	2	1.000	1.000	163	0.00	0.00
	RT	110	0.95	116	R	116	1	1.000	1.000	116	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	LT	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.984	1753
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	95	3279	0.029	0.083	273	0.347	
T	1378	5346	0.258	0.317	1693	0.814	*
R	319	1515	0.211	0.583	884	0.361	
WB							
L	95	3279	0.029	0.083	273	0.347	*
T	1127	5346	0.211	0.317	1693	0.666	
R	95	1515	0.063	0.550	833	0.114	
NB							
L	195	1693	0.115	0.267	451	0.432	*
LT	199	1753	0.113	0.267	468	0.425	
R	116	1515	0.076	0.350	530	0.218	
SB							
L	116	1693	0.068	0.233	395	0.293	
T	163	3564	0.046	0.233	832	0.196	
R	116	1515	0.076	0.317	480	0.241	*

Cycle Length, C = 120.0 sec.
Lost Time Per Cycle, L = 12.0 sec.

Sum (v/s) critical = ~~0.478~~ 0,470
X critical = ~~0.531~~ 0,522

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.347	0.083	120.0	39.5	273	0.3	1.00	39.8	D	23.9	C
T	0.814	0.317	120.0	28.7	1693	2.3	0.85	26.3	D		
R	0.361	0.583	120.0	10.0	884	0.1	0.85	8.6	B		
WB											
L	0.347	0.083	120.0	39.5	273	0.3	1.00	39.8	D	23.6	C
T	0.666	0.317	120.0	27.0	1693	0.7	0.85	23.5	C		
R	0.114	0.550	120.0	9.9	833	0.0	0.85	8.4	B		
NB											
L	0.432	0.267	120.0	27.7	451	0.4	1.00	28.1	D	24.1	C
LT	0.425	0.267	120.0	27.7	468	0.4	0.85	23.8	C		
R	0.218	0.350	120.0	20.9	530	0.0	0.85	17.8	C		
SB											
L	0.293	0.233	120.0	28.8	395	0.1	1.00	28.9	D	24.1	C
T	0.196	0.233	120.0	28.1	832	0.0	0.85	23.9	C		
R	0.241	0.317	120.0	23.1	480	0.1	0.85	19.6	C		

Intersection Delay = 23.8 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA

DATE OF THE ANALYSIS.....9/27/89

TIME PERIOD ANALYZED.....A.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVE 3C

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	417	213	505	707
THRU	1000*	888*	613	749
RIGHT	616	579	174	509
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

* The volumes used in this analysis represent two-thirds of the total through volume. Proposed geometry requires seven total approach lanes (including three through lanes), however, computer software limitations restrict the user to a maximum of six approach lanes. Therefore, two through lanes were used in

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 6 WESTBOUND = 6 NORTHBOUND = 6 SOUTHBOUND = 6

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	T	12.0	T	12.0
5	R	12.0	R	12.0	T	12.0	T	12.0
6	R	12.0	R	12.0	R	12.0	R	12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	43.8	3
WESTBOUND	50	N	43.8	3
NORTHBOUND	50	N	43.8	3
SOUTHBOUND	50	N	43.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
WESTBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X	X		

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
SOUTHBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
EASTBOUND RT	X			
WESTBOUND RT	X	X		

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	24.00
THRU	43.00
RIGHT	
Permitted	0.00
Protected	69.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	16.00
THRU	35.00
RIGHT	
Permitted	0.00
Protected	68.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	26.00
THRU	19.00
RIGHT	
Permitted	0.00
Protected	35.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	33.00
THRU	26.00
RIGHT	
Permitted	0.00
Protected	50.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	417	0.95	439	L	439	2	1.000	1.000	439	1.00	0.00
	TH	1000	0.95	1053	T	1053	2	1.000	1.000	1053	0.00	0.00
	RT	616	0.95	648	R	648	2	1.000	1.000	648	0.00	1.00
WB												
	LT	213	0.95	224	L	224	2	1.000	1.000	224	1.00	0.00
	TH	888	0.95	935	T	935	2	1.000	1.000	935	0.00	0.00
	RT	579	0.95	609	R	609	2	1.000	1.000	609	0.00	1.00
NB												
	LT	505	0.95	532	L	532	2	1.000	1.000	532	1.00	0.00
	TH	613	0.95	645	T	645	3	1.000	1.000	645	0.00	0.00
	RT	174	0.95	183	R	183	1	1.000	1.000	183	0.00	1.00
SB												
	LT	707	0.95	744	L	744	2	1.000	1.000	744	1.00	0.00
	TH	749	0.95	788	T	788	3	1.000	1.000	788	0.00	0.00
	RT	509	0.95	536	R	536	1	1.000	1.000	536	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET Page-

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	439	3279	0.134	0.200	656	0.669	*
T	1053	3564	0.295	0.358	1277	0.824	
R	648	2673	0.243	0.575	1537	0.422	
WB							
L	224	3279	0.068	0.133	437	0.513	
T	935	3564	0.262	0.292	1040	0.899	*
R	609	2673	0.228	0.567	1515	0.402	
NB							
L	532	3279	0.162	0.217	710	0.748	
T	645	5346	0.121	0.158	846	0.762	*
R	183	1515	0.121	0.292	442	0.415	
SB							
L	744	3279	0.227	0.275	902	0.825	*
T	788	5346	0.147	0.217	1158	0.681	
R	536	1515	0.354	0.417	631	0.849	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.744
Lost Time Per Cycle, L = 9.0 sec. X critical = 0.804

LEVEL-OF-SERVICE WORKSHEET

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.669	0.200	120.0	33.7	656	1.8	1.00	35.5	D	22.6	C
T	0.824	0.358	120.0	26.6	1277	3.2	0.85	25.4	D		
R	0.422	0.575	120.0	10.9	1537	0.1	0.85	9.3	B		
WB											
L	0.513	0.133	120.0	36.8	437	0.9	1.00	37.6	D	25.4	D
T	0.899	0.292	120.0	31.0	1040	7.6	0.85	32.8	D		
R	0.402	0.567	120.0	11.1	1515	0.1	0.85	9.5	B		
NB											
L	0.748	0.217	120.0	33.4	710	3.1	1.00	36.4	D	33.2	D
T	0.762	0.158	120.0	36.7	846	2.9	0.85	33.7	D		
R	0.415	0.292	120.0	26.0	442	0.4	0.85	22.4	C		
SB											
L	0.825	0.275	120.0	31.0	902	4.5	1.00	35.5	D	30.7	D
T	0.681	0.217	120.0	32.8	1158	1.2	0.85	28.9	D		
R	0.849	0.417	120.0	24.0	631	7.4	0.85	26.7	D		

Intersection Delay = 27.5 (sec/veh) Intersection LOS = D

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IDENTIFYING INFORMATION

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NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA

DATE OF THE ANALYSIS.....9/27/89

TIME PERIOD ANALYZED.....A.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVE 3D

TRAFFIC VOLUMES

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	EB	WB	NB	SB
LEFT	417	213	505	707
THRU	421*	414*	613	749
RIGHT	616	579	174	509
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

* The volumes used in this analysis represent two-thirds of the total through volume. Proposed geometry requires seven total approach lanes (including three through lanes), however, computer software limitations restrict the user to a maximum of six approach lanes. Therefore, two through lanes were used in this analysis and the through volume was reduced proportionately.

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 6 WESTBOUND = 6 NORTHBOUND = 6 SOUTHBOUND = 6

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	T	12.0	T	12.0
5	R	12.0	R	12.0	T	12.0	T	12.0
6	R	12.0	R	12.0	R	12.0	R	12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	43.8	3
WESTBOUND	50	N	43.8	3
NORTHBOUND	50	N	43.8	3
SOUTHBOUND	50	N	43.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
WESTBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X	X		

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
SOUTHBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
EASTBOUND RT	X			
WESTBOUND RT	X	X		

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	26.00
THRU	32.00
RIGHT	
Permitted	0.00
Protected	61.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	16.00
THRU	22.00
RIGHT	
Permitted	0.00
Protected	62.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	29.00
THRU	23.00
RIGHT	
Permitted	0.00
Protected	39.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	40.00
THRU	34.00
RIGHT	
Permitted	0.00
Protected	60.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	417	0.95	439	L	439	2	1.000	1.000	439	1.00	0.00
	TH	421	0.95	443	T	443	2	1.000	1.000	443	0.00	0.00
	RT	616	0.95	648	R	648	2	1.000	1.000	648	0.00	1.00
WB												
	LT	213	0.95	224	L	224	2	1.000	1.000	224	1.00	0.00
	TH	414	0.95	436	T	436	2	1.000	1.000	436	0.00	0.00
	RT	579	0.95	609	R	609	2	1.000	1.000	609	0.00	1.00
NB												
	LT	505	0.95	532	L	532	2	1.000	1.000	532	1.00	0.00
	TH	613	0.95	645	T	645	3	1.000	1.000	645	0.00	0.00
	RT	174	0.95	183	R	183	1	1.000	1.000	183	0.00	1.00
SB												
	LT	707	0.95	744	L	744	2	1.000	1.000	744	1.00	0.00
	TH	749	0.95	788	T	788	3	1.000	1.000	788	0.00	0.00
	RT	509	0.95	536	R	536	1	1.000	1.000	536	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	439	3279	0.134	0.217	710	0.618	*
T	443	3564	0.124	0.267	950	0.466	
R	648	2673	0.243	0.508	1359	0.477	
WB							
L	224	3279	0.068	0.133	437	0.513	
T	436	3564	0.122	0.183	653	0.667	*
R	609	2673	0.228	0.517	1381	0.441	
NB							
L	532	3279	0.162	0.242	792	0.671	
T	645	5346	0.121	0.192	1025	0.630	*
R	183	1515	0.121	0.325	492	0.372	
SB							
L	744	3279	0.227	0.333	1093	0.681	*
T	788	5346	0.147	0.283	1515	0.521	
R	536	1515	0.354	0.500	757	0.707	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.604
Lost Time Per Cycle, L = 9.0 sec. X critical = 0.653

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.618	0.217	120.0	32.3	710	1.2	1.00	33.5	D	21.9	C
T	0.466	0.267	120.0	28.0	950	0.3	0.85	24.0	C		
R	0.477	0.508	120.0	14.6	1359	0.2	0.85	12.5	B		
WB											
L	0.513	0.133	120.0	36.8	437	0.9	1.00	37.6	D	23.0	C
T	0.667	0.183	120.0	34.6	653	1.8	0.85	31.0	D		
R	0.441	0.517	120.0	13.8	1381	0.2	0.85	11.9	B		
NB											
L	0.671	0.242	120.0	31.3	792	1.6	1.00	32.9	D	29.6	D
T	0.630	0.192	120.0	33.9	1025	0.9	0.85	29.6	D		
R	0.372	0.325	120.0	23.6	492	0.2	0.85	20.3	C		
SB											
L	0.681	0.333	120.0	26.2	1093	1.2	1.00	27.4	D	23.2	C
T	0.521	0.283	120.0	27.5	1515	0.3	0.85	23.6	C		
R	0.707	0.500	120.0	17.6	757	2.1	0.85	16.8	C		

Intersection Delay = 24.2 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....118TH AVE.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA FILE:1849AG

DATE OF THE ANALYSIS.....9/27/89

TIME PERIOD ANALYZED.....A.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVES 3C/3D

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	27	311	129	113
THRU	1798	1470	1173	1433
RIGHT	157	92	254	32
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 5 WESTBOUND = 6 NORTHBOUND = 5 SOUTHBOUND = 5

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	T	12.0	L	12.0	T	12.0	T	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	T	12.0	T	12.0
5	R	12.0	T	12.0	R	12.0	R	12.0
6		12.0	R	12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	37.8	3
WESTBOUND	50	N	37.8	3
NORTHBOUND	50	N	40.8	3
SOUTHBOUND	50	N	40.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
WESTBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
NORTHBOUND RT	X	X		
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
EASTBOUND RT	X			
WESTBOUND RT				

EFFECTIVE GREENS - DESIGN ANALYSIS

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	10.00
THRU	42.50
RIGHT	
Permitted	0.00
Protected	58.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	18.50
THRU	51.00
RIGHT	
Permitted	0.00
Protected	51.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	15.50
THRU	34.50
RIGHT	
Permitted	0.00
Protected	53.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	15.50
THRU	34.50
RIGHT	
Permitted	0.00
Protected	44.50

VOLUME ADJUSTMENT WORKSHEET

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB											
LT	27	0.95	28	L	28	1	1.000	1.000	28	1.00	0.00
TH	1798	0.95	1893	T	1893	3	1.000	1.000	1893	0.00	0.00
RT	157	0.95	165	R	165	1	1.000	1.000	165	0.00	1.00
WB											
LT	311	0.95	327	L	327	2	1.000	1.000	327	1.00	0.00
TH	1470	0.95	1547	T	1547	3	1.000	1.000	1547	0.00	0.00
RT	92	0.95	97	R	97	1	1.000	1.000	97	0.00	1.00
NB											
LT	129	0.95	136	L	136	1	1.000	1.000	136	1.00	0.00
TH	1173	0.95	1235	T	1235	3	1.000	1.000	1235	0.00	0.00
RT	254	0.95	267	R	267	1	1.000	1.000	267	0.00	1.00
SB											
LT	113	0.95	119	L	119	1	1.000	1.000	119	1.00	0.00
TH	1433	0.95	1508	T	1508	3	1.000	1.000	1508	0.00	0.00
RT	32	0.95	34	R	34	1	1.000	1.000	34	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ SAT FLOW
EB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	165
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	151
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	327
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	534
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	165
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	151
SB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	169
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	534
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	151

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	28	1693	0.017	0.083	141	0.201	
T	1893	5346	0.354	0.354	1893	1.000	*
R	165	1515	0.109	0.483	732	0.226	
WB							
L	327	3279	0.100	0.154	505	0.648	*
T	1547	5346	0.289	0.425	2272	0.681	
R	97	1515	0.064	0.425	644	0.150	
NB							
L	136	1693	0.080	0.129	219	0.621	*
T	1235	5346	0.231	0.287	1537	0.803	
R	267	1515	0.177	0.442	669	0.400	
SB							
L	119	1693	0.070	0.129	219	0.544	
T	1508	5346	0.282	0.287	1537	0.981	*
R	34	1515	0.022	0.371	562	0.060	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.816
Lost Time Per Cycle, L = 9.0 sec. X critical = 0.882

LEVEL-OF-SERVICE WORKSHEET

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.201	0.083	120.0	39.0	141	0.1	1.00	39.1	D	36.4	D
T	1.000	0.354	120.0	29.4	1893	15.8	0.85	38.5	D		
R	0.226	0.483	120.0	13.7	732	0.0	0.85	11.6	B		
WB											
L	0.648	0.154	120.0	36.2	505	2.0	1.00	38.3	D	21.6	C
T	0.681	0.425	120.0	21.2	2272	0.6	0.85	18.5	C		
R	0.150	0.425	120.0	16.1	644	0.0	0.85	13.7	B		
NB											
L	0.621	0.129	120.0	37.6	219	3.7	1.00	41.3	E	26.6	D
T	0.803	0.287	120.0	30.1	1537	2.3	0.85	27.5	D		
R	0.400	0.442	120.0	17.3	669	0.2	0.85	14.9	B		
SB											
L	0.544	0.129	120.0	37.2	219	2.1	1.00	39.3	D	38.9	D
T	0.981	0.287	120.0	32.2	1537	14.0	0.85	39.3	D		
R	0.060	0.371	120.0	18.5	562	0.0	0.85	15.7	C		

Intersection Delay = 30.8 (sec/veh) Intersection LOS = D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....AIRPORT ENTRANCE

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA

DATE OF THE ANALYSIS.....8/31/89

TIME PERIOD ANALYZED.....A.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVES 3C/3D

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	466	0	331
THRU	0	0	82	100
RIGHT	0	271	381	0
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 0 WESTBOUND = 3 NORTHBOUND = 3 SOUTHBOUND = 4

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1		12.0	L	12.0	T	12.0	L	12.0
2		12.0	L	12.0	T	12.0	L	12.0
3		12.0	R	12.0	R	12.0	T	12.0
4		12.0		12.0		12.0	T	12.0
5								
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	28.8	3
WESTBOUND	50	N	28.8	3
NORTHBOUND	50	N	14.3	3
SOUTHBOUND	50	N	14.3	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
WESTBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT				

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
EASTBOUND RT				
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	47.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	86.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	25.00
RIGHT	
Permitted	0.00
Protected	72.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	39.00
THRU	64.00
RIGHT	
Permitted	0.00
Protected	0.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								
WB												
	LT	466	0.95	491	L	491	2	1.050	1.000	515	1.00	0.00
	TH	0	0.95	0								
	RT	271	0.95	285	R	285	1	1.000	1.000	285	0.00	1.00
NB												
	LT	0	0.95	0								
	TH	82	0.95	86	T	86	2	1.050	1.000	91	0.00	0.00
	RT	381	0.95	401	R	401	1	1.000	1.000	401	0.00	1.00
SB												
	LT	331	0.95	348	L	348	2	1.050	1.000	366	1.00	0.00
	TH	100	0.95	105	T	105	2	1.050	1.000	111	0.00	0.00
	RT	0	0.95	0								

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
WB							
L	515	3279	0.157 *	0.392	1284	0.401	
R	285	1515	0.188	0.717	1086	0.263	*
NB							
T	91	3564	0.025 *	0.208	743	0.122	*
R	401	1515	0.265	0.600	909	0.441	
SB							
L	366	3279	0.112 *	0.325	1066	0.343	*
T	111	3564	0.031	0.533	1901	0.058	

Cycle Length, C = 120.0 sec.
Lost Time Per Cycle, L = 9.0 sec.

Sum (v/s) critical = ~~0.325~~ 0.294
X critical = ~~0.352~~ 0.318

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
WB											
L	0.401	0.392	120.0	20.0	1284	0.1	1.00	20.1	C	14.3	B
R	0.263	0.717	120.0	4.5	1086	0.0	0.85	3.9	A		
NB											
T	0.122	0.208	120.0	29.3	743	0.0	0.85	24.9	C	11.6	B
R	0.441	0.600	120.0	9.9	909	0.2	0.85	8.6	B		
SB											
L	0.343	0.325	120.0	23.4	1066	0.1	1.00	23.5	C	20.0	C
T	0.058	0.533	120.0	10.2	1901	0.0	0.85	8.7	B		

Intersection Delay = 15.1 (sec/veh) Intersection LOS = C

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IDENTIFYING INFORMATION

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NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD. (WEST)

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA FILE:ULROWCAG

DATE OF THE ANALYSIS.....9/7/89

TIME PERIOD ANALYZED.....A.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVE 3C

TRAFFIC VOLUMES

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	EB	WB	NB	SB
LEFT	258	212	948	1345
THRU	0	0	367	448
RIGHT	1159	1101	173	316
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 4 WESTBOUND = 4 NORTHBOUND = 5 SOUTHBOUND = 5

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	R	12.0	R	12.0	T	12.0	T	12.0
4	R	12.0	R	12.0	T	12.0	T	12.0
5		12.0		12.0	R	12.0	R	12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	37.8	3
WESTBOUND	50	N	37.8	3
NORTHBOUND	50	N	43.8	3
SOUTHBOUND	50	N	43.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU				
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU				
RIGHT		X		
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
SOUTHBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
EASTBOUND RT	X			
WESTBOUND RT	X	X		

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	23.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	58.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	23.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	68.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	48.00
THRU	20.00
RIGHT	
Permitted	0.00
Protected	53.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	58.00
THRU	30.00
RIGHT	
Permitted	0.00
Protected	63.00

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB											
LT	258	0.95	272	L	272	2	1.000	1.000	272	1.00	0.00
TH	0	0.95	0								
RT	1159	0.95	1220	R	1220	2	1.000	1.000	1220	0.00	1.00
WB											
LT	212	0.95	223	L	223	2	1.000	1.000	223	1.00	0.00
TH	0	0.95	0								
RT	1101	0.95	1159	R	1159	2	1.000	1.000	1159	0.00	1.00
NB											
LT	948	0.95	998	L	998	2	1.000	1.000	998	1.00	0.00
TH	367	0.95	386	T	386	2	1.000	1.000	386	0.00	0.00
RT	173	0.95	182	R	182	1	1.000	1.000	182	0.00	1.00
SB											
LT	1345	0.95	1416	L	1416	2	1.000	1.000	1416	1.00	0.00
TH	448	0.95	472	T	472	2	1.000	1.000	472	0.00	0.00
RT	316	0.95	333	R	333	1	1.000	1.000	333	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	272	3279	0.083	0.192	628	0.432	*
R	1220	2673	0.456 ~~0.304~~ 0.152 *	0.483	1292	0.944	*
WB							
L	223	3279	0.068	0.192	628	0.355	
R	1159	2673	0.434	0.567	1515	0.765	
NB							
L	998	3279	0.304	0.400	1312	0.761	
T	386	3564	0.108 *	0.167	594	0.650	*
R	182	1515	0.120	0.442	669	0.272	
SB							
L	1416	3279	0.432 *	0.483	1585	0.893	*
T	472	3564	0.132	0.250	891	0.529	
R	333	1515	0.220	0.525	795	0.418	

Cycle Length, C = 120.0 sec.
Lost Time Per Cycle, L = 9.0 sec.

Sum (v/s) critical = ~~1.079~~ 0.775
X critical = ~~1.167~~ 0.838

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.432	0.192	120.0	32.5	628	0.3	1.00	32.8	D	28.6	D
R	0.944	0.483	120.0	22.4	1292	10.2	0.85	27.7	D		
WB											
L	0.355	0.192	120.0	32.0	628	0.2	1.00	32.1	D	17.2	C
R	0.765	0.567	120.0	15.1	1515	1.7	0.85	14.3	B		
NB											
L	0.761	0.400	120.0	23.6	1312	1.9	1.00	25.5	D	25.6	D
T	0.650	0.167	120.0	35.5	594	1.8	0.85	31.7	D		
R	0.272	0.442	120.0	16.2	669	0.1	0.85	13.8	B		
SB											
L	0.893	0.483	120.0	21.4	1585	5.0	1.00	26.4	D	24.0	C
T	0.529	0.250	120.0	29.6	891	0.5	0.85	25.5	D		
R	0.418	0.525	120.0	13.2	795	0.2	0.85	11.4	B		

Intersection Delay = 24.0 (sec/veh) Intersection LOS = C

****

IDENTIFYING INFORMATION

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NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD. (WEST)

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA

DATE OF THE ANALYSIS.....9/7/89

TIME PERIOD ANALYZED.....A.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVE 3D

TRAFFIC VOLUMES

==========

	EB	WB	NB	SB
LEFT	258	212	237	1345
THRU	643*	573*	367	448
RIGHT	290	1101	173	316
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

*The volumes used in this analysis represent two-thirds of the total through volume. Proposed geometry requires seven total approach lanes (including three through lanes), however, computer software limitations restrict the user to a maximum of six approach lanes. Therefore, two through lanes were used in the analyses and the through volume was reduced proportionately.

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 6 WESTBOUND = 6 NORTHBOUND = 5 SOUTHBOUND = 5

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	T	12.0	T	12.0
5	R	12.0	R	12.0	R	12.0	R	12.0
6	R	12.0	R	12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	37.8	3
WESTBOUND	50	N	37.8	3
NORTHBOUND	50	N	43.8	3
SOUTHBOUND	50	N	43.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
WESTBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X	X		

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
SOUTHBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
EASTBOUND RT	X			
WESTBOUND RT	X	X		

EFFECTIVE GREENS - DESIGN ANALYSIS

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	18.00
THRU	27.00
RIGHT	
Permitted	0.00
Protected	42.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	14.00
THRU	23.00
RIGHT	
Permitted	0.00
Protected	77.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	15.00
THRU	16.00
RIGHT	
Permitted	0.00
Protected	30.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	54.00
THRU	55.00
RIGHT	
Permitted	0.00
Protected	73.00

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB											
LT	258	0.95	272	L	272	2	1.000	1.000	272	1.00	0.00
TH	643	0.95	677	T	677	2	1.000	1.000	677	0.00	0.00
RT	290	0.95	305	R	305	2	1.000	1.000	305	0.00	1.00
WB											
LT	212	0.95	223	L	223	2	1.000	1.000	223	1.00	0.00
TH	573	0.95	603	T	603	2	1.000	1.000	603	0.00	0.00
RT	1101	0.95	1159	R	1159	2	1.000	1.000	1159	0.00	1.00
NB											
LT	237	0.95	249	L	249	2	1.000	1.000	249	1.00	0.00
TH	367	0.95	386	T	386	2	1.000	1.000	386	0.00	0.00
RT	173	0.95	182	R	182	1	1.000	1.000	182	0.00	1.00
SB											
LT	1345	0.95	1416	L	1416	2	1.000	1.000	1416	1.00	0.00
TH	448	0.95	472	T	472	2	1.000	1.000	472	0.00	0.00
RT	316	0.95	333	R	333	1	1.000	1.000	333	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	272	3279	0.083	0.150	492	0.552	
T	677	3564	0.190	0.225	802	0.844	*
R	305	2673	0.114	0.350	936	0.326	
WB							
L	223	3279	0.068	0.117	383	0.583	*
T	603	3564	0.169	0.192	683	0.883	
R	1159	2673	0.434	0.642	1715	0.676	
NB							
L	249	3279	0.076	0.125	410	0.609	
T	386	3564	0.108	0.133	475	0.813	*
R	182	1515	0.120	0.250	379	0.481	
SB							
L	1416	3279	0.432	0.450	1475	0.960	*
T	472	3564	0.132	0.458	1634	0.289	
R	333	1515	0.220	0.608	921	0.361	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.798
Lost Time Per Cycle, L = 9.0 sec. X critical = 0.863

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.552	0.150	120.0	35.9	492	1.0	1.00	37.0	D	30.7	D
T	0.844	0.225	120.0	33.8	802	5.8	0.85	33.7	D		
R	0.326	0.350	120.0	21.7	936	0.1	0.85	18.6	C		
WB											
L	0.583	0.117	120.0	38.2	383	1.7	1.00	39.8	D	21.6	C
T	0.883	0.192	120.0	35.9	683	9.2	0.85	38.3	D		
R	0.676	0.642	120.0	10.3	1715	0.8	0.85	9.4	B		
NB											
L	0.609	0.125	120.0	37.8	410	1.9	1.00	39.7	D	36.1	D
T	0.813	0.133	120.0	38.4	475	7.2	0.85	38.7	D		
R	0.481	0.250	120.0	29.2	379	0.8	0.85	25.4	D		
SB											
L	0.960	0.450	120.0	24.3	1475	11.0	1.00	35.3	D	26.5	D
T	0.289	0.458	120.0	15.4	1634	0.0	0.85	13.1	B		
R	0.361	0.608	120.0	9.0	921	0.1	0.85	7.7	B		

Intersection Delay = 27.0 (sec/veh) Intersection LOS = D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....34TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR

DATE OF THE ANALYSIS.....11/17/89

TIME PERIOD ANALYZED.....A.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVES 3C/3D

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	80	155	264	56
THRU	218	181	22	28
RIGHT	324	46	127	97
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 5 WESTBOUND = 5 NORTHBOUND = 4 SOUTHBOUND = 4

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	TR	12.0	TR	12.0
5	R	12.0	R	12.0		12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT Y/N	PKG (Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	31.8	3
WESTBOUND	50	N	31.8	3
NORTHBOUND	50	N	37.8	3
SOUTHBOUND	50	N	37.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 12.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
SOUTHBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
EASTBOUND RT	X	X		
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	14.00
THRU	27.00
RIGHT	
Permitted	0.00
Protected	63.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	14.00
THRU	27.00
RIGHT	
Permitted	0.00
Protected	38.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	36.00
THRU	56.00
RIGHT	
Permitted	0.00
Protected	56.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	11.00
THRU	31.00
RIGHT	
Permitted	0.00
Protected	31.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	80	0.95	84	L	84	2	1.000	1.000	84	1.00	0.00
	TH	218	0.95	229	T	229	2	1.000	1.000	229	0.00	0.00
	RT	324	0.95	341	R	341	1	1.000	1.000	341	0.00	1.00
WB												
	LT	155	0.95	163	L	163	2	1.000	1.000	163	1.00	0.00
	TH	181	0.95	191	T	191	2	1.000	1.000	191	0.00	0.00
	RT	46	0.95	48	R	48	1	1.000	1.000	48	0.00	1.00
NB												
	LT	264	0.95	278	L	278	2	1.000	1.000	278	1.00	0.00
	TH	22	0.95	23	TR	157	2	1.000	1.000	157	0.00	0.85
	RT	127	0.95	134								
SB												
	LT	56	0.95	59	L	59	2	1.000	1.000	59	1.00	0.00
	TH	28	0.95	29	TR	132	2	1.000	1.000	132	0.00	0.78
	RT	97	0.95	102								

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	TR	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.872	1.000	3108
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	TR	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.884	1.000	3149

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	84	3279	0.026	0.117	383	0.220	
T	229	3564	0.064	0.225	802	0.286	
R	341	1515	0.225 ~~-.085~~ 0.140 *	0.525	795	0.429	*
WB							
L	163	3279	0.050 *	0.117	383	0.427	*
T	191	3564	0.053	0.225	802	0.238	
R	48	1515	0.032	0.317	480	0.101	
NB							
L	278	3279	0.085 *	0.300	984	0.283	*
TR	157	3108	0.050	0.467	1451	0.108	
SB							
L	59	3279	0.018	0.092	301	0.196	
TR	132	3149	0.042 *	0.258	814	0.162	*

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.401~~ 0.317

Lost Time Per Cycle, L = 12.0 sec. X critical = ~~0.446~~ 0.352

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.220	0.117	120.0	36.5	383	0.0	1.00	36.6	D	19.4	C
T	0.286	0.225	120.0	29.3	802	0.1	0.85	24.9	C		
R	0.429	0.525	120.0	13.3	795	0.2	0.85	11.5	B		
WB											
L	0.427	0.117	120.0	37.4	383	0.5	1.00	37.9	D	29.3	D
T	0.238	0.225	120.0	28.9	802	0.0	0.85	24.6	C		
R	0.101	0.317	120.0	22.0	480	0.0	0.85	18.7	C		
NB											
L	0.283	0.300	120.0	24.4	984	0.0	1.00	24.5	C	19.8	C
TR	0.108	0.467	120.0	13.7	1451	0.0	0.85	11.6	B		
SB											
L	0.196	0.092	120.0	38.3	301	0.0	1.00	38.4	D	27.2	D
TR	0.162	0.258	120.0	26.2	814	0.0	0.85	22.3	C		

Intersection Delay = 22.8 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD. (EAST)

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR

DATE OF THE ANALYSIS.....11/17/89

TIME PERIOD ANALYZED.....A.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVES 3C/3D

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	194	1371	0
THRU	257	256	0	0
RIGHT	1677	0	159	0
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 4 WESTBOUND = 4 NORTHBOUND = 3 SOUTHBOUND = 0

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	T	12.0	L	12.0	L	12.0		12.0
2	T	12.0	L	12.0	L	12.0		12.0
3	R	12.0	T	12.0	R	12.0		12.0
4	R	12.0	T	12.0		12.0		12.0
5								
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	14.3	3
WESTBOUND	50	N	14.3	3
NORTHBOUND	50	N	31.8	3
SOUTHBOUND	50	N	31.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 6.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT				

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
SOUTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
EASTBOUND RT	X			
WESTBOUND RT				

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	28.00
RIGHT	
Permitted	0.00
Protected	93.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	21.00
THRU	49.00
RIGHT	
Permitted	0.00
Protected	0.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	65.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	86.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	0	0.95	0								
	TH	257	0.95	271	T	271	2	1.050	1.000	284	0.00	0.00
	RT	1677	0.95	1765	R	1765	2	1.050	1.000	1854	0.00	1.00
WB												
	LT	194	0.95	204	L	204	2	1.050	1.000	214	1.00	0.00
	TH	256	0.95	269	T	269	2	1.050	1.000	283	0.00	0.00
	RT	0	0.95	0								
NB												
	LT	1371	0.95	1443	L	1443	2	1.050	1.000	1515	1.00	0.00
	TH	0	0.95	0								
	RT	159	0.95	167	R	167	1	1.000	1.000	167	0.00	1.00
SB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
T	284	3564	0.080	0.233	832	0.342	*
R	1854	2673	0.693	0.775	2072	0.895	
WB							
L	214	3279	0.065	0.175	574	0.374	*
T	283	3564	0.079	0.408	1455	0.194	
NB							
L	1515	3279	0.462	0.542	1776	0.853	*
R	167	1515	0.110	0.717	1086	0.154	
SB							

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.607
Lost Time Per Cycle, L = 6.0 sec. X critical = 0.639

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
T	0.342	0.233	120.0	29.1	832	0.1	0.85	24.8	C	11.8	B
R	0.895	0.775	120.0	7.5	2072	4.0	0.85	9.8	B		
WB											
L	0.374	0.175	120.0	33.2	574	0.2	1.00	33.4	D	22.8	C
T	0.194	0.408	120.0	17.3	1455	0.0	0.85	14.7	B		
NB											
L	0.853	0.542	120.0	17.8	1776	3.0	1.00	20.9	C	19.1	C
R	0.154	0.717	120.0	4.1	1086	0.0	0.85	3.5	A		
SB											

Intersection Delay = 15.9 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....118TH AVE.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA

DATE OF THE ANALYSIS.....9/27/89

TIME PERIOD ANALYZED.....A.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVE 3C

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	584	0	0	278
THRU	1581	1159	0	0
RIGHT	0	228	0	714
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 5 WESTBOUND = 4 NORTHBOUND = 0 SOUTHBOUND = 2

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	T	12.0		12.0	L	12.0
2	L	12.0	T	12.0		12.0	R	12.0
3	T	12.0	T	12.0		12.0		12.0
4	T	12.0	R	12.0		12.0		12.0
5	T	12.0		12.0		12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	11.3	3
WESTBOUND	50	N	11.3	3
NORTHBOUND	50	N	34.8	3
SOUTHBOUND	50	N	34.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
WESTBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
SOUTHBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
EASTBOUND RT				
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	29.00
THRU	69.00
RIGHT	
Permitted	0.00
Protected	0.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	40.00
RIGHT	
Permitted	0.00
Protected	82.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	42.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	71.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	584	0.95	615	L	615	2	1.000	1.000	615	1.00	0.00
	TH	1581	0.95	1664	T	1664	3	1.000	1.000	1664	0.00	0.00
	RT	0	0.95	0								
WB												
	LT	0	0.95	0								
	TH	1159	0.95	1220	T	1220	3	1.000	1.000	1220	0.00	0.00
	RT	228	0.95	240	R	240	1	1.000	1.000	240	0.00	1.00
NB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								
SB												
	LT	278	0.95	293	L	293	1	1.000	1.000	293	1.00	0.00
	TH	0	0.95	0								
	RT	714	0.95	752	R	752	1	1.000	1.000	752	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
WB												
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
SB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	615	3279	0.187 *	0.242	792	0.776	*
T	1664	5346	0.311	0.575	3074	0.541	
WB							
T	1220	5346	0.228 *	0.333	1782	0.685	*
R	240	1515	0.158	0.683	1035	0.232	
NB							
SB							
L	293	1693	0.173	0.350	593	0.494	
R	752	1515	0.496-187 =0,309 *	0.592	896	0.839	*

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.912~~ 0,724

Lost Time Per Cycle, L = 9.0 sec. X critical = ~~0.986~~ 0,783

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.776	0.242	120.0	32.3	792	3.4	1.00	35.7	D	17.1	C
T	0.541	0.575	120.0	12.0	3074	0.2	0.85	10.3	B		
WB											
T	0.685	0.333	120.0	26.3	1782	0.8	0.85	23.0	C	20.0	C
R	0.232	0.683	120.0	5.4	1035	0.0	0.85	4.6	A		
NB											
SB											
L	0.494	0.350	120.0	23.3	593	0.5	1.00	23.8	C	19.0	C
R	0.839	0.592	120.0	15.1	896	5.0	0.85	17.1	C		

Intersection Delay = 18.4 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....118TH AVE.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA

DATE OF THE ANALYSIS.....9/27/89

TIME PERIOD ANALYZED.....A.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVE 3D

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	584	0	0	191
THRU	1581	1159	0	0
RIGHT	0	157	0	714
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 5 WESTBOUND = 4 NORTHBOUND = 0 SOUTHBOUND = 2

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	T	12.0		12.0	L	12.0
2	L	12.0	T	12.0		12.0	R	12.0
3	T	12.0	T	12.0		12.0		12.0
4	T	12.0	R	12.0		12.0		12.0
5	T	12.0		12.0		12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	11.3	3
WESTBOUND	50	N	11.3	3
NORTHBOUND	50	N	34.8	3
SOUTHBOUND	50	N	34.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
WESTBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
SOUTHBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
EASTBOUND RT				
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	33.00
THRU	72.00
RIGHT	
Permitted	0.00
Protected	0.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	39.00
RIGHT	
Permitted	0.00
Protected	78.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	39.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	72.00

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB											
LT	584	0.95	615	L	615	2	1.000	1.000	615	1.00	0.00
TH	1581	0.95	1664	T	1664	3	1.000	1.000	1664	0.00	0.00
RT	0	0.95	0								
WB											
LT	0	0.95	0								
TH	1159	0.95	1220	T	1220	3	1.000	1.000	1220	0.00	0.00
RT	157	0.95	165	R	165	1	1.000	1.000	165	0.00	1.00
NB											
LT	0	0.95	0								
TH	0	0.95	0								
RT	0	0.95	0								
SB											
LT	191	0.95	201	L	201	1	1.000	1.000	201	1.00	0.00
TH	0	0.95	0								
RT	714	0.95	752	R	752	1	1.000	1.000	752	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
WB												
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
SB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	615	3279	0.187	0.275	902	0.682	*
T	1664	5346	0.311	0.600	3208	0.519	
WB							
T	1220	5346	0.228	0.325	1737	0.702	*
R	165	1515	0.109	0.650	985	0.168	
NB							
SB							
L	201	1693	0.119	0.325	550	0.365	
R	752	1515	0.496 ~~-187~~ 0.309 *	0.600	909	0.827	*

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.912~~ 0.724

Lost Time Per Cycle, L = 9.0 sec. X critical = ~~0.986~~ 0.783

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.682	0.275	120.0	29.5	902	1.5	1.00	31.0	D	15.0	C
T	0.519	0.600	120.0	10.6	3208	0.1	0.85	9.1	B		
WB											
T	0.702	0.325	120.0	26.9	1737	0.9	0.85	23.7	C	21.5	C
R	0.168	0.650	120.0	6.3	985	0.0	0.85	5.3	B		
NB											
SB											
L	0.365	0.325	120.0	23.6	550	0.2	1.00	23.8	C	17.7	C
R	0.827	0.600	120.0	14.5	909	4.5	0.85	16.1	C		

Intersection Delay = 17.5 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ROOSEVELT BLVD.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA FILE:R049PG

DATE OF THE ANALYSIS.....8/31/89

TIME PERIOD ANALYZED.....P.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVES 3C/3D

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	110	110	303	90
THRU	1071	1309	155	127
RIGHT	247	110	90	90
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 6 WESTBOUND = 6 NORTHBOUND = 3 SOUTHBOUND = 4

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	LT	12.0	T	12.0
3	T	12.0	T	12.0	R	12.0	T	12.0
4	T	12.0	T	12.0		12.0	R	12.0
5	T	12.0	T	12.0		12.0		12.0
6	R	12.0	R	12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	28.8	3
WESTBOUND	50	N	28.8	3
NORTHBOUND	50	N	43.8	3
SOUTHBOUND	50	N	43.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 12.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
SOUTHBOUND				
LEFT		X		
THRU		X		
RIGHT		X		
PEDS				
EASTBOUND RT	X			
WESTBOUND RT		X		

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	11.00
THRU	40.00
RIGHT	
Permitted	0.00
Protected	74.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	11.00
THRU	40.00
RIGHT	
Permitted	0.00
Protected	63.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	34.00
THRU	34.00
RIGHT	
Permitted	0.00
Protected	45.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	23.00
THRU	23.00
RIGHT	
Permitted	0.00
Protected	34.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	110	0.95	116	L	116	2	1.000	1.000	116	1.00	0.00
	TH	1071	0.95	1127	T	1127	3	1.000	1.000	1127	0.00	0.00
	RT	247	0.95	260	R	260	1	1.000	1.000	260	0.00	1.00
WB												
	LT	110	0.95	116	L	116	2	1.000	1.000	116	1.00	0.00
	TH	1309	0.95	1378	T	1378	3	1.000	1.000	1378	0.00	0.00
	RT	110	0.95	116	R	116	1	1.000	1.000	116	0.00	1.00
NB												
	LT	303	0.95	319	L	239	1	1.000	1.000	239	1.00	0.00
	TH	155	0.95	163	LT	243	1	1.000	1.000	243	0.33	0.00
	RT	90	0.95	95	R	95	1	1.000	1.000	95	0.00	1.00
SB												
	LT	90	0.95	95	L	95	1	1.000	1.000	95	1.00	0.00
	TH	127	0.95	134	T	134	2	1.000	1.000	134	0.00	0.00
	RT	90	0.95	95	R	95	1	1.000	1.000	95	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f P	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	LT	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.984	1753
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	116	3279	0.035	0.092	301	0.385	
T	1127	5346	0.211	0.333	1782	0.633	
R	260	1515	0.172	0.617	934	0.278	
WB							
L	116	3279	0.035	0.092	301	0.385	*
T	1378	5346	0.258	0.333	1782	0.773	*
R	116	1515	0.076	0.525	795	0.146	
NB							
L	239	1693	0.141	0.283	480	0.499	*
LT	243	1753	0.139	0.283	497	0.489	
R	95	1515	0.063	0.375	568	0.167	
SB							
L	95	1693	0.056	0.192	324	0.292	
T	134	3564	0.038	0.192	683	0.196	
R	95	1515	0.063	0.283	429	0.221	*

Cycle Length, C = 120.0 sec.
Lost Time Per Cycle, L = 12.0 sec.

Sum (v/s) critical = ~~0.497~~ 0,472
X critical = ~~0.552~~ 0,524

LEVEL-OF-SERVICE WORKSHEET

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.385	0.092	120.0	39.0	301	0.4	1.00	39.4	D	20.9	C
T	0.633	0.333	120.0	25.7	1782	0.5	0.85	22.3	C		
R	0.278	0.617	120.0	8.1	934	0.0	0.85	6.9	B		
WB											
L	0.385	0.092	120.0	39.0	301	0.4	1.00	39.4	D	24.5	C
T	0.773	0.333	120.0	27.3	1782	1.5	0.85	24.5	C		
R	0.146	0.525	120.0	11.1	795	0.0	0.85	9.5	B		
NB											
L	0.499	0.283	120.0	27.3	480	0.7	1.00	28.0	D	24.2	C
LT	0.489	0.283	120.0	27.2	497	0.6	0.85	23.6	C		
R	0.167	0.375	120.0	19.0	568	0.0	0.85	16.2	C		
SB											
L	0.292	0.192	120.0	31.6	324	0.1	1.00	31.7	D	26.4	D
T	0.196	0.192	120.0	31.0	683	0.0	0.85	26.3	D		
R	0.221	0.283	120.0	25.0	429	0.0	0.85	21.3	C		

Intersection Delay = 23.3 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA

DATE OF THE ANALYSIS.....9/27/89

TIME PERIOD ANALYZED.....P.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVE 3C

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	509	174	616	579
THRU	888*	1000*	749	613
RIGHT	505	707	213	417
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

* The volumes used in this analysis represent two-thirds of the total through volume. Proposed geometry requires seven total approach lanes (including three through lanes), however, computer software limitations restrict the user to a maximum of six approach lanes. Therefore, two through lanes were used in the analysis and the through volume was reduced proportionately.

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 6 WESTBOUND = 6 NORTHBOUND = 6 SOUTHBOUND = 6

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	T	12.0	T	12.0
5	R	12.0	R	12.0	T	12.0	T	12.0
6	R	12.0	R	12.0	R	12.0	R	12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	43.8	3
WESTBOUND	50	N	43.8	3
NORTHBOUND	50	N	43.8	3
SOUTHBOUND	50	N	43.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
WESTBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X	X		

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
EASTBOUND RT	X			
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	26.00
THRU	48.00
RIGHT	
Permitted	0.00
Protected	76.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	15.00
THRU	37.00
RIGHT	
Permitted	0.00
Protected	65.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	28.00
THRU	20.00
RIGHT	
Permitted	0.00
Protected	35.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	28.00
THRU	20.00
RIGHT	
Permitted	0.00
Protected	46.00

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB											
LT	509	0.95	536	L	536	2	1.000	1.000	536	1.00	0.00
TH	888	0.95	935	T	935	2	1.000	1.000	935	0.00	0.00
RT	505	0.95	532	R	532	2	1.000	1.000	532	0.00	1.00
WB											
LT	174	0.95	183	L	183	2	1.000	1.000	183	1.00	0.00
TH	1000	0.95	1053	T	1053	2	1.000	1.000	1053	0.00	0.00
RT	707	0.95	744	R	744	2	1.000	1.000	744	0.00	1.00
NB											
LT	616	0.95	648	L	648	2	1.000	1.000	648	1.00	0.00
TH	749	0.95	788	T	788	3	1.000	1.000	788	0.00	0.00
RT	213	0.95	224	R	224	1	1.000	1.000	224	0.00	1.00
SB											
LT	579	0.95	609	L	609	2	1.000	1.000	609	1.00	0.00
TH	613	0.95	645	T	645	3	1.000	1.000	645	0.00	0.00
RT	417	0.95	439	R	439	1	1.000	1.000	439	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	536	3279	0.163	0.217	710	0.754	*
T	935	3564	0.262	0.400	1426	0.656	
R	532	2673	0.199	0.633	1693	0.314	
WB							
L	183	3279	0.056	0.125	410	0.447	
T	1053	3564	0.295	0.308	1099	0.958	*
R	744	2673	0.278	0.542	1448	0.514	
NB							
L	648	3279	0.198	0.233	765	0.848	*
T	788	5346	0.147	0.167	891	0.885	
R	224	1515	0.148	0.292	442	0.508	
SB							
L	609	3279	0.186	0.233	765	0.797	
T	645	5346	0.121	0.167	891	0.724	
R	439	1515	0.290 ~~0.163~~ 0.127	0.383	581	0.756	*

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.546~~ 0.783

Lost Time Per Cycle, L = 9.0 sec. X critical = ~~1.023~~ 0.846

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 6 WESTBOUND = 6 NORTHBOUND = 6 SOUTHBOUND = 6

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	T	12.0	T	12.0
5	R	12.0	R	12.0	T	12.0	T	12.0
6	R	12.0	R	12.0	R	12.0	R	12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	BUSES (Nm)	(Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	43.8	3
WESTBOUND	50	N	43.8	3
NORTHBOUND	50	N	43.8	3
SOUTHBOUND	50	N	43.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
WESTBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X	X		

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
EASTBOUND RT	X			
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	25.50
THRU	34.50
RIGHT	
Permitted	0.00
Protected	67.50
WESTBOUND	
LEFT	
Permitted	0.00
Protected	13.00
THRU	22.00
RIGHT	
Permitted	0.00
Protected	55.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	33.00
THRU	30.50
RIGHT	
Permitted	0.00
Protected	43.50
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	33.00
THRU	30.50
RIGHT	
Permitted	0.00
Protected	56.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	509	0.95	536	L	536	2	1.000	1.000	536	1.00	0.00
	TH	414	0.95	436	T	436	2	1.000	1.000	436	0.00	0.00
	RT	505	0.95	532	R	532	2	1.000	1.000	532	0.00	1.00
WB												
	LT	174	0.95	183	L	183	2	1.000	1.000	183	1.00	0.00
	TH	421	0.95	443	T	443	2	1.000	1.000	443	0.00	0.00
	RT	707	0.95	744	R	744	2	1.000	1.000	744	0.00	1.00
NB												
	LT	616	0.95	648	L	648	2	1.000	1.000	648	1.00	0.00
	TH	749	0.95	788	T	788	3	1.000	1.000	788	0.00	0.00
	RT	213	0.95	224	R	224	1	1.000	1.000	224	0.00	1.00
SB												
	LT	579	0.95	609	L	609	2	1.000	1.000	609	1.00	0.00
	TH	613	0.95	645	T	645	3	1.000	1.000	645	0.00	0.00
	RT	417	0.95	439	R	439	1	1.000	1.000	439	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	536	3279	0.163	0.213	697	0.769	*
T	436	3564	0.122	0.287	1025	0.425	
R	532	2673	0.199	0.563	1504	0.354	
WB							
L	183	3279	0.056	0.108	355	0.516	
T	443	3564	0.124	0.183	653	0.678	*
R	744	2673	0.278	0.458	1225	0.607	
NB							
L	648	3279	0.198	0.275	902	0.719	*
T	788	5346	0.147	0.254	1359	0.580	
R	224	1515	0.148	0.363	549	0.408	
SB							
L	609	3279	0.186	0.275	902	0.676	
T	645	5346	0.121	0.254	1359	0.475	
R	439	1515	0.290 ~~0.163~~ 0.127	0.467	707	0.621	*

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.775~~ 0.617

Lost Time Per Cycle, L = 9.0 sec. X critical = ~~0.838~~ 0.662

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.769	0.213	120.0	33.8	697	3.6	1.00	37.4	D	23.2	C
T	0.425	0.287	120.0	26.4	1025	0.2	0.85	22.6	C		
R	0.354	0.563	120.0	10.9	1504	0.1	0.85	9.3	B		
WB											
L	0.516	0.108	120.0	38.4	355	1.1	1.00	39.5	D	24.2	C
T	0.678	0.183	120.0	34.7	653	2.0	0.85	31.2	D		
R	0.607	0.458	120.0	18.5	1225	0.6	0.85	16.3	C		
NB											
L	0.719	0.275	120.0	29.9	902	2.0	1.00	31.8	D	27.1	D
T	0.580	0.254	120.0	29.8	1359	0.5	0.85	25.7	D		
R	0.408	0.363	120.0	21.8	549	0.3	0.85	18.7	C		
SB											
L	0.676	0.275	120.0	29.4	902	1.4	1.00	30.9	D	24.8	C
T	0.475	0.254	120.0	28.8	1359	0.2	0.85	24.7	C		
R	0.621	0.467	120.0	18.3	707	1.2	0.85	16.6	C		

Intersection Delay = 24.9 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....118TH AVE.

NAME OF THE NORTH/SOUTH STREET.....49TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA

DATE OF THE ANALYSIS.....9/27/89

TIME PERIOD ANALYZED.....P.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVES 3C/3D

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	32	254	157	92
THRU	1470	1798	1433	1173
RIGHT	129	113	311	27
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 5 WESTBOUND = 6 NORTHBOUND = 5 SOUTHBOUND = 5

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	T	12.0	L	12.0	T	12.0	T	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	T	12.0	T	12.0
5	R	12.0	T	12.0	R	12.0	R	12.0
6		12.0	R	12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	BUSES (Nm)	(Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	37.8	3
WESTBOUND	50	N	37.8	3
NORTHBOUND	50	N	40.8	3
SOUTHBOUND	50	N	40.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
WESTBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
NORTHBOUND RT	X	X		
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
EASTBOUND RT	X			
WESTBOUND RT				

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	10.00
THRU	40.00
RIGHT	
Permitted	0.00
Protected	59.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	17.00
THRU	47.00
RIGHT	
Permitted	0.00
Protected	47.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	19.00
THRU	35.00
RIGHT	
Permitted	0.00
Protected	52.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	19.00
THRU	35.00
RIGHT	
Permitted	0.00
Protected	45.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	32	0.95	34	L	34	1	1.000	1.000	34	1.00	0.00
	TH	1470	0.95	1547	T	1547	3	1.000	1.000	1547	0.00	0.00
	RT	129	0.95	136	R	136	1	1.000	1.000	136	0.00	1.00
WB												
	LT	254	0.95	267	L	267	2	1.000	1.000	267	1.00	0.00
	TH	1798	0.95	1893	T	1893	3	1.000	1.000	1893	0.00	0.00
	RT	113	0.95	119	R	119	1	1.000	1.000	119	0.00	1.00
NB												
	LT	157	0.95	165	L	165	1	1.000	1.000	165	1.00	0.00
	TH	1433	0.95	1508	T	1508	3	1.000	1.000	1508	0.00	0.00
	RT	311	0.95	327	R	327	1	1.000	1.000	327	0.00	1.00
SB												
	LT	92	0.95	97	L	97	1	1.000	1.000	97	1.00	0.00
	TH	1173	0.95	1235	T	1235	3	1.000	1.000	1235	0.00	0.00
	RT	27	0.95	28	R	28	1	1.000	1.000	28	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	34	1693	0.020	0.083	141	0.239	*
T	1547	5346	0.289	0.333	1782	0.868	
R	136	1515	0.090	0.492	745	0.182	
WB							
L	267	3279	0.082	0.142	465	0.576	
T	1893	5346	0.354	0.392	2094	0.904	*
R	119	1515	0.079	0.392	593	0.200	
NB							
L	165	1693	0.098	0.158	268	0.617	*
T	1508	5346	0.282	0.292	1559	0.967	*
R	327	1515	0.216	0.433	656	0.499	
SB							
L	97	1693	0.057	0.158	268	0.361	
T	1235	5346	0.231	0.292	1559	0.792	
R	28	1515	0.019	0.375	568	0.050	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.754
Lost Time Per Cycle, L = 9.0 sec. X critical = 0.815

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.239	0.083	120.0	39.1	141	0.2	1.00	39.3	D	26.2	D
T	0.868	0.333	120.0	28.5	1782	3.5	0.85	27.2	D		
R	0.182	0.492	120.0	12.9	745	0.0	0.85	11.0	B		
WB											
L	0.576	0.142	120.0	36.6	465	1.3	1.00	37.9	D	26.8	D
T	0.904	0.392	120.0	26.1	2094	4.4	0.85	25.9	D		
R	0.200	0.392	120.0	18.3	593	0.0	0.85	15.6	C		
NB											
L	0.617	0.158	120.0	35.8	268	3.0	1.00	38.8	D	33.8	D
T	0.967	0.292	120.0	31.9	1559	11.7	0.85	37.0	D		
R	0.499	0.433	120.0	18.7	656	0.5	0.85	16.3	C		
SB											
L	0.361	0.158	120.0	34.3	268	0.4	1.00	34.6	D	27.3	D
T	0.792	0.292	120.0	29.8	1559	2.0	0.85	27.0	D		
R	0.050	0.375	120.0	18.2	568	0.0	0.85	15.4	C		

Intersection Delay = 28.6 (sec/veh) Intersection LOS = D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....AIRPORT ENTRANCE

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA

DATE OF THE ANALYSIS.....8/31/89

TIME PERIOD ANALYZED.....P.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVES 3C/3D

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	381	0	271
THRU	0	0	100	82
RIGHT	0	331	466	0
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 0 WESTBOUND = 3 NORTHBOUND = 3 SOUTHBOUND = 4

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1		12.0	L	12.0	T	12.0	L	12.0
2		12.0	L	12.0	T	12.0	L	12.0
3		12.0	R	12.0	R	12.0	T	12.0
4		12.0		12.0		12.0	T	12.0
5								
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	28.8	3
WESTBOUND	50	N	28.8	3
NORTHBOUND	50	N	14.3	3
SOUTHBOUND	50	N	14.3	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
WESTBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT				

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
EASTBOUND RT				
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	47.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	85.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	26.00
RIGHT	
Permitted	0.00
Protected	73.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	38.00
THRU	64.00
RIGHT	
Permitted	0.00
Protected	0.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								
WB												
	LT	381	0.95	401	L	401	2	1.050	1.000	421	1.00	0.00
	TH	0	0.95	0								
	RT	331	0.95	348	R	348	1	1.000	1.000	348	0.00	1.00
NB												
	LT	0	0.95	0								
	TH	100	0.95	105	T	105	2	1.050	1.000	111	0.00	0.00
	RT	466	0.95	491	R	491	1	1.000	1.000	491	0.00	1.00
SB												
	LT	271	0.95	285	L	285	2	1.050	1.000	300	1.00	0.00
	TH	82	0.95	86	T	86	2	1.050	1.000	91	0.00	0.00
	RT	0	0.95	0								

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
WB							
L	421	3279	0.128	0.392	1284	0.328	
R	348	1515	0.230 ~~.091~~ 0,139 *	0.708	1073	0.325	*
NB							
T	111	3564	0.031	0.217	772	0.143	*
R	491	1515	0.324	0.608	921	0.532	
SB							
L	300	3279	0.091	0.317	1038	0.288	*
T	91	3564	0.025	0.533	1901	0.048	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.352~~ 0,241
Lost Time Per Cycle, L = 9.0 sec. X critical = ~~0.381~~ 0,282

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
WB											
L	0.328	0.392	120.0	19.4	1284	0.1	1.00	19.4	C	12.6	B
R	0.325	0.708	120.0	5.0	1073	0.1	0.85	4.3	A		
NB											
T	0.143	0.217	120.0	28.9	772	0.0	0.85	24.5	C	12.0	B
R	0.532	0.608	120.0	10.3	921	0.5	0.85	9.2	B		
SB											
L	0.288	0.317	120.0	23.4	1038	0.0	1.00	23.5	C	20.0	C
T	0.048	0.533	120.0	10.2	1901	0.0	0.85	8.7	B		

Intersection Delay = 14.0 (sec/veh) Intersection LOS = B

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD. (WEST)

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA FILE: ULROWCPG

DATE OF THE ANALYSIS.....9/27/89

TIME PERIOD ANALYZED.....P.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVE 3C

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	316	173	1159	1101
THRU	0	0	448	367
RIGHT	948	1345	212	258
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 4 WESTBOUND = 4 NORTHBOUND = 5 SOUTHBOUND = 5

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	R	12.0	R	12.0	T	12.0	T	12.0
4	R	12.0	R	12.0	T	12.0	T	12.0
5		12.0		12.0	R	12.0	R	12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT Y/N	PKG (Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	37.8	3
WESTBOUND	50	N	37.8	3
NORTHBOUND	50	N	43.8	3
SOUTHBOUND	50	N	43.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU				
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU				
RIGHT		X		
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
SOUTHBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
EASTBOUND RT	X	X		
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	26.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	65.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	26.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	63.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	51.00
THRU	22.00
RIGHT	
Permitted	0.00
Protected	62.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	49.00
THRU	20.00
RIGHT	
Permitted	0.00
Protected	60.00

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB											
LT	316	0.95	333	L	333	2	1.000	1.000	333	1.00	0.00
TH	0	0.95	0								
RT	948	0.95	998	R	998	2	1.000	1.000	998	0.00	1.00
WB											
LT	173	0.95	182	L	182	2	1.000	1.000	182	1.00	0.00
TH	0	0.95	0								
RT	1345	0.95	1416	R	1416	2	1.000	1.000	1416	0.00	1.00
NB											
LT	1159	0.95	1220	L	1220	2	1.000	1.000	1220	1.00	0.00
TH	448	0.95	472	T	472	2	1.000	1.000	472	0.00	0.00
RT	212	0.95	223	R	223	1	1.000	1.000	223	0.00	1.00
SB											
LT	1101	0.95	1159	L	1159	2	1.000	1.000	1159	1.00	0.00
TH	367	0.95	386	T	386	2	1.000	1.000	386	0.00	0.00
RT	258	0.95	272	R	272	1	1.000	1.000	272	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	333	3279	0.101	0.217	710	0.468	*
R	998	2673	0.373	0.542	1448	0.689	
WB							
L	182	3279	0.056	0.217	710	0.256	
R	1416	2673	0.530	0.525	1403	1.009	*
NB							
L	1220	3279	0.372	0.425	1394	0.875	
T	472	3564	0.132	0.183	653	0.722	*
R	223	1515	0.147	0.517	783	0.285	
SB							
L	1159	3279	0.353	0.408	1339	0.866	*
T	386	3564	0.108	0.167	594	0.650	
R	272	1515	0.179	0.500	757	0.359	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 1.117
Lost Time Per Cycle, L = 9.0 sec. X critical = 1.207

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.468	0.217	120.0	31.1	710	0.4	1.00	31.5	D	18.3	C
R	0.689	0.542	120.0	15.3	1448	1.0	0.85	13.8	B		
WB											
L	0.256	0.217	120.0	29.6	710	0.0	1.00	29.7	D	35.3	D
R	1.009	0.525	120.0	21.9	1403	20.5	0.85	36.0	D		
NB											
L	0.875	0.425	120.0	24.0	1394	4.7	1.00	28.7	D	27.4	D
T	0.722	0.183	120.0	35.1	653	2.7	0.85	32.1	D		
R	0.285	0.517	120.0	12.5	783	0.1	0.85	10.7	B		
SB											
L	0.866	0.408	120.0	24.7	1339	4.4	1.00	29.1	D	27.1	D
T	0.650	0.167	120.0	35.5	594	1.8	0.85	31.7	D		
R	0.359	0.500	120.0	13.9	757	0.1	0.85	11.9	B		

Intersection Delay = 27.4 (sec/veh) Intersection LOS = D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD. (WEST)

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA

DATE OF THE ANALYSIS.....9/27/89

TIME PERIOD ANALYZED.....P.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVE 3D

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	316	173	290	1101
THRU	573 *	643 *	448	367
RIGHT	237	1345	212	258
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

*The volumes used in this analysis represent two-thirds of the total through volume. Proposed geometry requires seven total approach lanes (including three through lanes), however computer software limitations restrict the user to six total approach lanes. Therefore, two through lanes were used in the analysis and the through volumes were reduced proportionately.

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 6 WESTBOUND = 6 NORTHBOUND = 5 SOUTHBOUND = 5

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	T	12.0	T	12.0
5	R	12.0	R	12.0	R	12.0	R	12.0
6	R	12.0	R	12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	37.8	3
WESTBOUND	50	N	37.8	3
NORTHBOUND	50	N	43.8	3
SOUTHBOUND	50	N	43.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
WESTBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT	X	X		

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
SOUTHBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
EASTBOUND RT	X			
WESTBOUND RT	X	X		

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	19.00
THRU	31.00
RIGHT	
Permitted	0.00
Protected	49.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	14.00
THRU	26.00
RIGHT	
Permitted	0.00
Protected	72.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	18.00
THRU	20.00
RIGHT	
Permitted	0.00
Protected	34.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	46.00
THRU	48.00
RIGHT	
Permitted	0.00
Protected	67.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	316	0.95	333	L	333	2	1.000	1.000	333	1.00	0.00
	TH	573	0.95	603	T	603	2	1.000	1.000	603	0.00	0.00
	RT	237	0.95	249	R	249	2	1.000	1.000	249	0.00	1.00
WB												
	LT	173	0.95	182	L	182	2	1.000	1.000	182	1.00	0.00
	TH	643	0.95	677	T	677	2	1.000	1.000	677	0.00	0.00
	RT	1345	0.95	1416	R	1416	2	1.000	1.000	1416	0.00	1.00
NB												
	LT	290	0.95	305	L	305	2	1.000	1.000	305	1.00	0.00
	TH	448	0.95	472	T	472	2	1.000	1.000	472	0.00	0.00
	RT	212	0.95	223	R	223	1	1.000	1.000	223	0.00	1.00
SB												
	LT	1101	0.95	1159	L	1159	2	1.000	1.000	1159	1.00	0.00
	TH	367	0.95	386	T	386	2	1.000	1.000	386	0.00	0.00
	RT	258	0.95	272	R	272	1	1.000	1.000	272	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	333	3279	0.101	0.158	519	0.641	*
T	603	3564	0.169	0.258	921	0.655	
R	249	2673	0.093	0.408	1091	0.229	
WB							
L	182	3279	0.056	0.117	383	0.476	
T	677	3564	0.190	0.217	772	0.877	*
R	1416	2673	0.530	0.600	1604	0.883	
NB							
L	305	3279	0.093	0.150	492	0.621	
T	472	3564	0.132	0.167	594	0.794	*
R	223	1515	0.147	0.283	429	0.520	
SB							
L	1159	3279	0.353	0.383	1257	0.922	*
T	386	3564	0.108	0.400	1426	0.271	
R	272	1515	0.179	0.558	846	0.321	

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.777
Lost Time Per Cycle, L = 9.0 sec. X critical = 0.840

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.641	0.158	120.0	36.0	519	1.9	1.00	37.8	D	27.3	D
T	0.655	0.258	120.0	30.2	921	1.2	0.85	26.7	D		
R	0.229	0.408	120.0	17.6	1091	0.0	0.85	15.0	B		
WB											
L	0.476	0.117	120.0	37.7	383	0.7	1.00	38.4	D	24.4	C
T	0.877	0.217	120.0	34.5	772	7.9	0.85	36.1	D		
R	0.883	0.600	120.0	15.5	1604	4.4	0.85	17.0	C		
NB											
L	0.621	0.150	120.0	36.3	492	1.7	1.00	38.0	D	33.7	D
T	0.794	0.167	120.0	36.5	594	5.1	0.85	35.3	D		
R	0.520	0.283	120.0	27.5	429	0.9	0.85	24.1	C		
SB											
L	0.922	0.383	120.0	26.8	1257	8.2	1.00	35.0	D	27.0	D
T	0.271	0.400	120.0	18.4	1426	0.0	0.85	15.7	C		
R	0.321	0.558	120.0	10.8	846	0.1	0.85	9.3	B		

Intersection Delay = 27.2 (sec/veh) Intersection LOS = D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....34TH ST.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....GSR

DATE OF THE ANALYSIS.....11/17/89

TIME PERIOD ANALYZED.....P.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVES 3C/3D

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	97	127	324	46
THRU	181	218	28	22
RIGHT	264	56	155	80
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 5 WESTBOUND = 5 NORTHBOUND = 4 SOUTHBOUND = 4

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	L	12.0	L	12.0	L	12.0
2	L	12.0	L	12.0	L	12.0	L	12.0
3	T	12.0	T	12.0	T	12.0	T	12.0
4	T	12.0	T	12.0	TR	12.0	TR	12.0
5	R	12.0	R	12.0		12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	31.8	3
WESTBOUND	50	N	31.8	3
NORTHBOUND	50	N	37.8	3
SOUTHBOUND	50	N	37.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 12.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X	X		
THRU		X	X	
RIGHT		X	X	
PEDS				
SOUTHBOUND				
LEFT	X			
THRU			X	
RIGHT			X	
PEDS				
EASTBOUND RT	X	X		
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	14.00
THRU	27.00
RIGHT	
Permitted	0.00
Protected	64.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	14.00
THRU	27.00
RIGHT	
Permitted	0.00
Protected	39.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	37.00
THRU	55.00
RIGHT	
Permitted	0.00
Protected	55.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	12.00
THRU	30.00
RIGHT	
Permitted	0.00
Protected	30.00

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB											
LT	97	0.95	102	L	102	2	1.000	1.000	102	1.00	0.00
TH	181	0.95	191	T	191	2	1.000	1.000	191	0.00	0.00
RT	264	0.95	278	R	278	1	1.000	1.000	278	0.00	1.00
WB											
LT	127	0.95	134	L	134	2	1.000	1.000	134	1.00	0.00
TH	218	0.95	229	T	229	2	1.000	1.000	229	0.00	0.00
RT	56	0.95	59	R	59	1	1.000	1.000	59	0.00	1.00
NB											
LT	324	0.95	341	L	341	2	1.000	1.000	341	1.00	0.00
TH	28	0.95	29	TR	193	2	1.000	1.000	193	0.00	0.85
RT	155	0.95	163								
SB											
LT	46	0.95	48	L	48	2	1.000	1.000	48	1.00	0.00
TH	22	0.95	23	TR	107	2	1.000	1.000	107	0.00	0.78
RT	80	0.95	84								

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	TR	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.873	1.000	3111
SB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	TR	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.882	1.000	3145

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	102	3279	0.031	0.117	383	0.267	
T	191	3564	0.053	0.225	802	0.238	
R	278	1515	0.183 ~~.104~~ 0,079	0.533	808	0.344	*
WB							
L	134	3279	0.041	0.117	383	0.349	*
T	229	3564	0.064	0.225	802	0.286	
R	59	1515	0.039	0.325	492	0.120	
NB							
L	341	3279	0.104	0.308	1011	0.337	*
TR	193	3111	0.062	0.458	1426	0.135	
SB							
L	48	3279	0.015	0.100	328	0.148	
TR	107	3145	0.034	0.250	786	0.137	*

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.362~~ 0,258
Lost Time Per Cycle, L = 12.0 sec. X critical = ~~0.403~~ 0,287

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.267	0.117	120.0	36.7	383	0.1	1.00	36.8	D	19.9	C
T	0.238	0.225	120.0	28.9	802	0.0	0.85	24.6	C		
R	0.344	0.533	120.0	12.2	808	0.1	0.85	10.4	B		
WB											
L	0.349	0.117	120.0	37.1	383	0.2	1.00	37.3	D	27.9	D
T	0.286	0.225	120.0	29.3	802	0.1	0.85	24.9	C		
R	0.120	0.325	120.0	21.6	492	0.0	0.85	18.4	C		
NB											
L	0.337	0.308	120.0	24.3	1011	0.1	1.00	24.4	C	20.0	C
TR	0.135	0.458	120.0	14.3	1426	0.0	0.85	12.1	B		
SB											
L	0.148	0.100	120.0	37.5	328	0.0	1.00	37.5	D	27.2	D
TR	0.137	0.250	120.0	26.6	786	0.0	0.85	22.6	C		

Intersection Delay = 22.6 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....ULMERTON RD.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD

AREA TYPE.....OTHER

NAME OF THE ANALYST.....XS FILE: ULMROSPM.SIG

DATE OF THE ANALYSIS.....10/26/89

TIME PERIOD ANALYZED.....P.M. PEAK

OTHER INFORMATION:
Alternative 3C/3D

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	159	1677	0
THRU	256	257	0	0
RIGHT	1371	0	194	0
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 4 WESTBOUND = 4 NORTHBOUND = 3 SOUTHBOUND = 0

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	T	12.0	L	12.0	L	12.0		12.0
2	T	12.0	L	12.0	L	12.0		12.0
3	R	12.0	T	12.0	R	12.0		12.0
4	R	12.0	T	12.0		12.0		12.0
5								
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	0	N	14.3	3
WESTBOUND	0	N	14.3	3
NORTHBOUND	0	N	31.8	3
SOUTHBOUND	0	N	31.8	3

min T = minimum green time for pedestrians

PRETIMED LOST TIME/CYCLE = 6.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
WESTBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
NORTHBOUND RT	X			
SOUTHBOUND RT				

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
SOUTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
EASTBOUND RT	X			
WESTBOUND RT				

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	26.00
RIGHT	
Permitted	0.00
Protected	96.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	18.00
THRU	44.00
RIGHT	
Permitted	0.00
Protected	0.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	70.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	88.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	0	0.95	0								
	TH	256	0.95	269	T	269	2	1.000	1.000	269	0.00	0.00
	RT	1371	0.95	1443	R	1443	2	1.000	1.000	1443	0.00	1.00
WB												
	LT	159	0.95	167	L	167	2	1.000	1.000	167	1.00	0.00
	TH	257	0.95	271	T	271	2	1.000	1.000	271	0.00	0.00
	RT	0	0.95	0								
NB												
	LT	1677	0.95	1765	L	1765	2	1.000	1.000	1765	1.00	0.00
	TH	0	0.95	0								
	RT	194	0.95	204	R	204	1	1.000	1.000	204	0.00	1.00
SB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
	R	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	0.750	1.000	2673
WB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	3564
NB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
SB												

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
T	269	3564	0.076	0.217	772	0.349	*
R	1443	2673	0.540	0.800	2138	0.675	
WB							
L	167	3279	0.051	0.150	492	0.340	*
T	271	3564	0.076	0.367	1307	0.207	
NB							
L	1765	3279	0.538	0.583	1913	0.923	*
R	204	1515	0.135	0.733	1111	0.184	
SB							

Cycle Length, C = 120.0 sec. Sum (v/s) critical = 0.665
Lost Time Per Cycle, L = 6.0 sec. X critical = 0.700

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
T	0.349	0.217	120.0	30.3	772	0.1	1.00	30.4	D	8.6	B
R	0.675	0.800	120.0	4.0	2138	0.6	1.00	4.6	A		
WB											
L	0.340	0.150	120.0	34.7	492	0.2	1.00	34.9	D	25.6	D
T	0.207	0.367	120.0	19.8	1307	0.0	1.00	19.8	C		
NB											
L	0.923	0.583	120.0	17.1	1913	5.9	1.00	23.0	C	21.0	C
R	0.184	0.733	120.0	3.7	1111	0.0	1.00	3.8	A		
SB											

Intersection Delay = 16.4 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....118th Ave.

NAME OF THE NORTH/SOUTH STREET.....Roosevelt Blvd.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....xs File: 18ROCPG

DATE OF THE ANALYSIS.....11/30/89

TIME PERIOD ANALYZED.....2010 PM PEAK

OTHER INFORMATION:
Alternative 3C

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	714	0	0	228
THRU	1159	1581	0	0
RIGHT	0	278	0	584
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 5 WESTBOUND = 4 NORTHBOUND = 0 SOUTHBOUND = 2

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	T	12.0		12.0	L	12.0
2	L	12.0	T	12.0		12.0	R	12.0
3	T	12.0	T	12.0		12.0		12.0
4	T	12.0	R	12.0		12.0		12.0
5	T	12.0		12.0		12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT Y/N	PKG (Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	11.3	3
WESTBOUND	50	N	11.3	3
NORTHBOUND	50	N	34.8	3
SOUTHBOUND	50	N	34.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
WESTBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
SOUTHBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
EASTBOUND RT				
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	33.00
THRU	78.00
RIGHT	
Permitted	0.00
Protected	0.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	45.00
RIGHT	
Permitted	0.00
Protected	78.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	33.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	66.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	714	0.95	752	L	752	2	1.000	1.000	752	1.00	0.00
	TH	1159	0.95	1220	T	1220	3	1.000	1.000	1220	0.00	0.00
	RT	0	0.95	0								
WB												
	LT	0	0.95	0								
	TH	1581	0.95	1664	T	1664	3	1.000	1.000	1664	0.00	0.00
	RT	278	0.95	293	R	293	1	1.000	1.000	293	0.00	1.00
NB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								
SB												
	LT	228	0.95	240	L	240	1	1.000	1.000	240	1.00	0.00
	TH	0	0.95	0								
	RT	584	0.95	615	R	615	1	1.000	1.000	615	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
WB												
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
SB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	752	3279	0.229	0.275	902	0.834	*
T	1220	5346	0.228	0.650	3475	0.351	
WB							
T	1664	5346	0.311	0.375	2005	0.830	*
R	293	1515	0.193	0.650	985	0.297	
NB							
SB							
L	240	1693	0.142	0.275	466	0.516	
R	615	1515	0.406 ~~-,229~~ 0,177	0.550	833	0.738	*

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.946~~ 0,717

Lost Time Per Cycle, L = 9.0 sec. X critical = ~~1.023~~ 0,775

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.834	0.275	120.0	31.1	902	4.8	1.00	35.9	D	17.5	C
T	0.351	0.650	120.0	7.2	3475	0.0	0.85	6.2	B		
WB											
T	0.830	0.375	120.0	25.9	2005	2.2	0.85	23.9	C	21.2	C
R	0.297	0.650	120.0	6.9	985	0.1	0.85	5.9	B		
NB											
SB											
L	0.516	0.275	120.0	27.9	466	0.8	1.00	28.8	D	19.1	C
R	0.738	0.550	120.0	15.5	833	2.4	0.85	15.3	C		

Intersection Delay = 19.3 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....118TH AVE.

NAME OF THE NORTH/SOUTH STREET.....ROOSEVELT BLVD.

AREA TYPE.....OTHER

NAME OF THE ANALYST.....DEA

DATE OF THE ANALYSIS.....9/27/89

TIME PERIOD ANALYZED.....P.M. PEAK HOUR-2010

OTHER INFORMATION:
ALTERNATIVE 3D

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	714	0	0	157
THRU	1159	1581	0	0
RIGHT	0	191	0	584
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 5 WESTBOUND = 4 NORTHBOUND = 0 SOUTHBOUND = 2

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	T	12.0		12.0	L	12.0
2	L	12.0	T	12.0		12.0	R	12.0
3	T	12.0	T	12.0		12.0		12.0
4	T	12.0	R	12.0		12.0		12.0
5	T	12.0		12.0		12.0		12.0
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	2.00	N	0	0	0.95
WESTBOUND	0.00	2.00	N	0	0	0.95
NORTHBOUND	0.00	2.00	N	0	0	0.95
SOUTHBOUND	0.00	2.00	N	0	0	0.95

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	11.3	3
WESTBOUND	50	N	11.3	3
NORTHBOUND	50	N	34.8	3
SOUTHBOUND	50	N	34.8	3

min T = minimum green time for pedestrians

ACTUATED LOST TIME/CYCLE = 9.0 CYCLE LENGTH = 120.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS				
WESTBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT	X			

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
SOUTHBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS				
EASTBOUND RT				
WESTBOUND RT	X			

	EFFECTIVE GREEN, g
EASTBOUND	
LEFT	
Permitted	0.00
Protected	34.00
THRU	78.00
RIGHT	
Permitted	0.00
Protected	0.00
WESTBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	44.00
RIGHT	
Permitted	0.00
Protected	77.00
NORTHBOUND	
LEFT	
Permitted	0.00
Protected	0.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	0.00
SOUTHBOUND	
LEFT	
Permitted	0.00
Protected	33.00
THRU	0.00
RIGHT	
Permitted	0.00
Protected	67.00

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	714	0.95	752	L	752	2	1.000	1.000	752	1.00	0.00
	TH	1159	0.95	1220	T	1220	3	1.000	1.000	1220	0.00	0.00
	RT	0	0.95	0								
WB												
	LT	0	0.95	0								
	TH	1581	0.95	1664	T	1664	3	1.000	1.000	1664	0.00	0.00
	RT	191	0.95	201	R	201	1	1.000	1.000	201	0.00	1.00
NB												
	LT	0	0.95	0								
	TH	0	0.95	0								
	RT	0	0.95	0								
SB												
	LT	157	0.95	165	L	165	1	1.000	1.000	165	1.00	0.00
	TH	0	0.95	0								
	RT	584	0.95	615	R	615	1	1.000	1.000	615	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	2	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.920	3279
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
WB												
	T	1800	3	1.000	0.990	1.000	1.000	1.000	1.000	1.000	1.000	5346
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515
NB												
SB												
	L	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	1.000	0.950	1693
	R	1800	1	1.000	0.990	1.000	1.000	1.000	1.000	0.850	1.000	1515

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	752	3279	0.229	0.283	929	0.809	*
T	1220	5346	0.228	0.650	3475	0.351	
WB							
T	1664	5346	0.311	0.367	1960	0.849	*
R	201	1515	0.133	0.642	972	0.207	
NB							
SB							
L	165	1693	0.098	0.275	466	0.355	
R	615	1515	0.406 ~~.229~~ 0,177	0.558	846	0.727	*

Cycle Length, C = 120.0 sec. Sum (v/s) critical = ~~0.946~~ 0,717

Lost Time Per Cycle, L = 9.0 sec. X critical = ~~1.023~~ 0,775

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.809	0.283	120.0	30.4	929	3.8	1.00	34.2	D	16.9	C
T	0.351	0.650	120.0	7.2	3475	0.0	0.85	6.2	B		
WB											
T	0.849	0.367	120.0	26.6	1960	2.7	0.85	24.8	C	22.8	C
R	0.207	0.642	120.0	6.8	972	0.0	0.85	5.8	B		
NB											
SB											
L	0.355	0.275	120.0	26.6	466	0.2	1.00	26.8	D	17.2	C
R	0.727	0.558	120.0	15.0	846	2.2	0.85	14.6	B		

Intersection Delay = 19.3 (sec/veh) Intersection LOS = C

APPENDIX C

FREEWAY CAPACITY ANALYSES - ROOSEVELT BOULEVARD EXPRESSWAY ALTERNATIVES 3C AND 3D

****

FACILITY SECTION... SB ROOSVLT. BTWN. 49TH & ULMERTON
ANALYST..... DEA/FILE NAME-SBR049UL
TIME OF ANALYSIS... 2010 A.M. PEAK HOUR
DATE OF ANALYSIS... 9/28/89
OTHER INFORMATION...ALTERNATIVES 3C/3D

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	572	608	is the nonweaving vehicles on the freeway
V 2	526	559	is the down weaving vehicles
V 3	1,104	1,173	is the up weaving vehicles
V 4	1,017	1,081	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... B
NO. OF LANES..... 3
LENGTH OF SECTION..... 1650
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS	SPEED
WEAVING VEHICLES	D	41 mph
NONWEAVING VEHICLES	D	42 mph

OPERATION OF WEAVING AREA IS UNCONSTRAINED

****

	ANALYZED	MAXIMUM
WEAVING VOLUME (VW)..	1,739	3,000
VOLUME RATIO (VR)....	0.51	0.80
WEAVING RATIO (R)....	0.32	0.50
WEAVING LENGTH (L)...	1,650	2,500

****

FACILITY SECTION... SB ROOSVLT. ML BTWN. ULM. & 118TH
ANALYST..... DEA/FILE NAME-SROU18AC
TIME OF ANALYSIS... 2010 A.M. PEAK HOUR
DATE OF ANALYSIS... 9/12/89
OTHER INFORMATION...ALTERNATIVE 3C

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	1,200	1,275	is the nonweaving vehicles on the freeway
V 2	476	506	is the down weaving vehicles
V 3	1,303	1,385	is the up weaving vehicles
V 4	516	548	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... B
NO. OF LANES..... 4
LENGTH OF SECTION..... 1420
NO. OF MAINLINE LANES..... 3
(Upstream of Weave Section)

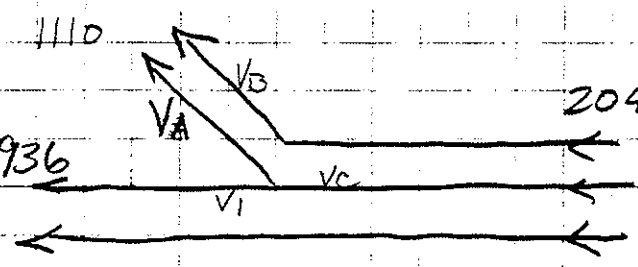
	LOS	SPEED
WEAVING VEHICLES	D	42 mph
NONWEAVING VEHICLES	D	43 mph

OPERATION OF WEAVING AREA IS UNCONSTRAINED
****

	ANALYZED	MAXIMUM
WEAVING VOLUME (VW)..	1,898	3,000
VOLUME RATIO (VR)....	0.51	0.80
WEAVING RATIO (R)....	0.27	0.50
WEAVING LENGTH (L)...	1,420	2,500

Greiner, Inc.

JOB _____ SHEET ___ OF ___ PROJ. NO. C1192.31
DESCRIPTION 118th Expressway at Roosevelt off to frontage Rd. WB. A.M. PEAK ALTERNATIVE 3C
COMPUTED BY AEG DATE 9/28/89
CHECKED BY GSR DATE 9/29/89



Using Fig I.5-13

$V_c = 64 + 0.285(2046) + 0.141(1110) = 804$ vph ✓

$V_1 = 173 + 0.295(2046) - 0.320(1110) = 421$ vph ✓

$V_A = V_c - V_1 = 804 - 421 = 383$ vph ✓

$V_B = V_r - V_A = 1110 - 383 = 727$ ✓

Trucks in lane C $= (0.52)(0.02)(936) + (0.02)(383) = 17$ ✓

$f_{HV} = 1/1 + (17-1)(0.02) = 0.986$

$17/804 = 0.021 \Rightarrow f_{HV} = 1/1 + (17-1)(0.021) = 0.986$

$Vd_1 = V_B = 727/0.986(0.95) = 776$ pcph ✓ (LOS B)

$Vd_2 = V_A = 804/0.986(0.95) = 858$ pcph ✓ (LOS B)

FACILITY SECTION... NB ROOSVLT. BTWN. ULMERTON & 49TH
ANALYST..... DEA/FILE NAME-NROUL49A
TIME OF ANALYSIS... 2010 A.M. PEAK HOUR
DATE OF ANALYSIS... 9/28/89
OTHER INFORMATION...ALTERNATIVES 3C/3D

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	467	496	is the nonweaving vehicles on the freeway
V 2	903	960	is the down weaving vehicles
V 3	431	458	is the up weaving vehicles
V 4	832	884	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... B
NO. OF LANES..... 3
LENGTH OF SECTION..... 1650
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS	SPEED
WEAVING VEHICLES	D	43 mph
NONWEAVING VEHICLES	D	45 mph

OPERATION OF WEAVING AREA IS UNCONSTRAINED

	ANALYZED	MAXIMUM
WEAVING VOLUME (VW)..	1,423	3,000
VOLUME RATIO (VR)....	0.51	0.80
WEAVING RATIO (R)....	0.32	0.50
WEAVING LENGTH (L)...	1,650	2,500

****

FACILITY SECTION... WB ULM. RD. BTW. ROOS(EAST) & ROOS(WEST)
ANALYST..... XS FILE: WULROOSA.WVE
TIME OF ANALYSIS... 2010 A.M. PEAK HOUR
DATE OF ANALYSIS... 10/26/89
OTHER INFORMATION...ALTERNATIVE 3C

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	977	1,038	is the nonweaving vehicles on the freeway
V 2	1,001	1,064	is the down weaving vehicles
V 3	615	653	is the up weaving vehicles
V 4	630	669	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... A
NO. OF LANES..... 4
LENGTH OF SECTION..... 1030
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS	SPEED
WEAVING VEHICLES	E	38 mph
NONWEAVING VEHICLES	D	46 mph

OPERATION OF WEAVING AREA IS CONSTRAINED
****

	ANALYZED	MAXIMUM	
WEAVING VOLUME (VW)..	1,724	1,800	
VOLUME RATIO (VR)....	0.50	0.35	*** EXCEEDS MAX
WEAVING RATIO (R)....	0.38	0.50	
WEAVING LENGTH (L)...	1,030	2,000	

****

FACILITY SECTION... EB ULM. RD. BTW. ROOS(WEST) & ROOS(EAST)
ANALYST..... xs File: eulroosa
TIME OF ANALYSIS... 2010 A.M. PEAK HOUR
DATE OF ANALYSIS... 10/26/89
OTHER INFORMATION...ALTERNATIVE 3C

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	1,270	1,350	is the nonweaving vehicles on the freeway
V 2	809	860	is the down weaving vehicles
V 3	1,136	1,207	is the up weaving vehicles
V 4	724	769	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... A
NO. OF LANES..... 4
LENGTH OF SECTION..... 1030
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS ***	SPEED ******
WEAVING VEHICLES	E	36 mph
NONWEAVING VEHICLES	D	44 mph

OPERATION OF WEAVING AREA IS CONSTRAINED
****

	ANALYZED ********	MAXIMUM *******	
WEAVING VOLUME (VW)..	2,076	1,800	*** EXCEEDS MAX
VOLUME RATIO (VR)....	0.49	0.35	*** EXCEEDS MAX
WEAVING RATIO (R)....	0.42	0.50	
WEAVING LENGTH (L)...	1,030	2,000	

FACILITY LOCATION... NB ROOSVLT. ML ON-RAMP FROM 118TH
ANALYST..... GSR/FILE NAME-NRON18AC
TIME OF ANALYSIS.... 2010 A.M. PEAK HOUR
DATE OF ANALYSIS.... 12/4/89
OTHER INFORMATION... ALTERNATIVE 3C

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (Typical - 200 #/HP)
PEAK HOUR FACTOR..... .95
HIGHWAY DESIGN SPEED (mph)..... 60
(BUSES AND RV'S ARE CONSIDERED AS TRUCKS)

LEVEL TERRAIN

B) INPUT INFORMATION

NO. OF LANES ON FREEWAY : 2 (per direction)

ANALYSIS RAMP CHARACTERISTICS:
(1) RIGHT-HAND RAMP.
(2) ONE LANE RAMP.

	UPSTREAM RAMP	FREEWAY	ANALYSIS RAMP	DOWNSTREAM RAMP
VOLUME	N.A.	936	434	N.A.
% TRUCKS	N.A.	2	2	N.A.
RAMP TYPE	N.A.	N.A.	ON	N.A.
DISTANCE	N.A.	N.A.	N.A.	N.A.

C) RAMP ANALYSIS RESULTS

TRUCK PRESENCE IN LANE 1: 78 % OF FREEWAY TRUCKS

RAMP ANALYZED ALONE USING FIGURE I.5- 1

	V1	Vr	Vf
	****	****	*****
VPH	409	434	936
ET	1.7	1.7	1.7
Fhv	0.97	0.99	0.99
PHF	0.95	0.95	0.95
PCPH	444	461	995

CHECKPOINT	VOLUME	LOS
**********	******	***
FREEWAY:	1456	B
MERGE:	905	B

****

FACILITY SECTION... SB ROOSVLT. BTWN. 49TH & ULMERTON
ANALYST..... DEA/FILE NAME-SR049ULP
TIME OF ANALYSIS... 2010 P.M. PEAK HOUR
DATE OF ANALYSIS... 9/28/89
OTHER INFORMATION...ALTERNATIVES 3C/3D

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	467	496	is the nonweaving vehicles on the freeway
V 2	431	458	is the down weaving vehicles
V 3	903	960	is the up weaving vehicles
V 4	832	884	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... B
NO. OF LANES..... 3
LENGTH OF SECTION..... 1650
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS	SPEED
WEAVING VEHICLES	D	43 mph
NONWEAVING VEHICLES	D	45 mph

OPERATION OF WEAVING AREA IS UNCONSTRAINED
****

	ANALYZED	MAXIMUM
WEAVING VOLUME (VW)..	1,423	3,000
VOLUME RATIO (VR)....	0.51	0.80
WEAVING RATIO (R)....	0.32	0.50
WEAVING LENGTH (L)...	1,650	2,500

****

FACILITY SECTION... SB ROOSVLT. ML BTWN. ULM. & 118TH
ANALYST..... DEA/FILE NAME-SROU18PC
TIME OF ANALYSIS... 2010 P.M. PEAK HOUR
DATE OF ANALYSIS... 9/12/89
OTHER INFORMATION...ALTERNATIVE 3C

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	981	1,043	is the nonweaving vehicles on the freeway
V 2	389	413	is the down weaving vehicles
V 3	1,065	1,132	is the up weaving vehicles
V 4	423	449	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... B
NO. OF LANES..... 4
LENGTH OF SECTION..... 1420
NO. OF MAINLINE LANES..... 3
(Upstream of Weave Section)

	LOS	SPEED
WEAVING VEHICLES	D	44 mph
NONWEAVING VEHICLES	D	47 mph

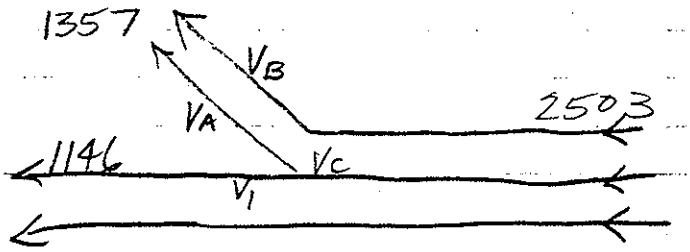
OPERATION OF WEAVING AREA IS UNCONSTRAINED

****

	ANALYZED	MAXIMUM
WEAVING VOLUME (VW)..	1,551	3,000
VOLUME RATIO (VR)....	0.51	0.80
WEAVING RATIO (R)....	0.27	0.50
WEAVING LENGTH (L)...	1,420	2,500

Greiner, Inc.

JOB _____ SHEET ___ OF ___ PROJ. NO. C1192.31
DESCRIPTION 118th Expressway at Roosevelt off-ramp to frontage Road WB PM Peak Alternative 3C
COMPUTED BY DEA DATE 9/28/89
CHECKED BY GSR DATE 9/29/89



Using Fig. I.5-13

$V_C = 64 + 0.285(2503) + 0.141(1357) = 969$ vph ✓

$V_1 = 173 + 0.295(2503) - 0.320(1357) = 477$ vph ✓

$V_A = V_C - V_1 = 969 - 477 = 492$ vph ✓

$V_B = V_r - V_A = 1357 - 492 = 865$ vph ✓

Trucks in lane C $= (0.50)(0.02)(1146) + (0.02)(492) = 21$ ✓

$f_{HV} = 1/1 + (1.7-1)(0.02) = 0.986$

$21/969 = 0.022 \Rightarrow f_{HV} = 1/1 + (1.7-1)(0.022) = 0.985$ ✓

$Vd_1 = V_B = 865/0.986(0.95) = 923$ pcph (LOS B) ✓

$Vd_2 = V_C = 969/0.985(0.95) = 1{,}036$ pcph (LOS B) ✓

FACILITY SECTION... NB ROOSVLT. BTWN. ULMERTON & 49TH
ANALYST..... DEA/FILE NAME-NROUL49P
TIME OF ANALYSIS... 2010 P.M. PEAK HOUR
DATE OF ANALYSIS... 9/28/89
OTHER INFORMATION...ALTERNATIVES 3C/3D

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	572	608	is the nonweaving vehicles on the freeway
V 2	1,104	1,173	is the down weaving vehicles
V 3	526	559	is the up weaving vehicles
V 4	1,017	1,081	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... B
NO. OF LANES..... 3
LENGTH OF SECTION..... 1650
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS	SPEED
WEAVING VEHICLES	D	41 mph
NONWEAVING VEHICLES	D	42 mph

OPERATION OF WEAVING AREA IS UNCONSTRAINED

	ANALYZED	MAXIMUM
WEAVING VOLUME (VW)..	1,739	3,000
VOLUME RATIO (VR)....	0.51	0.80
WEAVING RATIO (R)....	0.32	0.50
WEAVING LENGTH (L)...	1,650	2,500

FACILITY LOCATION... NB ROOSVLT. ML ON-RAMP FROM 118TH
ANALYST..... GSR/FILE NAME-NRON18AC
TIME OF ANALYSIS.... 2010 P.M. PEAK HOUR
DATE OF ANALYSIS.... 12/4/89
OTHER INFORMATION... ALTERNATIVE 3C

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (Typical - 200 #/HP)
PEAK HOUR FACTOR..... .95
HIGHWAY DESIGN SPEED (mph)..... 60
(BUSES AND RV'S ARE CONSIDERED AS TRUCKS)

LEVEL TERRAIN

B) INPUT INFORMATION

NO. OF LANES ON FREEWAY : 2 (per direction)

ANALYSIS RAMP CHARACTERISTICS:
(1) RIGHT-HAND RAMP.
(2) ONE LANE RAMP.

	UPSTREAM RAMP	FREEWAY	ANALYSIS RAMP	DOWNSTREAM RAMP
VOLUME	N.A.	1146	530	N.A.
% TRUCKS	N.A.	2	2	N.A.
RAMP TYPE	N.A.	N.A.	ON	N.A.
DISTANCE	N.A.	N.A.	N.A.	N.A.

C) RAMP ANALYSIS RESULTS

TRUCK PRESENCE IN LANE 1: 74 % OF FREEWAY TRUCKS

RAMP ANALYZED ALONE USING FIGURE I.5- 1

	V1	Vr	Vf
	****	****	*****
VPH	470	530	1146
ET	1.7	1.7	1.7
Fhv	0.97	0.99	0.99
PHF	0.95	0.95	0.95
PCPH	510	564	1219

CHECKPOINT	VOLUME	LOS
**********	******	***
FREEWAY:	1783	B
MERGE:	1074	C

FACILITY SECTION... WB ULM. RD. BTW. ROOS(EAST) & ROOS(WEST)
ANALYST..... XS FILE: WULROOSP.WVE
TIME OF ANALYSIS... 2010 P.M. PEAK HOUR
DATE OF ANALYSIS... 10/26/89
OTHER INFORMATION...ALTERNATIVE 3C

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	1,270	1,350	is the nonweaving vehicles on the freeway
V 2	1,136	1,207	is the down weaving vehicles
V 3	809	860	is the up weaving vehicles
V 4	724	769	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... A
NO. OF LANES..... 4
LENGTH OF SECTION..... 1030
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS	SPEED
WEAVING VEHICLES	E	36 mph
NONWEAVING VEHICLES	D	44 mph

OPERATION OF WEAVING AREA IS CONSTRAINED

	ANALYZED	MAXIMUM	
WEAVING VOLUME (VW)..	2,076	1,800	*** EXCEEDS MAX
VOLUME RATIO (VR)....	0.49	0.35	*** EXCEEDS MAX
WEAVING RATIO (R)....	0.42	0.50	
WEAVING LENGTH (L)...	1,030	2,000	

FACILITY SECTION... EB ULM. RD. BTW. ROOS(WEST) & ROOS(EAST)
ANALYST..... XS FILE: EULROOSP.WVE
TIME OF ANALYSIS... 2010 P.M. PEAK HOUR
DATE OF ANALYSIS... 10/26/89
OTHER INFORMATION...ALTERNATIVE 3C

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	977	1,038	is the nonweaving vehicles on the freeway
V 2	615	653	is the down weaving vehicles
V 3	1,001	1,064	is the up weaving vehicles
V 4	630	669	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... A
NO. OF LANES..... 4
LENGTH OF SECTION..... 1030
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS	SPEED
WEAVING VEHICLES	E	38 mph
NONWEAVING VEHICLES	D	46 mph

OPERATION OF WEAVING AREA IS CONSTRAINED

	ANALYZED	MAXIMUM	
WEAVING VOLUME (VW)..	1,724	1,800	
VOLUME RATIO (VR)....	0.50	0.35	*** EXCEEDS MAX
WEAVING RATIO (R)....	0.38	0.50	
WEAVING LENGTH (L)...	1,030	2,000	

****

FACILITY SECTION... SB ROOSVLT. ML BTWN. ULM. & 118TH
ANALYST..... GSR/FILE NAME-SROU18AD
TIME OF ANALYSIS... 2010 A.M. PEAK HOUR
DATE OF ANALYSIS... 9/12/89
OTHER INFORMATION...ALTERNATIVE 3D

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	1,242	1,320	is the nonweaving vehicles on the freeway
V 2	644	684	is the 1st on ramp to freeway vehicles
V 3	434	461	is the freeway to off ramp vehicles
V 4	225	239	is the 1st on ramp to off ramp vehicles
V 5	704	748	is the 2nd on ramp to freeway vehicles
V 6	246	261	is the 2nd on ramp to off ramp vehicles

NUMBER OF LANES ON MAINLINE FREEWAY: 2

D) ANALYSIS RESULTS

ANALYSIS OF FIRST SECTION:

WEAVE TYPE..... B
NO. OF LANES..... 3
LENGTH OF SECTION..... 1270
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS	SPEED
WEAVING VEHICLES	D	43 mph
NONWEAVING VEHICLES	D	44 mph

OPERATION OF WEAVING AREA IS UNCONSTRAINED

	ANALYZED	MAXIMUM
WEAVING VOLUME (VW)..	1,150	3,000
VOLUME RATIO (VR)....	0.42	0.80
WEAVING RATIO (R)....	0.40	0.50
WEAVING LENGTH (L)...	1,270	2,500

ANALYSIS OF SECOND SECTION:

WEAVE TYPE..... B
NO. OF LANES..... 4
LENGTH OF SECTION..... 1420
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

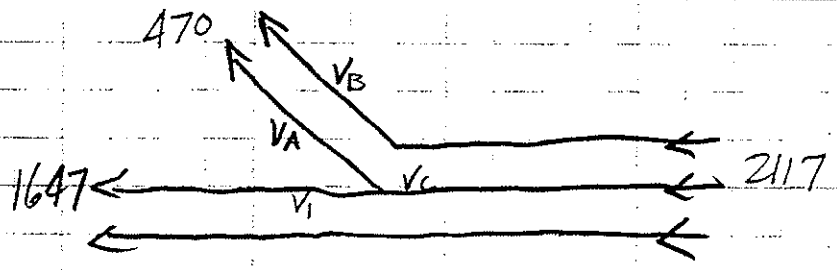
	LOS	SPEED
WEAVING VEHICLES	D	43 mph
NONWEAVING VEHICLES	D	45 mph

OPERATION OF WEAVING AREA IS UNCONSTRAINED

	ANALYZED	MAXIMUM
WEAVING VOLUME (VW)..	1,454	3,000
VOLUME RATIO (VR)....	0.39	0.80
WEAVING RATIO (R)....	0.48	0.50
WEAVING LENGTH (L)...	1,420	2,500

Greiner, Inc.

JOB _____ SHEET ___ OF ___ PROJ. NO. C1192.31
DESCRIPTION 118th Expressway at Roosevelt off-ramp to frontage road WB A.M. Peak Alternative 3D
COMPUTED BY DEA DATE 9/28/89
CHECKED BY GSR DATE 9/29/89



Using Fig. I.5-13

$V_C = 64 + 0.285(2117) + 0.141(470) = 734$ vph ✓

$V_1 = 173 + 0.295(2117) - 0.320(470) = 647$ vph ✓

$V_A = V_C - V_1 = 734 - 647 = 87$ vph ✓

$V_B = V_r - V_A = 470 - 87 = 383$ vph ✓

Trucks in lane C $= (0.51)(0.02)(1647) + (0.02)(87) = 19$ ✓

$f_{HV} = 1/1 + (1.7-1)(0.02) = 0.986$ ✓

$19/734 = 0.026 \Rightarrow f_{HV} = 1/1 + (1.7-1)(0.026) = 0.982$ ✓

$Vd_1 = V_B = 383/0.986(0.95) = 409$ pcph (LOS A) ✓

$Vd_2 = V_A = 734/0.982(0.95) = 787$ pcph (LOS B) ✓

****

FACILITY SECTION... NB ROOSVLT.C/D BTWN. 118TH & ULMERTON
ANALYST..... DEA/FILE NAME-NR018UAD
TIME OF ANALYSIS... 2010 A.M. PEAK HOUR
DATE OF ANALYSIS... 9/8/89
OTHER INFORMATION...ALTERNATIVE 3D

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	1,084	1,152	is the nonweaving vehicles on the freeway
V 2	563	598	is the down weaving vehicles
V 3	286	304	is the up weaving vehicles
V 4	148	157	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... B
NO. OF LANES..... 3
LENGTH OF SECTION..... 1470
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS	SPEED
	***	******
WEAVING VEHICLES	C	46 mph
NONWEAVING VEHICLES	C	49 mph

OPERATION OF WEAVING AREA IS UNCONSTRAINED
****

	ANALYZED	MAXIMUM
	********	*******
WEAVING VOLUME (VW)..	906	3,000
VOLUME RATIO (VR)....	0.41	0.80
WEAVING RATIO (R)....	0.34	0.50
WEAVING LENGTH (L)...	1,470	2,500

****

FACILITY SECTION... WB ULM. RD. BTW. ROOS(EAST) & ROOS(WEST)
ANALYST..... XS FILE: WULROSAD.WVE
TIME OF ANALYSIS... 2010 A.M. PEAK HOUR
DATE OF ANALYSIS... 10/26/89
OTHER INFORMATION...ALTERNATIVE 3D

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	977	1,038	is the nonweaving vehicles on the freeway
V 2	1,001	1,064	is the down weaving vehicles
V 3	615	653	is the up weaving vehicles
V 4	630	669	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... A
NO. OF LANES..... 4
LENGTH OF SECTION..... 2740
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS	SPEED
	***	******
WEAVING VEHICLES	C	49 mph
NONWEAVING VEHICLES	C	52 mph

OPERATION OF WEAVING AREA IS CONSTRAINED
****

	ANALYZED	MAXIMUM	
	********	*******	
WEAVING VOLUME (VW)..	1,724	1,800	
VOLUME RATIO (VR)....	0.50	0.35	*** EXCEEDS MAX
WEAVING RATIO (R)....	0.38	0.50	
WEAVING LENGTH (L)...	2,740	2,000	*** EXCEEDS MAX

****

FACILITY LOCATION... ULMERTON EXP. WB ON-RAMP FROM NB ROOSVLT
ANALYST..... DEA/FILE NAME-WULROONA
TIME OF ANALYSIS.... 2010 A.M. PEAK HOUR
DATE OF ANALYSIS.... 9/28/89
OTHER INFORMATION... ALTERNATIVE 3D

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (Typical - 200 #/HP)
PEAK HOUR FACTOR..... .95
HIGHWAY DESIGN SPEED (mph)..... 60
(BUSES AND RV'S ARE CONSIDERED AS TRUCKS)

LEVEL TERRAIN

B) INPUT INFORMATION

NO. OF LANES ON FREEWAY : 2 (per direction)

ANALYSIS RAMP CHARACTERISTICS:
****
(1) ADDITION OF LANE AT ON-RAMP.

	UPSTREAM RAMP	FREEWAY	ANALYSIS RAMP	DOWNSTREAM RAMP
	********	*******	********	**********
VOLUME	N.A.	1592	711	N.A.
% TRUCKS	N.A.	2	2	N.A.
RAMP TYPE	N.A.	N.A.	ON	N.A.
DISTANCE	N.A.	N.A.	N.A.	N.A.

C) RAMP ANALYSIS RESULTS

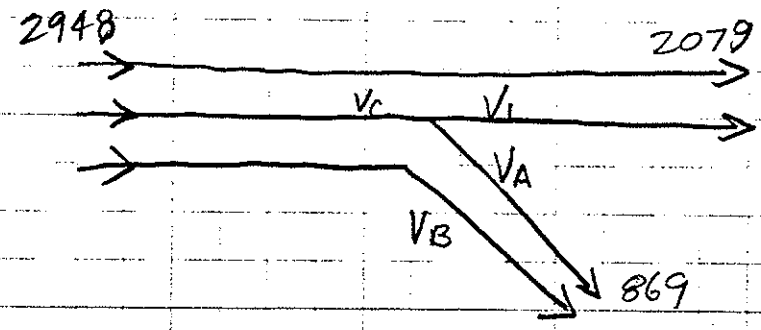
The merge criteria are applied directly to
the ON-RAMP flow rate as the checkpoint:

FLOW RATE = 756 pcph
LOS = B

Greiner, Inc.

JOB
DESCRIPTION Ulmerton (Expressway) EB off-ramp to Roosevelt (Expressway) Alternative 3D A.M. Peak

SHEET ___ OF ___ PROJ. NO. C1192.31
COMPUTED BY DEA DATE 9/28/89
CHECKED BY GSR DATE 9/29/89



Using Fig I-5-13

$V_C = 64 + 0.285(2948) + 0.141(869) = 1027$ vph ✓

$V_1 = 173 + 0.295(2948) - 0.320(869) = 765$ vph ✓

$V_A = V_C - V_1 = 1027 - 765 = 262$ vph ✓

$V_B = V_r - V_A = 869 - 262 = 607$ vph ✓

Trucks in lane C $= (0.48)(0.02)(2079) + (0.02)(262) = 25$ ✓

$f_{HV} = 1/1 + (1.7-1)(0.02) = 0.986$

$25/1027 = 0.024 \Rightarrow f_{HV} = 1/1 + (1.7-1)(0.024) = 0.983$ ✓

$Vd_1 = V_B = 607/0.986(0.95) = 648$ pcph (LOS A) ✓

$Vd_2 = V_A = 1027/0.983(0.95) = 1100$ pcph (LOS C) ✓

****

FACILITY SECTION... EB ULM. RD. BTW. ROOS(WEST) & ROOS(EAST)
ANALYST..... xs File: EULROSAD.wve
TIME OF ANALYSIS... 2010 A.M. PEAK HOUR
DATE OF ANALYSIS... 10/26/89
OTHER INFORMATION...Alternative 3D

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	1,270	1,350	is the nonweaving vehicles on the freeway
V 2	809	860	is the down weaving vehicles
V 3	1,136	1,207	is the up weaving vehicles
V 4	724	769	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... A
NO. OF LANES..... 4
LENGTH OF SECTION..... 2620
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS ***	SPEED ******
WEAVING VEHICLES	C	46 mph
NONWEAVING VEHICLES	C	51 mph

OPERATION OF WEAVING AREA IS CONSTRAINED
****

	ANALYZED ********	MAXIMUM *******	
WEAVING VOLUME (VW)..	2,076	1,800	*** EXCEEDS MAX
VOLUME RATIO (VR)....	0.49	0.35	*** EXCEEDS MAX
WEAVING RATIO (R)....	0.42	0.50	
WEAVING LENGTH (L)...	2,620	2,000	*** EXCEEDS MAX

****

FACILITY SECTION... SB ROOSVLT. ML BTWN. ULM. & 118TH
ANALYST..... GSR/FILE NAME-SROU18PD
TIME OF ANALYSIS... 2010 P.M. PEAK HOUR
DATE OF ANALYSIS... 9/12/89
OTHER INFORMATION...ALTERNATIVE 3D

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	1,014	1,078	is the nonweaving vehicles on the freeway
V 2	527	560	is the 1st on ramp to freeway vehicles
V 3	356	378	is the freeway to off ramp vehicles
V 4	184	195	is the 1st on ramp to off ramp vehicles
V 5	576	612	is the 2nd on ramp to freeway vehicles
V 6	201	213	is the 2nd on ramp to off ramp vehicles

NUMBER OF LANES ON MAINLINE FREEWAY: 2

D) ANALYSIS RESULTS

ANALYSIS OF FIRST SECTION:

WEAVE TYPE..... B
NO. OF LANES..... 3
LENGTH OF SECTION..... 1270
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS	SPEED
WEAVING VEHICLES	C	45 mph
NONWEAVING VEHICLES	D	47 mph

OPERATION OF WEAVING AREA IS UNCONSTRAINED

	ANALYZED	MAXIMUM
WEAVING VOLUME (VW)..	942	3,000
VOLUME RATIO (VR)....	0.42	0.80
WEAVING RATIO (R)....	0.40	0.50
WEAVING LENGTH (L)...	1,270	2,500

ANALYSIS OF SECOND SECTION:

WEAVE TYPE..... B
NO. OF LANES..... 4
LENGTH OF SECTION..... 1420
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

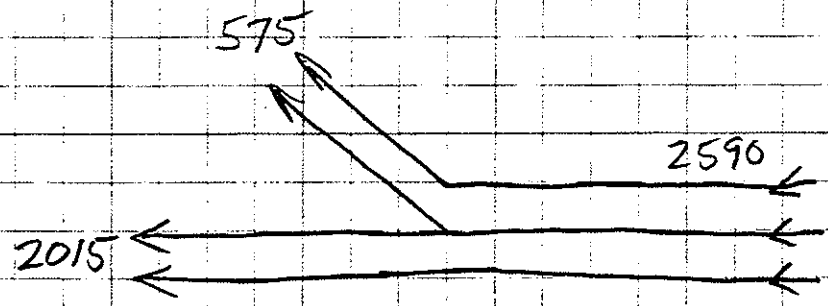
	LOS	SPEED
WEAVING VEHICLES	C	45 mph
NONWEAVING VEHICLES	C	49 mph

OPERATION OF WEAVING AREA IS UNCONSTRAINED

	ANALYZED	MAXIMUM
WEAVING VOLUME (VW)..	1,191	3,000
VOLUME RATIO (VR)....	0.39	0.80
WEAVING RATIO (R)....	0.48	0.50
WEAVING LENGTH (L)...	1,420	2,500

Greiner, Inc.

JOB _____ SHEET ___ OF ___ PROJ. NO. C1192.31
DESCRIPTION 118th Expressway at Roosevelt off-ramp to frontage road WB P.M. Peak Alternative 3D
COMPUTED BY DEA DATE 9/28/89
CHECKED BY GSR DATE 9/29/89



Using Fig I.5-13

$V_C = 64 + 0.285(2590) + (0.141)(575) = 883$ vph ✓

$V_1 = 173 + 0.295(2590) - 0.320(575) = 753$ vph ✓

$V_A = V_C - V_1 = 883 - 753 = 130$ vph ✓

$V_B = V_r - V_A = 575 - 130 = 445$ vph ✓

Trucks in lane C $= (0.41)(0.02)(2015) + (0.02)(130) = 22$ ✓

$f_{HV} = 1/1 + (1.7-1)(0.02) = 0.986$

$22/883 = (0.025) \Rightarrow f_{HV} = 1/1 + (1.7-1)(0.025) = 0.983$ ✓

$Vd_1 = V_B = 445/(0.986)(0.95) = 475$ pcph ✓ (LOS A)

$Vd_2 = V_A = 883/(0.983)(0.95) = 946$ pcph ✓ (LOS B)

****

FACILITY SECTION... NB ROOSVLT.C/D BTWN. 118TH & ULMERTON
ANALYST..... DEA/FILE NAME-NR018UPD
TIME OF ANALYSIS... 2010 P.M. PEAK HOUR
DATE OF ANALYSIS... 9/8/89
OTHER INFORMATION...ALTERNATIVE 3D

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	1,327	1,410	is the nonweaving vehicles on the freeway
V 2	688	731	is the down weaving vehicles
V 3	349	371	is the up weaving vehicles
V 4	181	192	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... B
NO. OF LANES..... 3
LENGTH OF SECTION..... 1470
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS	SPEED
WEAVING VEHICLES	D	44 mph
NONWEAVING VEHICLES	D	46 mph

OPERATION OF WEAVING AREA IS UNCONSTRAINED

	ANALYZED	MAXIMUM
WEAVING VOLUME (VW)..	1,106	3,000
VOLUME RATIO (VR)....	0.41	0.80
WEAVING RATIO (R)....	0.34	0.50
WEAVING LENGTH (L)...	1,470	2,500

****

FACILITY SECTION... WB ULM. RD. BTW. ROOS(EAST) & ROOS(WEST)
ANALYST..... XS FILE: WULROSPD.WVE
TIME OF ANALYSIS... 2010 P.M. PEAK HOUR
DATE OF ANALYSIS... 10/26/89
OTHER INFORMATION...ALTERNATIVE 3D

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	1,270	1,350	is the nonweaving vehicles on the freeway
V 2	1,136	1,207	is the down weaving vehicles
V 3	809	860	is the up weaving vehicles
V 4	724	769	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... A
NO. OF LANES..... 4
LENGTH OF SECTION..... 2740
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS	SPEED
WEAVING VEHICLES	C	47 mph
NONWEAVING VEHICLES	C	51 mph

OPERATION OF WEAVING AREA IS CONSTRAINED
****

	ANALYZED	MAXIMUM	
WEAVING VOLUME (VW)..	2,076	1,800	*** EXCEEDS MAX
VOLUME RATIO (VR)....	0.49	0.35	*** EXCEEDS MAX
WEAVING RATIO (R)....	0.42	0.50	
WEAVING LENGTH (L)...	2,740	2,000	*** EXCEEDS MAX

****

FACILITY LOCATION... ULMERTON EXP. WB ON-RAMP FROM NB ROOSVLT
ANALYST..... DEA/FILE NAME-WULROONP
TIME OF ANALYSIS.... 2010 P.M. PEAK HOUR
DATE OF ANALYSIS.... 9/28/89
OTHER INFORMATION... ALTERNATIVE 3D

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (Typical - 200 #/HP)
PEAK HOUR FACTOR..... .95
HIGHWAY DESIGN SPEED (mph)..... 60
(BUSES AND RV'S ARE CONSIDERED AS TRUCKS)

LEVEL TERRAIN

B) INPUT INFORMATION

NO. OF LANES ON FREEWAY : 2 (per direction)

ANALYSIS RAMP CHARACTERISTICS:
****
(1) ADDITION OF LANE AT ON-RAMP.

	UPSTREAM RAMP	FREEWAY	ANALYSIS RAMP	DOWNSTREAM RAMP
	********	*******	********	**********
VOLUME	N.A.	2079	869	N.A.
% TRUCKS	N.A.	2	2	N.A.
RAMP TYPE	N.A.	N.A.	ON	N.A.
DISTANCE	N.A.	N.A.	N.A.	N.A.

C) RAMP ANALYSIS RESULTS

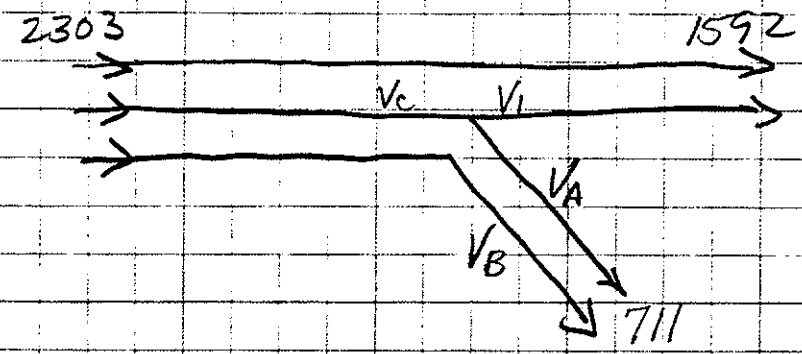
The merge criteria are applied directly to
the ON-RAMP flow rate as the checkpoint:

FLOW RATE = 924 pcph
LOS = B

Greiner, Inc.

JOB
DESCRIPTION Ulmerton (Expressway) EB off-ramp to Roosevelt (Expressway) Alternative 3D PM. Peak

SHEET ___ OF ___ PROJ. NO. C1192.31
COMPUTED BY DEA DATE 9/28/89
CHECKED BY QSR DATE 9/29/89



Using Fig I.5-13

$V_C = 64 + 0.285(2303) + 0.141(711) = 821$ vph ✓

$V_1 = 173 + 0.295(2303) - 0.320(711) = 625$ vph ✓

$V_A = V_C - V_1 = 821 - 625 = 196$ vph ✓

$V_B = V_r - V_A = 711 - 196 = 515$ vph ✓

Trucks in lane C $= (0.50)(0.02)(1592) + (0.02)(196) = 20$ ✓

$f_{HV} = 1/1 + (1.7-1)(0.02) = 0.986$

$20/821 = 0.024 \Rightarrow f_{HV} = 1/1 + (1.7-1)(0.024) = 0.983$ ✓

$Vd_1 = V_B = 515/0.986(0.95) = 550$ pcph (LOS A) ✓

$Vd_2 = V_A = 821/0.983(0.95) = 879$ pcph (LOS B) ✓

****

FACILITY SECTION... EB ULM. RD. BTW. ROOS(WEST) & ROOS(EAST)
ANALYST..... XS FILE: EULROSPD.WVE
TIME OF ANALYSIS... 2010 P.M. PEAK HOUR
DATE OF ANALYSIS... 10/26/89
OTHER INFORMATION...ALTERNATIVE 3D

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 2 (TYPICAL - 200 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES... 0
PEAK HOUR FACTOR..... .95
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS ON BOTH SIDES
DISTANCE FROM ROADWAY EDGE (FT)..... 6

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p
LEVEL	1.7	1.5	1.6	0.99	1.00	1.00

C) INPUT VOLUMES

VOL	(vph)	(pcph)	DESCRIPTION
V 1	977	1,038	is the nonweaving vehicles on the freeway
V 2	615	653	is the down weaving vehicles
V 3	1,001	1,064	is the up weaving vehicles
V 4	630	669	is the ramp-to-ramp nonweaving vehicles

D) ANALYSIS RESULTS

WEAVE TYPE..... A
NO. OF LANES..... 4
LENGTH OF SECTION..... 2620
NO. OF MAINLINE LANES..... 2
(Upstream of Weave Section)

	LOS	SPEED
WEAVING VEHICLES	C	48 mph
NONWEAVING VEHICLES	C	52 mph

OPERATION OF WEAVING AREA IS CONSTRAINED
****

	ANALYZED	MAXIMUM	
WEAVING VOLUME (VW)..	1,724	1,800	
VOLUME RATIO (VR)....	0.50	0.35	*** EXCEEDS MAX
WEAVING RATIO (R)....	0.38	0.50	
WEAVING LENGTH (L)...	2,620	2,000	*** EXCEEDS MAX