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**STATE ROAD 686  
EAST BAY/ROOSEVELT BOULEVARD  
PROJECT DEVELOPMENT  
AND  
ENVIRONMENTAL STUDIES  
PINELLAS COUNTY, FLORIDA  
STATE PROJECT NO. 15030-1523  
W.P.I. NO. 7116952  
FEDERAL AID NO. M-1414-(5)**

**ENGINEERING REPORT**

**SEGMENTS 2B AND 3 - 49TH STREET to U.S. 92 (GANDY BOULEVARD)**

**Submitted To  
THE FLORIDA DEPARTMENT OF TRANSPORTATION**

**Submitted By  
GREINER, INC.  
Tampa, Florida**

**APRIL 1991  
REVISED FEBRUARY 1992  
UPDATED JUNE 1993**

**FINAL ENGINEERING REPORT**

**S.R. 686 (EAST BAY DRIVE/ROOSEVELT BOULEVARD)  
SEGMENTS 2B & 3 - 49TH STREET TO U.S. 92 (GANDY BOULEVARD)  
PINELLAS COUNTY, FLORIDA**

**U.S. Department of Transportation  
Federal Highway Administration  
and  
Florida Department of Transportation**

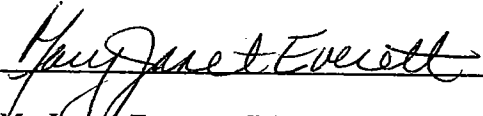
**State Project Number 15030-1523  
Federal Project Number M-1414-(5)  
Work Program 7116952**

**This project extends from 49th Street to U.S. 92 (Gandy Boulevard), approximately 4.18 miles, and analyzes alternatives for upgrading from a four-lane rural facility to a six-lane arterial. The project also includes alternative alignments for an expressway connection from the 49th Street Bridge to the Pinellas Gateway Expressway.**

**Prepared by:  
GREINER, INC.**

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**SECTION 1.0**

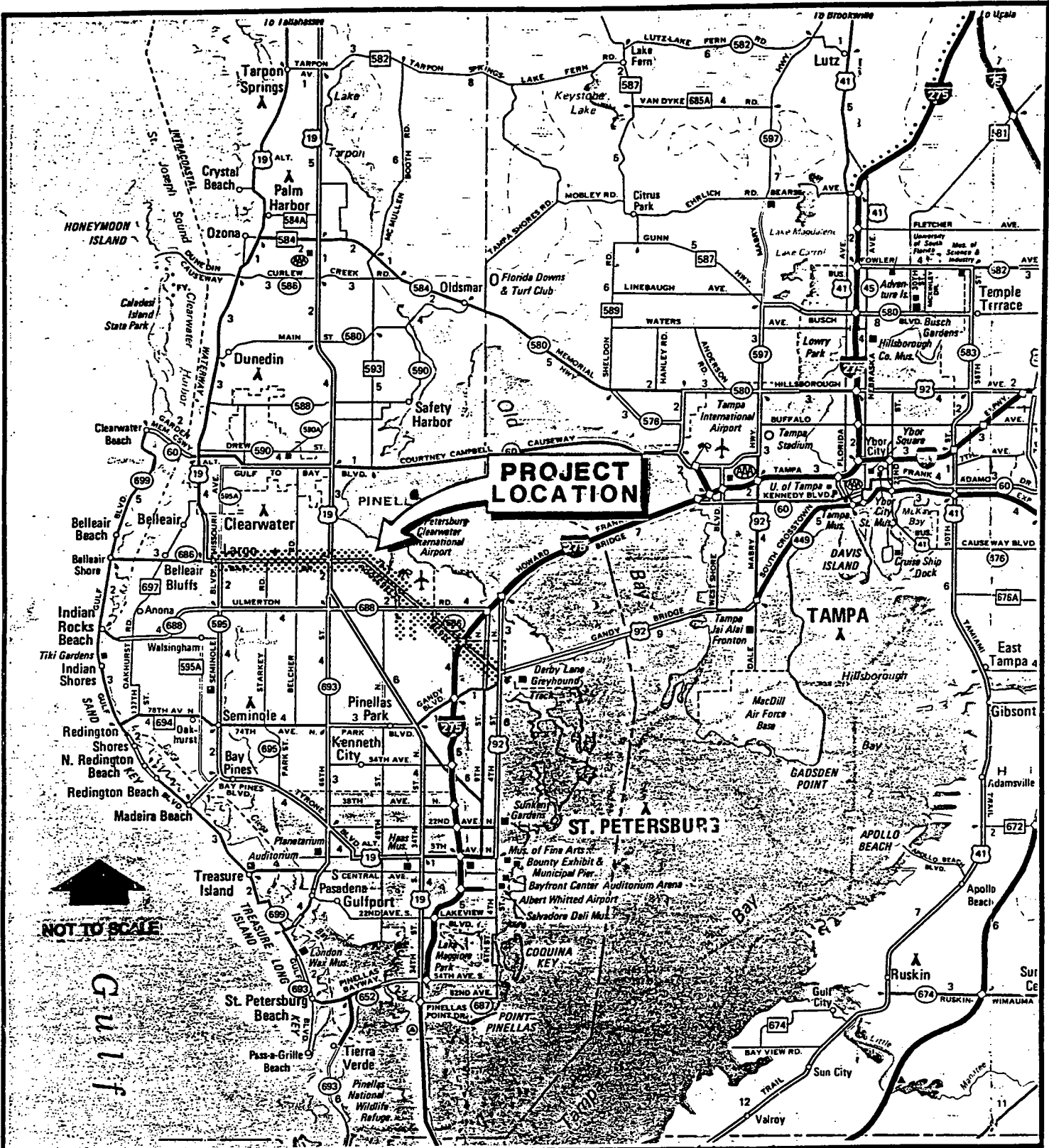
**ABSTRACT**



## 1.0 ABSTRACT

The Florida Department of Transportation (FDOT) and the Pinellas County Metropolitan Planning Organization (MPO) have identified the need to improve S.R. 686 (East Bay Drive/Roosevelt Boulevard) in Pinellas County, Florida (See Exhibit 1-A). Greiner, Inc. has been retained by FDOT to conduct the necessary preliminary engineering and environmental evaluations to identify the need, type, design, and location of the improvements. The project limits extend from Alternate U.S. 19 (Missouri Avenue) on the west to U.S. 92 (Gandy Boulevard) on the east. For purposes of this study, the project is subdivided into three segments. Segment 1 extends from Alternate U.S. 19 to U.S. 19, a distance of approximately 3.9 miles. Segment 2 begins at U.S. 19 and extends eastward a distance of approximately 3.1 miles to the east interchange with S.R. 688 (Ulmerton Road). Segment 3 extends from S.R. 688 to U.S. 92 (Gandy Boulevard) and includes the segment of Roosevelt Boulevard that is co-located with S.R. 688 (Ulmerton Road).

The Pinellas County 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 to U.S. 19 as well as on C.R. 296 (118th Avenue) from U.S. 19 to I-275, including modifications to the interchange at S.R. 686 and 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 Speedway and Stables to 118th Avenue and via 118th Avenue to I-275 was identified as an alternative alignment. A subsequent amendment in July 1990 identified the S.R. 686 corridor, along with the extension to 118th Avenue, as the alignment for the expressway.



**FLORIDA DEPARTMENT OF TRANSPORTATION**

**ENGINEERING REPORT**

**(S.R. 686/ROOSEVELT BLVD.)**

**Pinellas County, Florida**

S.P. No. 15030-1523 W.P.I. No. 7116952 F.A. No. M-1414-(5)

**LOCATION MAP**

EXHIBIT 1-A

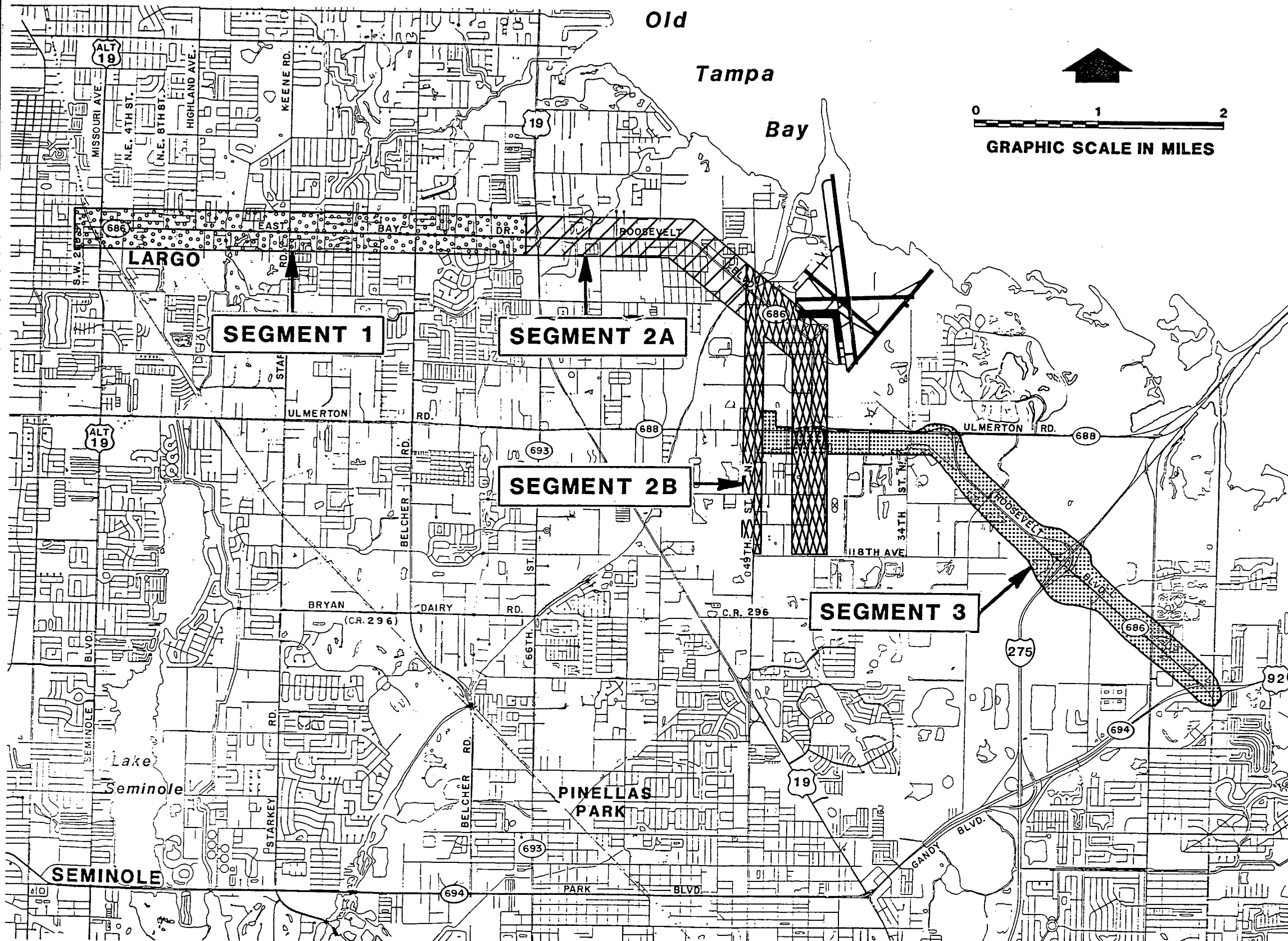
To accommodate the evaluation of the alternative expressway alignments, Segment 2 was subdivided into Segments 2A and 2B. Segment 2A extends from U.S. 19 to west of 49th Street, a distance of approximately 1.95 miles. Segment 2B extends along Roosevelt Boulevard from west of 49th Street to S.R. 688 and south of Roosevelt Boulevard from S.R. 688 to 118th Avenue. The study area and study segments are illustrated on Exhibit 1-B.

This report presents the preliminary engineering effort for Segments 2B and 3. Separate Engineering Reports discuss the preliminary engineering evaluations for Segments 1 and 2A. In addition, separate environmental documents have been prepared for each segment. The preliminary engineering elements addressed in this document include the existing conditions, need for the improvement, future travel demand, existing physical features, corridor alternatives, conceptual design alternatives and alternative improvement plans.





### **1.1 Description of the Proposed Action**

S.R. 686 extends the full width of central Pinellas County from S.R. 699 to U.S. 92 (Gandy Boulevard). From 49th Street to the S.R. 688 (Ulmerton Road) west interchange, the existing roadway is a four-lane divided rural arterial with a 16- to 19-foot grass median. From S.R. 688 east interchange to U.S. 92, S.R. 686 has a four-lane divided rural cross section with a 40- to 88-foot depressed median. The section of S.R. 686 co-located with S.R. 688 is a six-lane divided rural arterial. There are two grade separated interchanges where Roosevelt Boulevard intersects Ulmerton Road (the Ulmerton Road east and west interchanges).

The proposed improvements to Roosevelt Boulevard involve widening the existing facility from a four-lane divided arterial to a combination of six-lane arterial and an



**LEGEND**

-  Segment 1
-  Segment 2A
-  Segment 2B
-  Segment 3

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

**STUDY AREA**

expressway with frontage road system. The arterial section extends from the S.R. 688 east interchange southeast to the proposed interchange at U.S. 92/Roosevelt Boulevard/4th Street. The expressway with frontage roads extends from the Roosevelt Boulevard/49th Street interchange to 118th Avenue on Roosevelt Boulevard and from 49th Street to the east Roosevelt Boulevard interchange on Ulmerton Road. The portion of the expressway on 118th Avenue from the Roosevelt Boulevard extension east to I-275 is documented in a separate engineering report prepared for Pinellas County.

The proposed improvements in the corridor will accommodate bicycles with some pedestrian facilities. In the arterial section, bicycles are accommodated on the paved shoulders. Due to the nature of the development and the ditch drainage, no pedestrian facilities are proposed on this section of the corridor. In the expressway section, bicycles will be accommodated on the frontage roads with 14-foot curb lanes. Pedestrians are accommodated by five-foot sidewalks on both sides of the frontage road system. The specific typical sections for the proposed action are discussed in detail in Section 5.0 of this document.

**SECTION 2.0**

**NEED**

## 2.0 NEED

This section documents the need for the proposed action on S.R. 686. The need is established through documentation of the planning basis for the improvement as well as an evaluation of the current and projected travel demand and available capacity in the corridor.

### 2.1 Planning Basis for the Proposed Action

S.R. 686 (East Bay Drive) is a primary east-west arterial extending from Gulf Boulevard (S.R. 699) on the west to U.S. 92 (Gandy Boulevard) on the east, traversing the mid-county area of Pinellas County. S.R. 686 is a minor arterial on the Federal Aid Urban System. As such, S.R. 686 provides one of only three cross county routes in the mid-county area. The original 2010 Long Range Highway Plan for Pinellas County identifies S.R. 686 as a six-lane arterial from Highland Avenue east to the Ulmerton Road west interchange, an eight-lane expressway on the co-located section of S.R. 686 and S.R. 688, and a six-lane expressway from the Ulmerton Road east interchange south and east to Gandy Boulevard.

As indicated previously, the plan was amended by the Pinellas County Metropolitan Planning Organization (MPO) in April 1988 to include upgrading both 49th Street and 118th Avenue from six-lane arterials to six-lane expressways. This is consistent with plans to build the 49th Street Bridge across Old Tampa Bay connecting McMullen Booth Road to 49th Street. Based on the evaluations conducted as part of this study, the Pinellas County Board of County Commissioners passed a resolution on April 17, 1990, requesting the MPO again amend the plan. The amendment request relocated the expressway to the S.R. 686 alignment and revised 49th Street to a six-lane arterial. With this amendment, which was passed in July 1990, the proposed expressway

improvements in the corridor are consistent with the Long-Range Transportation Plan. It should be noted, however, that the current Long-Range Transportation Plan still includes an expressway on the portion of S.R. 686 from Ulmerton Road to Gandy Boulevard.

Improvements to Segments 2A, 2B and 3 of S.R. 686 are not included in the current Transportation Improvement Program (TIP). Improvements are currently under design for Segment 1 of S.R. 686 (Alternate U.S. 19 to U.S. 19) with construction anticipated to begin in some sections as early as 1993. The improvements for Segments 2A, 2B and 3 are to be scheduled as soon as funds become available. Pinellas County has completed the design of the 49th Street Bridge and 49th Street and has initiated design on 118th Avenue. Construction of the 49th Street bridge and arterial has begun with completion scheduled for 1993. The Department and the County are continuing to coordinate the design, right-of-way acquisition and construction schedules for all the improvements, including S.R. 686.

## 2.2 Transportation Demand

The Federal-Aid Highway Acts and the Urban Mass Transportation Act of 1964, as amended, mandate an urban transportation planning process. The legislation requires a continuing, comprehensive, and cooperative (3C) transportation planning process in urban areas with populations of more than 50,000. The development and adoption of the long-range transportation plan by the Pinellas County MPO conforms to this mandated process.

As indicated, the proposed improvements to S.R. 686 are consistent with the 2010 Long-Range Transportation Plan for Pinellas County with the current amendment. It should be noted, however, that the original plan amendment to provide an expressway



connection from the 49th Street Bridge to I-275 did not examine alternative expressway alignments. This study evaluates the impacts of both expressway alignments. In addition, the MPO, its Technical Review and Citizens Advisory Committees, and the engineering and planning staffs of Pinellas County have been involved in the development and evaluation of alternatives for the proposed action through coordination meetings as well as the public involvement process.

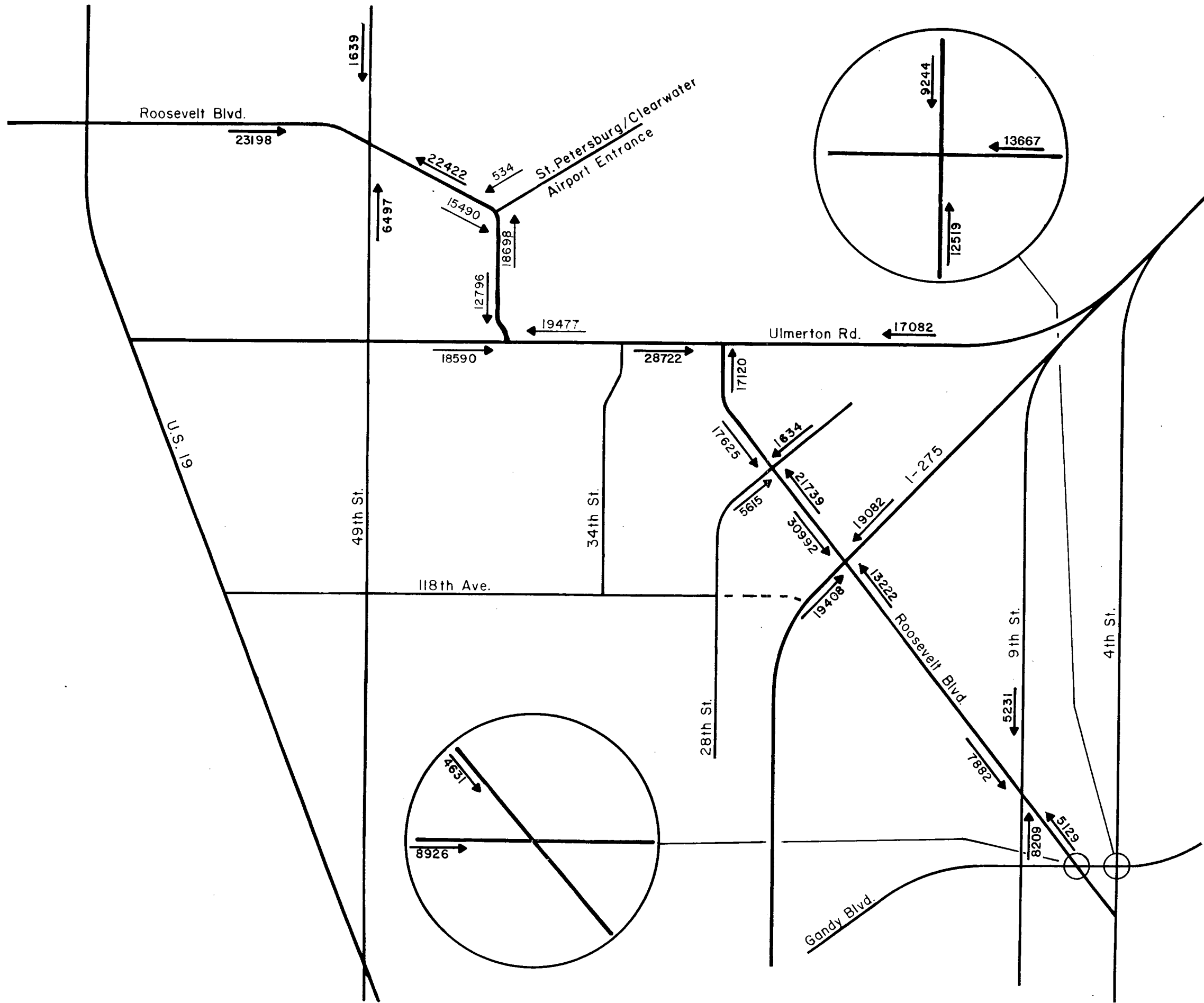
### **2.3      Capacity**

The ability of a facility to operate safely and efficiently is a function of the projected travel demand and the available roadway capacity. An evaluation of existing and projected conditions in the corridor has been conducted. The Traffic Memorandum and Addendum, published separately, document these evaluations. The following briefly summarizes the existing and projected conditions.

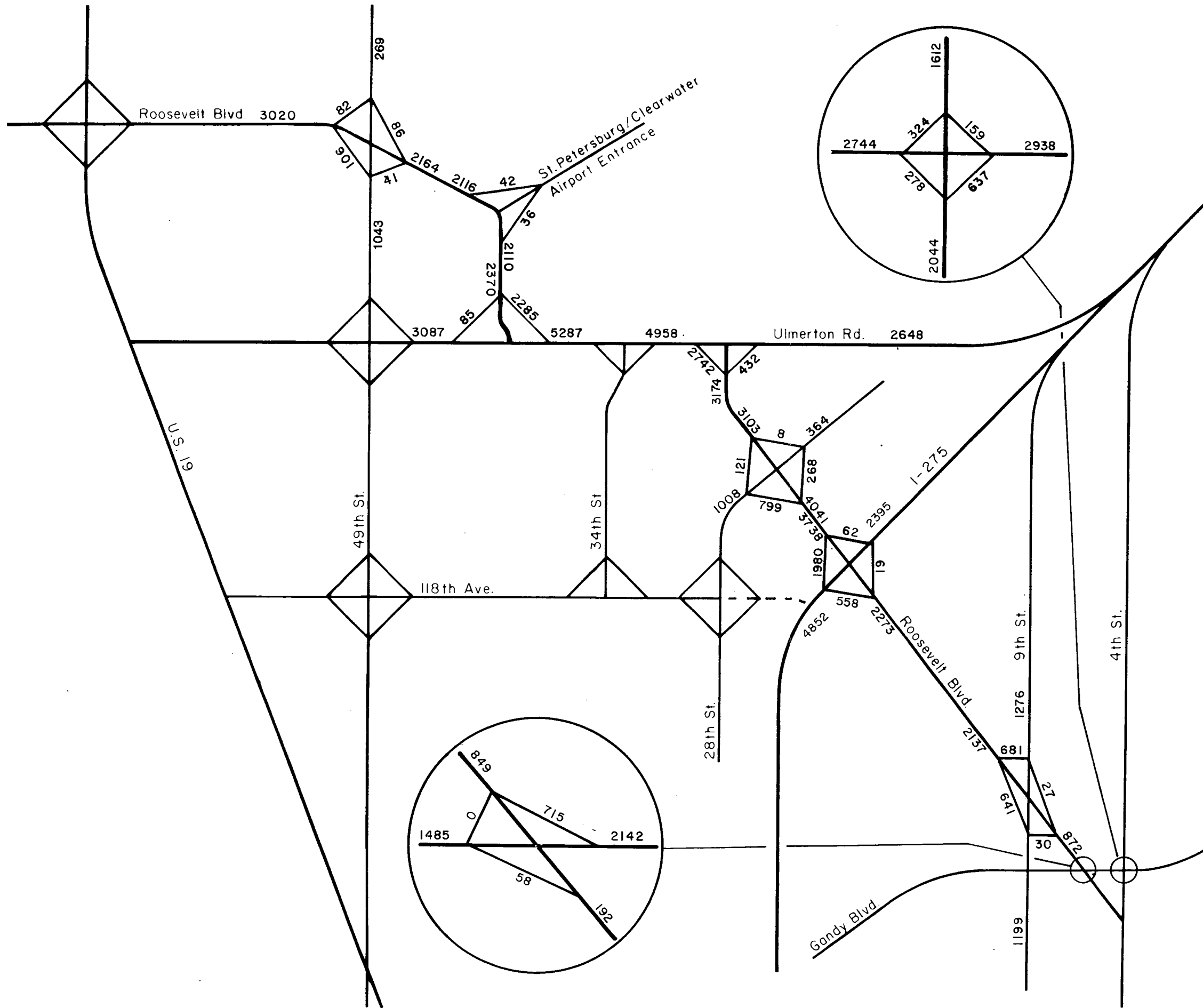
#### **2.301    Existing Conditions Analyses**

Traffic count data were collected by Greiner, Inc. along S.R. 686 for both daily and peak periods. Traffic data collection included 24-hour directional approach counts recorded in 15-minute intervals and peak period turning movement counts. Exhibit 2-A illustrates the 24-hour approach counts collected by Greiner. Exhibits 2-B and 2-C illustrate the a.m. and p.m. peak hour turning movement counts, respectively.

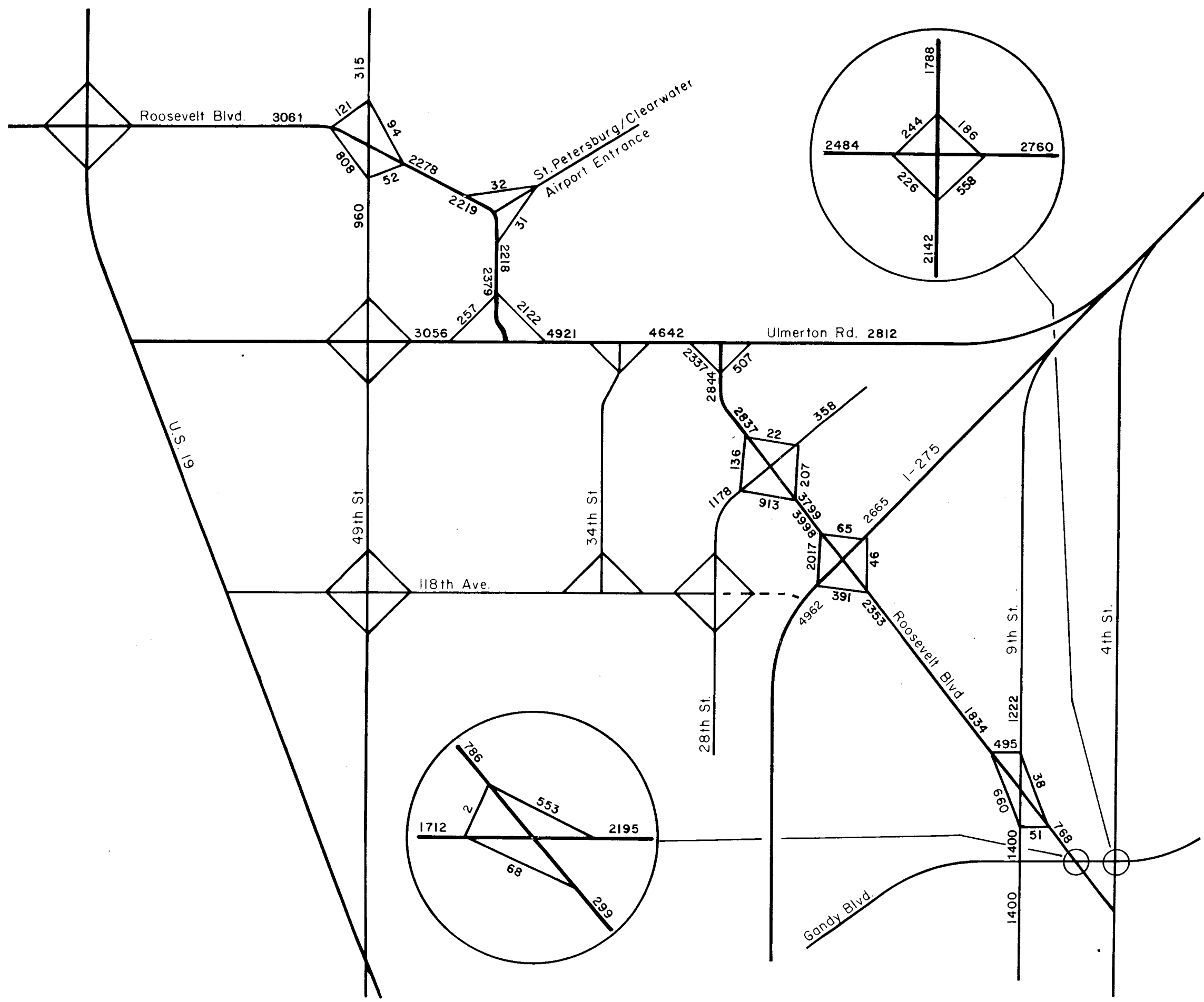
Using the existing a.m. and p.m. peak hour turning movement counts, capacity analyses were performed for each of the signalized intersections along S.R. 686. These calculations were conducted using the methodology as outlined in Chapter 9 - Signalized Intersections of the 1985 Highway Capacity Manual. In addition to the



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**S.R. 686**  
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**EXISTING 24 HOUR**  
**APPROACH COUNTS**



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 (EAST BAY DR./ROOSEVELT BLVD.)  
 Pinellas County, Florida  
**EXISTING A.M. PEAK HOUR  
 TURNING MOVEMENT COUNTS**  
 EXHIBIT 2-B



FLORIDA DEPARTMENT OF TRANSPORTATION  
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 (EAST BAY DR./ROOSEVELT BLVD.)  
 Pinellas County, Florida  
**EXISTING P.M. PEAK HOUR  
 TURNING MOVEMENT COUNTS**  
 EXHIBIT 2-C

signalized intersection analyses, the existing unsignalized intersections at S.R. 686 and I-275 interchange ramps and the airport entrance were analyzed. The level of service of the unsignalized intersections were determined using the methodology described in Chapter 10 - Unsignalized Intersections of the 1985 Highway Capacity Manual. Table 2.1 summarizes the results of the existing intersection analyses. As seen in the table, several of the intersections are currently operating at unacceptable levels of service during peak periods. The capacity calculations are included in the Traffic Memorandum and Addendum.

The segment of Ulmerton Road co-located with S.R. 686 (between the east and west interchanges) was recently improved by the FDOT. The improvement involved widening Ulmerton Road to a six-lane cross section between the interchanges, thus eliminating the merge for the southbound to eastbound movement at the west Roosevelt Boulevard interchange and diverge for the eastbound to southbound improvement at the east Roosevelt Boulevard interchange. This improvement alleviated the queuing problem and the interchanges are currently operating at acceptable levels of service.

### **2.302 Traffic Projections**

The design year for the S.R. 686 project 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.

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), projections developed for the

TABLE 2.1

EXISTING INTERSECTION OPERATIONS  
S.R. 686 (East Bay Drive/Roosevelt Boulevard)  
Segments 2B and 3

Intersection	A.M. Peak Hour			P.M. Peak Hour		
	V/C <sup>1</sup>	Average <sup>2</sup> Delay	LOS <sup>3</sup>	V/C <sup>1</sup>	Average <sup>2</sup> Delay	LOS <sup>3</sup>
Roosevelt Blvd. & 49th Street	0.750	9.5	B	1.257	*	F
Roosevelt Blvd. & 28th St.	0.922	11.0	B	0.694	31.9	D
Roosevelt Blvd. & 9th St.	0.601	24.1	C	0.615	13.5	B
Roosevelt Blvd. & Gandy Blvd.	0.486	3.6	A	0.509	5.5	B
4th St. & Gandy Blvd.	1.205	*	F	1.213	*	F
Roosevelt Blvd. & Airport Ent.	33 <sup>4</sup>	N/A	E	16 <sup>4</sup>	N/A	E
Roosevelt Blvd. & I-275 (SB Ramps)	-10 <sup>4</sup>	N/A	F	-30 <sup>4</sup>	N/A	F
Roosevelt Blvd. & I-275 (NB Ramps)	120 <sup>4</sup>	N/A	D	133 <sup>4</sup>	N/A	D

<sup>1</sup> V/C = Volume to Capacity Ratio

<sup>2</sup> Average Delay in Seconds Per Vehicle

<sup>3</sup> LOS = Level of Services

<sup>4</sup> Reserve capacity for controlling movement in passenger cars per hour.

N/A = Not applicable.

\* When V/C ratio exceeds 1.2 delays are not meaningful.

County's on-going 49th Street Bridge project and the Northeast Corridor Study conducted for the County.

The traffic projections were developed for the three initial project alternatives as outlined below.

Alternative 1 - S.R. 686 remains on the current alignment as a major arterial. The co-located segment with S.R. 688 will provide an expressway cross section. Both 49th Street and 118th Avenue are assumed to be six-lane arterials with 118th Avenue terminating at 28th Street.

Alternative 2 - This alternative is similar to Alternative 1 except that 49th Street and 118th Avenue are assumed to be six-lane expressways. In addition, 118th Avenue extends to I-275 with full access to the Interstate via a modified interchange at I-275 and S.R. 686.

Alternative 3 - S.R. 686 remains on its existing alignment from U.S. 19 to 49th Street. Alternative 3 provides an expressway facility on the Roosevelt Boulevard alignment from 49th Street to the west interchange with S.R. 688. South of S.R. 688, the alignment extends south along a new alignment to 118th Avenue as an expressway. The 118th Avenue improvements remain as an expressway and 49th Street was assumed to be a six-lane arterial.

The projections provided by the MPO indicated approximately 53,000 vehicles per day on the 49th Street Bridge in the design year (2010). The addition of several roadway improvements, including the upgrading of the East Lake Road/McMullen Booth Road, the Northeast corridor, and the extension of the North Suncoast Expressway, required

the updating of the traffic volumes. The projections were updated as part of the County' studies and indicated in excess of 70,000 vpd using the 49th Street Bridge. The MPO's initial projections were then updated to reflect the additional traffic over the bridge for the two expressway alternatives. The traffic volumes for the arterial alternative, Alternative 1, were not updated as there would be insufficient capacity in the system to accommodate the increased demand safely and efficiently. Exhibits 2-D through 2-F illustrate the daily traffic volumes for Alternatives 1, 2 and 3, respectively.

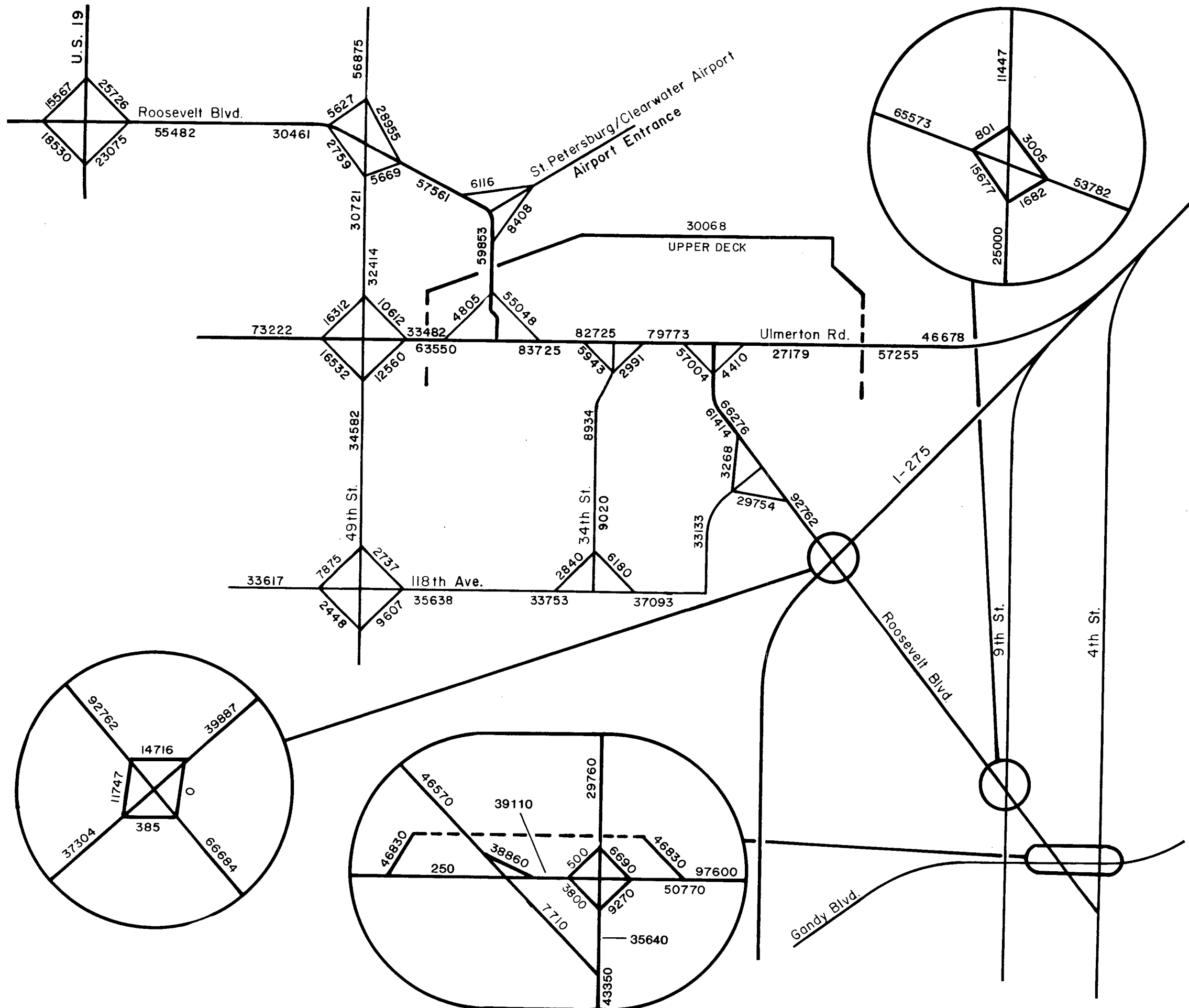
Peak hour (a.m. and p.m.) traffic volumes were derived from the daily projections using a K-factor (percentage of daily traffic occurring during the peak hour) of 10.0 percent and a D-factor (directional distribution) of 55.0 percent. The peak directions of traffic flow were assumed to be eastbound and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

### **2.303 Future Conditions Analyses**

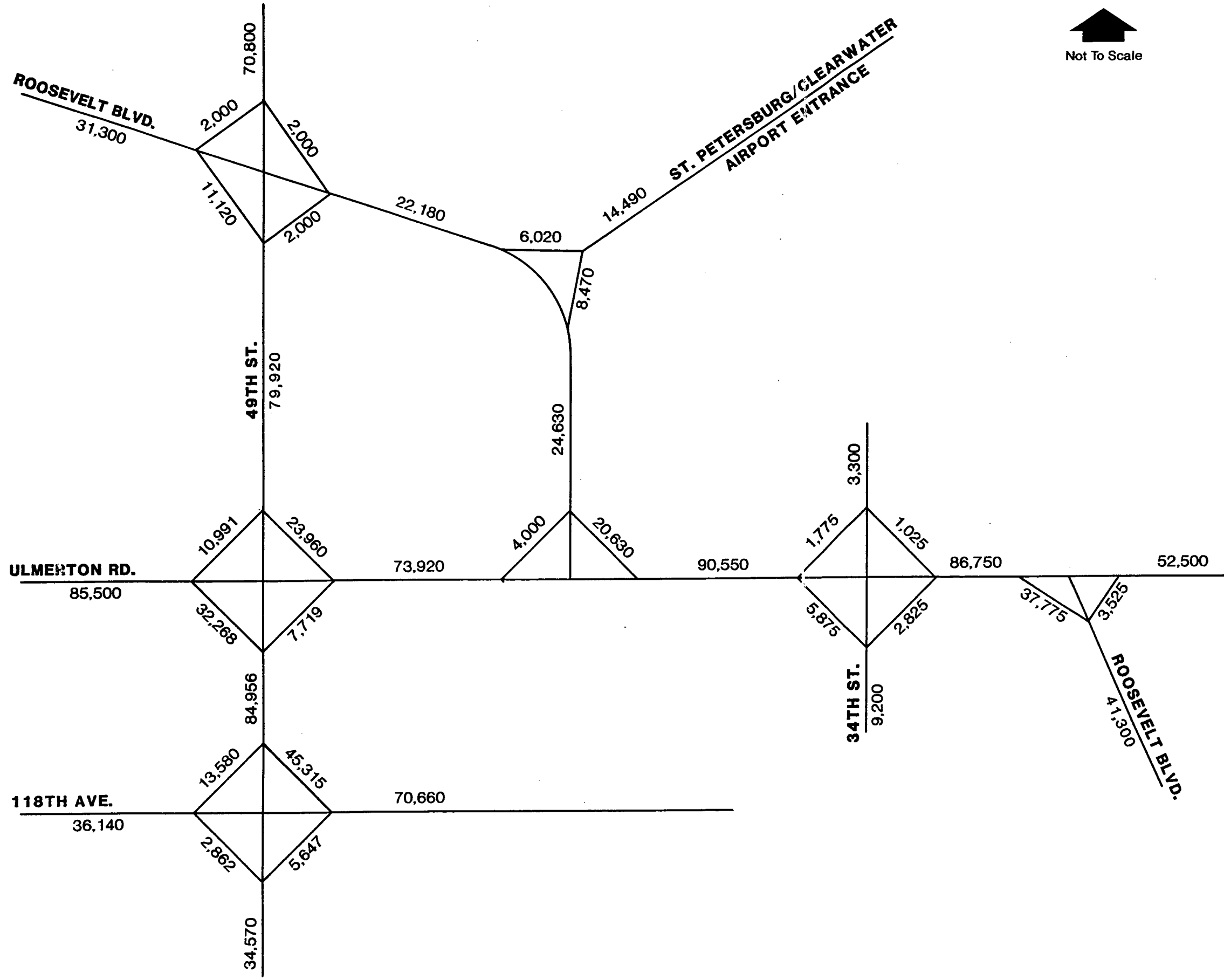
As with existing conditions, capacity analyses were conducted for the three alternatives for the design year. The analyses were conducted using the procedures outlined in the 1985 Highway Capacity Manual.

Alternative 1 design hour volumes are illustrated on Exhibit 2-G. Table 2.2 summarizes the results of the signalized intersection capacity analysis for Alternative 1. The intersection geometry for Alternative 1 is illustrated on Exhibit 2-H. As presented in Table 2.2, nine of the eleven intersections analyzed are projected to operate at an acceptable level of service (LOS D or better). The two Roosevelt



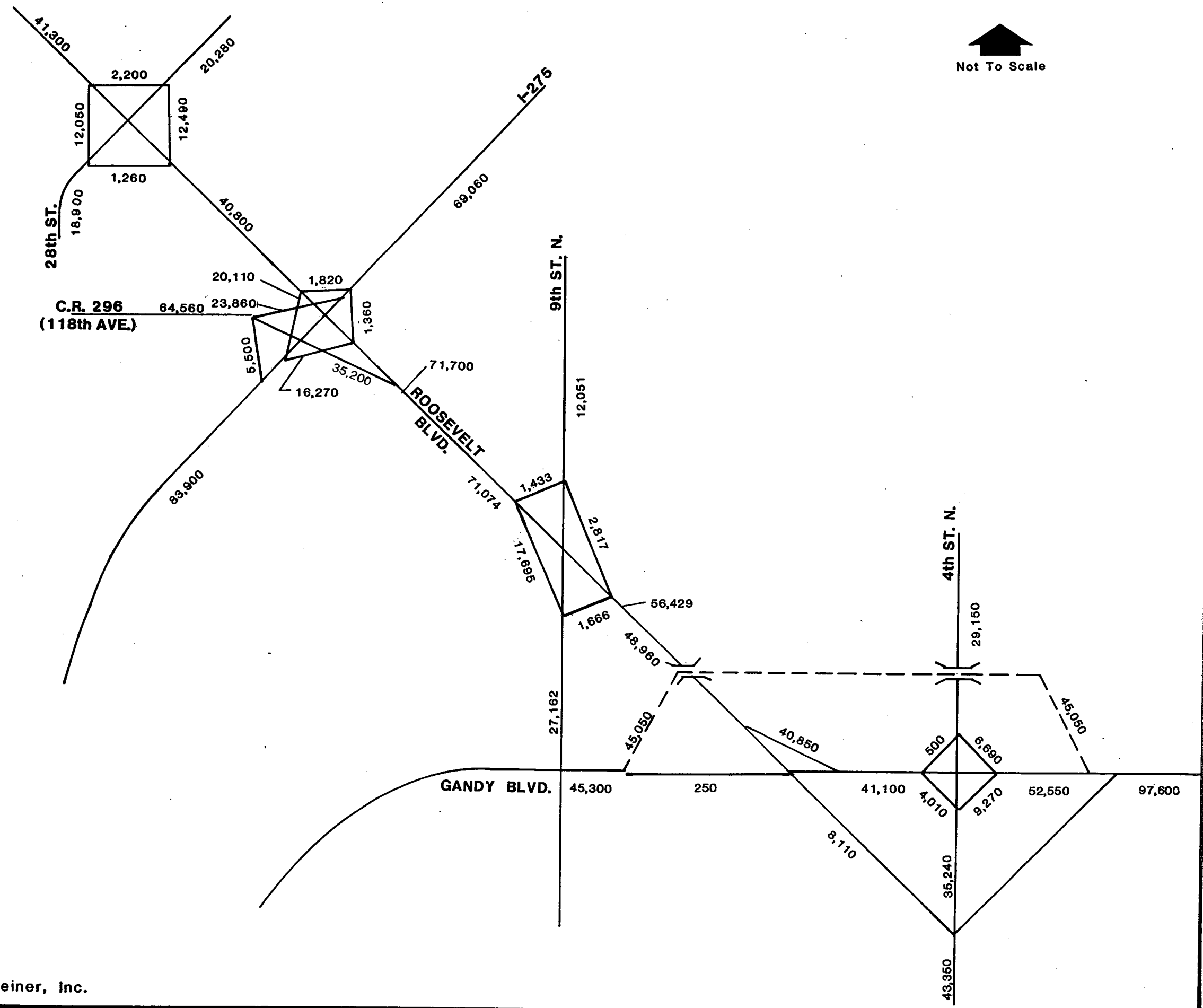


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**PATS 2010 AVERAGE DAILY  
 TRAFFIC PROJECTIONS ALTERNATIVE 1**  
 EXHIBIT 2-D



Not To Scale

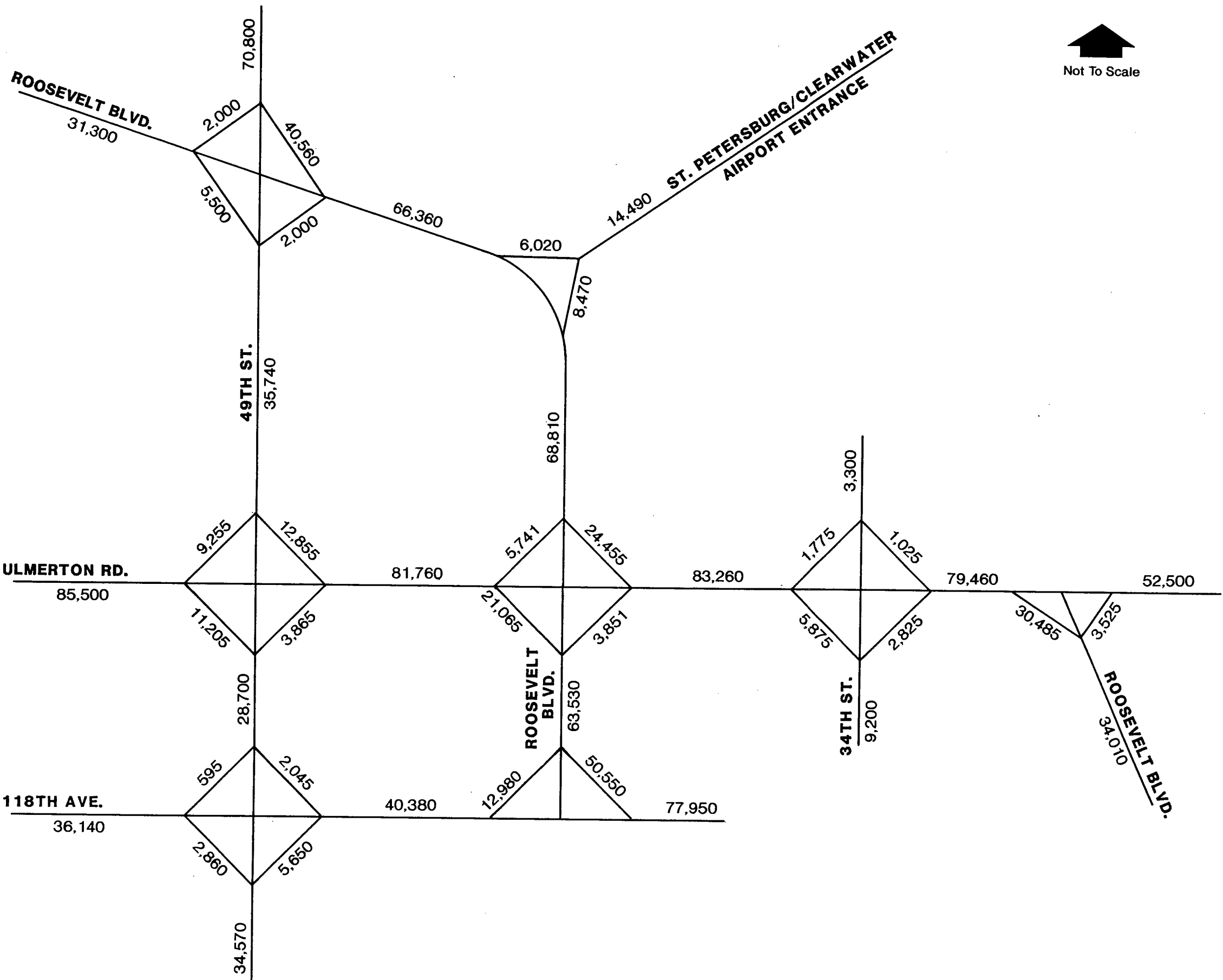
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**S.R. 686**  
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 Pinellas County, Florida  
**YEAR 2010 AVERAGE DAILY TRAFFIC**  
**VOLUMES-ALTERNATIVES 2A/2B**



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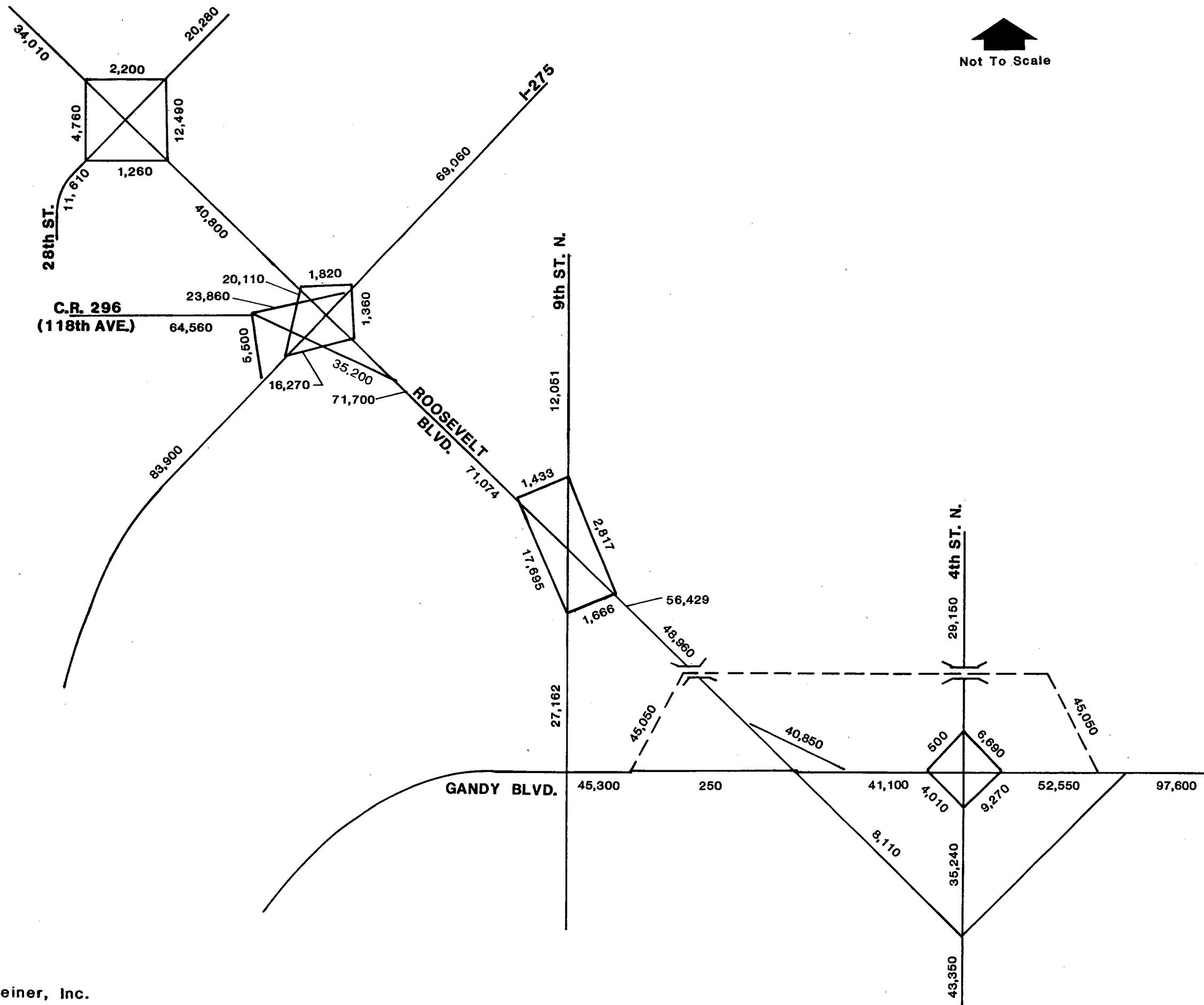
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YEAR 2010 AVERAGE DAILY TRAFFIC  
VOLUMES-ALTERNATIVES 2A/2B

EXHIBIT 2-E 2

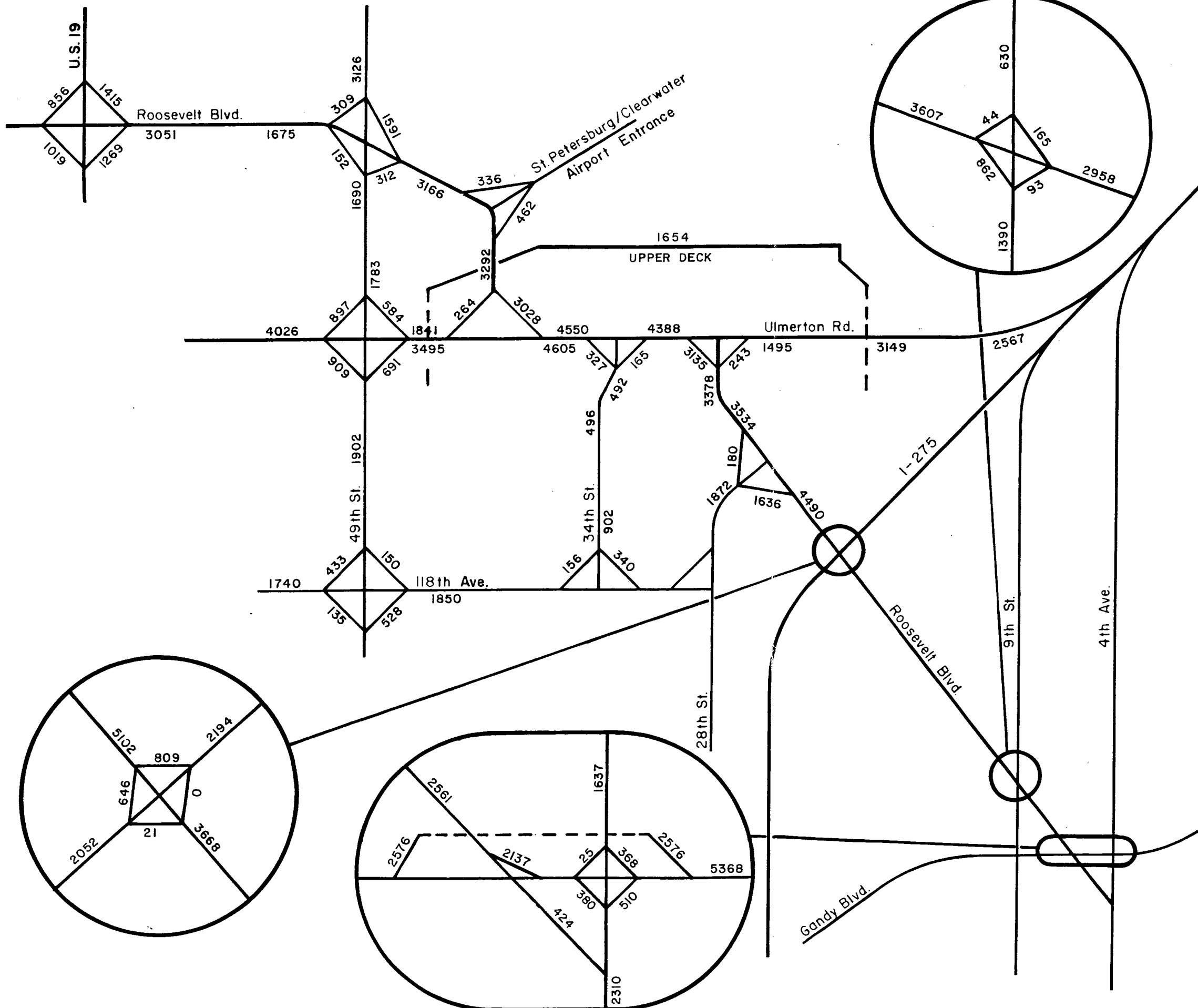


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**YEAR 2010 AVERAGE DAILY TRAFFIC  
 VOLUMES-ALTERNATIVES 3C/3D**



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 EXHIBIT 2-F 2



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**2010 DIRECTIONAL DESIGN**  
**HOURLY VOLUMES - ALTERNATIVE 1**  
 EXHIBIT 2-G

**TABLE 2.2****2010 SIGNALIZED INTERSECTION  
OPERATIONS - ALTERNATIVE 1  
S.R. 686 (East Bay Drive/Roosevelt Boulevard)  
Segments 2B and 3**

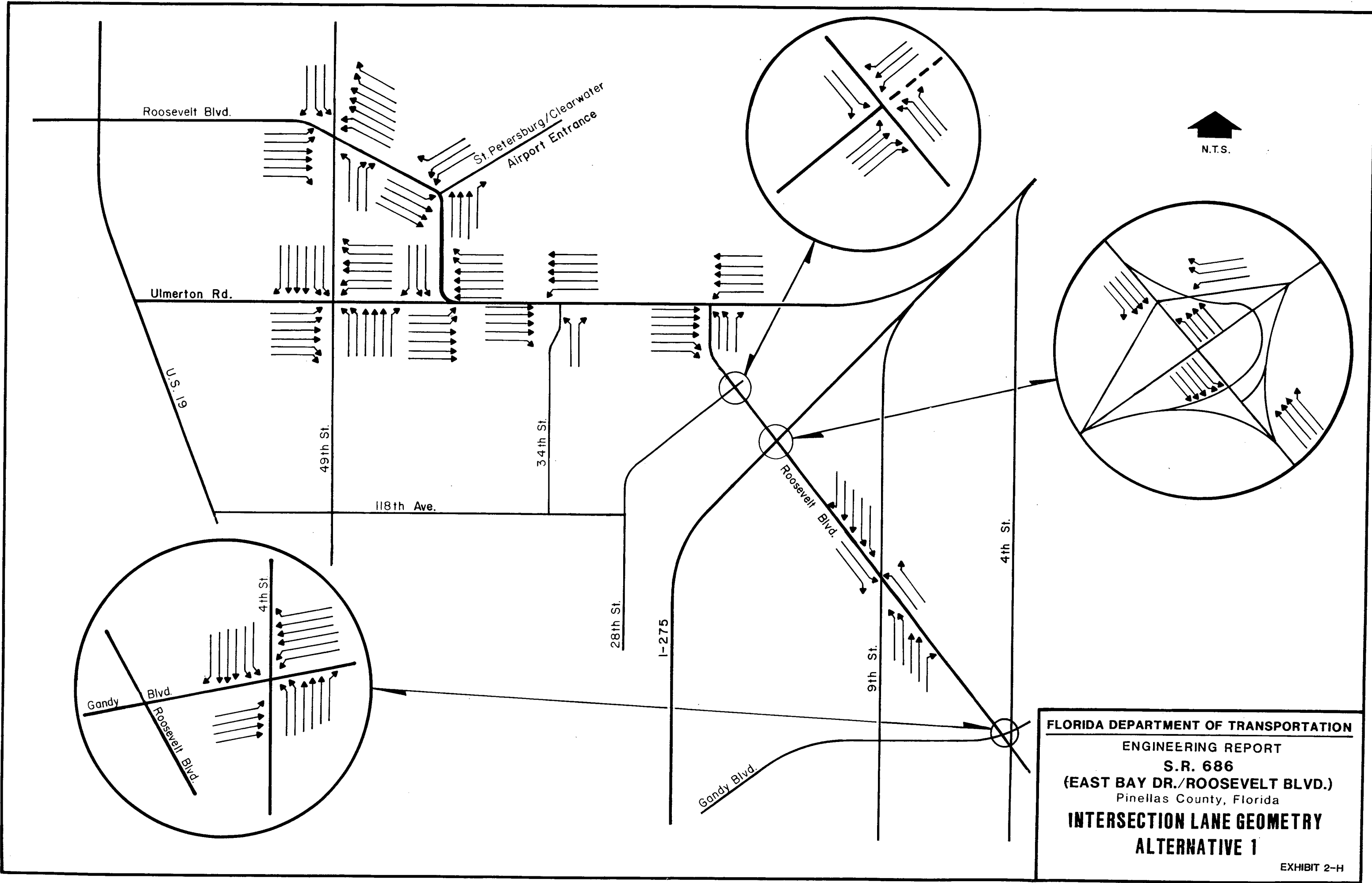
<b><u>Intersections</u></b>	<b><u>V/C</u></b>	<b><u>Average Delay</u></b>	<b><u>LOS</u></b>
Roosevelt Blvd. & 49th St. (Urban)	0.95	24.1	C
Roosevelt Blvd. & Airport (@ Grade)	1.11	38.5	D
49th St. & Ulmerton Road (Urban)	0.77	20.2	C
Roosevelt Blvd. (West Side) Ulmerton Rd. (@ Grade)	1.34	*	F
34th St. & Ulmerton Rd. (@ Grade)	0.93	19.6	C
Roosevelt Blvd. (East Side) Ulmerton Rd. (@ Grade)	1.67	*	F
Roosevelt Blvd. & 28th St. (Urban)	1.00	15.3	C
Roosevelt Blvd. & I-275 SB Ramp (Interchange)	0.97	11.5	B
Roosevelt Blvd. & I-275 NB Ramp (Interchange)	1.02	28.8	D
Roosevelt Blvd. & 9th St. (Urban)	0.56	19.1	C
Gandy Blvd. & 4th St. (Interchange)	0.97	33.3	D

Boulevard interchanges with Ulmerton Road are projected to operate at unacceptable levels of service. With volume to capacity ratios of 1.34 and 1.67, at-grade improvements will not alleviate the significant deficiencies.

For the expressway alternatives, traffic operations analyses were conducted for the intersections and ramp terminals. For the preferred expressway alignments, merge, diverge and weaving analyses were also conducted. For both expressway alignment alternatives, the arterial section of Roosevelt Boulevard from Ulmerton Road to Gandy Boulevard has the same traffic projections. The following discusses the traffic projections and operations analyses for the alternative expressway alignments. After the expressway alternatives, the operational analyses for the arterial section of Roosevelt Boulevard is discussed.

For the 49th Street expressway alignment (Alternative 2), 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 2-I and 2-J, respectively. The a.m. and p.m. peak hour volumes for Alternative 2B are illustrated on Exhibits 2-K and 2-L, respectively. Tables 2.3 and 2.4 summarize the results of the signalized intersection capacity analyses for the expressway portions of Alternatives 2A and 2B, respectively. As indicated previously, the operations analyses of the arterial section of Roosevelt Boulevard, from Ulmerton Road to Gandy Boulevard, are discussed in a subsequent section of this report. The intersection geometry for Alternatives 2A and





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**INTERSECTION LANE GEOMETRY**  
**ALTERNATIVE 1**  
 EXHIBIT 2-H

**TABLE 2.3**  
**2010 SIGNALIZED INTERSECTION**  
**OPERATIONS - ALTERNATIVE 2A**  
**S.R. 686 (East Bay Drive/Roosevelt Boulevard)**  
**Segment 2B**

<u>Intersection</u>	<u>A.M. Peak Hour</u>			<u>P.M. Peak Hour</u>		
	<u>V/C<sup>1</sup></u>	<u>Average<sup>2</sup> Delay</u>	<u>LOS<sup>3</sup></u>	<u>V/C<sup>1</sup></u>	<u>Average<sup>2</sup> Delay</u>	<u>LOS<sup>3</sup></u>
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.

<sup>1</sup> V/C = Volume-to-Capacity Ratio

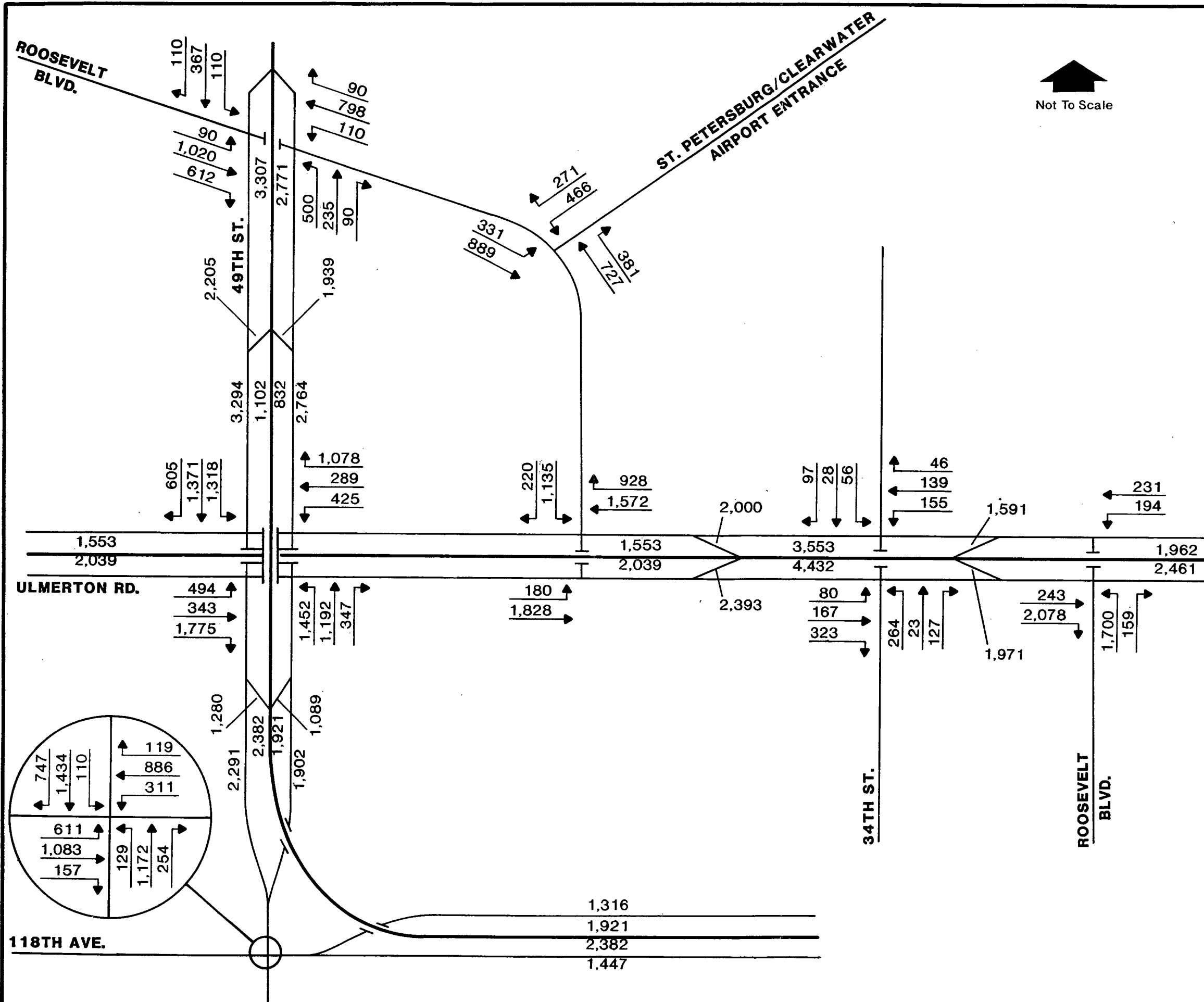
<sup>2</sup> Average Delay in Seconds per Vehicle

<sup>3</sup> LOS = Level of Service

**TABLE 2.4**  
**2010 SIGNALIZED INTERSECTION**  
**OPERATIONS - ALTERNATIVE 2B**  
**S.R. 686 (East Bay Drive/Roosevelt Boulevard)**  
**Segment 2B**

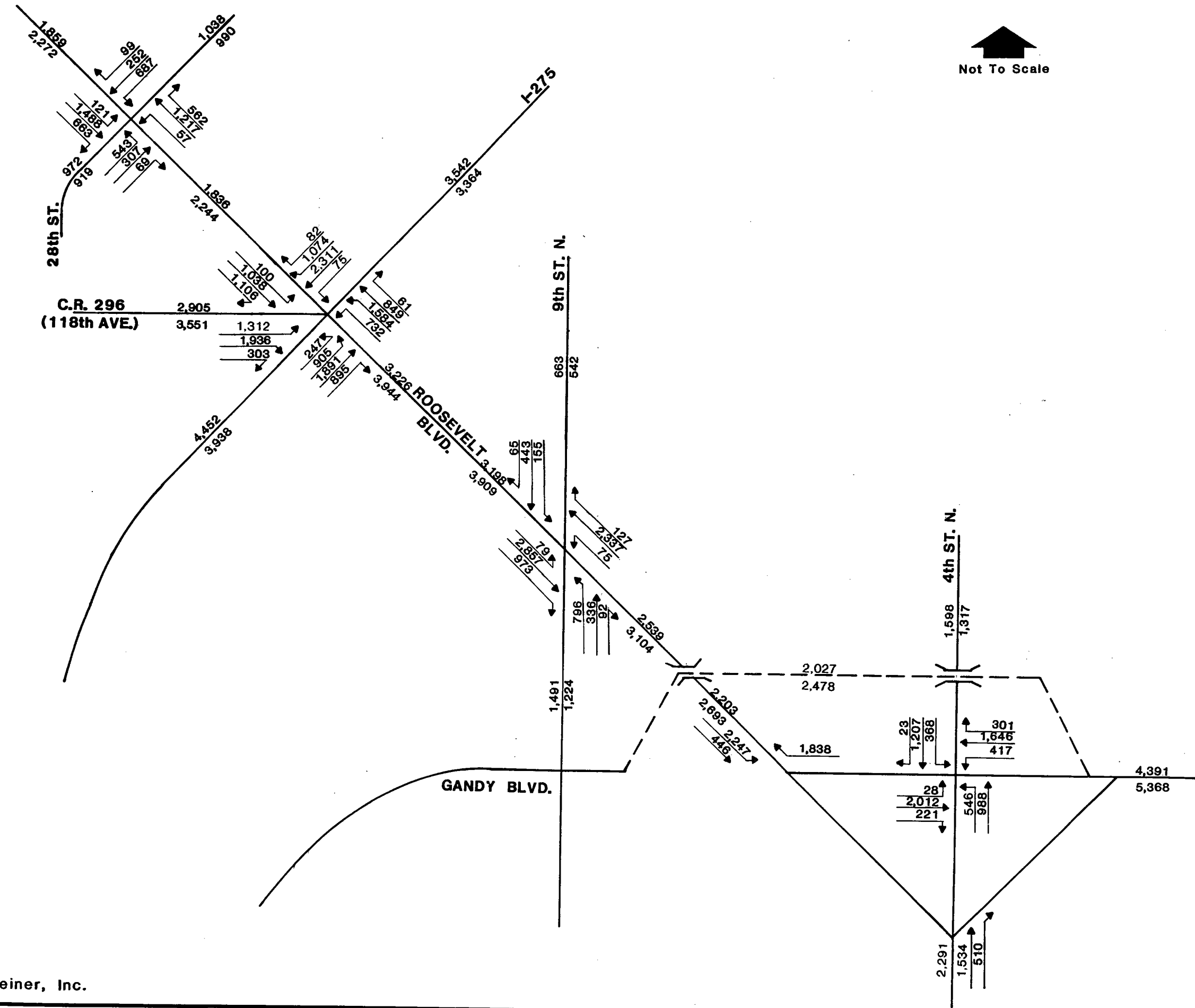
<u>Intersection</u>	<u>A.M. Peak Hour</u>			<u>P.M. Peak Hour</u>		
	<u>V/C<sup>1</sup></u>	<u>Average<sup>2</sup></u> <u>Delay</u>	<u>LOS<sup>3</sup></u>	<u>V/C<sup>1</sup></u>	<u>Average<sup>2</sup></u> <u>Delay</u>	<u>LOS<sup>3</sup></u>
49th Street and Roosevelt Boulevard	0.55	21.2	C	0.47	20.7	C
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

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



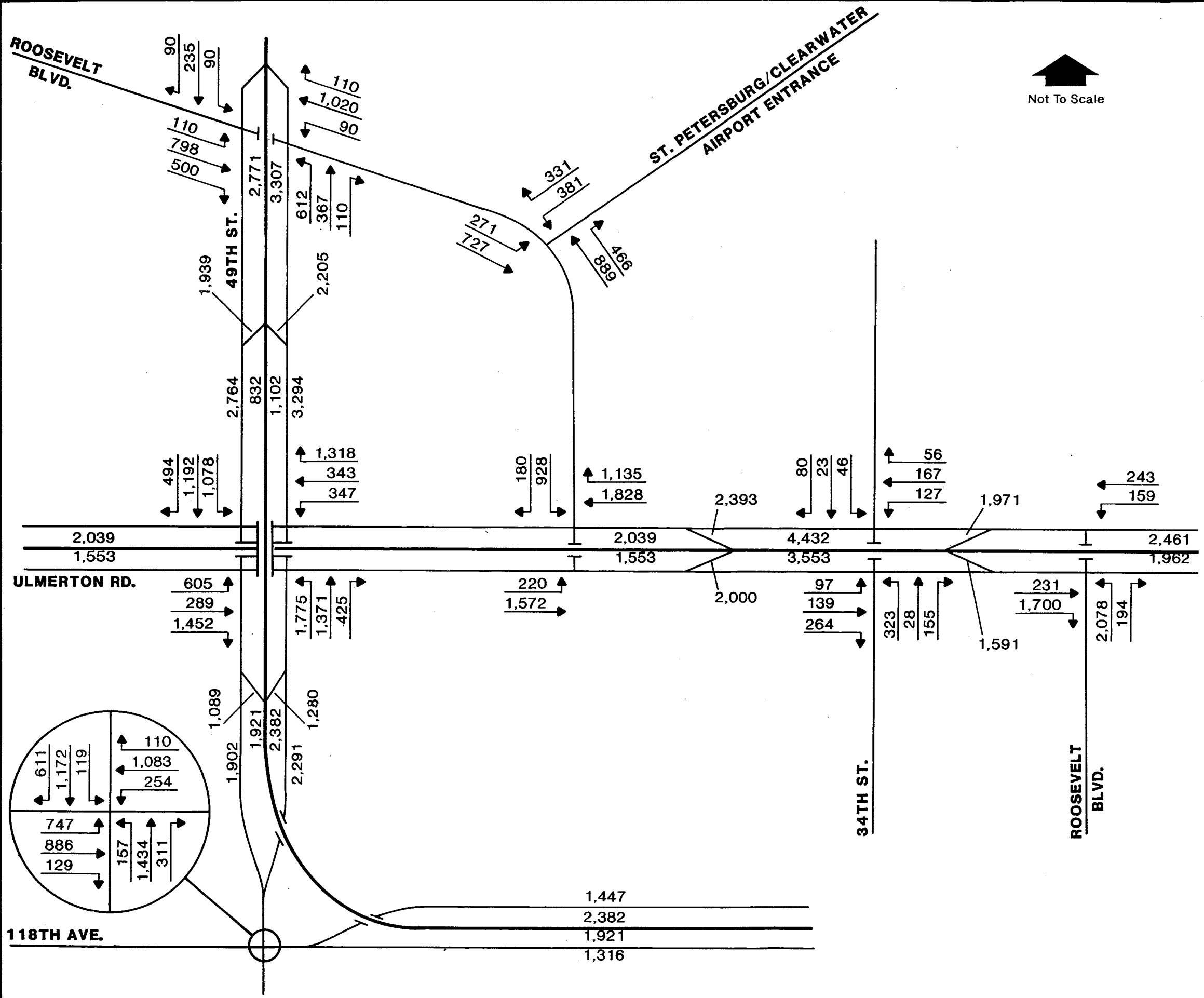
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**YEAR 2010 AM PEAK HOUR  
 TRAFFIC VOLUMES-ALTERNATIVE 2A**



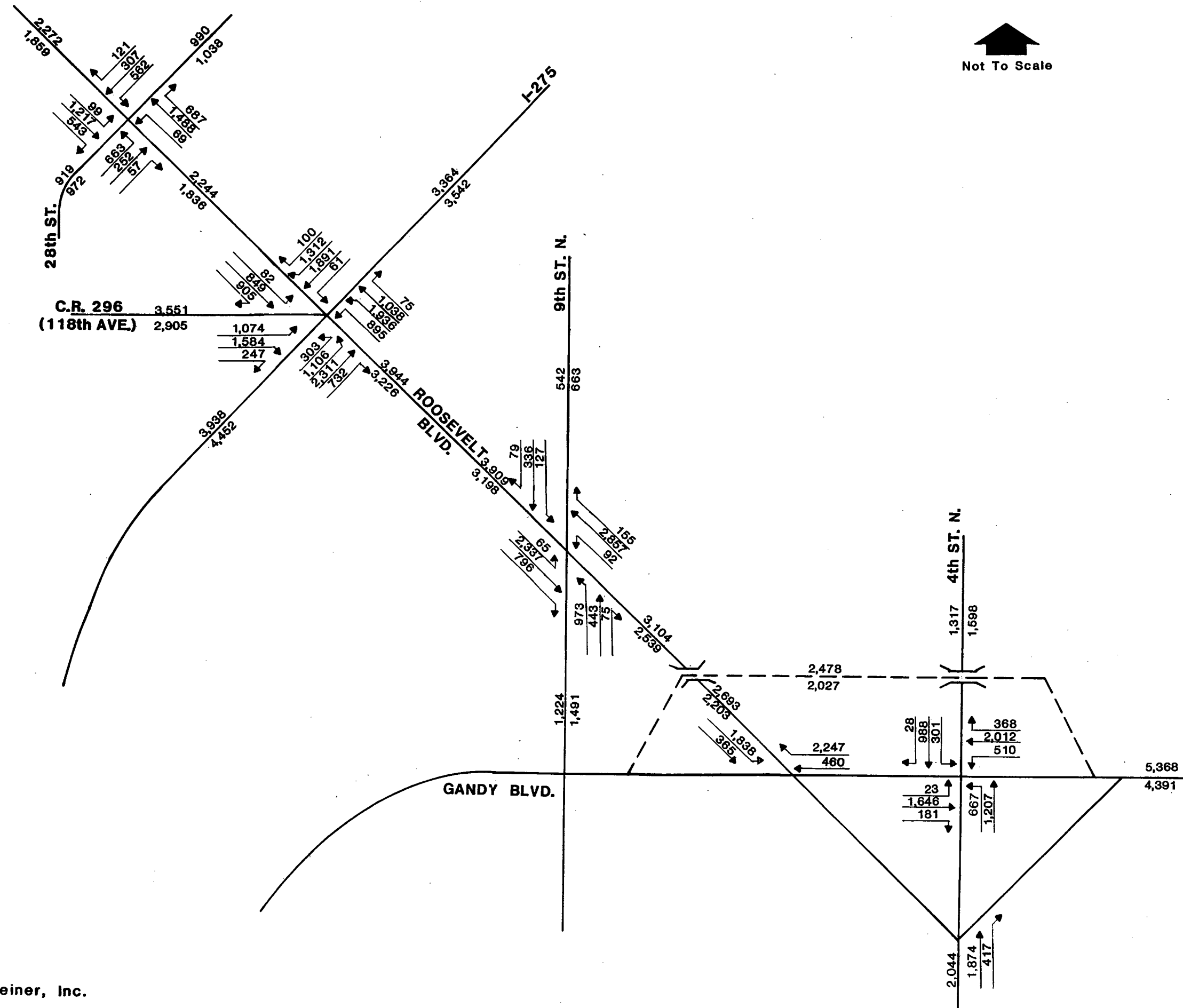
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YEAR 2010 AM PEAK HOUR TRAFFIC  
VOLUMES-ALTERNATIVES 2A/2B



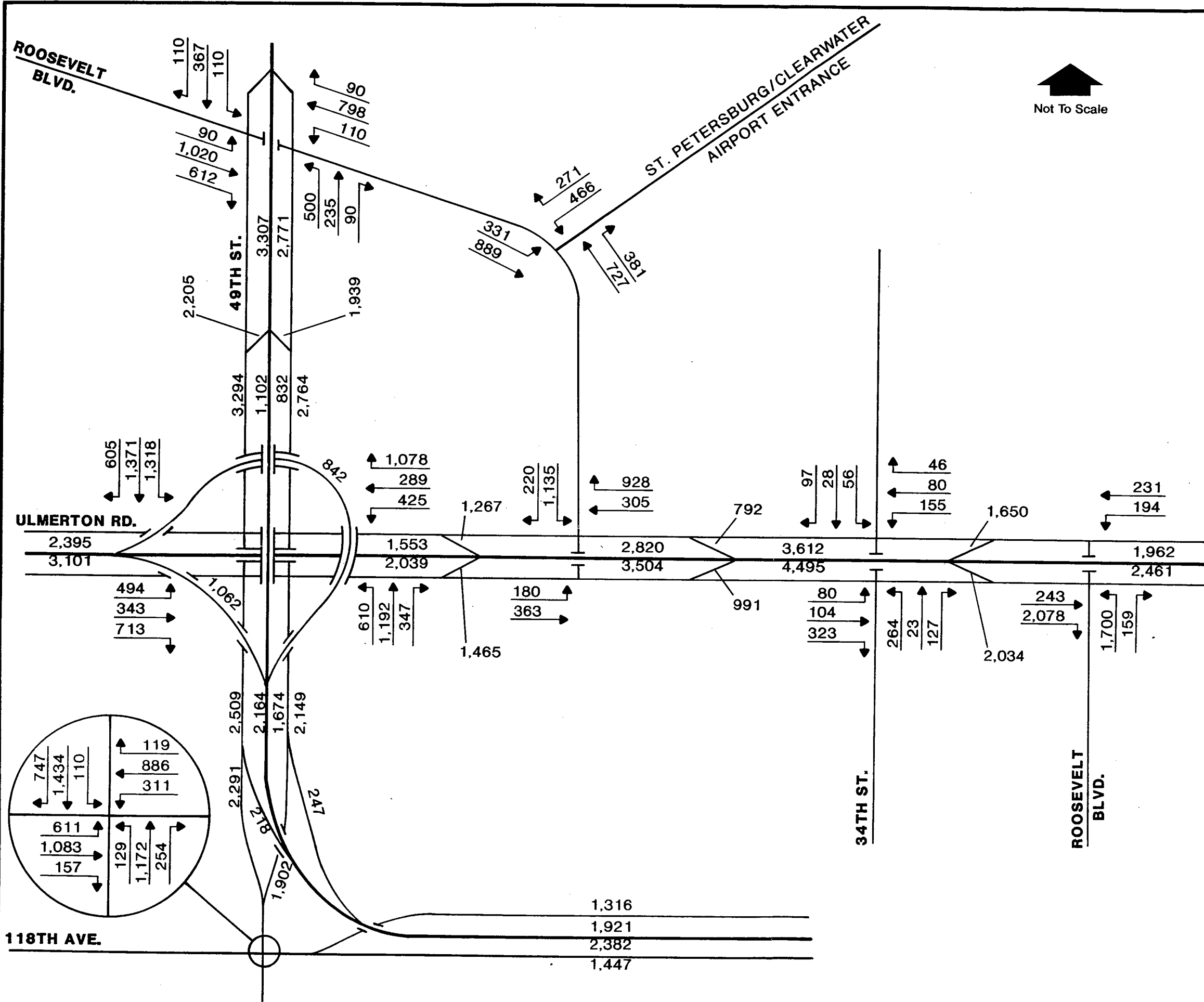
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**TRAFFIC VOLUMES-ALTERNATIVE 2A**



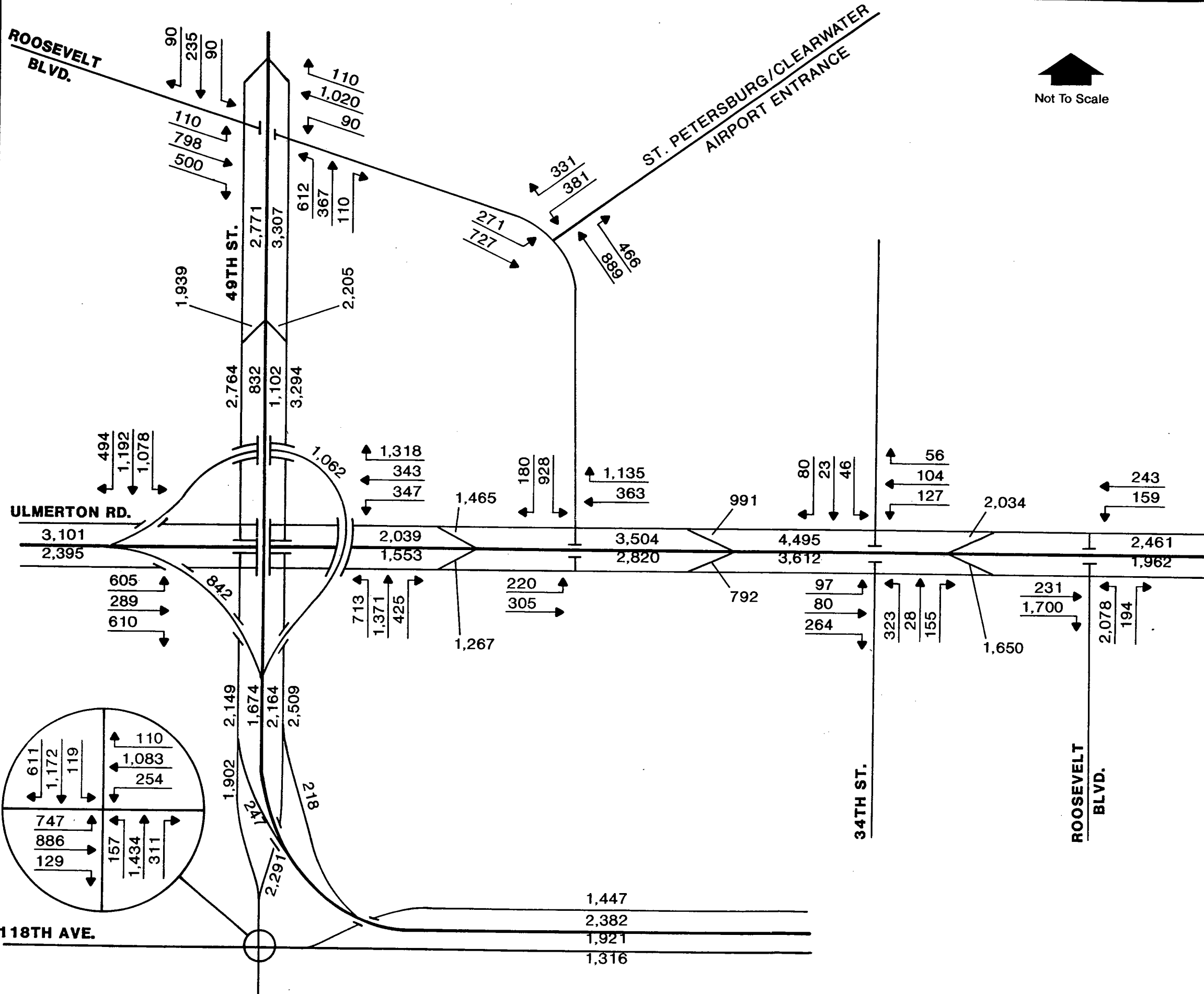
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 VOLUMES- ALTERNATIVES 2A/2B**



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**TRAFFIC VOLUMES-ALTERNATIVE 2B**  
 EXHIBIT 2-K



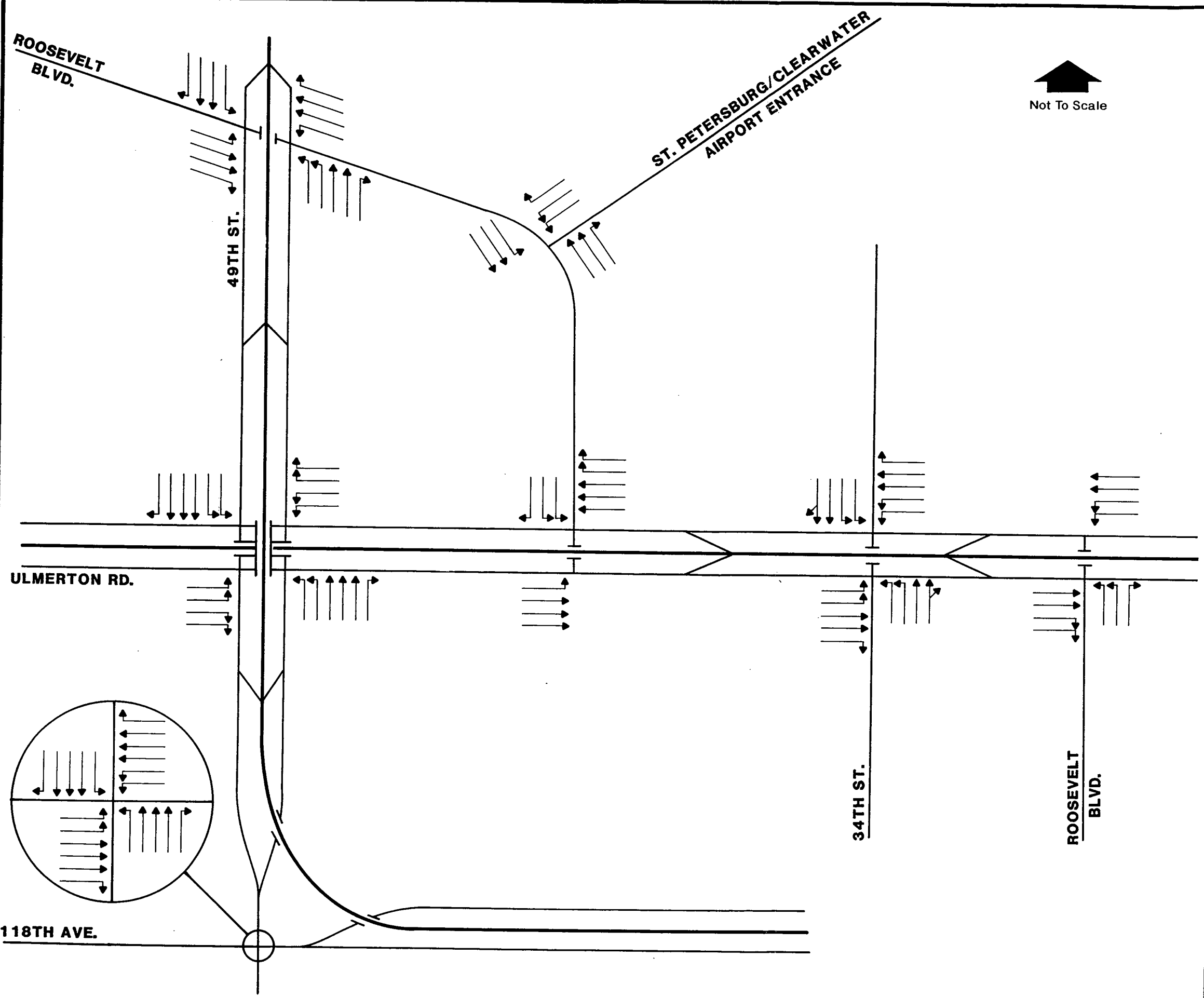


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**TRAFFIC VOLUMES-ALTERNATIVE 2B**

2B is illustrated on Exhibits 2-M and 2-N, respectively. As presented in Tables 2.3 and 2.4, 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 the intersections are projected to operate at LOS C while the 49th Street/118th Avenue intersection is projected to operate at LOS D under both alternatives. The intersection of 49th Street and Ulmerton 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.

For the Roosevelt Boulevard expressway alignment (Alternative 3), 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 movement. The a.m. and p.m. peak hour volumes for Alternative 3C are illustrated on Exhibits 2-O and 2-P, respectively. Exhibits 2-Q and 2-R illustrate the a.m. and p.m. peak volumes, respectively, for Alternative 3D.

Tables 2.5 and 2.6 summarize the results of the signalized intersection capacity analyses for the expressway portions of Alternatives 3C and 3D, respectively. The intersection geometry for Alternatives 3C and 3D are illustrated on Exhibits 2-S and 2-T, respectively. As indicated in Tables 2.5 and 2.6, all eight of the intersections are projected to operate at acceptable levels of service in both the a.m. and p.m. peak hours for both alternatives.

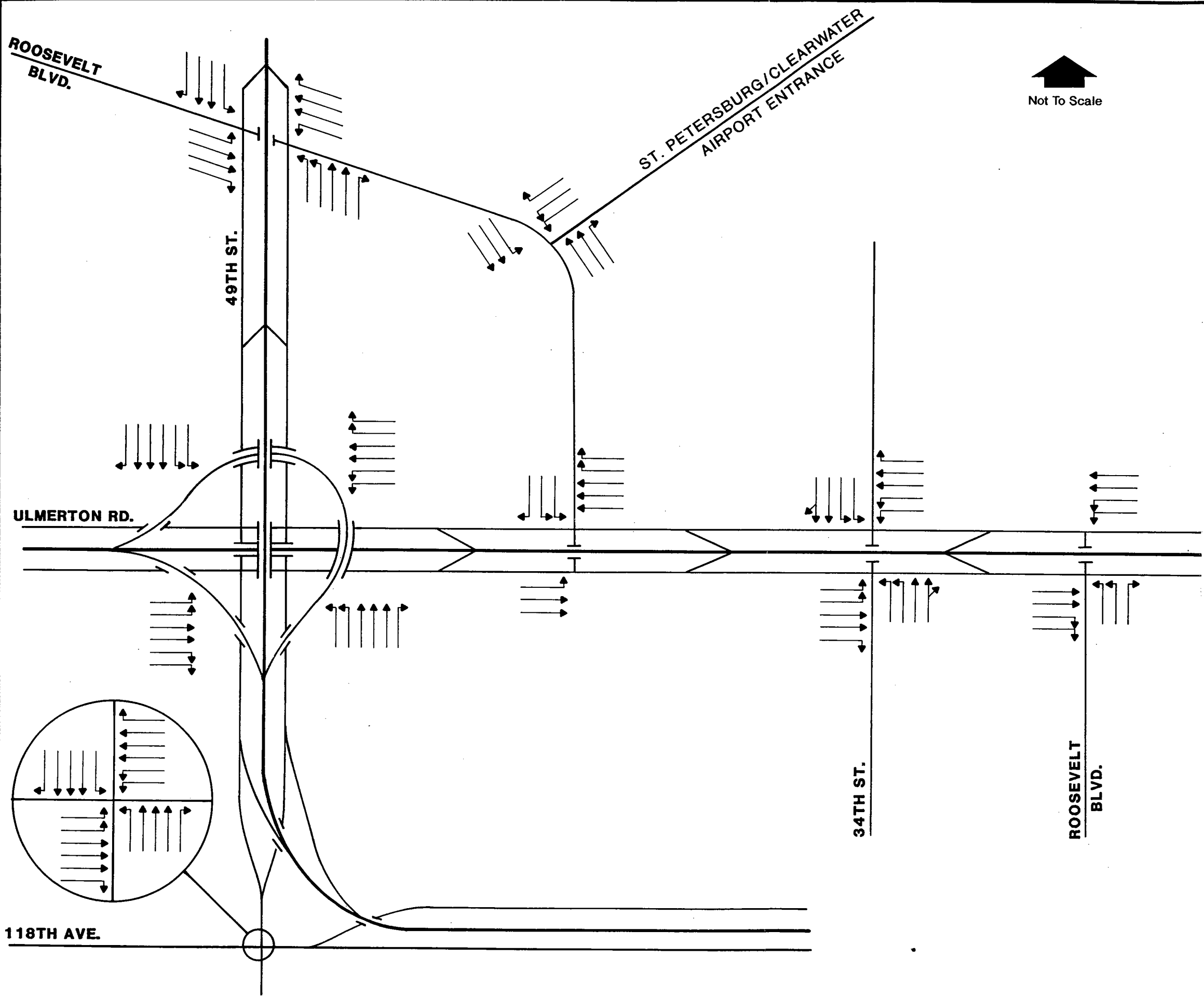


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 YEAR 2010 INTERSECTION  
 LANE GEOMETRY-ALTERNATIVE 2A

EXHIBIT 2-M

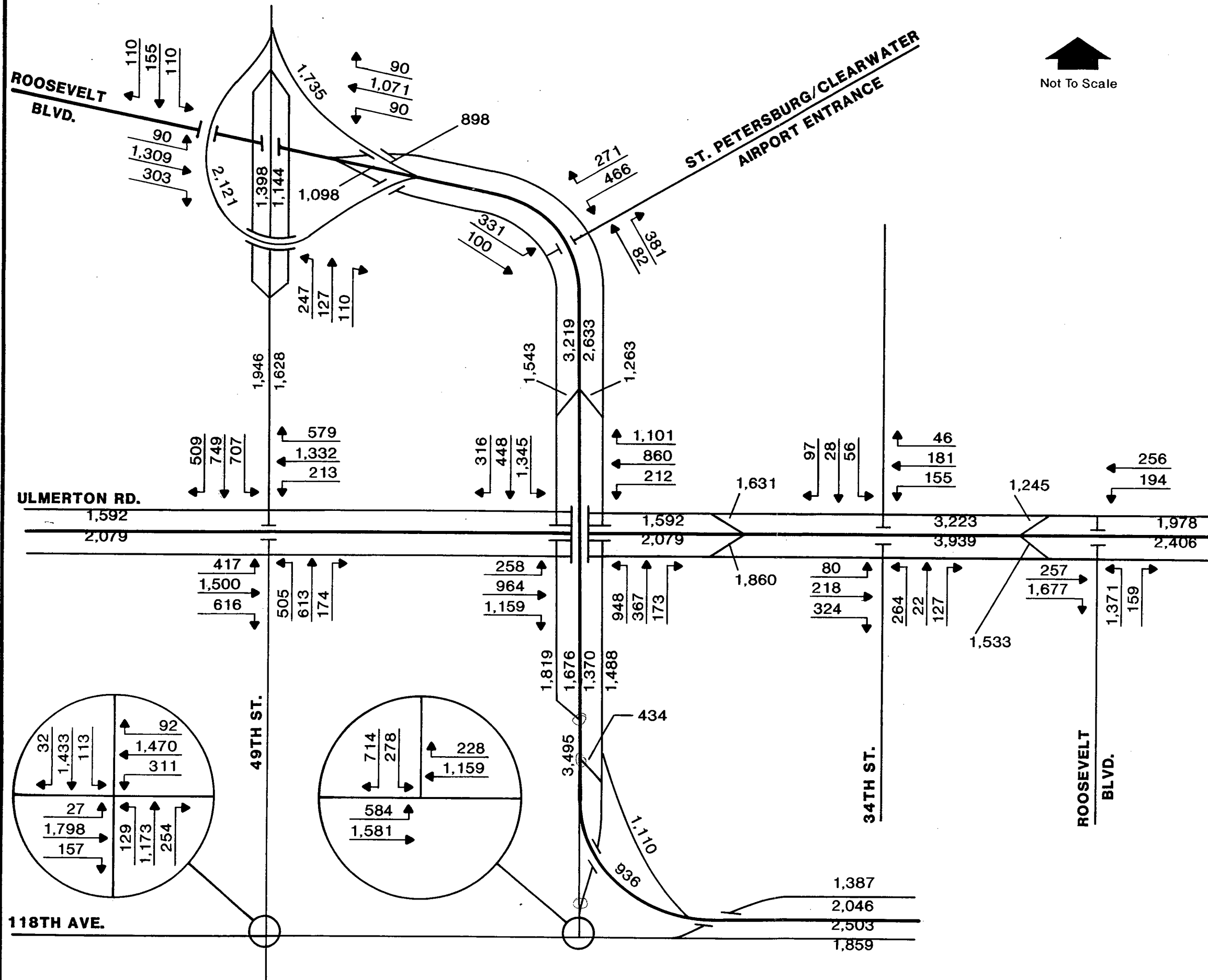


118TH AVE.

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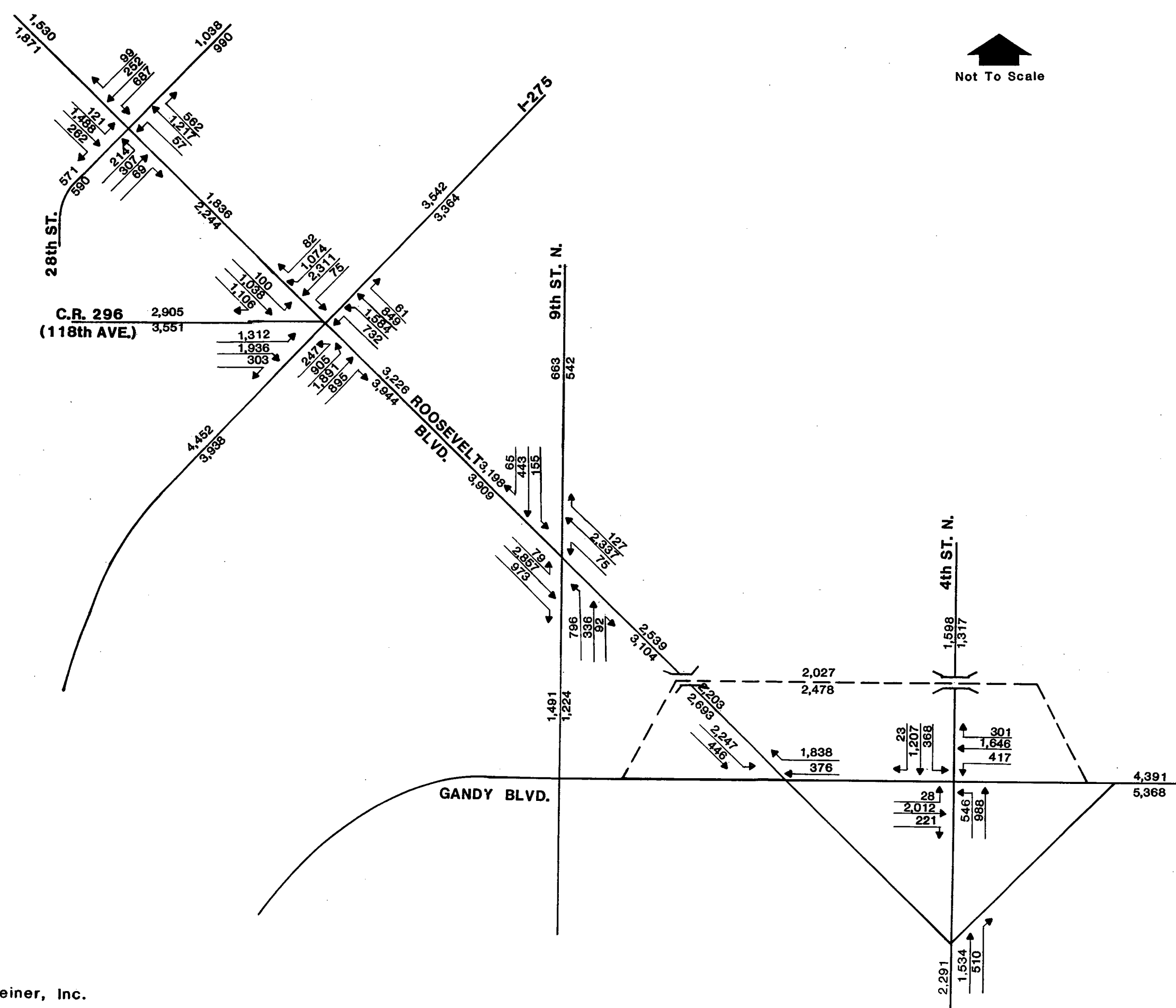
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 LANE GEOMETRY - ALTERNATIVE 2B

EXHIBIT 2-N



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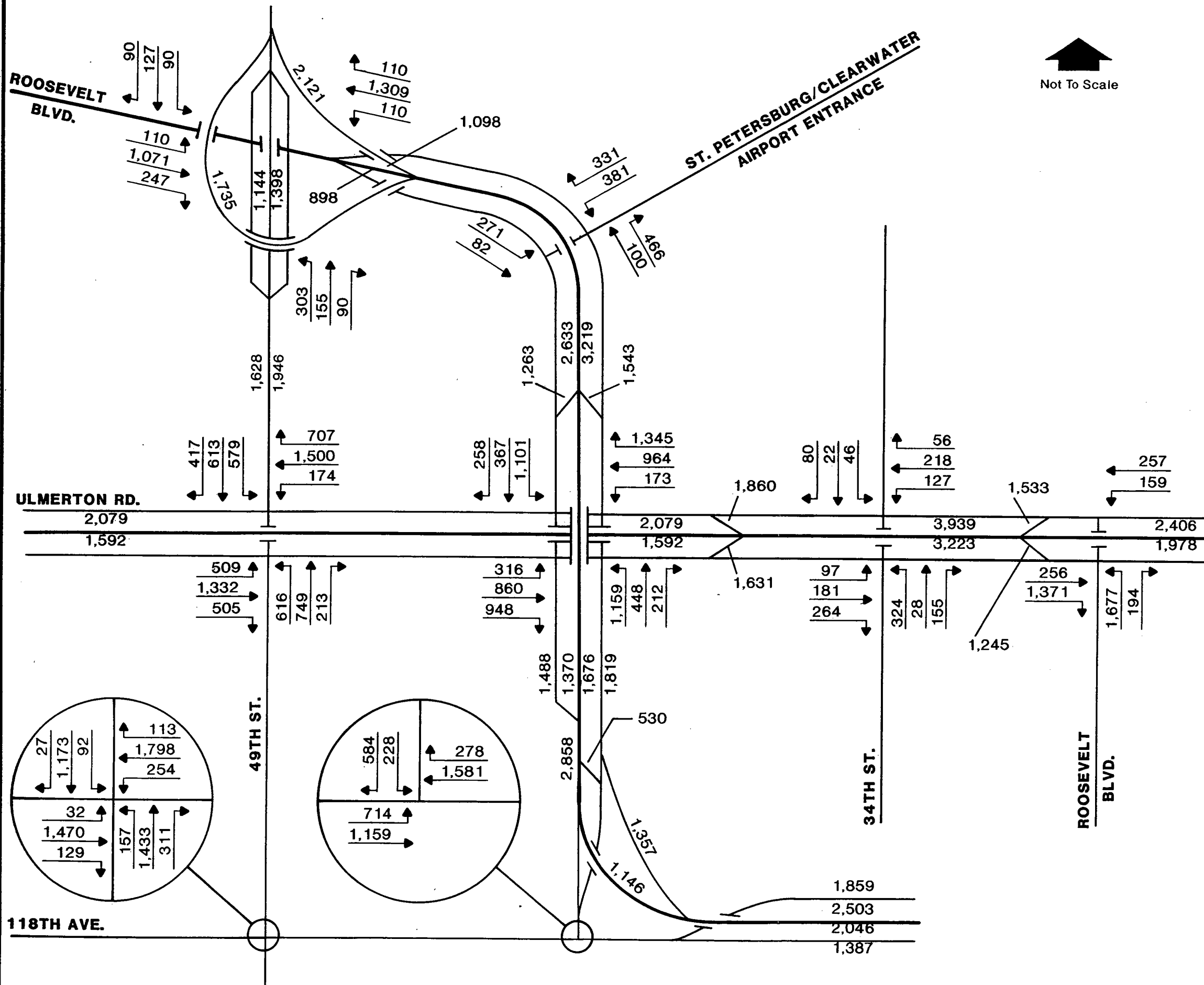
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 TRAFFIC VOLUMES-ALTERNATIVE 3C



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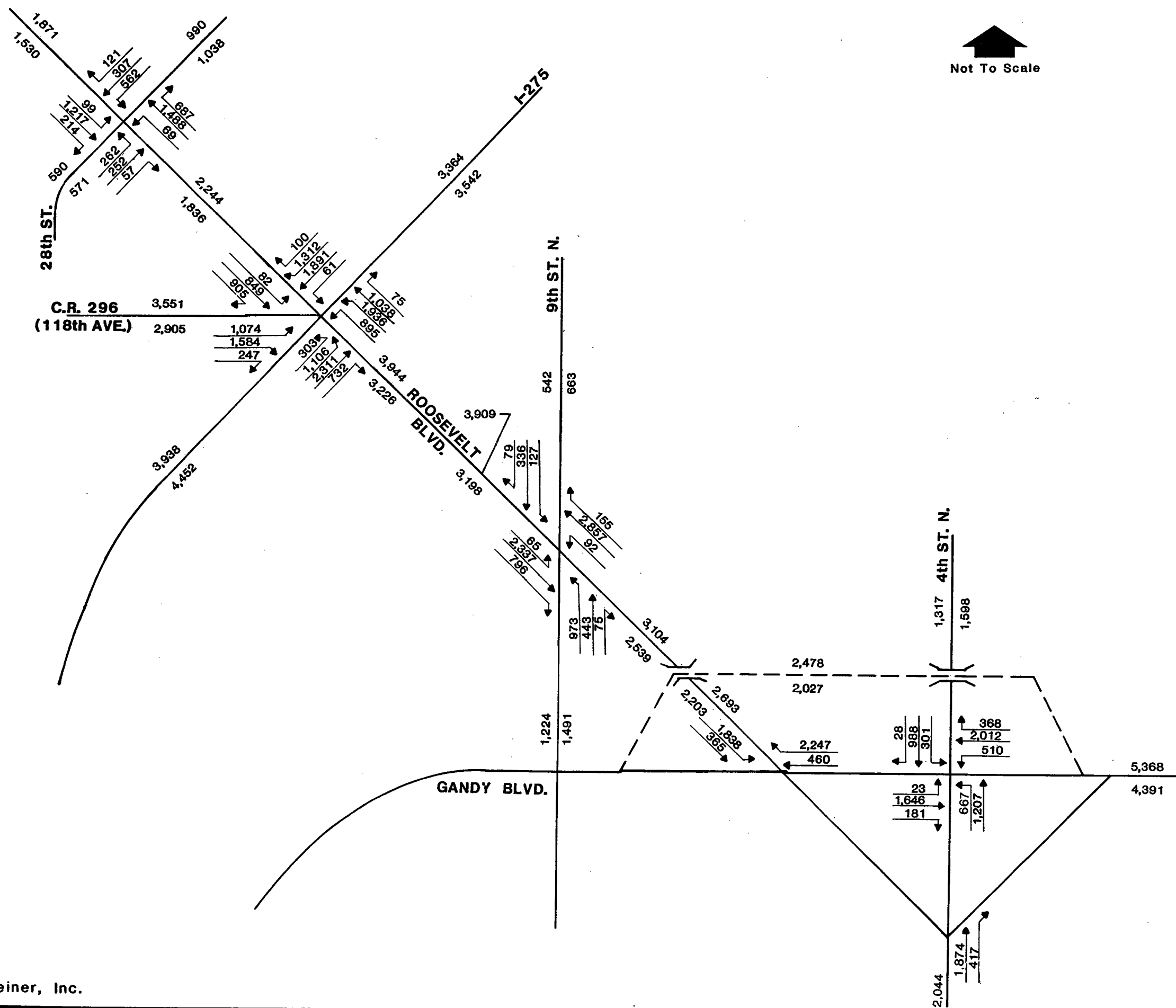
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 VOLUMES-ALTERNATIVES 3C/3D**  
 EXHIBIT 2-O 2



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**TRAFFIC VOLUMES-ALTERNATIVE 3C**



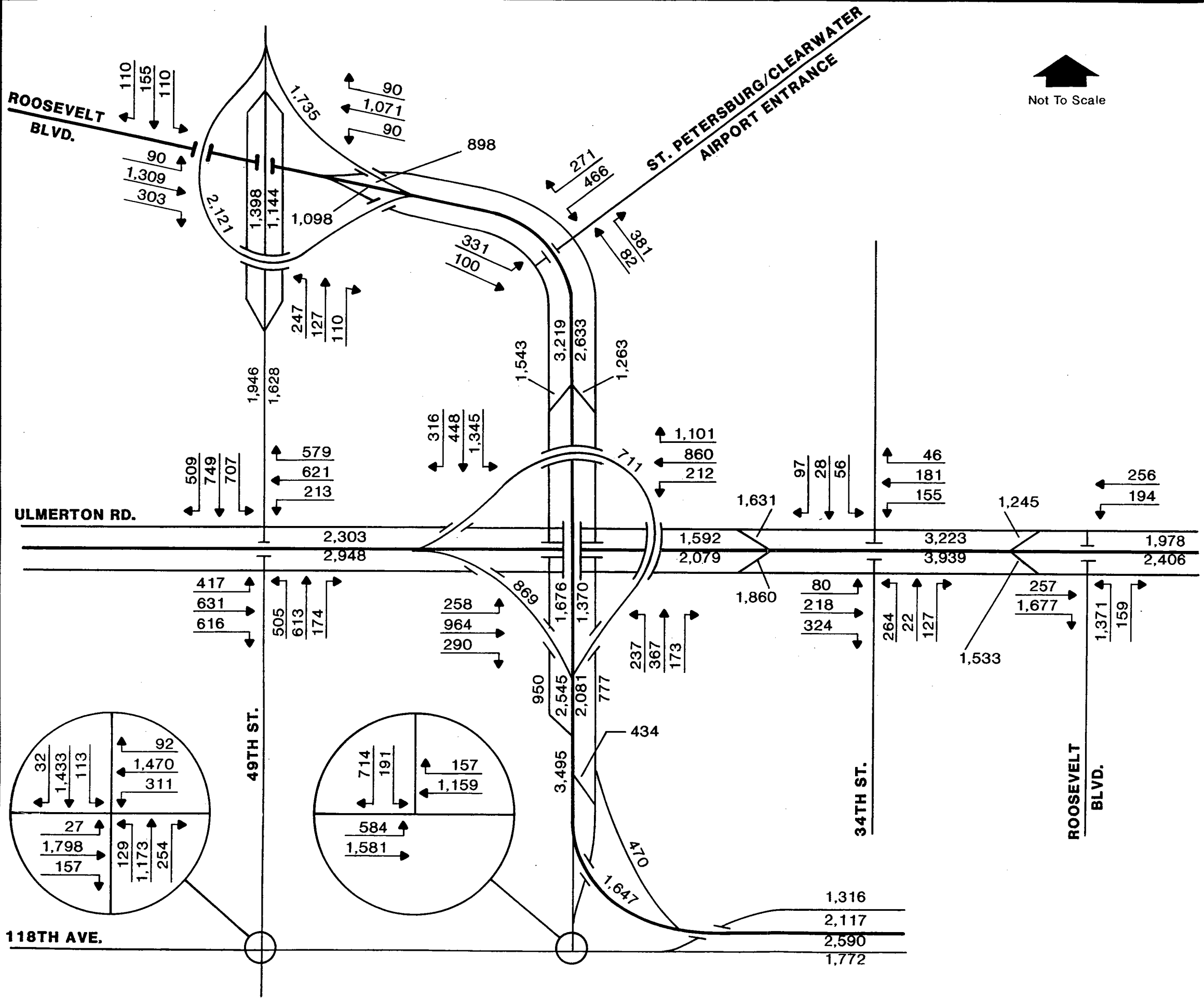
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 VOLUMES-ALTERNATIVES 3C/3D**

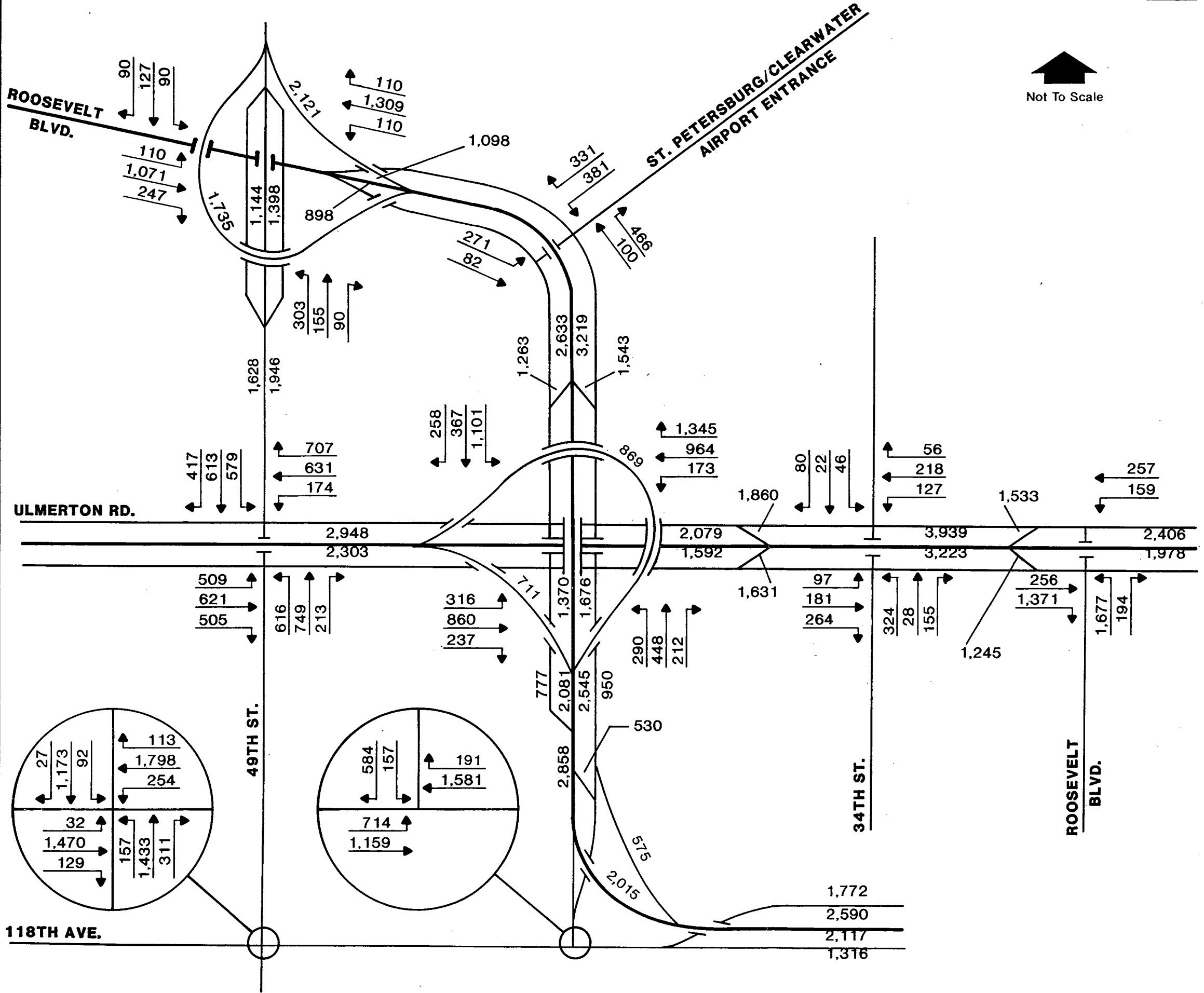
EXHIBIT 2-P 2





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 TRAFFIC VOLUMES-ALTERNATIVE 3D

EXHIBIT 2-R

**TABLE 2.5**

**2010 SIGNALIZED INTERSECTION  
OPERATIONS - ALTERNATIVE 3C  
S.R. 686 (East Bay Drive/Roosevelt Boulevard)  
Segment 2B**

<u>Intersection</u>	<u>A.M. Peak Hour</u>			<u>P.M. Peak Hour</u>		
	<u>V/C<sup>1</sup></u>	<u>Average<sup>2</sup> Delay</u>	<u>LOS<sup>3</sup></u>	<u>V/C<sup>1</sup></u>	<u>Average<sup>2</sup> Delay</u>	<u>LOS<sup>3</sup></u>
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

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

**TABLE 2.6**

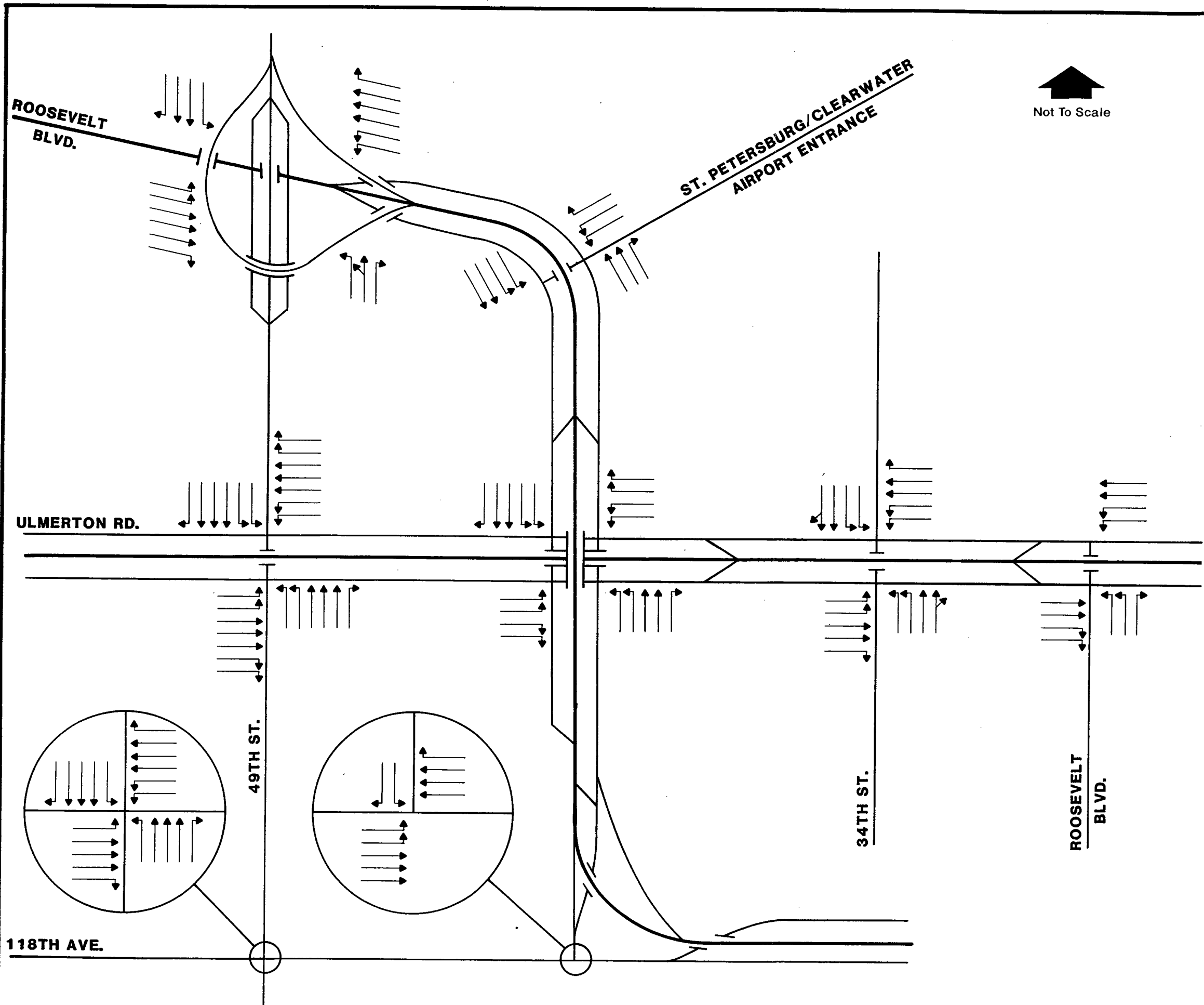
**2010 SIGNALIZED INTERSECTION  
OPERATIONS - ALTERNATIVE 3D  
S.R. 686 (East Bay Drive/Roosevelt Boulevard)  
Segment 2B**

<u>Intersection</u>	<u>A.M. Peak Hour</u>			<u>P.M. Peak Hour</u>		
	<u>V/C<sup>1</sup></u>	<u>Average<sup>2</sup> Delay</u>	<u>LOS<sup>3</sup></u>	<u>V/C<sup>1</sup></u>	<u>Average<sup>2</sup> Delay</u>	<u>LOS<sup>3</sup></u>
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

<sup>1</sup> V/C = Volume-to-Capacity Ratio

<sup>2</sup> Average Delay in Seconds per Vehicle

<sup>3</sup> LOS = Level of Service

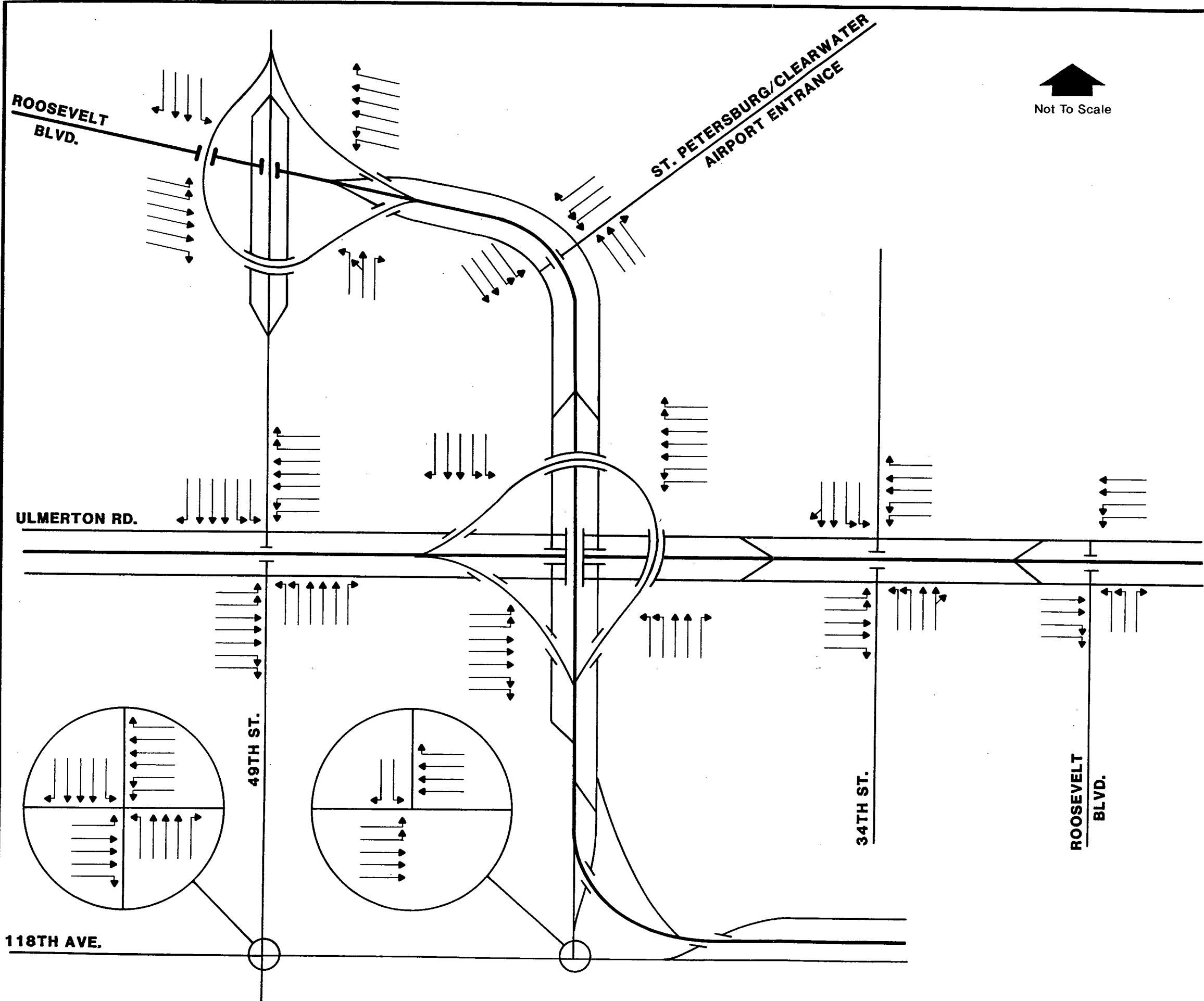


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**YEAR 2010 INTERSECTION**  
**LANE GEOMETRY-ALTERNATIVE 3C**

EXHIBIT 2-S



Not To Scale

**ROOSEVELT  
BLVD.**

**ST. PETERSBURG/CLEARWATER  
AIRPORT ENTRANCE**

**ULMERTON RD.**

**49TH ST.**

**34TH ST.**

**ROOSEVELT  
BLVD.**

**118TH AVE.**

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**FLORIDA DEPARTMENT OF TRANSPORTATION  
ENGINEERING REPORT**

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(EAST BAY DR./ROOSEVELT BLVD.)  
Pinellas County, Florida**

**YEAR 2010 INTERSECTION  
LANE GEOMETRY-ALTERNATIVE 3D**

EXHIBIT 2-T

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 intersections (49th Street/Ulmerton Road and 49th Street/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 intersections (49th Street/118th Avenue and Ulmerton Road west interchange with Roosevelt Boulevard) are projected to operate at LOS D during both peak hours.

The expressway operations were evaluated for Alternative 3 using the procedures outlined in Chapter 4 - Weaving Areas and Chapter 5 - Ramps and Ramp Junctions of the 1985 Highway Capacity Manual. Tables 2.7 and 2.8 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 interchange and Roosevelt Boulevard east interchange are projected to operate at LOS E for the weaving vehicles and LOS D for the non-weaving vehicles. The less than desirable operations anticipated for the weaving vehicles is due to the large volume of weaving vehicles and the short weaving length (1,030 feet in each 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.

Tables 2.9 and 2.10 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

TABLE 2.7

2010 A.M. PEAK HOUR FREEWAY OPERATIONS ANALYSIS SUMMARY - ALTERNATIVE 3C  
 S.R. 686 (East Bay Drive/Roosevelt Boulevard)  
 Segment 2B

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	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					
2-16 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 2.8

2010 P.M. PEAK HOUR FREEWAY OPERATIONS ANALYSIS SUMMARY - ALTERNATIVE 3C  
 S.R. 686 (East Bay Drive/Roosevelt Boulevard)  
 Segment 2B

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	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

TABLE 2.9

2010 A.M. PEAK HOUR FREEWAY OPERATIONS ANALYSIS SUMMARY - ALTERNATIVE 3D  
 S.R. 686 (East Bay Drive/Roosevelt Boulevard)  
 Segment 2B

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	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 2.10

2010 P.M. PEAK HOUR FREEWAY OPERATIONS ANALYSIS SUMMARY - ALTERNATIVE 3D  
 S.R. 686 (East Bay Drive/Roosevelt Boulevard)  
 Segment 2B

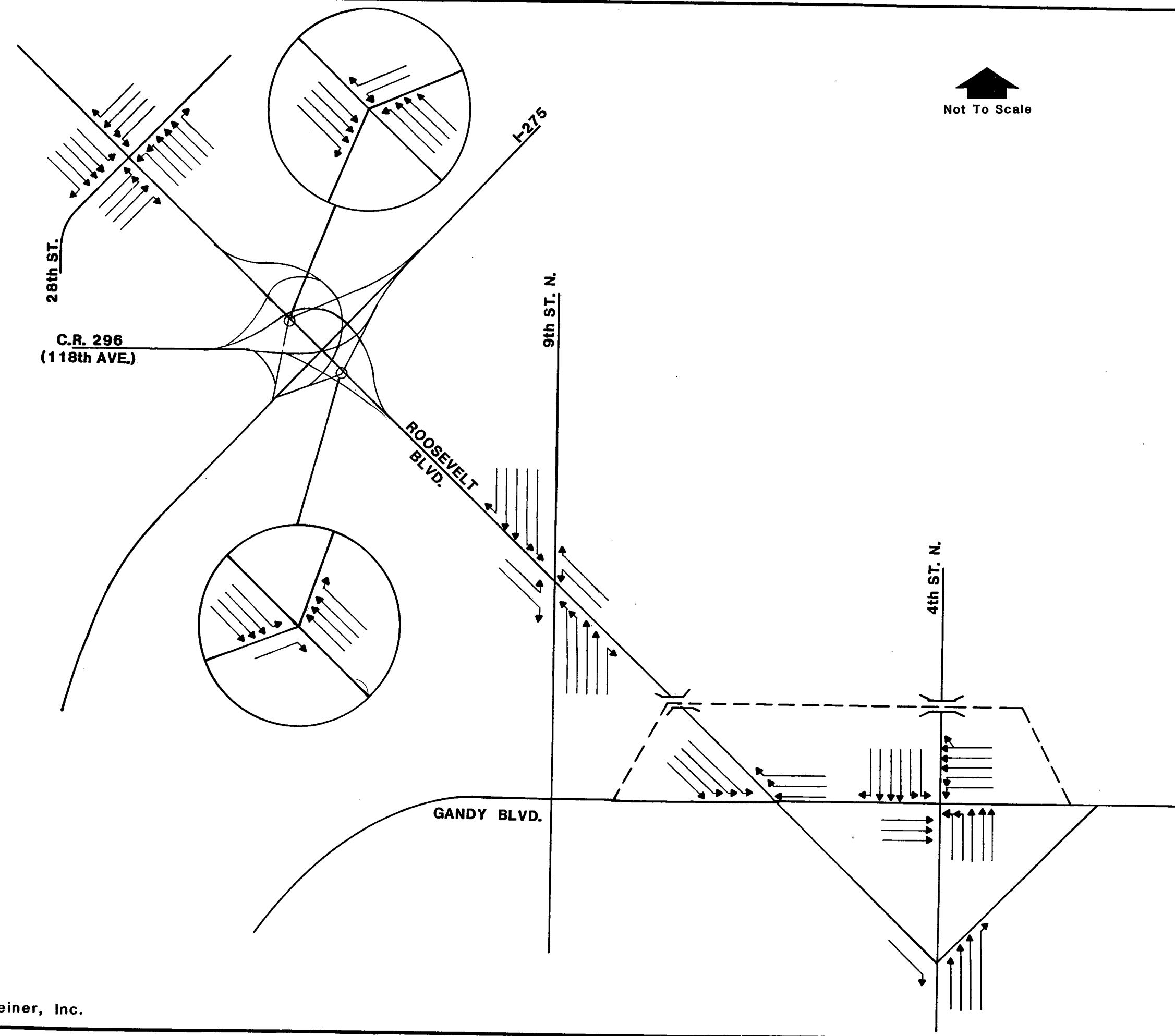
Location	Freeway Volume (in vph)	Merge Area			Diverge Area			Weaving Area				
		Ramp Volume (in vph)	Merge Volume (in pcph)	Merge Level of Service	Ramp Volume (in vph)	Diverge Volume (in pcph)	Diverge Level of Service	Type/Length of Weave	Weaving Speed (in mph)	Weaving Level of Service	Non-Weaving Speed (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

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 the Roosevelt Boulevard west interchange and Roosevelt Boulevard east interchange are projected to operate at LOS C during both peak hours. The improved operations are due to the longer lengths of the weaving area (2,620 feet) and the ramping configuration. 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 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.

Segment 3, from Ulmerton Road to U.S. 92 (Gandy Boulevard), was analyzed as a six-lane arterial. As indicated previously, the volumes on this section of Roosevelt Boulevard are similar for both expressway alignments (Alternatives 2 and 3). The daily, a.m. peak hour and p.m. peak hour volumes have been included previously on Exhibits 2-I, 2-J and 2-K, respectively. Table 2.11 summarizes the results of the signalized intersection operations. As indicated in the table all of the intersections are projected to operate at LOS D or better in both the a.m. and p.m. peak hours.

The capacity analyses were conducted assuming a six-lane arterial on Roosevelt Boulevard and that the ramp terminals at the S.R. 686/I-275 interchange are signalized. The intersection geometrics are illustrated in Exhibit 2-U. It should be noted that the traffic projections assumed only Phase I of the Carrilon development



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**ENGINEERING REPORT**  
**S.R. 686**  
**(EAST BAY DR./ROOSEVELT BLVD.)**  
Pinellas County, Florida  
**YEAR 2010 ARTERIAL INTERSECTION**  
**LANE GEOMETRY ALTERNATIVES 3C/3D**  
EXHIBIT 2-U

was completed. Recently the Carrilon development, located in the southeast quadrant of the Ulmerton Road and Roosevelt Boulevard east interchange, has proposed substantially increasing the land use densities with the development of Phase II. Preliminary evaluations indicate that with the implementation of Carrilon Phase II, it is likely that a grade separation will be required at the intersection of Roosevelt Boulevard and 28th Street, one of the development's primary entrances. Initial evaluations conducted by Pinellas County as part of their on-going 28th Street design project indicate an urban interchange can be implemented at this intersection essentially within the existing right-of-way on Roosevelt Boulevard.

One additional issue raised on the project was the selection of the year 2010 as the design year for the project. This issue was raised as the design year does not cover a 20-year planning period beyond the potential implementation of the proposed improvements. The design year of 2010 was initially established for the project as it reflects the year of the current travel demand model and the Long-Range Transportation Plan. The socioeconomic data in the model which was used for the 2010 Long-Range Transportation Plan reflects near build-out conditions in Pinellas County. Thus, the traffic projections would not increase appreciably if a design year of 2015 or 2020 were selected. Another element which must be considered relative to the establishment of the design year is the proposed level of improvements in the S.R. 686 corridor. The proposed improvements represent the maximum improvement which can reasonably be implemented. Thus, any additional traffic in the corridor would need to be accommodated by an alternative mode.

**SECTION 3.0**

**EXISTING PHYSICAL FEATURES**

### 3.0 EXISTING PHYSICAL FEATURES

This section documents the existing physical features and design components of the roadway. Among the features described are the functional classification, typical section, drainage, lighting, pedestrian/bicycle facilities, safety, structures and utility systems. The analyses of deficiencies and alternative solutions are discussed in Section 4 and 5, respectively.

#### 3.1 System Linkage

Pinellas County is a north-south oriented peninsula with a roadway network which provides a limited number of east-west routes crossing the county. One surface arterial, S.R. 580, and three bridges, S.R. 60 (Courtney Campbell Causeway), I-275 (Howard Frankland Bridge), and S.R. 687/U.S. 92 (Gandy Boulevard) provide the major arterial access from Hillsborough County to Pinellas County across Old Tampa Bay. The arterial and three bridges connect directly with the east-west arterial routes in Pinellas County.

S.R. 580 traverses the northern portion of the county, connecting Oldsmar to Dunedin. Gulf to Bay Boulevard (S.R. 60) provides arterial access from the Courtney Campbell Causeway to Clearwater and the barrier island beaches. Park Boulevard/78th Avenue North provides arterial access from the Gandy Boulevard Bridge to Seminole, Indian Shores, and the barrier island beaches. S.R. 686 and S.R. 688 (Ulmerton Road) provide east-west arterial access from the Howard Frankland Bridge to Largo and the barrier island beaches.

In addition to its east-west traffic carrying function, S.R. 686 also connects several existing and planned north-south arterials. In the study area, S.R. 686 connects 49th

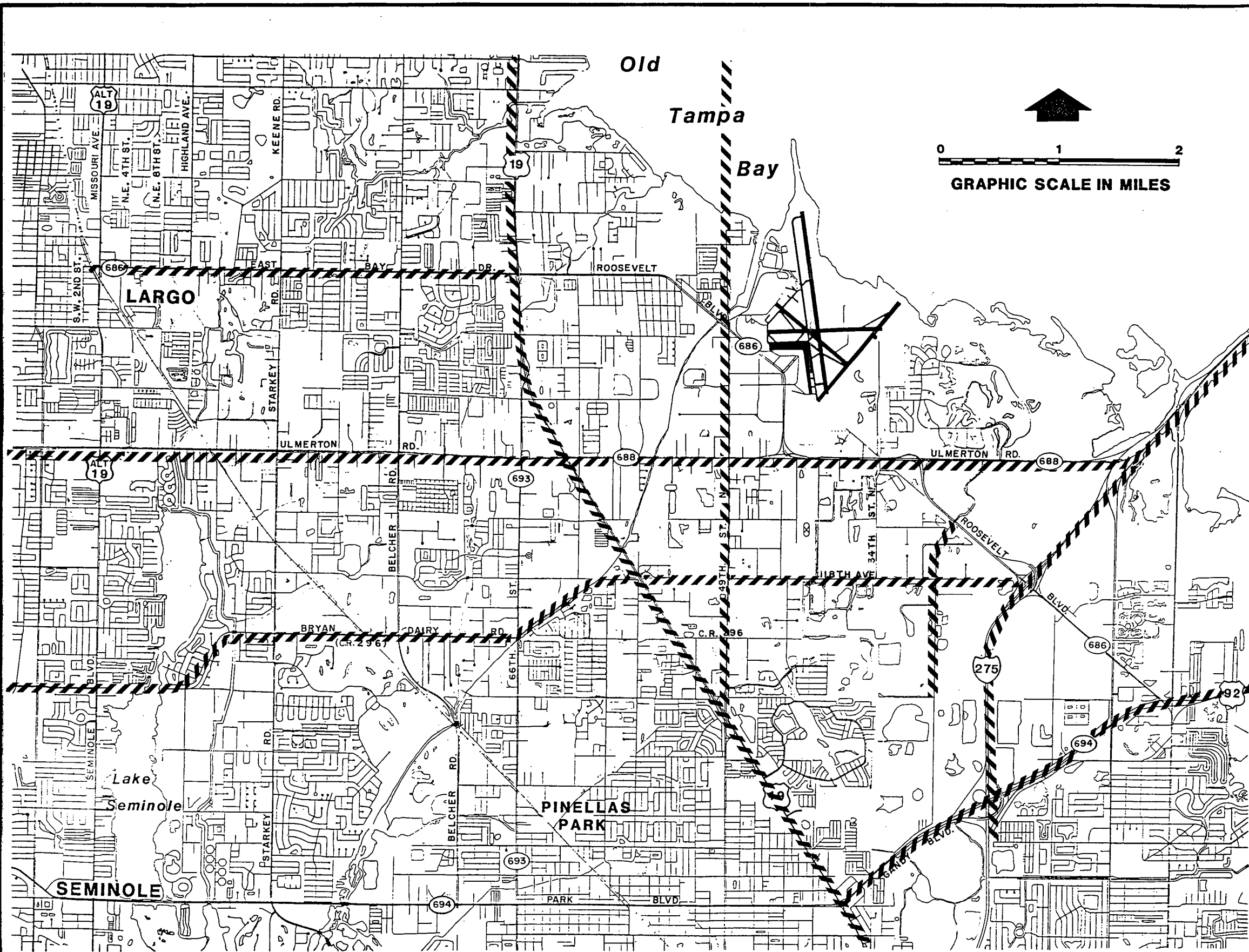


Street, 28th Street, 9th Street and 4th Street. Access to the St. Petersburg-Clearwater Airport is provided from S.R. 686 as well as access to S.R. 688 (Ulmerton Road) and I-275. Consequently, S.R. 686 serves both local and regional traffic.

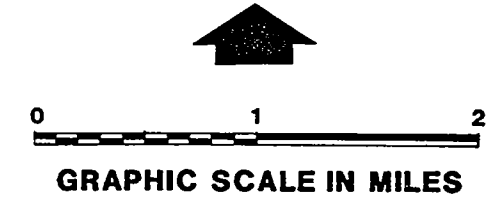
While improvements to Segments 2A, 2B and 3 are not currently included in the Pinellas County TIP, the improvements in Segment 1 (Alternate U.S. 19 to U.S. 19) are all included. These improvements are anticipated to be completed by 1995. Several additional projects are also currently planned or programmed for the mid-county area. Other improvement projects currently being planned, designed or currently under construction include the following: (1) addition of lanes on the Howard Frankland Bridge to provide an eight-lane facility, (2) design and construction of C.R. 296 (along the 118th Avenue alignment) from U.S. 19 to I-275 as a six-lane expressway, (3) improvements to U.S. 19 to provide a six-lane expressway, (4) improvements to 49th Street to provide a six-lane facility including a new bridge across Old Tampa Bay, (5) widening of McMullen Booth Road to provide a six-lane arterial, (6) improvements to 28th Street provide a four- to six-lane arterial, (7) a PD&E study on S.R. 688 evaluating multi-lane improvements, and (8) a PD&E study on Gandy Boulevard from Dale Mabry Highway in Hillsborough County to U.S. 19 in Pinellas County evaluating a controlled access facility in the corridor. The locations of these improvement projects are depicted in Exhibit 3-A. As seen in the exhibit, substantial improvements to the mid-county arterial system are planned. These improvements will significantly increase the available capacity and alleviate existing and anticipated deficiencies.

### **3.2 Roadway Characteristics**

S.R. 686 was originally constructed in 1912 as a 40-foot brick street serving mid-Pinellas County. In 1956, the roadway was completely reconstructed as a four-lane



**////// Improvement Projects**



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**S.R. 686**  
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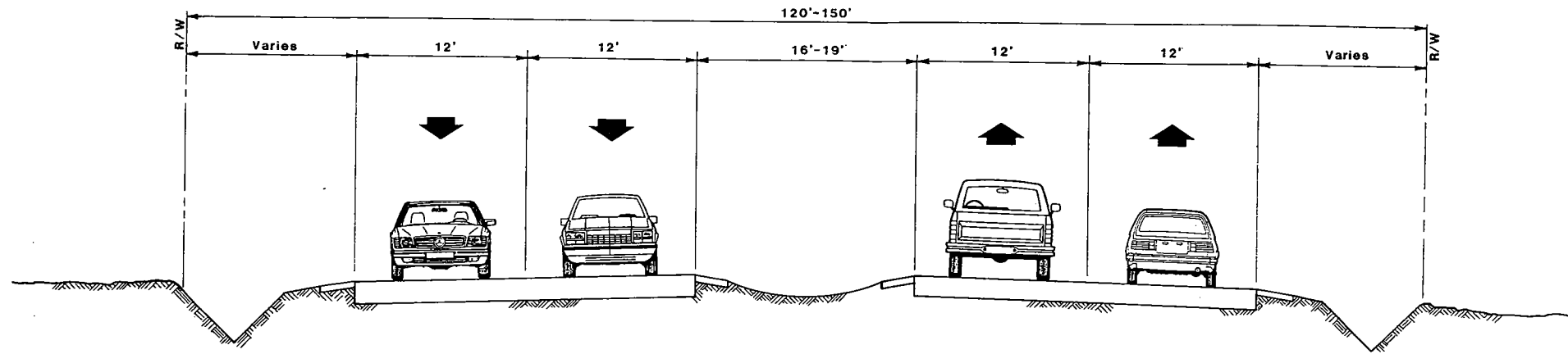
**CURRENTLY PLANNED ROADWAY  
 IMPROVEMENT PROJECTS**

divided arterial with flexible pavement with the existing cross section. Subsequent improvements in the corridor have been limited to the construction of median openings with turn lanes, intersection throat widenings, and resurfacing. The most recent resurfacing project in the corridor was completed in 1985.

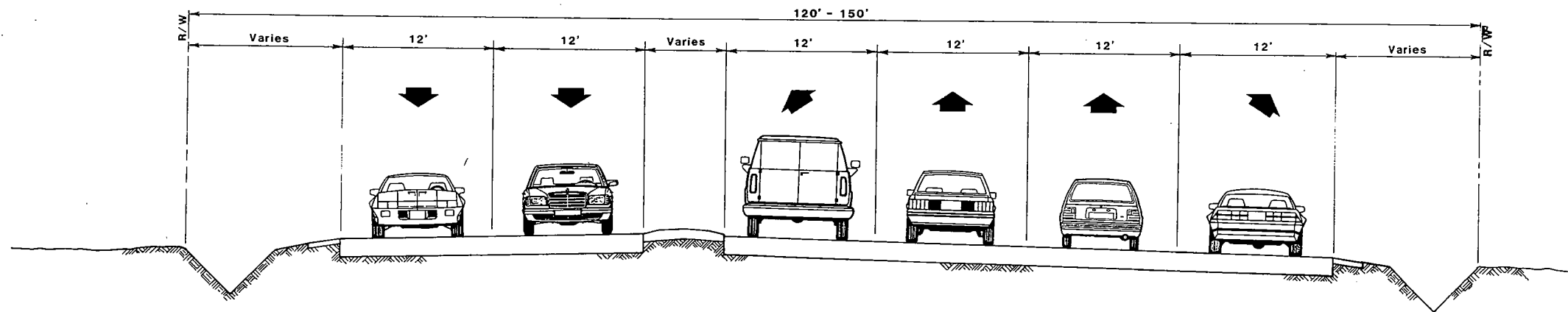
S.R. 686 is a four-lane divided east-west arterial through the City of Largo and unincorporated Pinellas County. West of Alternate U.S. 19 (Missouri Avenue), S.R. 686 is a four-lane undivided arterial and transitions to a two-lane causeway to the barrier island and Belleair Beach.

From 49th Street east to the west interchange with Ulmerton Road, a four-lane divided rural cross section with 12-foot travel lanes is provided in a 152-foot existing right-of-way. The 16-foot grass median transitions to concrete traffic separators at median openings. The existing horizontal alignment includes a seven degree curve at Terminal Parkway. The vertical alignment is essentially flat. The existing roadway includes minor throat widening at major intersections to provide for exclusive left-turn and right-turn lanes. Exhibit 3-B illustrates the existing mid-block typical cross section.

The segment of Roosevelt Boulevard which is co-located with Ulmerton Road was recently improved to provide a six-lane divided rural cross section. Within the 200-foot right-of-way, the typical section includes three 12-foot travel lanes in each direction separated by a 16-foot median and open ditch drainage. Continuous right-turn lanes are also included throughout the mile section from the Roosevelt Boulevard west interchange to the Roosevelt Boulevard east interchange. Exhibit 3-C illustrates the mid-block typical section.

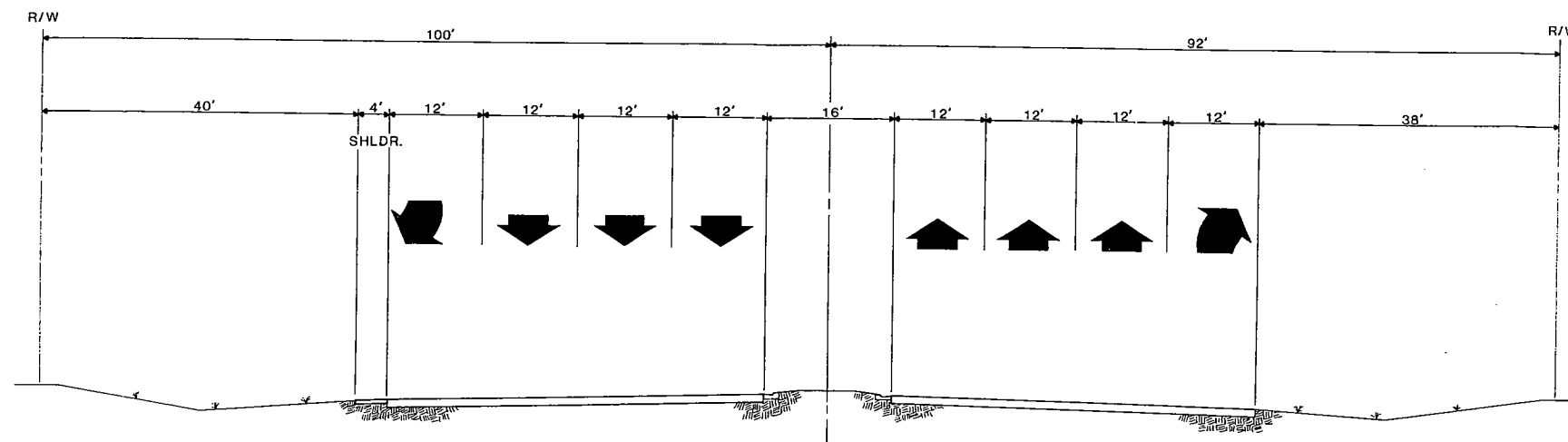


**EXISTING TYPICAL SECTION - MID BLOCK**  
49TH STREET TO S.R. 688



**EXISTING TYPICAL SECTION - INTERSECTION APPROACH**  
ROOSEVELT BOULEVARD AT 49TH STREET  
ROOSEVELT BOULEVARD AT ST. PETE-CLEARWATER AIRPORT

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S.R. 686  
**(EAST BAY DR./ROOSEVELT BLVD.)**  
Pinellas County, Florida  
**EXISTING TYPICAL SECTION**  
**49TH STREET TO ULMERTON ROAD**



S.R. 688(ULMERTON)  
 FROM S.R.686(ROOSEVELT,NORTH OF ULMERTON)  
 TO S.R. 686(ROOSEVELT,SOUTH OF ULMERTON)

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 S.R. 686  
 (EAST BAY DR./ROOSEVELT BLVD.)  
 Pinellas County, Florida  
**EXISTING TYPICAL SECTION**  
 S.R. 686/S.R. 688

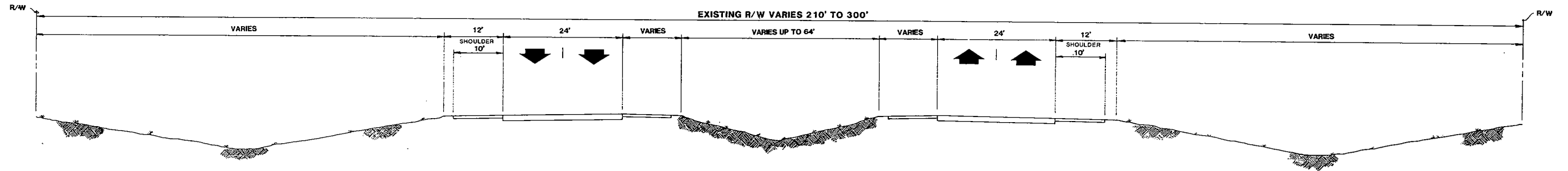
From the east interchange with Ulmerton Road to U.S. 92, a four-lane divided rural cross section with 12-foot travel lanes is provided in the 300-foot existing right-of-way. The grass median, varying from 40 to 88 feet in width, provides left-turn lanes at median openings. The existing horizontal alignment is relatively straight. The vertical alignment is essentially flat. The existing roadway includes throat widening at major intersections to provide for exclusive left turn and right turn lanes. The typical mid-block cross section is illustrated in Exhibit 3-D.

The shoulders throughout the corridor are typically not paved with bicycles required to use the 12-foot travel lanes. With the ditch drainage system, there are no sidewalks throughout most of the corridor. On the segment co-located with Ulmerton Road, there are some sidewalks adjacent to areas of intense commercial development. Typically, the sidewalks are located adjacent to the development and outside the drainage ditches.

### **3.3 Drainage**

The roadway drainage system for Segments 2B and 3 consists of roadway ditches to convey roadway runoff. From site investigations, it appears that the roadway ditches receive runoff from the roadway and limited areas immediately adjacent to the roadway.

Seven major cross drain structures were identified for the existing Roosevelt Boulevard alignment in Segment 2B from available data and site investigations. The details of sizes, drainage areas, peak flow rates and flow stages are documented in detail in the Segment 2B and 3 Location Hydraulic Report Addendum included as Appendix 6.4. As indicated in the Location Hydraulic Report Addendum, the existing



S.R. 686 FROM S.R. 688 (Ulmerton Road)  
TO U.S. 92 (Gandy Boulevard)

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**S.R. 686**  
**(EAST BAY DR./ROOSEVELT BLVD.)**  
 Pinellas County, Florida  
**EXISTING TYPICAL SECTION**  
**ULMERTON ROAD TO GANDY BOULEVARD**  
 EXHIBIT 3-D

cross drain structures appear to be in good condition and functioning properly, although some siltation has occurred.

For the Roosevelt Boulevard extension from Ulmerton Road south to C.R. 296, an investigation of existing drainage structures and drainage basins was conducted. Since there is no existing roadway in this portion of the corridor, there are no cross drains. There are however, 10 drainage structures in the area which service five drainage basins. Five drainage structures have been proposed for the extension of Roosevelt Boulevard. The characteristics of the existing drainage basins and the proposed structures are discussed in detail in the Segment 2B and 3 Location Hydraulic Report Addendum (see Appendix 6.4).

In Segment 3, sixteen cross-drain structures were identified from available data and site investigations. Six of the cross-drain structures are located at the Ulmerton Road and I-275 interchanges with Roosevelt Boulevard. The details of sizes, drainage areas, peak flow rates, and flow stages are documented in detail in the Segment 3 Location Hydraulic Report included as Appendix 6.3. As indicated in the Location Hydraulic Report, the existing cross drain structures appear to be in good condition and functioning properly, although some siltation has occurred.

### **3.4 Highway Lighting**

Segments 2B and 3 are lighted for the majority of the corridor. The 49th Street intersection is lighted by luminaries mounted on the traffic signal poles. The roadway along the entrance to the airport is also lighted. Both the west and east interchanges of S.R. 686 and Ulmerton Road as well as southward to U.S. 92 the street lighting is mounted on concrete poles generally between the edge of pavement and the inside of the ditch.



### 3.5 Bicycle/Pedestrian Considerations

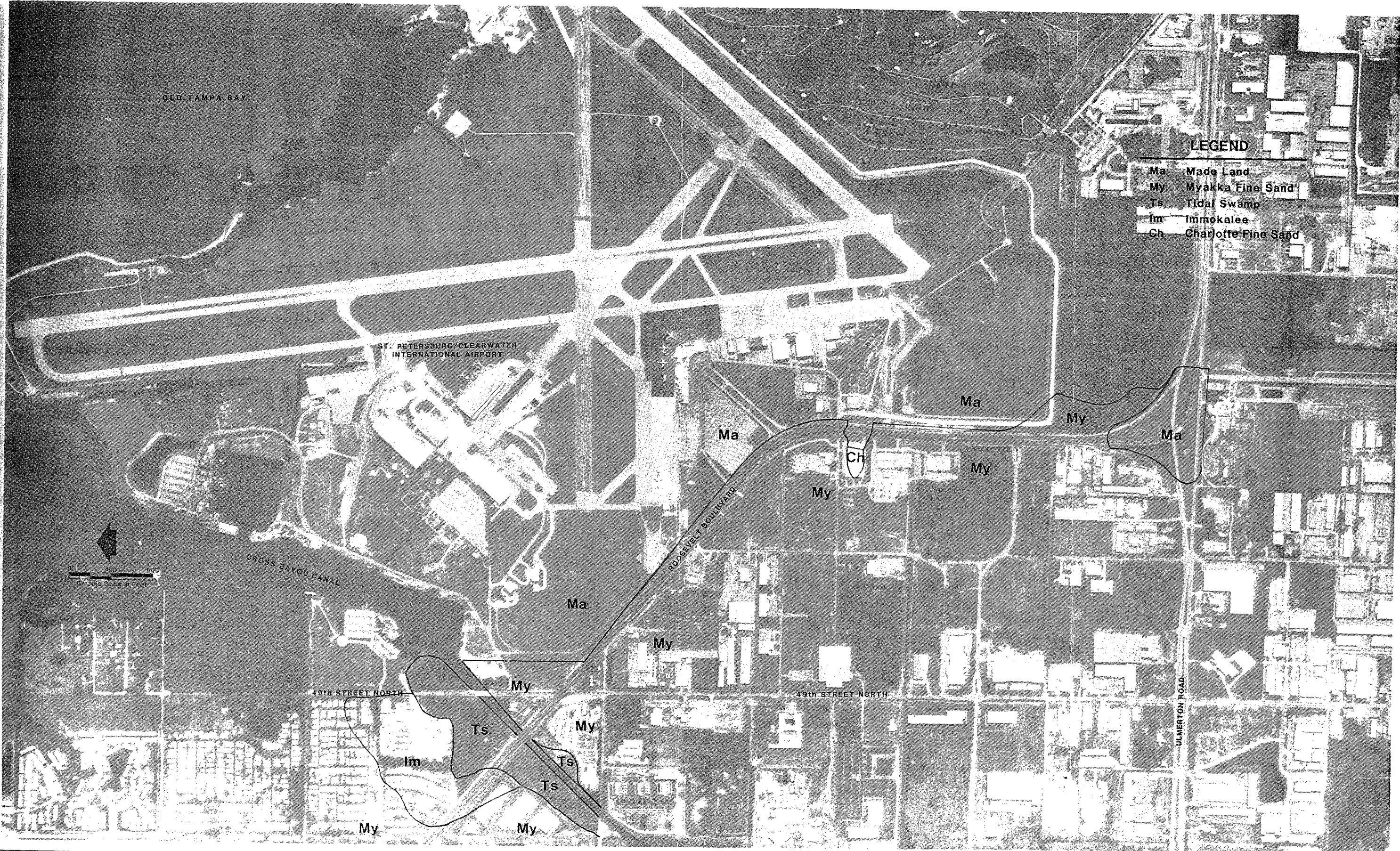
There are no existing bicycle facilities within the project corridor. Segments 2B and 3 of S.R. 686 are not included as a bike route in the MPO's Comprehensive Bicycle Plan. There is a bike route on 49th Street and bike routes cross S.R. 686 and S.R. 688 on 34th Street, 9th Street and 4th Street.

There are limited pedestrian facilities within the project limits. Discontinuous sidewalks are limited to the section of S.R. 686 co-located with Ulmerton Road. Sidewalks are typically adjacent to the intense commercial development and outside the drainage ditches. The lack of sidewalks and roadside ditches currently inhibit pedestrian movements along S.R. 686.

### 3.6 Geotechnical Data

The soils within the study area can be classified as urban, moderately to poorly drained, fine-grained sands and reworked sediments. Exhibits 3-E through 3-H illustrate the location and classification of soils within the project limits. Sixteen soil types have been identified within the corridor. The specific types of soils identified are briefly described in Table 3.1

Large areas within the project corridor have been classified as Made Lands (Ma or Md) or Borrow Pits according to the Soil Survey of Pinellas County (1972). Many of the borrow pits and sanitary landfills were associated with road construction and development of the area.



**LEGEND**

- Ma Made Land
- My Myakka Fine Sand
- Ts Tidal Swamp
- Im Immokalee
- Ch Charlotte Fine Sand



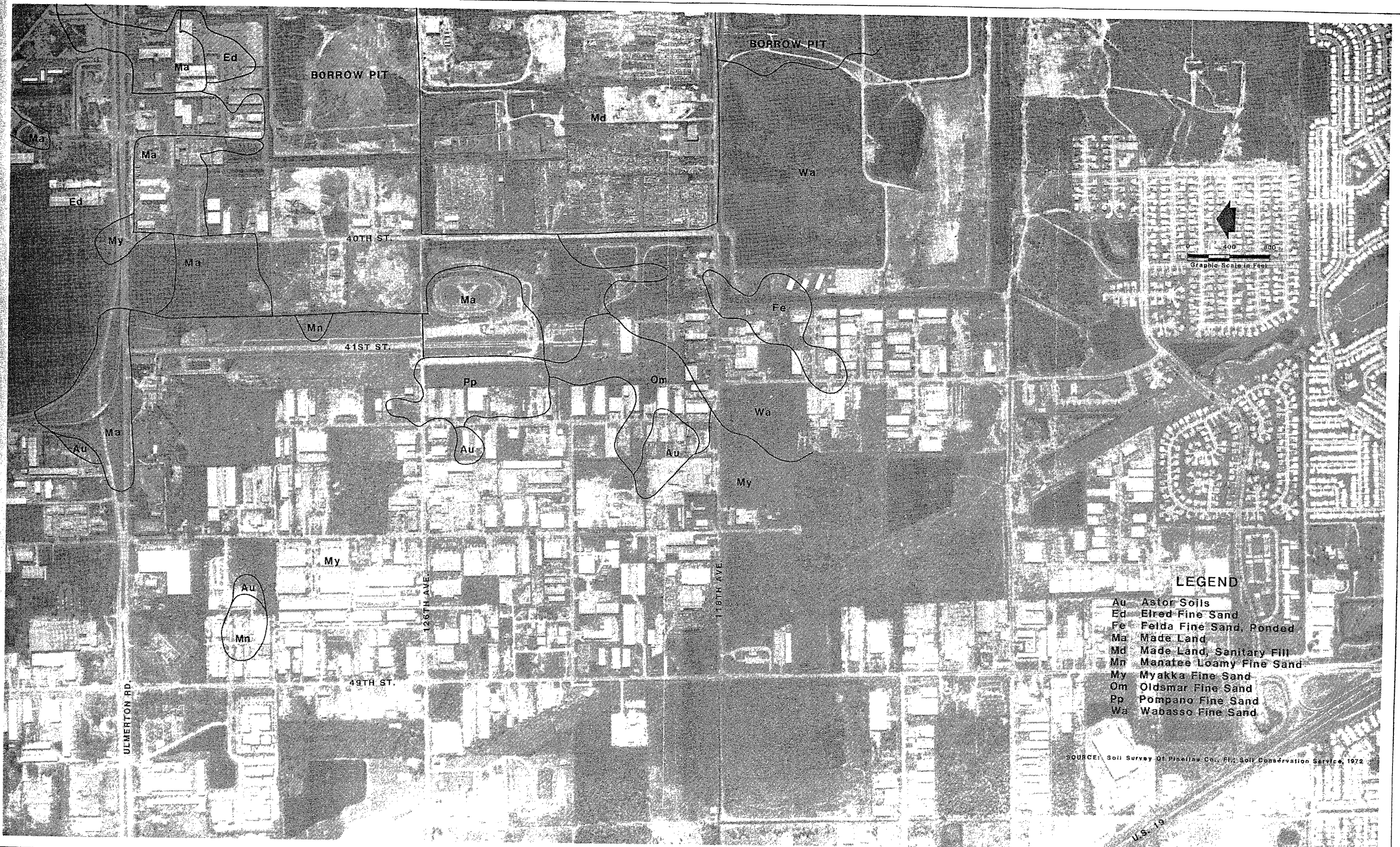
Revisions		Project No.	
Date	Description	Name	Date

**GREINER ENGINEERING SCIENCES, INC.**  
 Consulting Engineers  
 Tampa, Florida                      Orlando, Florida

**SR 686 (EAST BAY DRIVE/ROOSEVELT BOULEVARD)**  
**PROJECT DEVELOPMENT**  
**AND ENVIRONMENTAL STUDY**  
 PINELLAS COUNTY, FLORIDA

**SOILS CLASSIFICATION AND LOCATION**

Approved by: \_\_\_\_\_  
 Drawing No. 2 OF 6                      EXHIBIT 3-E

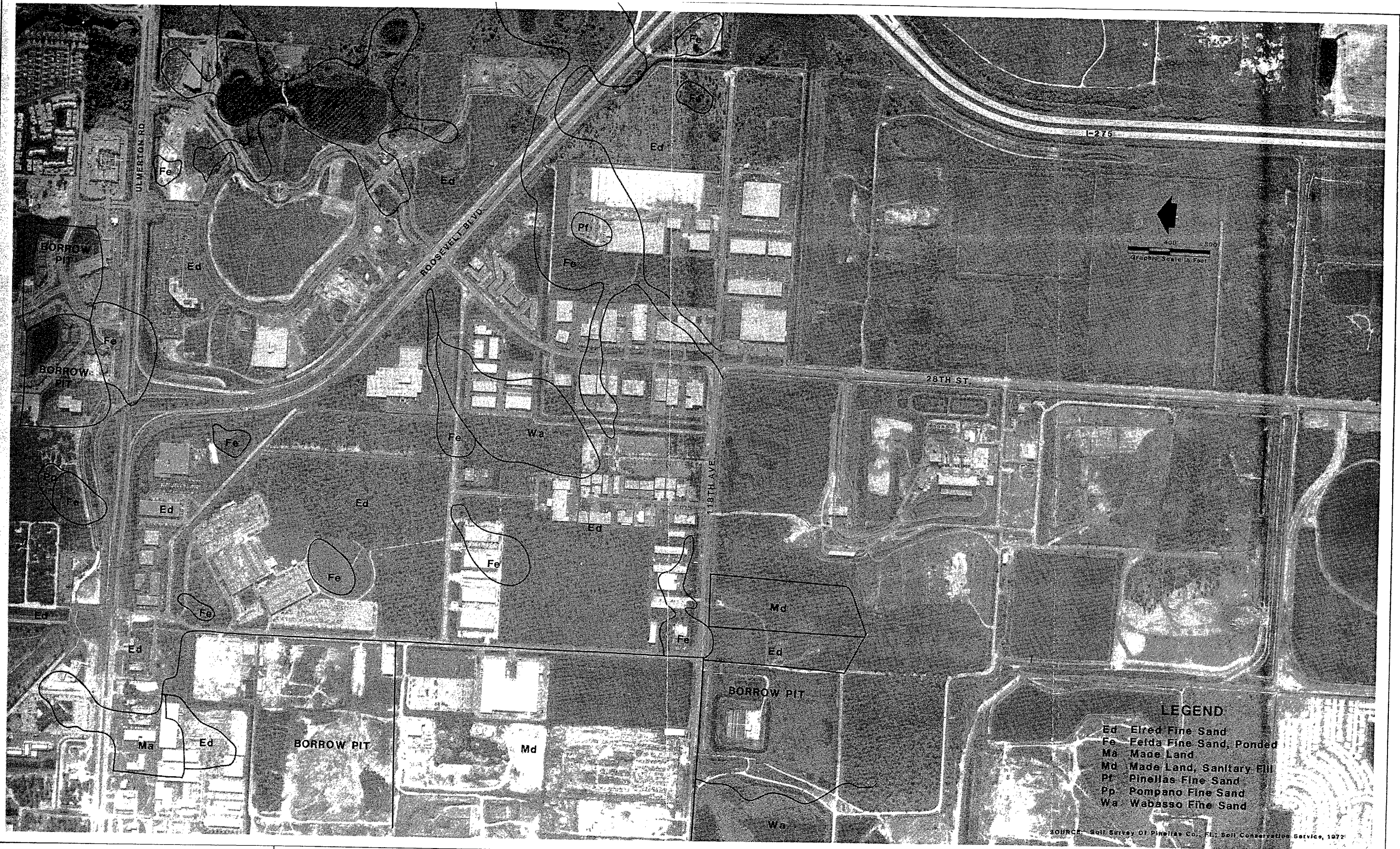


**LEGEND**

- Au Astor Soils
- Ed Elred Fine Sand
- Fe Feida Fine Sand, Ponded
- Ma Made Land
- Md Made Land, Sanitary Fill
- Mn Manatee Loamy Fine Sand
- My Myakka Fine Sand
- Om Oldsmar Fine Sand
- Pp Pompano Fine Sand
- Wa Wabasso Fine Sand

SOURCE: Soil Survey of Pinellas Co., Fla. Soil Conservation Service, 1972

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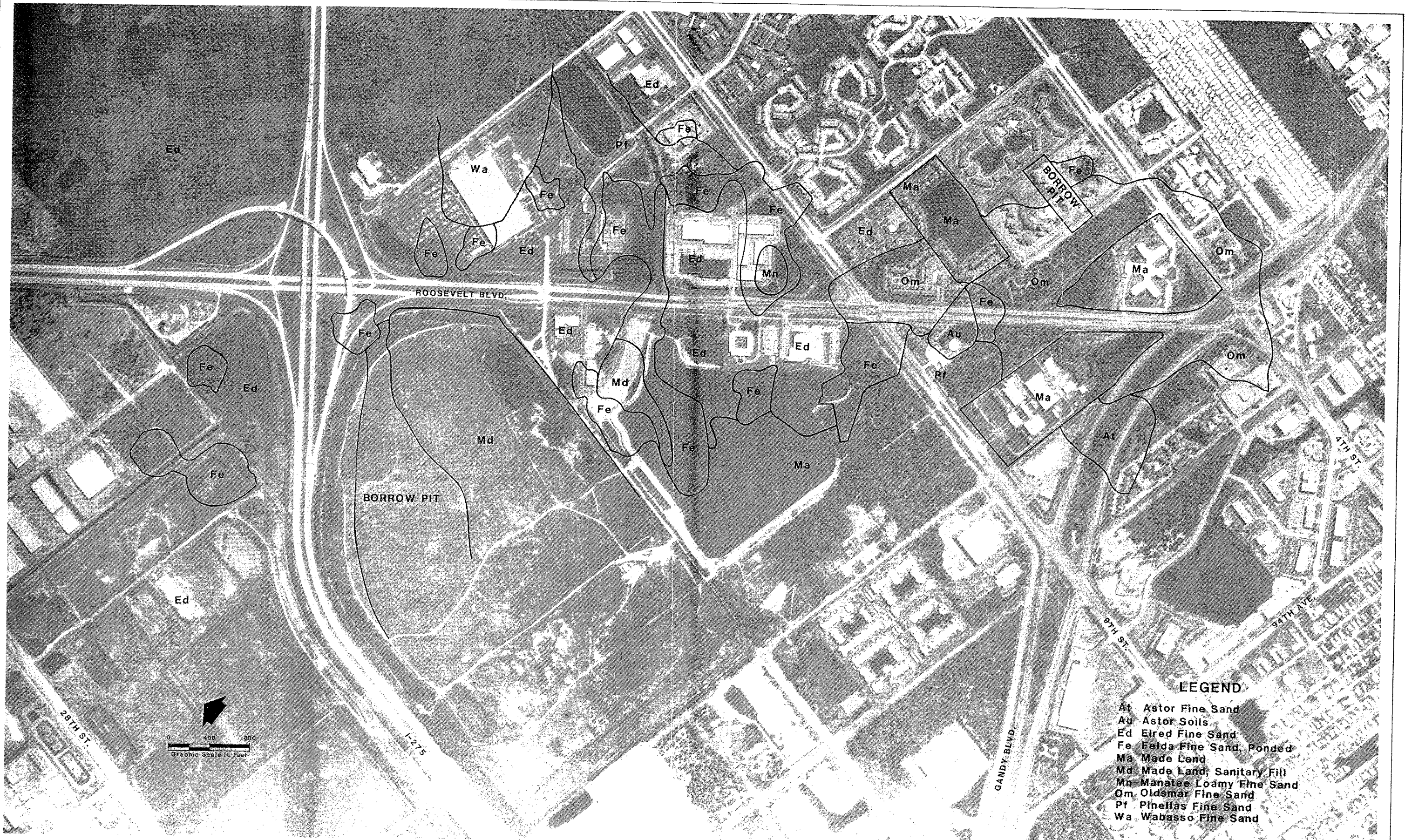
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Project No.		
Designed By	Name	Date
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 Consulting Engineers  
 Tampa, Florida                      Orlando, Florida

**SR 686 (EAST BAY DRIVE/ROOSEVELT BOULEVARD)**  
**PROJECT DEVELOPMENT**  
**AND ENVIRONMENTAL STUDY**  
PINELLAS COUNTY, FLORIDA

**SOIL CLASSIFICATION AND DESCRIPTION**  
 Approved by: \_\_\_\_\_  
 Drawing No. \_\_\_\_\_



SOURCE: Soil Survey of Pinellas Co., FL., Soil Conservation Service, 1972.

Revisions		Project No.	
Date	Description	Name	Date

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**SR 686 (EAST BAY DRIVE, ROOSEVELT BOULEVARD)**  
**PROJECT DEVELOPEMENT**  
**AND ENVIRONMENTAL STUDY**  
 PINELLAS COUNTY, FLORIDA

**SOIL CLASSIFICATION AND DESCRIPTION**

Approved by \_\_\_\_\_  
 Drawing No \_\_\_\_\_

**TABLE 3.1**  
**SOILS TYPES AND DESCRIPTIONS**  
**S.R. 686 (East Bay Drive/Roosevelt Boulevard)**  
**Segment 2B and 3**

**Astor Fine Sand (At) and Astor Soils (Au)** are characterized by nearly level, very poorly drained soils in depressions and swampy areas. These soils generally tend to have a high organic content, high water capacity and a shallow water table.

**Elred Fine Sand (Ed)** is nearly level, poorly drained soil on broad low ridges in the flatwoods. The water table is at a depth of 10 to 30 inches for 2 to 6 months in most years and within a depth of 10 inches for 1 or 2 months during wet seasons.

**Felda Fine Sand, Poned (Fe)** is a nearly level, poorly drained soil in depressions and grassy sloughs. It is covered with shallow water during wet periods and the lowest areas are covered with water most of the time.

**Charlotte Fine Sand (Ch)** is nearly level, poorly drained soil in grassy sloughs and topographic depressions in the flatwoods. Depth to the water table ranges from 10 inches during the wet season to between 20 and 40 inches below the surface during times of drought.

**Immokalee Fine Sand (Im)** consists of nearly level, poorly drained sandy soils that occur mostly in broad areas between sloughs and flatwoods. The water table is normally at a depth of about 30 inches.

**Made Land (Ma)** consists of mixed sand, clay, hard rock, shells, and shell fragments that have been transported, reworked, and leveled by earth-moving equipment.

**TABLE 3.1**  
**SOILS TYPES AND DESCRIPTIONS**  
**S.R. 686 (East Bay Drive/Roosevelt Boulevard)**  
**Segment 2B and 3**  
**(Continued)**

**Made Land, Sanitary Fill (Md)** consists of sand, clay, shells, and shell fragments in varying proportions deposited over refuse and garbage.

**Manatee Loamy Fine Sand (Mn)** is a nearly level, very poorly drained soil that has a loamy subsoil. It occurs in depressions and along broad drainage ways. The water table commonly is at a depth of less than 10 inches. Soils in depressions are covered with water for more than 6 months in most years.

**Myakka Fine Sand (My)** is nearly level, poorly drained soils on broad flats between sloughs and swamps. The water table is normally at a depth of 10 to 30 inches. It rises to the surface for a short time during wet periods and falls below 30 inches in the dry season.

**Oldsmar Fine Sand (Om)** is a nearly level, poorly drained sandy soil on broad low ridges in the flatwoods. The water table is at 10 inches for 1 or 2 months during wet periods and at 10 to 30 inches for 2 to 6 months in most years. Most areas are periodically wet.

**Pinellas Fine Sand (Pf)** is a nearly level, somewhat poorly drained soil located around sloughs and ponds in the flatwoods. The water table normally is at 10 to 40 inches for 2 to 6 months in most years. It is within a depth of 10 inches for a short time during wet periods.

**TABLE 3.1**

**SOILS TYPES AND DESCRIPTIONS  
S.R. 686 (East Bay Drive/Roosevelt Boulevard)  
Segment 2B and 3  
(Continued)**

**Pompano Fine Sand (Pp)** consists of a nearly level, poorly drained soil located near ponds and in areas between sloughs in the flatwoods. The water table normally is at a depth of 10 to 40 inches. It is within 10 inches for 1 or 2 months during wet seasons and is below 40 inches during dry periods.

**Tidal Swamp (Ts)** occurs on small islands and in low, broad coastal areas adjacent to saltwater bays. Water levels vary from several inches deep at low tide to 1 to 2 feet deep at high tide.

**Urban Land (Ub)** refers to areas where the original soil has been reworked through the processes of excavation, grading, filling, shaping, or removal. Urban facilities have been constructed on at least 75 percent of these altered sediments.

**Wabasso Fine Sand (Wa)** is a nearly level, poorly drained soil on broad low ridges in the flatwoods. The water table is within a depth of 10 inches for 1 or 2 months during wet seasons and at a depth of 10 to 40 inches to 2 to 6 months in most years.

**Wauchula Fine Sand (Wc)** is a nearly level, poorly drained soil which occurs on broad low ridges in the flatwoods and in a few flat areas on the uplands. Water table depth range from 10 to 30 inches most of the year.

Source: Soil Survey of Pinellas County, Florida, USDA Soil Conservation Service, September, 1972.



Since the soil survey was compiled, extensive development in the project corridor has occurred. Many of the borrow pit areas could now be classified as Made Lands of either Ma or Md classification due to the disturbed soil conditions from development.

The improvements proposed in the corridor will require modifications to the existing vertical profile to accommodate the interchanges, overpasses and a storm sewer system in Segment 2B. Cuts and/or embankments are anticipated in these areas. The embankment is included in the cost estimates and the specifics will be addressed in the design phase of the project.

In Segment 3, the proposed improvements maintain the existing rural cross section. With the exception of the urban interchange at 9th Street and Roosevelt, no modifications to the existing vertical profile are anticipated. Other than in the interchange area, no major cuts or embankments are anticipated.

### **3.7 Existing Multi-Modal Transportation**

Transit service in Pinellas County is provided by the Pinellas Suncoast Transit Authority (PSTA) and includes bus service throughout the county. Currently there is one PSTA route along S.R. 686 in the study area. Route 52 provides service to and from the Clearwater-St. Petersburg International Airport. There are four bus routes, Route Nos. 10, 11, 52 and 79, which traverse 49th Street from Roosevelt Boulevard to Ulmerton Road.

A recently completed study in Pinellas County investigated the feasibility of a fixed guideway rapid transit system. One of the alternative alignments investigated for the fixed guideway system includes S.R. 688 from Ridge Road to the Roosevelt Boulevard

east interchange, a portion of this being within the project limits. The initial feasibility study has been complete and the study is currently on hold due to funding constraints.

Current transit ridership estimates from PSTA indicate approximately 8.1 million trips annually. This represents one percent of the total trips in the County being made by bus (mode split).

### **3.8 Existing Bridges**

There are three bridges, including one box culvert, within the limits of the project, excluding the bridges associated with the I-275 interchange at S.R. 686. The interchange improvements are included as part of the 118th Avenue project being conducted for Pinellas County. Information on the bridges was obtained from the FDOT Bridge Record, the Structural Inventory and Appraisal forms and the District Structural Engineer for each of the bridges.

The following summarizes the data collected for each of the bridges. The structural condition listed for each bridge is based on a scale of 0 through 9 with 9 indicating the best structural condition. The number is based on the condition of the deck, superstructure, exposed substructure and load carrying capacity. The inventory rating, or load carrying capacity, is the load level which the bridge can carry for an indefinite period of time.

#### **3.801 Cross Bayou Canal (Bridge #15065)**

This concrete box culvert was built in 1955 and consists of four 10-foot by 12-foot cells with an overall length of 74 feet. The box culvert carries a four-lane divided

roadway. The inventory rating is 34 tons and the structural condition rating is 7. The estimated remaining life is 17 years. The Department's Bridge Inspection Office supports widening the existing structure.

As part of the Advance Notification process, the Bridge Project Questionnaire was completed for the project indicating the channel width is 40 feet and the channel depth varies from 3 feet to 4 feet 7 inches depending on the tide. The questionnaire is included in the Advance Notification Package in Appendix 6.1. No official response has been received from the U.S. Coast Guard concerning the Department's recommendation to lengthen the structure. Due to the limited clearances and the downstream bridge at 49th Street and upstream triple concrete box culvert on S.R. 688, navigation on the canal is limited to canoes, rowboats and other small vessels.

**3.802 Roosevelt Boulevard/Ulmerton Road West Interchange (Bridge #150016)**

The existing AASHTO girder bridge, built-in 1964, consists of three spans with an overall length of 168 feet. The maximum span length is 79 feet and the minimum vertical clearance is 15.67 feet. The bridge has an out-to-out width of 35.3 feet, a clear roadway width of 30 feet and carries one lane of traffic. Two lanes of traffic pass under the bridge westbound on Ulmerton Road. The bridge has a structural condition of 9 and an inventory rating of 23 tons. The remaining life of the bridge is estimated as 29 years. The District Structural Engineer recommends widening the bridge.

**3.803 Roosevelt Boulevard/Ulmerton Road East Interchange (Bridge #150114)**

The existing four span AASHTO girder bridge was constructed in 1975. The structure has an overall length of 304 feet, a maximum span length of 103 feet and a minimum

vertical clearance of 15.83 feet. The bridge has an out-to-out width of 43.5 feet with a clear roadway width of 40.5 feet carrying two lanes of traffic from northbound Roosevelt Boulevard to westbound Ulmerton Road. The existing structural condition is 8 and the inventory rating is 20 tons. The remaining life of the bridge is estimated as 39 years. The exterior girder has been damaged as a result of vehicular impact. The District Structural Engineer recommends widening the bridge.

### 3.9 Traffic Safety

Accident data were obtained from FDOT for the five-year period from 1984 to 1988. Both detailed and summary accident data were reviewed. The accident data was summarized for each of the major roadway links in the project. The major roadway links are as follows:

- East of 49th Street to east of 142nd Avenue
- East of 142nd Avenue to north of Ulmerton Road West Interchange
- Ulmerton Road between Roosevelt Boulevard East and West Interchanges
- Westbound Flyover Ramp, S.R. 688 East Interchange
- Ulmerton Road to north of I-275
- North of I-275 to I-275
- I-275 to south of I-275
- South of I-275 to west of 9th Street
- West of 9th Street to east of 9th Street
- East of 9th Street to U.S. 92

Tables 3.2 through 3.11 provide a listing, by year, of the number of accidents (total accidents as well as fatalities, injuries, and property damage), traffic volumes, actual accident rate, critical accident rate, safety ratio, and economic loss for each roadway link. The safety ratio, the ratio of the actual accident rate to critical accident rate, is the criteria used to identify problem areas and/or high accident locations. The critical accident rate is the statewide average accident rate for a similar facility. Thus, a safety ratio greater than 1.00 indicates that the facility is experiencing more accidents than would be anticipated on this type of facility.

TABLE 3.2

ACCIDENT SUMMARY  
 EAST OF 49TH STREET TO EAST OF 142ND AVENUE  
 S.R. 686 (East Bay Drive/Roosevelt Boulevard)  
 Segment 2B

<u>Year</u>	<u>Roadway Type</u>	<u>ADT<sup>a</sup></u>	<u>Total Accidents</u>	<u>Actual<sup>b</sup> Accident Rate</u>	<u>Critical<sup>b</sup> Accident Rate</u>	<u>Safety Ratio</u>	<u>Fatality</u>	<u>Injury</u>	<u>Property Damage</u>	<u>Economic Loss</u>
1984	4U	27,196	13	1.871	6.150	.304	0	14	5	\$313,846
1985	4U	34,177	7	0.801	5.694	.140	0	5	4	168,994
1986	4U	30,580	8	1.023	4.775	.214	0	14	2	193,136
1987	4U	33,171	4	0.471	4.554	.103	1	5	1	96,568
1988	4U	35,842	<u>5</u>	0.546	4.436	.123	<u>0</u>	<u>6</u>	<u>1</u>	<u>120,710</u>
Total			37				1	44	13	\$893,254

Source: Data supplied by the Florida Department of Transportation

a Average Daily Traffic

b Accidents per million vehicle miles.

**TABLE 3.3**  
**ACCIDENT SUMMARY**  
**EAST OF 142ND AVENUE TO NORTH OF S.R. 688 (ULMERTON ROAD) WEST INTERCHANGE**  
**S.R. 686 (East Bay Drive/Roosevelt Boulevard)**  
**Segment 2B**

<u>Year</u>	<u>Roadway Type</u>	<u>ADT<sup>a</sup></u>	<u>Total Accidents</u>	<u>Actual<sup>b</sup> Accident Rate</u>	<u>Critical<sup>b</sup> Accident Rate</u>	<u>Safety Ratio</u>	<u>Fatality</u>	<u>Injury</u>	<u>Property Damage</u>	<u>Economic Loss</u>
1984	4U	27,196	12	1.823	6.213	.293	0	8	4	\$289,704
1985	4U	34,177	12	1.451	5.224	.277	0	5	7	312,896
1986	4U	30,580	12	1.621	5.454	.297	0	7	5	265,404
1987	4U	33,171	9	1.121	5.291	.211	0	10	3	198,378
1988	4U	35,842	<u>5</u>	0.576	5.044	.114	<u>0</u>	<u>4</u>	<u>1</u>	<u>109,910</u>
<b>Total</b>			50				0	34	20	\$1,176,292

Source: Data supplied by the Florida Department of Transportation

a Average Daily Traffic

b Accidents per million vehicle miles.

TABLE 3.4

ACCIDENT SUMMARY  
 ULMERTON ROAD BETWEEN ROOSEVELT BOULEVARD EAST AND WEST INTERCHANGES  
 S.R. 686 (East Bay Drive/Roosevelt Boulevard)

<u>Year</u>	<u>Roadway Type</u>	<u>ADT<sup>a</sup></u>	<u>Accidents</u>	<u>Actual<sup>b</sup> Accident Rate</u>	<u>Critical<sup>b</sup> Accident Rate</u>	<u>Safety Ratio</u>	<u>Fatality</u>	<u>Injury</u>	<u>Property</u>	<u>Economic Loss</u>
1984	4LD	40,572	55	2.794	7.731	0.361	0	19	39	\$350,700
1985	4LD	50,059	60	2.468	5.071	0.486	1	43	30	878,900
1986	4LD	51,757	52	2.071	4.861	0.426	0	54	20	724,200
1987	4LD	55,479	52	1.932	3.904	0.494	0	68	14	878,400
1988	4LD	61,266	<u>62</u>	2.086	3.724	0.560	<u>1</u>	<u>78</u>	<u>20</u>	<u>127,400</u>
<b>TOTAL</b>			<b>281</b>				<b>2</b>	<b>262</b>	<b>123</b>	<b>\$2,959,600</b>

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Source: Data supplied by the Florida Department of Transportation

<sup>a</sup> Average Daily Traffic Volume

<sup>b</sup> Accidents per million vehicle miles

**TABLE 3.6**  
**ACCIDENT SUMMARY**  
**ULMERTON ROAD TO 1.0 MILE NORTH OF I-275**  
**S.R. 686 (East Bay Drive/Roosevelt Boulevard)**  
**Segment 3**

<u>Year</u>	<u>Roadway Type</u>	<u>ADT<sup>a</sup></u>	<u>Total Accidents</u>	<u>Actual<sup>b</sup> Accident Rate</u>	<u>Critical<sup>b</sup> Accident Rate</u>	<u>Safety Ratio</u>	<u>Fatality</u>	<u>Injury</u>	<u>Property Damage</u>	<u>Economic Loss</u>
1984	4U	34,028	6	.687	5.902	.116	0	8	1	\$144,852
1985	4U	34,389	21	2.379	5.683	.418	0	28	6	506,982
1986	4U	39,491	11	1.085	4.548	.238	0	13	1	265,562
1987	4U	38,595	12	1.211	4.423	.273	0	13	3	289,704
1988	4U	40,482	<u>11</u>	1.059	4.333	.244	<u>0</u>	<u>15</u>	<u>4</u>	<u>265,562</u>
<b>Total</b>			61				0	77	15	\$1,472,662

Source: Data supplied by the Florida Department of Transportation

a Average Daily Traffic

b Accidents per million vehicle miles.



**TABLE 3.7**  
**ACCIDENT SUMMARY**  
**1.0 MILE NORTH OF I-275 TO I-275**  
**S.R. 686 (East Bay Drive/Roosevelt Boulevard)**  
**Segment 3**

<u>Year</u>	<u>Roadway Type</u>	<u>ADT<sup>a</sup></u>	<u>Total Accidents</u>	<u>Actual<sup>b</sup> Accident Rate</u>	<u>Critical<sup>b</sup> Accident Rate</u>	<u>Safety Ratio</u>	<u>Fatality</u>	<u>Injury</u>	<u>Property Damage</u>	<u>Economic Loss</u>
1984	6U	34,028	5	.536	5.837	.091	0	2	3	\$104,360
1985	6U	34,389	2	.212	5.620	.037	0	2	0	41,744
1986	6U	39,491	9	.832	6.028	.138	0	7	4	197,658
1987	6U	38,595	7	.662	4.912	.134	0	16	1	159,184
1988	6U	40,482	<u>8</u>	.889	6.286	.141	<u>0</u>	<u>3</u>	<u>6</u>	<u>166,976</u>
<b>Total</b>			<b>31</b>				<b>0</b>	<b>30</b>	<b>14</b>	<b>\$669,922</b>

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Source: Data supplied by the Florida Department of Transportation

a Average Daily Traffic

b Accidents per million vehicle miles.

**TABLE 3.8**  
**ACCIDENT SUMMARY**  
**I-275 TO 0.3 MILE SOUTH OF I-275**  
**S.R. 686 (East Bay Drive/Roosevelt Boulevard)**  
**Segment 3**

<u>Year</u>	<u>Roadway Type</u>	<u>ADT<sup>a</sup></u>	<u>Total Accidents</u>	<u>Actual<sup>b</sup> Accident Rate</u>	<u>Critical<sup>b</sup> Accident Rate</u>	<u>Safety Ratio</u>	<u>Fatality</u>	<u>Injury</u>	<u>Property Damage</u>	<u>Economic Loss</u>
1984*	4U									
1985	4U	14,297	1	.638	8.321	0.076	0	1	0	\$24,142
1986	4U	19,358	1	.471	6.432	0.073	0	1	0	24,142
1987*	4U									
1988	4U	18,751	<u>1</u>	.478	6.235	0.078	<u>0</u>	<u>1</u>	<u>0</u>	<u>24,142</u>
<b>Total</b>			<b>3</b>				<b>0</b>	<b>3</b>	<b>0</b>	<b>\$72,426</b>

---

Source: Data supplied by the Florida Department of Transportation

a Average Daily Traffic

b Accidents per million vehicle miles.

\* No accidents found for above referenced section.

TABLE 3.9

**ACCIDENT SUMMARY**  
**SOUTH OF I-275 TO WEST OF 9TH STREET**  
**S.R. 686 (East Bay Drive/Roosevelt Boulevard)**  
**Segment 3**

<u>Year</u>	<u>Roadway Type</u>	<u>ADT<sup>a</sup></u>	<u>Total Accidents</u>	<u>Actual<sup>b</sup> Accident Rate</u>	<u>Critical<sup>b</sup> Accident Rate</u>	<u>Safety Ratio</u>	<u>Fatality</u>	<u>Injury</u>	<u>Property Damage</u>	<u>Economic Loss</u>
1984	4U	8,683	2	3.159	11.051	.285	0	1	1	\$48,284
1985	4U	14,297	2	1.917	9.287	.206	0	2	1	48,284
1986	4U	19,358	2	1.415	7.172	.197	0	0	2	48,284
1987	4U	18,042	1	.759	7.110	.106	0	1	0	24,142
1988*	4U		—				—	—	—	—
<b>Total</b>			<b>7</b>				<b>0</b>	<b>4</b>	<b>4</b>	<b>168,994</b>

Source: Data supplied by the Florida Department of Transportation

a Average Daily Traffic

b Accidents per million vehicle miles.

\* No accidents found for above referenced section.

**TABLE 3.10**  
**ACCIDENT SUMMARY**  
**WEST OF 9TH STREET TO EAST OF 9TH STREET**  
**S.R. 686 (East Bay Drive/Roosevelt Boulevard)**  
**Segment 3**

<u>Year</u>	<u>Roadway Type</u>	<u>ADT<sup>a</sup></u>	<u>Total Accidents</u>	<u>Actual<sup>b</sup> Accident Rate</u>	<u>Critical<sup>b</sup> Accident Rate</u>	<u>Safety Ratio</u>	<u>Fatality</u>	<u>Injury</u>	<u>Property Damage</u>	<u>Economic Loss</u>
1984	4U	8,683	13	11.722	9.424	1.243	0	16	4	\$313,846
1985	4U	14,297	17	9.309	7.995	1.164	0	23	3	410,414
1986	4U	11,488	10	6.816	7.098	.960	0	14	2	241,420
1987	4U	11,561	6	4.065	6.887	.590	0	6	2	144,852
1988	4U	12,529	<u>4</u>	2.500	6.667	.374	<u>0</u>	<u>4</u>	<u>1</u>	<u>96,568</u>
<b>Total</b>			50				0	63	12	\$1,207,100

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Source: Data supplied by the Florida Department of Transportation

a Average Daily Traffic

b Accidents per million vehicle miles.

**TABLE 3.11**  
**ACCIDENT SUMMARY**  
**EAST OF 9TH STREET TO U.S. 92**  
**S.R. 686 (East Bay Drive/Roosevelt Boulevard)**  
**Segment 3**

<u>Year</u>	<u>Roadway Type</u>	<u>ADT<sup>a</sup></u>	<u>Total Accidents</u>	<u>Actual<sup>b</sup> Accident Rate</u>	<u>Critical<sup>b</sup> Accident Rate</u>	<u>Safety Ratio</u>	<u>Fatality</u>	<u>Injury</u>	<u>Property Damage</u>	<u>Economic Loss</u>
1984	4U	8,683	2	1.428	8.848	.161	0	3	1	\$48,284
1985	4U	14,297	3	1.300	7.541	.172	0	2	2	72,426
1986	4U	11,488	1	.539	6.664	.080	0	0	1	24,142
1987	4U	11,561	2	1.072	6.464	.165	0	6	0	48,284
1988	4U	12,529	<u>4</u>	1.979	6.281	.316	<u>0</u>	<u>1</u>	<u>3</u>	<u>96,568</u>
<b>Total</b>			12				0	12	6	\$289,704

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Source: Data supplied by the Florida Department of Transportation

a Average Daily Traffic

b Accidents per million vehicle miles.

As illustrated in tables, only one roadway segment has experienced a safety ratio in excess of 1.00 and this occurred for only two years (the segment centered either side of 9th Street North in 1984 and 1985). In addition, the same segment experienced a safety ratio of 0.960 in 1986. This is due to several factors which increase the potential for accidents. Among these factors are traffic volumes which approach or equal roadway capacity as well as the intersection skew angle and geometry.

Over the five-year period there were 536 accidents in the project corridor, including 3 fatalities, 531 injuries and 209 accidents involving property damage. The severity of accidents is significant with over 99 percent of the accidents involving injuries.

Given the severity of accidents, coupled with several relatively high safety ratios, improvements to reduce accident potential in the corridor should be examined. The improvement to the roadway capacity as well as limiting the potential for conflicts at driveways and median openings should improve the roadway's traffic safety.

### 3.10 Emergency and Evacuation Services

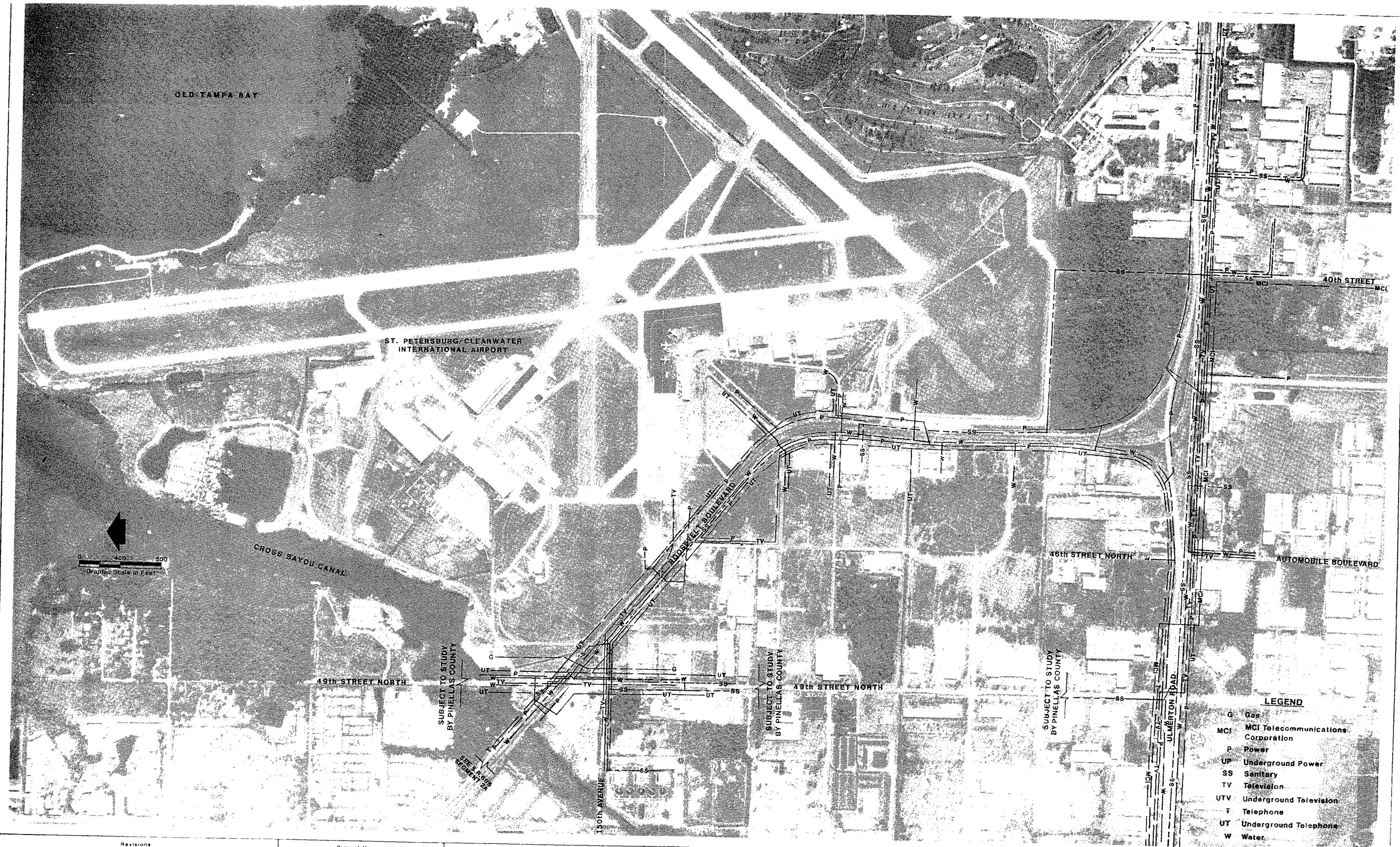
S.R. 686 is not identified as an evacuation route for Pinellas County according to the Pinellas County Civil Emergency Services Department. However, S.R. 686 does provide access from the barrier island beaches via the Belleair Causeway east to I-275 and Hillsborough County. As discussed, S.R. 686 is a primary access route to one of four bridges crossing Old Tampa Bay. As such, improvements to increase capacity could facilitate evacuation during hurricanes or other severe weather conditions.

The portion of S.R. 686 which is co-located with S.R. 688 (Ulmerton Road) is identified as an evacuation route for Pinellas County according to the Pinellas County Emergency Services Department. Thus, improvements to this portion of the project will enhance evacuation. There are no emergency services (fire, police, ambulances, etc.) located on S.R. 686 within the project limits.

### 3.11 Existing Utility Systems

The existing utilities in the corridor include telephone (GTE of Florida and MCI Telecommunications Corporation), electric (Florida Power Corporation), cable television (Vision Cable and Paragon Cable), natural gas (People's Gas Systems, Inc.), water (Pinellas County and the City of St. Petersburg) and sanitary sewer (the City of Largo, City of Pinellas Park and the City of St. Petersburg). Exhibits 3-I through 3-L illustrate the approximate locations of the utilities in the corridor. The following briefly describes the existing utilities located within the existing roadway right-of-way.

GTE of Florida has underground lines along both sides of S.R. 686 from 49th Street to Terminal Parkway. The lines along the southern/western side of the roadway extend to Ulmerton Road. Underground lines also extend along the south side of the Ulmerton Road alignment from west of Roosevelt Boulevard to the east interchange. South of Ulmerton Road there are underground lines for the full length of the segment on the northeast side. Underground lines are also present on the southwest from Ulmerton Road to I-275 and from 9th Street North to U.S. 92. Underground lines cross the roadway right-of-way south of 9th Street North. The majority of the telephone lines in the corridor are underground; however, aerial lines do exist along 49th Street north of the Roosevelt Boulevard Intersection, and along Ulmerton Road



**LEGEND**

G	Gas
MCI	MCI Telecommunications Corporation
P	Power
UP	Underground Power
SS	Sanitary
TV	Television
UTV	Underground Television
T	Telephone
UT	Underground Telephone
W	Water

Revisions		Project No.		
Date	Description	Name	Date	
		Designed By		
		Checked By		
		Quantity By		

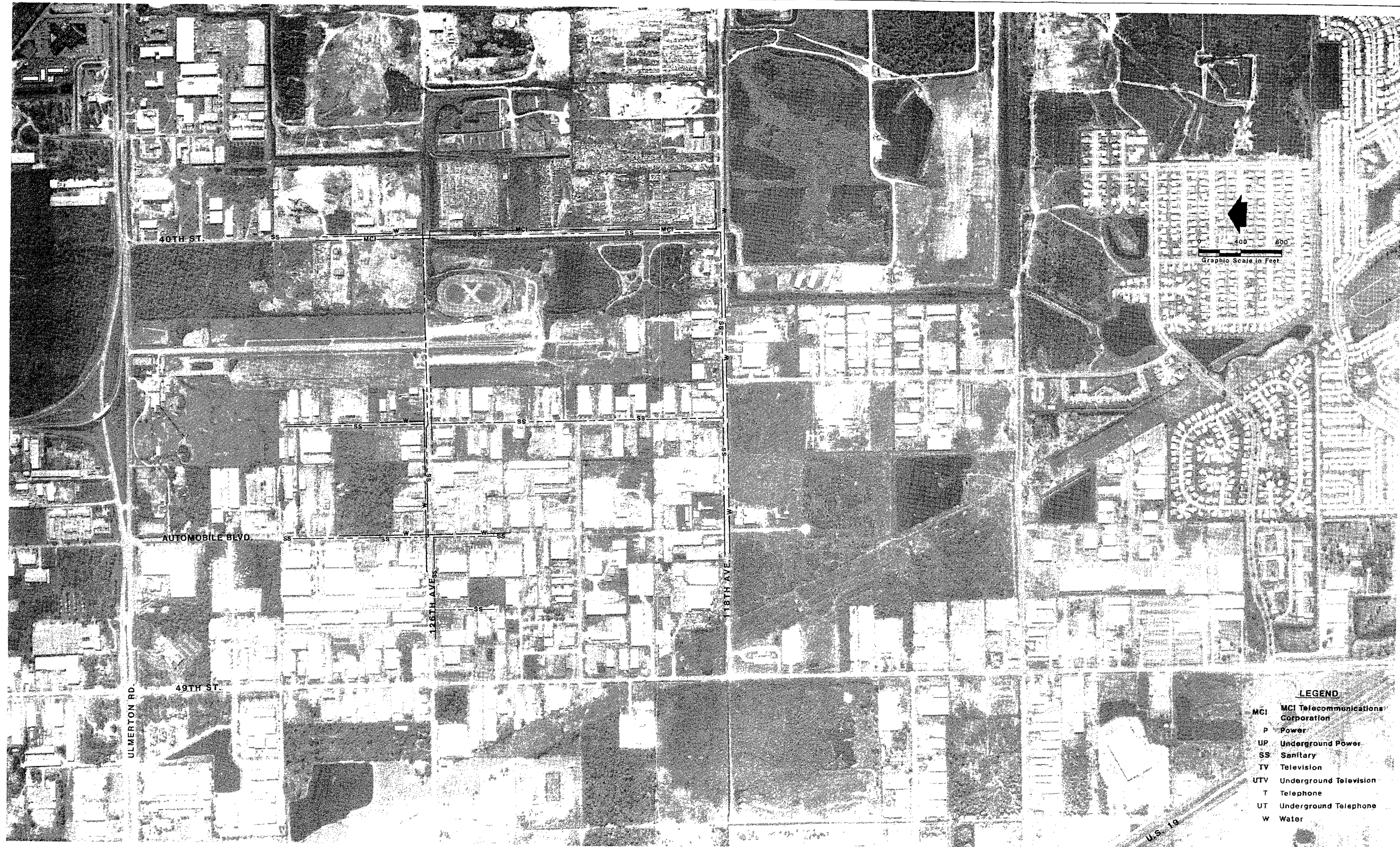
**GREINER ENGINEERING SCIENCES, INC.**  
 Consulting Engineers  
 Tampa, Florida                      Orlando, Florida

**SR 686 (EAST BAY DRIVE / ROOSEVELT BOULEVARD)**  
**PROJECT DEVELOPMENT**  
**AND ENVIRONMENTAL STUDY**  
 PINELLAS COUNTY, FLORIDA

**UTILITY LOCATIONS**

Approved by \_\_\_\_\_  
 Drawing No \_\_\_\_\_





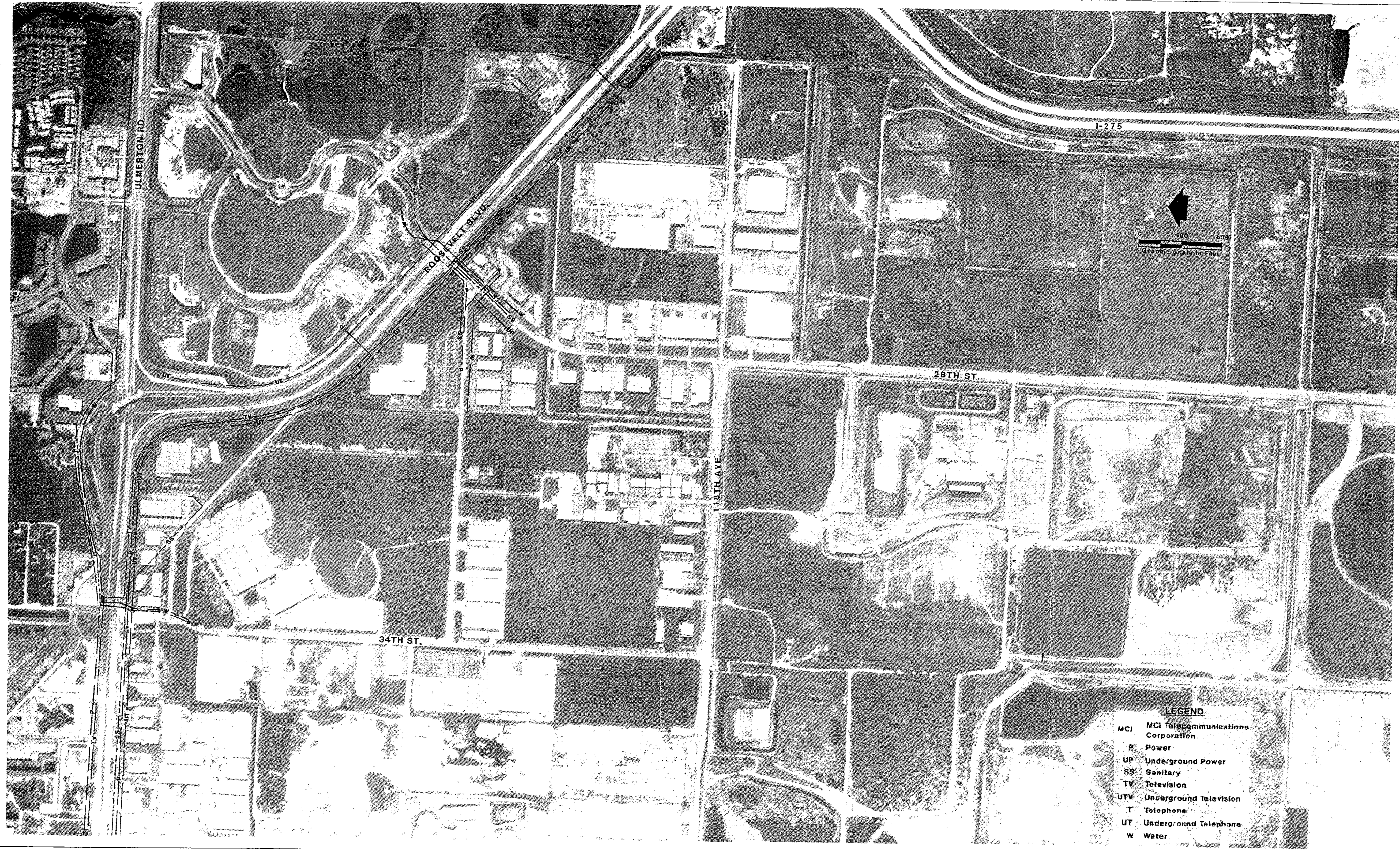
- LEGEND**
- MCI MCI Telecommunications Corporation
  - P Power
  - UP Underground Power
  - SS Sanitary
  - TV Television
  - UTV Underground Television
  - T Telephone
  - UT Underground Telephone
  - W Water

Revisions		Project No	
Date	Description	Name	Date

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**SR 686 (EAST BAY DRIVE, ROOSEVELT BOULEVARD)**  
**PROJECT DEVELOPEMENT**  
**AND ENVIRONMENTAL STUDY**  
PINELLAS COUNTY, FLORIDA

**UTILITY LOCATIONS**  
 Approved by \_\_\_\_\_  
 Drawing No \_\_\_\_\_



- LEGEND**
- MCI MCI Telecommunications Corporation
  - P Power
  - UP Underground Power
  - SS Sanitary
  - TV Television
  - UTV Underground Television
  - T Telephone
  - UT Underground Telephone
  - W Water

Date	Revisions	Descriptions

Project No.		
NAME	DATE	
Designed By		
Checked By		
Quantity By		

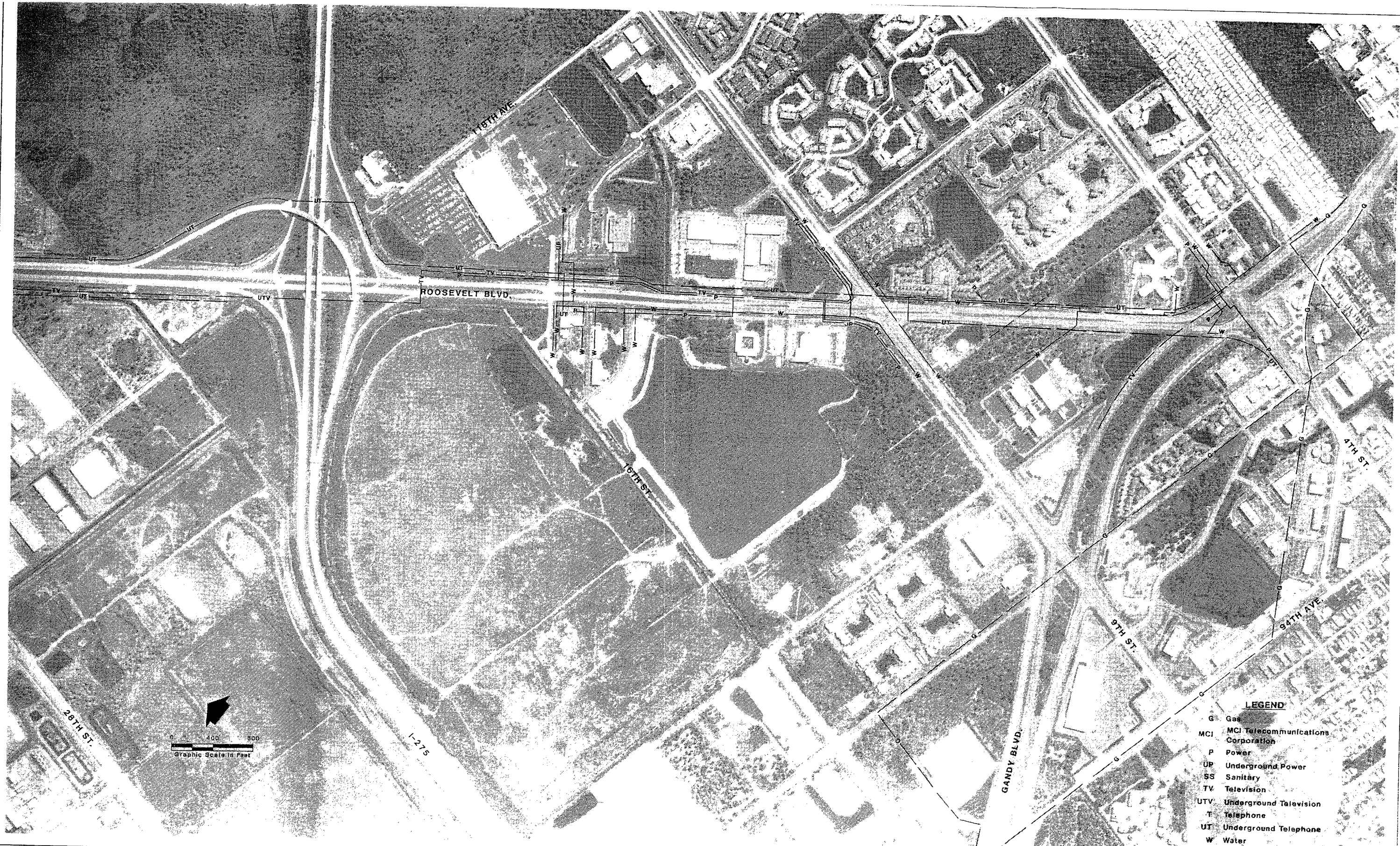
**GREINER ENGINEERING SCIENCES, INC.**  
 Consulting Engineers  
 Tampa, Florida                      Orlando, Florida

**SR 686 (EAST BAY DRIVE ROOSEVELT BOULEVARD)**  
**PROJECT DEVELOPEMENT**  
**AND ENVIRONMENTAL STUDY**  
 PINELLAS COUNTY, FLORIDA

Approved by \_\_\_\_\_  
 Drawing No \_\_\_\_\_

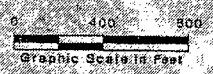
**UTILITY LOCATIONS**

EXHIBIT 3-K



**LEGEND**

- G Gas
- MCI MCI Telecommunications Corporation
- P Power
- UP Underground Power
- SS Sanitary
- TV Television
- UTV Underground Television
- T Telephone
- UT Underground Telephone
- W Water



Revisions		Project No.	
Date	Description	Name	Date

**GREINER ENGINEERING SCIENCES, INC.**  
 Consulting Engineers  
 Tampa, Florida                      Orlando, Florida

**SR 686 (EAST BAY DRIVE ROOSEVELT BOULEVARD)**  
**PROJECT DEVELOPEMENT**  
**AND ENVIRONMENTAL STUDY**  
 PINELLAS COUNTY, FLORIDA

**UTILITY LOCATIONS**

Approved by \_\_\_\_\_  
 Drawing No \_\_\_\_\_

from west of Roosevelt Boulevard to the east interchange. The aerial lines are typically mounted on Florida Power Corporation poles.

MCI Telecommunications corporation has an underground line that runs along the north side of Ulmerton Road from east of 49th Street to 40th Street (east of the west S.R. 686/S.R. 688 interchange. The line turns south and runs along the east side of the 40th Street right-of-way to 118th Avenue.

Electric service (Florida Power Corporation) is located parallel to S.R. 686 on one or both sides of the roadway throughout much of the corridor. Electric service is primarily aerial, mounted on wooden poles, typically located at the back edge of the right-of-way. From north of 46th Street North to south of 142nd Avenue North lines run on both sides of S.R. 686. The west side lines continue to south of Sunplex where lines begin on the east side again through the west interchange. Along Ulmerton Road, the lines run along both the north and south sides of Ulmerton Road. From the east interchange to north of 126th Avenue North the lines run along the southwest side. North of 16th Court North the lines run on the northeast side to 9th Street North. Lines also run on the southwest side from south of Bellflower Drive to north of Aster Boulevard. There are underground lines for a short distance north of 9th Street North on the southwest side. In addition, there are aerial transmission line crossings located north of 46th Street North, south of 142nd Avenue North (at Smith Industries), north of 126th Avenue North, south of Bellflower Drive and an underground crossing north of 9th Street. Aerial transmission lines also cross Ulmerton Road at 34th Street.

Vision Cable (cable television) has an underground CATV line along the northern S.R. 686 right-of-way from 49th Street to the northern airport entrance just south of 46th Street. In addition there are aerial CATV lines on the Florida Power Corporation poles along the south side of Ulmerton Road from east of Automobile Boulevard to Evergreen Street. Paragon Cable (cable television) has aerial CATV lines mounted on Florida Power poles on the north side of Ulmerton Road from the Roosevelt Boulevard west interchange to the Roosevelt Boulevard east interchange. Just west of the Roosevelt Boulevard east interchange the aerial CATV lines cross Ulmerton Road and continue southeast on the southwest side of Roosevelt Boulevard to I-275. The CATV lines are underground through the I-275 interchange and cross Roosevelt Boulevard south of the I-275 interchange. The aerial CATV lines follow the northeast side of Roosevelt Boulevard from I-275 to 9th Street where they continue north on 9th Street.

People's Gas Systems, Inc. has underground gas transmission lines south of the U.S. 92 (Gandy Boulevard) intersection. A gas transmission line also crosses S.R. 686 about 120 feet south of 49th Street.

The City of Largo has sanitary sewer lines (both gravity and forced) in the northern project area. There is a line from 49th Street to about 600 feet south along the northeast side of S.R. 686. A line crosses S.R. 686 about 600 feet south of 49th Street and continues along the southwest side to about 1,000 feet south of Terminal Parkway where it crosses S.R. 686 and continues south along the east side to about 1,350 feet north of Ulmerton Road.

Along Ulmerton Road (S.R. 688) a sanitary sewer line runs along the south side from west of the S.R. 686 west interchange to east of 38th Street North. East of 38th Street

North several lines follow the south right-of-way line to the S.R. 686 east interchange. South of Ulmerton Road, sanitary sewer lines cross S.R. 686 at 28th Street North and continue south along the southwest side for approximately 430 feet.

Sanitary sewer lines also run along the west side of Automobile Boulevard from south of Ulmerton Road to south of 126th Avenue and on 43rd Street from its northern terminus south to 118th Avenue. A sanitary sewer line runs on 40th Street from south of Ulmerton Road to 118th Avenue. An additional line runs along 118th Avenue from west of Automobile Boulevard to 40th Street.

Pinellas County has water mains along the west side of S.R. 686 from 49th Street to Ulmerton Road (S.R. 688). In addition, there are water mains crossing S.R. 686 at Convair Avenue, Terminal Parkway, Constellation Avenue and Smith Industries. Along Ulmerton Road, the water mains run along both the north and south right-of-way limits to 34th Street North and along the north right-of-way limit to past the east interchange. Water mains cross S.R. 688 at Automobile Boulevard, east of 40th Street North and at 34th Street North. There are no water mains along S.R. 686 from Ulmerton Road to 28th Street North; however, a main crosses S.R. 686 at 28th Street North.

South of the 28th Street North intersection is the City of St. Petersburg water system. Water lines cross Roosevelt Boulevard south of 16th Street and run on the southwest side of Roosevelt Boulevard from 16th Street to 9th Street where it turns both north and south on the west side of 9th Street. South of 9th Street, a water line runs on the northeast side of Roosevelt Boulevard through the Gandy Boulevard intersection.

### **3.12 Land Uses Which Modify The Alignment**

The general alignment for the proposed action is along the existing roadway alignment to minimize the impact to adjacent development and established neighborhoods. Where right-of-way acquisition was required, adjacent development (building locations, park areas, etc.) were assessed to evaluate where right-of-way should be acquired to minimize the number of relocations and potential business damages.

Several existing developments in the corridor have the potential to impact the alignment alternatives, specifically the St. Petersburg-Clearwater International Airport and the dense commercial development on Ulmerton Road. Other than the drainage ditches, the only natural features which affect the alignment are Cross Bayou Canal and major drainage culverts. The following briefly discusses each of the significant land uses and natural features. It should be noted that there are no Section 4(f) lands within the project limits. The historical and archeological review has been completed by the State Historic Preservation Officer and indicated there are no known sites in the corridor. In addition, there are no schools or churches adjacent to the corridor.

Along S.R. 686 from 49th Street to the Ulmerton Road west interchange, the St. Petersburg/Clearwater International Airport is located along the north and east side of Roosevelt Boulevard. The Part 77 surfaces were considered as the horizontal and vertical alignments were developed. The need to preserve the airside capacity, support the additional development indicated in the Airport's Master Plan and providing direct access to the Airport were considered in the development of the alternative corridors and alignments.

Along S.R. 686 from the east Ulmerton Road interchange to U.S. 92 the right-of-way is of sufficient width to accommodate the six-lane rural section. The adjacent commercial and industrial developments are set back with enough distance so as not to be impacted. Additional right-of-way would be required for an interchange at 9th Street North, but it would not involve any relocations. The Village Square Condominium and the Nursing home are located on the northeast side of Roosevelt Boulevard south of 9th Street North and will require access.

The 49th Street corridor is typically industrial development located immediately adjacent to the roadway and includes the Pinellas County Criminal Courts Complex as well as the PSTA Maintenance Facility. These developments are impacted under alternatives 2A and 2B with the expressway located on 49th Street. The impacts are discussed in Section 5.302 of this report.

The extension of the expressway alignments on the Roosevelt Boulevard alignment South of Ulmerton Road (Alternatives 3C and 3D) impacts the Sunshine Stables and Speedway. As with the 49th Street alignment alternatives, the impacts are fully addressed in Section 5.303 of this document.

Other than drainage ditches, the only natural features which affect the alignments are the area wetlands and the Cross Bayou Canal. The location, impacts, and potential mitigation measures for these wetland areas are fully documented in the Permit Coordination Report and Addendum, published separately. The box culvert for Cross Bayou Canal will be lengthened. This is also discussed in the Permit Coordination Addendum. It should also be noted that the construction of the interchange of 49th Street and Roosevelt Boulevard involves Cross Bayou Canal. This is being addressed by Pinellas County as part of the 49th Street Bridge project.



**SECTION 4.0**

**ANALYSIS AND INDICATED DEFICIENCIES**

## **4.0 ANALYSIS AND INDICATED DEFICIENCIES**

This section of the report documents the analyses conducted to identify deficiencies on the existing facility, potential low-cost improvements (multi-modal and transportation systems management considerations), drainage, and right-of-way considerations.

### **4.1 Alternatives Considered**

As discussed in Section 2.3, the existing roadway is inadequate to accommodate design year traffic demand at an acceptable level of service. Alternatives were developed to provide acceptable transportation service in the corridor for the growing demand. The alternatives considered included alternate corridors for improvements, low-cost improvements, and construction alternatives. The construction alternatives are discussed in Section 5 of this report. The remainder of this section discusses the alternate corridors and low-cost options as well as drainage and right-of-way considerations.

#### **4.101 Alternate Corridors**

The development of alternatives involved an evaluation of alternate corridors for S.R. 686. The criteria used to evaluate alternate corridors included availability of right-of-way, disruption to existing land use, consistency with adopted transportation plans, and potential impacts.

The study area is generally developed with a combination of commercial, industrial and residential development throughout the corridor. Initial examinations of the one-

mile area either side of the existing S.R. 686 corridor indicated that no other corridors are viable relative to available right-of-way and disruptions to existing residential development, industrial development and neighborhoods. The provision of a one-way pair parallel to S.R. 686 was also investigated. This option would be difficult to implement due to the lack of continuous streets parallel to S.R. 686 and would significantly impact residential neighborhoods and industrial developments.

Given the constraints to developing a new arterial corridor, coupled with the existing arterial spacing, the existing alignment is considered to be the only viable corridor for S.R. 686.

Two alternative corridors were considered for the expressway facility. North-south alignments along 49th Street and along S.R. 686 were considered from the south end of the 49th Street Bridge (S.R. 686 and 49th Street) to 118th Avenue. The alternatives in Sections 5.302 and 5.303 address these alternative expressway alignments.

#### **4.102 No-Action Alternative**

The No-Action Alternative serves as the baseline condition and reflects a situation where design year traffic volumes are loaded on the planned roadway system with no improvements to S.R. 686. It should be noted that the No-Action Alternative is not consistent with adopted transportation plans.

The No-Action Alternative will produce a number of adverse impacts on roadways in the study area. These impacts are associated with the deterioration of traffic service when the traffic demand exceeds available roadway capacity, resulting in arterials operating under stop-and-go conditions (Level of Service F) during peak periods.

The first impact will be an increase in the number of hours during which congestion occurs (i.e., the morning and evening peak periods would extend to several hours each). A second impact will be the diversion of traffic from arterial facilities to local and collector streets. As the level of service on major facilities deteriorates, more trips seeking the shortest and/or least congested routes will use neighborhood streets. This disrupts the neighborhoods and could increase the demand on collector and local streets beyond their capacities.

As discussed in Section 2.301, portions of Segments 2B and 3 currently operate at unacceptable levels of service during both the a.m. and p.m. peak hours. Given the projected traffic volumes in 2010, the No-Action Alternative does not serve the travel demand and is inconsistent with transportation planning goals in the region.

There are, however, benefits associated with the No-Action Alternative. There are no residential or business disruptions without roadway construction, and the monies for right-of-way acquisition and construction for the project would not be expended. In addition, without improvements to the roadway, ambient noise levels would remain stable or increase minimally. The No-Action Alternative remained as a valid alternative until after the public hearing.

#### **4.103 Multi-Modal Alternative**

The reduction of automobile travel by diverting to other modes such as mass transit is an alternative which was considered. Transit services within Pinellas County are provided by Pinellas Suncoast Transit Authority (PSTA), and there is one local bus route Route 52, S.R. 686 from 49th Street to the airport entrance.

According to PSTA, 8.1 million trips were made on transit in 1987, representing a one percent mode split. Transit typically best serves non-discretionary, frequent, scheduled trips such as home-based work trips. Pinellas County residents, with its large percentage of retirees who are not bound by a work schedule, make a large percentage of discretionary trips for other purposes such as shopping, social, and recreational trips. In these cases, transit is not as attractive because trip purposes are less frequent and less predictable, thus difficult to serve with scheduled bus service on fixed routes.

A recent study in Pinellas County investigated the feasibility of a fixed guideway rapid transit system. One of the alternative alignments resulting from the study provides service in the S.R. 688 portion of this project. Data from the guideway study indicated that even with the fixed guideway transit system, improvements would still be required in the corridor to provide an acceptable level of service.

Given the limited potential to increase transit ridership in the corridor, assuming the fixed guideway system is implemented, the Multi-Modal Alternative is not considered a viable alternative.

#### **4.104 Transportation System Management Alternative**

An alternative to the No-Action Alternative are Transportation System Management (TSM) improvements to increase the available capacity. Pinellas County has a policy to pursue TSM improvements. TSM improvements may include the following: traffic signal timing optimization, traffic signal coordination, restriping existing pavement, removing on-street parking, turn prohibitions, and reversible lanes. The intent of TSM improvements is to increase the traffic carrying capacity of a roadway with minimum capital expenditures and within the available right-of-way.

The projected capacity deficiencies on S.R. 686 are significant, resulting in stop and go conditions for extended periods. In addition, the capacity is constrained by operations at major intersections and improving signal timing or instituting turn prohibitions will not alleviate these deficiencies. The traffic is not sufficiently directional (i.e., south-eastbound in the morning and north-westbound in the evening) that instituting reversible lanes is feasible. Therefore, the TSM Alternative will not improve operations significantly beyond the No-Action Alternative and is not considered a viable alternative.

#### **4.105 Right-of-Way Considerations**

As discussed in Section 3.2, improvements to S.R. 686 will require right-of-way acquisition from 49th Street south and east to the Ulmerton Road east interchange to increase the traffic carrying capacity of the roadway. Right-of-way acquisition will also be required if an interchange is implemented at Roosevelt Boulevard and 9th Street North and through-out the corridor for water detention. The extension of Roosevelt Boulevard south of Ulmerton Road through the Sunshine Speedway and Stables will also require additional right-of-way.

Several criteria were established relative to right-of-way acquisition to minimize costs and impacts. The specific intent of the criteria was to limit acquisition to the least practical amount while still providing roadway improvements which meet minimum design standards. The criteria used, where practical, were as follows:

- \* acquire right-of-way on only one side of the roadway to minimize the number of property owners involved;
- \* acquire vacant (undeveloped), residential, industrial or commercial property, in this order, to minimize costs;

- \* avoid acquiring buildings (whole or in part) to minimize relocations; and
- \* when acquiring property, leave sufficient area to redevelop to minimize business damages.

In developing the Construction Alternatives, these criteria were applied. It should be noted, however, that the violation of a right-of-way criteria (i.e., acquisition of a building) did not justify elimination of an alternative from consideration.

#### **4.106 Drainage Considerations**

As discussed in Section 3.3, the existing roadway in Segment 2B and 3 has open ditch drainage. The co-located section of Roosevelt Boulevard and Ulmerton Road was recently improved and involved widening in the median. The improvement maintained the open ditch drainage system with the installation of inlets in the median and cross-drains to the existing ditches.

From 49th Street to the Ulmerton Road west interchange, the right-of-way on Roosevelt Boulevard is approximately 150 feet. The segment between the east and west interchanges that is co-located with Ulmerton Road has a 200-foot right-of-way. The section on Roosevelt Boulevard from the east Ulmerton Road interchange to Gandy Boulevard (Segment 3) has a right-of-way of 300 feet.

To provide the expressway/frontage road system proposed in Segment 2B, right-of-way ranging from 200 to 276 feet is required, assuming an enclosed storm sewer system. To maintain a rural drainage system, the ditch cross section requires approximately 50 feet. Thus, the right-of-way requirements would increase by approximately 100 feet if open ditch drainage were to be considered. An additional factor related to drainage is the development adjacent to the roadway. The relatively dense commercial

development along the Ulmerton Road portion of the corridor would be significantly impacted by the additional right-of-way requirements. The character of the development is such that pedestrian movements could increase. An open ditch drainage system inhibits pedestrian movements.

Given these constraints, the provision of an urban cross section was considered the only reasonable cross section and drainage system for the Build Alternatives in Segment 2B. The major impact of this decision is the loss of potential stormwater treatment in the ditches may require mitigation. The stormwater treatment will likely require detention or retention ponds to treat the stormwater run-off from the roadway as well as adjacent land. Typically, however, the land requirements for ponds are significantly less than the land requirements for ditches. The treatment of stormwater will be addressed during the final design phase for Segment 2B.

The existing right-of-way in Segment 3, Roosevelt Boulevard from the Ulmerton Road east interchange to Gandy Boulevard, is sufficient to accommodate the proposed six-lane arterial and maintain the existing rural drainage system. The corridor traverses an area of large tracts, most of which is developed. The character of the development adjacent to the roadway is such that it is not conducive to major pedestrian movements. Thus, the provision of an open ditch drainage system in Segment 3 is anticipated to have minimal impact on pedestrians.

#### **4.107 Use of Existing Pavement**

The existing pavement on S.R. 686 is in good condition as a result of the resurfacing project completed in 1985. Given the condition of the existing pavement, the



widening of the existing roadway would appear, at first glance, to provide the most economical alternative for improvements in the corridor. Initial evaluations indicate that this may not be practical in Segment 2B due to several design issues.

The first issue is the conversion from a rural arterial to an urban expressway section. The existing pavement has virtually zero grade the length of the corridor. The provision of an urban cross section will require minor grades (0.2 to 0.3 percent) to accommodate stormwater run-off. This will require modifications to the existing pavement. This could be accomplished by milling the existing pavement and increasing the overlay. There are, however, practical limits to the amounts of milling and overlaying.

The second issue is the drainage system design relative to co-mingling of off-site and roadway run-off. The elevations of the adjacent development are such that modifications to the existing roadway will need to be made to either combine or separate the off-site and roadway run-off. This condition is exacerbated by the construction of expressway and frontage road lanes that will require grade modifications. The location of underground utilities, discussed in Section 3.10 will significantly impact the costs of lowering the grades.

The third design issue is the conversion from an arterial to an expressway with frontage roads which includes additional lanes, grade separations and median reconstruction. The existing median lane will need to be reconstructed for the drainage system and to provide adequate inside shoulders (10 feet) and the concrete barrier. This reconstruction may require excessive efforts to preserve the existing pavement and may not prove cost effective.

In Segment 3 (from the east Roosevelt Boulevard interchange with Ulmerton Road to U.S. 92), the use of the existing pavement is more likely. The proposed six-lane improvement can be implemented by widening in the median.

Lastly, soil borings to be undertaken during the final design phase will indicate the suitability of using the existing pavement. Attempts should be made during design to maximize the use of existing pavement. However, for purposes of this analysis, the construction costs for the Construction Alternatives were estimated assuming the existing pavement would not be used.

**SECTION 5.0**

**PROPOSED ALTERNATIVE SOLUTIONS**

## 5.0 PROPOSED ALTERNATIVE SOLUTIONS

The travel demand in the S.R. 686 corridor is projected to increase substantially in the next 20 years. The existing facility will not accommodate the increased demand at acceptable levels of service (No-Action Alternative). In addition, low-cost and alternative mode options as discussed in Sections 4.103 and 4.104 will not improve transportation service sufficiently to accommodate the increased demand safely and efficiently. To provide acceptable transportation service in the corridor, improvement alternatives have been developed and evaluated. This section of the report documents the design standards, proposed alternatives and their engineering evaluation. The environmental impacts of the alternatives are discussed in a separate environmental document.

### 5.1 Roadway Design Standards

The design criteria for the alternative alignments were developed using standards as set forth in Roadway and Traffic Design Standards and Manual of Uniform Standards for Design, Construction, and Maintenance for Streets and Highways published by the Department. These documents, coupled with discussions with FDOT and FHWA staff, were the basis for determining the design criteria for the roadway.

The design speed of the roadway is 60 mph desirable, 50 mph minimum, for the expressway lanes and 35 mph to 45 mph for the service roads. Posted speed limits on the expressway lanes are anticipated to be 45 mph where the design speed is 50 mph and 55 mph where the design speed is 60 mph. Posted speed limits will 35 to 45 mph for the service roads.

For the arterial section of S.R. 686 (from the S.R. 688 east interchange south to U.S. 92), the design speed is 50 mph with a posted speed of 45 mph. A design memorandum documenting the alternatives, typical sections, horizontal and vertical alignment, drainage, intersection concepts, utilities, right-of-way and bicycle and pedestrian accommodations was prepared for the project. The memorandum was reviewed at a meeting on May 8, 1990 and accepted by FHWA. The design memorandum and meeting summary are included in Appendix 6.1.

The arterial alternatives were developed based on Department access guidelines of providing median openings at public streets while maintaining adequate spacing between median openings. Exceptions would be made at private driveways where no reasonable access alternative was available and the traffic using the private driveway is a high volume.

There are no median openings on the expressways. Access is provided via the one-way frontage roads. For the arterial alignment alternatives (Alternatives 2A and 2B) in Segment 2B, from 49th Street to the west Ulmerton interchange, the existing median openings west of the airport entrance, at the airport entrance (Terminal Parkway) and at the industrial complex between 142nd Avenue and 140th Avenue remain. In Alternatives 3C and 3D, Roosevelt Boulevard is an expressway and there are no median openings, however, grade separations are provided at the airport entrance (Terminal Parkway) and at 142nd Avenue. The vertical clearances for all grade separations provide a minimum of 16.5 feet.

In the arterial portion of the project in Segment 3, from Ulmerton Road east interchange to Gandy Boulevard, the existing median openings have been revised. The median opening north of 28th Street North has been closed. From I-275 to 9th Street North the median opening at 16th Court has been relocated to the 16th Street North

intersection and the median opening located at the industrial plant north of 9th Street North has been closed. A grade separation is provided at 9th Street North. From 9th Street North to U.S. 92 (Gandy Boulevard) the median opening at South Village Drive has been closed and the median opening at the Fairview Nursing Home remains open.

The median openings were reviewed for the full length of the corridor with the Department and FHWA. The appended conceptual plan set reflects these median openings.

## **5.2 Preliminary Alternative Alignments**

Intersection capacity analyses discussed in Section 2.3 indicate that deficiencies exist in the corridor and multi-lane improvements are needed. The alternatives considered in the corridor were dependent on other system improvements proposed in the eastern portion of mid-Pinellas County. A series of alternatives were developed in cooperation with on-going studies being conducted by the Department and Pinellas County. Several elements were common to all alternatives and include the following:

1. Construction of the 49th Street Bridge over Old Tampa Bay (four- to six-lane bridge).
2. Upgrading U.S. 19 to an expressway with interchanges at S.R. 686 and S.R. 688.
3. Upgrading S.R. 688 to an expressway from west of Alternate U.S. 19 to I-275.

For purposes of this study, an expressway is defined as a controlled access facility with grade separated interchanges and associated ramps. To provide access to adjacent development, a one-way frontage road system parallels the controlled access or expressway lanes.

The system improvements which varied by alternatives included 49th Street, C.R. 296 (118th Avenue) and S.R. 686. The three preliminary build alternatives that were examined included the following:

Alternative 1 - S.R. 686 remains on the current alignment as a six-lane major arterial. The co-located segment with S.R. 688 provides an expressway cross section. Both 49th Street and 118th Avenue are assumed to be six-lane arterials. In addition, 118th Avenue terminates at 28th Street North.

Alternative 2 - This alternative is similar to Alternative 1 except that 49th Street and 118th Avenue are assumed to be six-lane expressways. In addition, 118th Avenue extends to I-275 with full access to the Interstate via a modified interchange at I-275 and S.R. 686. S.R. 686 remains on the existing alignment as a four- and six-lane arterial. The segment of S.R. 686 co-located with S.R. 688 provides an expressway.

Alternative 3 - S.R. 686 remains on its existing alignment as a six-lane arterial from U.S. 19 to the western interchange with S.R. 688. South of S.R. 688, the alignment extends south as an arterial to approximately 110th Avenue where it extends east to 4th Street North. In this alternative, both 49th Street and 118th Avenue are assumed to be six-lane arterials with 118th Avenue terminating at 28th Street North.

The alternatives were developed to maximize the use of existing corridors and potential corridor extensions as well as to relieve existing deficiencies in the area street system. The existing roadway configuration focuses traffic in the eastern

portion of mid-Pinellas County through the co-located segment of S.R. 686 and S.R. 688. This segment of roadway is carrying both north-south and east-west traffic, severely restricting the available capacity. The intent of the alternatives is to distribute the traffic evenly on all available routes.

Alternative 1 reflects the original year 2010 long-range plan. This alternative includes the potential for a "double deck" or elevated expressway cross section in the co-located section of S.R. 686 and S.R. 688. The intent of the elevated expressway concept was to separate through traffic from local trips.

The objective of Alternative 2 is to provide two controlled access, east-west expressways between U.S. 19 and I-275 via S.R. 688 and C.R. 296 (118th Avenue). The implementation of expressway facilities along 49th Street and 118th Avenue was being actively pursued by Pinellas County. This is evidenced by the original plan amendment approved on April 22, 1988 revising 49th Street and 118th Avenue to expressways.

The purpose of Alternative 3 was to increase the arterial capacity and local access in the area. The level of development approved in the area indicated there may be a need for additional capacity with the emphasis on local access rather than through traffic carrying capacity on controlled access facilities.

Alternative 3, as originally proposed, did not accommodate the projected travel demand as the traffic projections on the co-located segment of S.R. 686 and S.R. 688 exceeded the practical capacity which would be provided. In addition, the arterial segment on the Roosevelt Boulevard alignment south of S.R. 688 was not projected to



carry sufficient traffic (10,000 to 14,000 vehicles per day) to warrant a new road on new alignment. These evaluations are fully documented in the Traffic Memorandum, published separately.

Subsequent evaluations by the Department and Pinellas County resulted in modifying Alternative 3 to provide an expressway facility on the Roosevelt Boulevard alignment from 49th Street to the west interchange with S.R. 688. South of S.R. 688, the alignment extends south to 118th Avenue as an expressway. The section of S.R. 686 from the S.R. 688 east interchange to Gandy Boulevard provides a six-lane arterial on the existing alignment. As with Alternative 2, the 118th Avenue corridor involves an expressway with full access to I-275. A six-lane arterial is provided on 49th Street.

The three alternatives outlined above were evaluated relative to traffic service and right-of-way requirements. Initial evaluations of the 2010 traffic projections indicated that there were no significant differences in the traffic volumes west of 49th Street with the three alternatives. The volume projections on S.R. 686, 49th Street, S.R. 688 (Ulmerton Road) and 118th Avenue do vary, however, depending on the alternative. The traffic projections and capacity evaluations of the alternatives are discussed in Sections 2.302 and 2.303 of this report.

The initial evaluations of traffic indicated that the original Alternative 3, the provision of additional arterial capacity, was deemed not to be reasonable due to the projected volumes and was modified as discussed. The north-south portion of the alignment was projected to carry between 10,000 and 14,000 vehicles per day, indicating a two-lane collector roadway would be sufficient to accommodate the demand. The east west portion along the 110th Avenue alignment was projected to carry from 10,000 to 24,000 vehicles per day, requiring a two-lane to four-lane

facility. Given the low traffic projections that would use a new alignment, which requires substantial right-of-way acquisition, the alternative was not deemed to be reasonable or feasible. In addition, the original alternative did not improve operations on the co-located section of S.R. 686 and S.R. 688 over Alternative 1. The modified alternative, including the expressway connection to I-275, would alleviate this deficiency.

The updated traffic projections from the County's on-going 49th Street Bridge project and the preliminary evaluations for the Northeast Corridor Study resulted in the traffic projections crossing the 49th Street Bridge increasing from 53,000 vehicles per day to in excess of 70,000 vehicles per day on the co-located segment of S.R. 686 and S.R. 688 (see Traffic Memorandum and Addendum). It is not practical to provide sufficient capacity to accommodate this level of demand and provide local access given the limited right-of-way available. Thus, Alternative 1 was determined to be not feasible due to capacity limitations, projected operating conditions and right-of-way impacts and was dropped from further consideration.

### **5.3 Reasonable and Feasible Alternative Alignments**

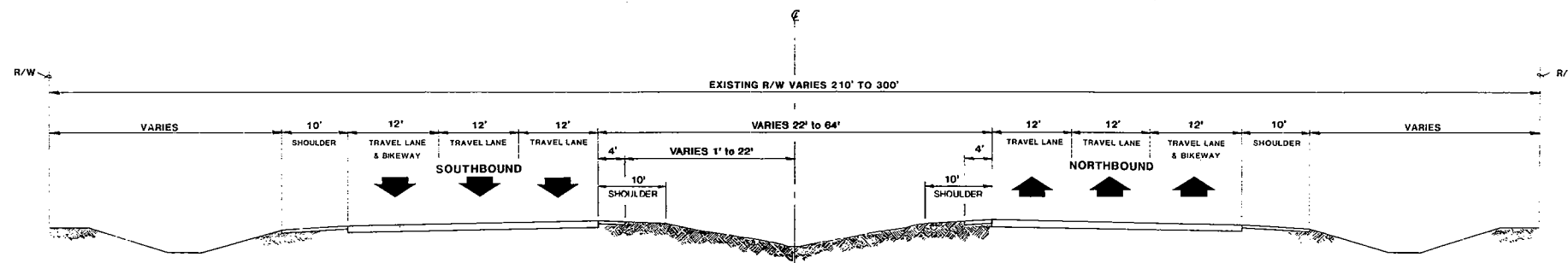
As discussed in Section 5.2, several alternative alignments and configurations were considered reasonable and feasible from 49th Street to 118th Avenue. From the Ulmerton Road east interchange south to U.S. 92 (Gandy Boulevard), a six-lane rural arterial centered in the existing right-of-way was considered the only reasonable and feasible alternative. The following subsections document the alternatives proposed for the section from 49th Street to 118th Avenue (C.R. 296). The section from the Ulmerton Road east interchange to U.S. 92 (Gandy Boulevard) is discussed under Alternative 1 and pertains to all the alternatives.

### 5.301 Alternative 1

From 49th Street to the S.R. 688 east interchange, this alternative was dropped from further consideration due to capacity limitations. South of the S.R. 688 east interchange to U.S. 92 (Gandy Boulevard), Alternative 1 provides a six-lane rural arterial. Exhibit 5-A illustrates the proposed mid-block typical section for this alternative south of S.R. 688. As shown in the exhibit, the cross section provides three 12-foot travel lanes in each direction for vehicular traffic separated by a grass median varying from 22 to 64 feet. Where the median is 22 feet, it will consist of two 10-foot paved shoulders separated by a 2-foot concrete barrier median. For the wider median sections, it will consist of 10-foot stabilized shoulders (4-foot paved) and grassed areas. There is a 10-foot paved outside shoulder for refuge and bicycle traffic and an open ditch drainage system. This rural cross section is centered in the existing 210 to 300 feet of right-of-way.

The conceptual plan for this alternative is shown on the appended 100 scale aerial photography plan set. The conceptual plans illustrate the existing right-of-way, drainage ditch locations, edge of pavement, median openings, and number of lanes. Traffic signals are included at the intersections of S.R. 686 with 28th Street, I-275 ramp termini, 9th Street North, and U.S. 92. The improvements at 9th Street includes a tight diamond interchange to accommodate the travel demand at an acceptable level of service. The interchange will require minor right-of-way acquisition at 9th Street North. There are no relocations associated with the acquisition.

The construction cost estimate for the portion of the project from the east interchange of S.R. 688 to U.S. 92 and estimated to be \$18,100,000. The construction costs, as previously discussed, assumes maximum use of the existing pavement and involves



S.R. 686 FROM S.R. 688 (Ulmerton Road)  
TO U.S. 92 (Gandy Boulevard)

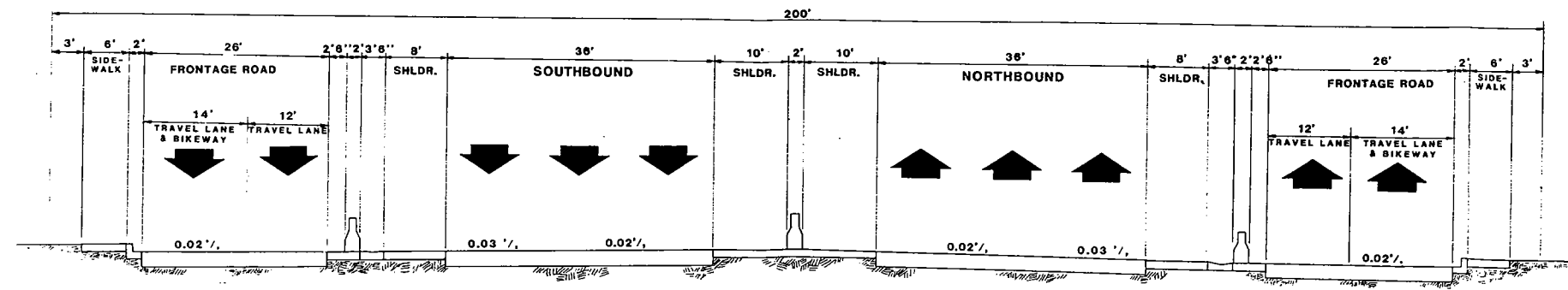
**FLORIDA DEPARTMENT OF TRANSPORTATION**  
**ENGINEERING REPORT**  
**S.R. 686**  
**(EAST BAY DR./ROOSEVELT BLVD.)**  
 Pinellas County, Florida  
**TYPICAL SECTION**  
**SIX-LANE ARTERIAL**

existing pavement resurfacing and new lane construction, as well as engineering design, maintenance of traffic, and contingencies. The right-of-way costs, associated with the 12 parcels impacted, are estimated at \$1,819,000. There are no major utility relocations anticipated in this segment of the corridor.

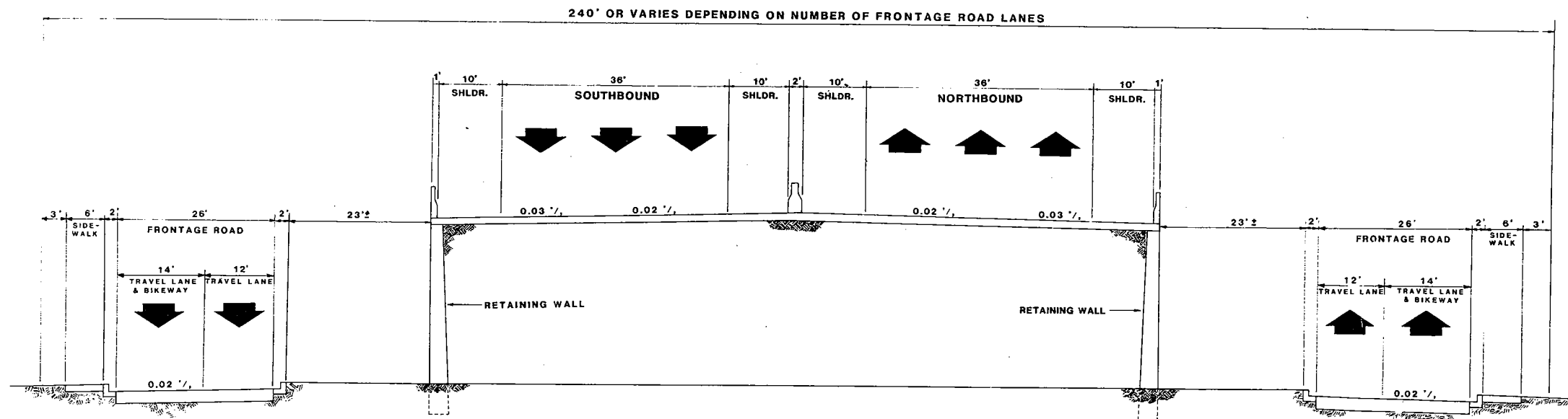
### 5.302 Alternative 2

As previously noted Alternative 2 assumes that 49th Street and 118th Avenue are assumed to be expressways with parallel frontage roads. In addition, it includes 118th Avenue extended to I-275 with full access to the Interstate via a modified interchange at I-275 and S.R. 686. S.R. 686 from 49th Street to S.R. 688 remains as a four-lane arterial. Interchanges are provided on 49th Street at Roosevelt Boulevard, Ulmerton Road and 118th Avenue. Overpasses, with access to both frontage roads, are included on 49th Street at 142nd Avenue and 126th Avenue. The Ulmerton Road section of the expressway provides interchanges at 49th Street, S.R. 686 west interchange, 34th Street and S.R. 686 east interchange.

The typical section for the proposed expressway improvement is illustrated in Exhibit 5-B. As seen in the exhibit, the expressway requires 200 to 240 feet of right-of-way. The existing right-of-way in the 49th Street corridor is only 100 feet, requiring acquisition of 100 to 140 feet of right-of-way the full length of the corridor. The typical section for the Ulmerton Road portion of the project, from 49th Street to the Roosevelt Boulevard east interchange, is similar to the 49th Street typical section. The typical section requires up to 240 feet of right-of-way, up to 40 feet more than the existing 200-foot right-of-way.



S.R. 686 EXPRESSWAY FROM  
49TH STREET TO 118TH AVENUE



ROOSEVELT BOULEVARD AND AIRPORT ENTRANCE

FLORIDA DEPARTMENT OF TRANSPORTATION  
ENGINEERING REPORT  
S.R. 686  
(EAST BAY DR./ROOSEVELT BLVD.)  
Pinellas County, Florida  
**PROPOSED TYPICAL SECTION  
EXPRESSWAY**

Two alternative interchange configurations were developed for the expressway to expressway interchange at 49th Street and Ulmerton Road. 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.

Extensive right-of-way acquisition is required to improve 49th Street from Roosevelt Boulevard to 118th Avenue to implement the expressway. The 49th Street expressway provides for bicycles with 14-foot curb lanes on the frontage roads. Pedestrians are accommodated with five-foot sidewalks on both sides of the roadway.

Under this alternative, S.R. 686 provides a four-lane arterial from 49th Street to S.R. 688 west interchange and a six-lane arterial from S.R. 688 east interchange to U.S. 92. The existing facility from 49th Street to Ulmerton Road is adequate to accommodate the demand with minor turn-lane revisions. There are no provisions for bicycle or pedestrians on the existing alignment. If this alternative is selected, it is likely that the state road designation would be changed to 49th Street and existing Roosevelt Boulevard would revert to the County.

South of Ulmerton Road, a six-lane arterial is required to accommodate the demand. The typical section in this segment is the same as Alternative 1.

The conceptual plan for Alternatives 2A and 2B for 49th Street, Roosevelt Boulevard and Ulmerton Road are included on 100 scale aerial photography in the appended plan set.

The cost estimates for Alternatives 2A and 2B are listed in Table 5.1. The construction costs, as previously discussed, assume that 49th Street and Ulmerton Road will be completely reconstructed within the project limits and involves existing pavement removal and new roadway construction including drainage, engineering design, maintenance of traffic and contingencies. The utilities costs are for relocating utilities located within the existing right-of-way and will be the responsibility of each utility company.

For Alternatives 2A and 2B there are 144 and 142 parcels involved, respectively with no relocations along Roosevelt Boulevard. For Alternative 2A there are a total of 28 business relocations with the majority (26) on 49th Street, and two on Ulmerton Road. For Alternative 2B there are a total of 47 relocations, the majority along 49th Street, including one residential relocation.

### **5.303 Alternative 3**

As previously noted, Alternative 3 provides an expressway facility with frontage roads on the Roosevelt Boulevard alignment from 49th Street to the west interchange with S.R. 688. South of S.R. 688, the alignment extends south to 118th Avenue as an expressway. The 118th Avenue improvements remained as an expressway and 49th Street was assumed to be a six-lane arterial. South of Ulmerton Road, existing S.R. 686 continues as a six-lane arterial to U.S. 92 as discussed in Alternative 1.

Interchanges are included on Roosevelt Boulevard at 49th Street, Ulmerton Road and 118th Avenue. Overpasses providing access to both frontage roads are provided on Roosevelt Boulevard at the St. Petersburg-Clearwater International Airport entrance and exit and 126th Avenue. The Ulmerton Road expressway interchanges are



TABLE 5.1

PRELIMINARY COST ESTIMATE  
 ALTERNATIVES 2A AND 2B  
 S.R. 686 (East Bay Drive/Roosevelt Boulevard)  
 Segments 2B and 3

<u>Roadway</u>	<u>Item</u>		<u>Total Cost</u>
	<u>Construction<sup>1</sup></u>	<u>Right-of-Way<sup>2</sup></u>	
<u>Alternative 2A</u>			
49th Street	\$61,865,300	\$31,141,000	\$93,006,300
Ulmerton Road	80,063,500	11,744,000	91,807,500
Roosevelt Boulevard -49th Street to Ulmerton Road	407,400	37,000	444,400
<b>TOTAL</b>	<b>\$142,336,200</b>	<b>\$42,922,000</b>	<b>\$185,258,200</b>
<u>Alternative 2B</u>			
49th Street	\$71,183,200	\$35,469,000	\$106,652,200
Ulmerton Road	87,701,200	21,940,000	109,641,200
Roosevelt Boulevard -49th Street to Ulmerton Road	407,400	37,000	444,400
<b>TOTAL</b>	<b>\$159,291,800</b>	<b>\$57,446,000</b>	<b>\$216,737,800</b>

Notes: <sup>1</sup> Items included as a percentage of construction costs are: Engineering Design - 4.5 percent; Construction Engineering and Inspection at 4 percent; Maintenance of Traffic - 4 percent; Legal and Administrative at 4 percent and Design Contingencies at 9 percent.

<sup>2</sup> Provided by the Department for roadway right-of-way and include land acquisition, business, damages, and relocations.

Preliminary costs are expressed in 1990 dollars with no allowance for inflation.

provided at the same locations as Alternative 2 and include 49th Street, the Roosevelt Boulevard west interchange, 34th Street and the Roosevelt Boulevard east interchange. The typical sections are similar to the sections for Alternative 2 as illustrated on Exhibit 5-B.

The configuration of the Roosevelt Boulevard interchange at 49th Street was developed based on the anticipated implementation schedule for the improvements in the mid-Pinellas County area. The initial concepts assumed the 49th Street Bridge and the expressway improvements would occur during similar time periods. Thus, a single phase of construction was assumed and a two-level interchange with the mainline expressway lanes on the second level was developed. Based on fiscal constraints, the 49th Street Bridge is anticipated to be completed approximately five to ten years prior to the expressway. To encourage drivers to use the 49th Street Bridge the County and the Department determined the 49th Street intersection with Roosevelt Boulevard should be grade separated when the bridge opens to traffic in 1993. Based on this, the interchange configuration includes a diamond interchange at Roosevelt and 49th Street to be constructed by the County as Phase I and be complete concurrent with the opening of the bridge in 1993. Phase II, to be constructed as part of the expressway improvements, involves third-level flyovers to accommodate the southbound 49th Street to eastbound expressway and westbound expressway to northbound 49th Street movements.

Access to the St. Petersburg-Clearwater International Airport is provided from the one-way frontage road system. The access incorporates the one-way circulation system as included in the Airport's Terminal Plan. This involves two overpasses for the expressway lanes, one at the Airport entrance and one at the Airport exit. It should be noted, however, that the concepts could be modified to maintain the existing access

at Terminal Parkway if the one-way access and circulation plan is not implemented by the Airport. The provision of an interchange to serve the Airport was evaluated. While the interchange spacing is less than desirable, an interchange could be implemented. The traffic projections for the Airport, however, are relatively low and do not warrant the additional costs associated construction of a full movement interchange accessing the airport.

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 cost estimate for Alternatives 3C and 3D are listed in Table 5.2. The construction costs, as previously discussed, assume that the roadways will be completely reconstructed and involves existing pavement removal and new roadway construction including drainage, engineering design, maintenance of traffic and contingencies. The costs for relocating utilities in the existing right-of-way are the responsibility of the utility companies. The costs for the preferred alternative have been requested from the utility companies and are discussed in Section 5.10 of this report.

For Alternatives 3C and 3D there are 12 relocations with the road centered in the existing right-of-way, 10 business relocations and two residential relocations. The southern shift and the modified southern shift have the same number, based on the right-of-way estimates provided by the Department. The major acquisition under all alternatives is the Sunshine Speedway and stables, required for the extension of

TABLE 5.2

PRELIMINARY COST ESTIMATE -  
 ALTERNATIVES 3C AND 3D  
 S.R. 686 (East Bay Drive/Roosevelt Boulevard)  
 Segments 2B and 3

<u>Roadway</u>	<u>Item</u>		<u>Total Cost</u>
	<u>Construction<sup>1</sup></u>	<u>Right-of-Way<sup>2</sup></u>	
<u>Alternative 3C</u>			
49th Street	\$12,651,900	\$4,979,000	\$17,630,900
Ulmerton Road	89,958,800	7,953,000	97,911,800
Roosevelt Boulevard -49th Street to C.R. 296	59,905,200	14,438,000	74,343,200
TOTAL	\$162,515,900	\$27,370,000	\$189,885,900
<u>Alternative 3D</u>			
49th Street	\$12,651,900	\$4,979,000	\$17,630,900
Ulmerton Road	92,169,700	11,941,000	104,110,700
Roosevelt Boulevard -49th Street to C.R. 296	61,887,100	14,862,000	76,749,100
TOTAL	\$166,708,700	\$31,782,000	\$198,490,700

Notes: <sup>1</sup> Items included as a percentage of construction costs are: Engineering Design - 4.5 percent; Construction Engineering and Inspection at 4 percent; Maintenance of Traffic - 4 percent; Legal and Administrative at 4 percent and Design Contingencies at 9 percent.

<sup>2</sup> Provided by the Department for roadway right-of-way and include land acquisition, business, damages, and relocations.

Preliminary costs are expressed in 1990 dollars with no allowance for inflation.

Roosevelt Boulevard south of S.R. 688. Alternative 3C involves 110 parcels and Alternative 3D involves 122 parcels.

In response to concerns raised by representatives of the St. Petersburg-Clearwater International Airport, three roadway alignments were considered from 49th Street to Ulmerton Road. These alternatives included the expressway section centered in the existing alignment, requiring right-of-way acquisition on both sides of S.R. 686 (Alternative 3D); the expressway section shifted to the south of the existing alignment, minimizing the right-of-way acquisition from the Airport (Alternative 3D-Southern Shift); and a modified southern alignment to balance the impacts to the Airport as well as private property owners on the southwest side of Roosevelt Boulevard (Alternative 3D-Modified Southern). It should be noted that the Southern Shift alignment does not align with the current plans for the 49th Street bridge and would require substantial modifications to the 49th Street/Roosevelt Boulevard interchange. The modified southern alignment is consistent with the 49th Street Bridge design and minimizes impacts to the St. Petersburg-Clearwater International Airport.

The conceptual plan for Alternatives 3C and 3D are shown on 100 scale aerial photography in the appended plan set. The plan set also includes the three alignment shifts (centered, southern shift and modified southern shift) in the vicinity of the St. Petersburg-Clearwater International Airport.

Cost estimates were also prepared for the southern shift and modified southern shift for those areas where the right-of-way requirements differ. The area is generally from 49th Street to east of 142nd Avenue. The construction costs for all three alternatives are the same as the alignment shifts will not sufficiently affect the roadway to be constructed. There are, however, substantial differences in the right-

of-way costs. Based on data provided by the Department, the estimated right-of-way costs are as follows:

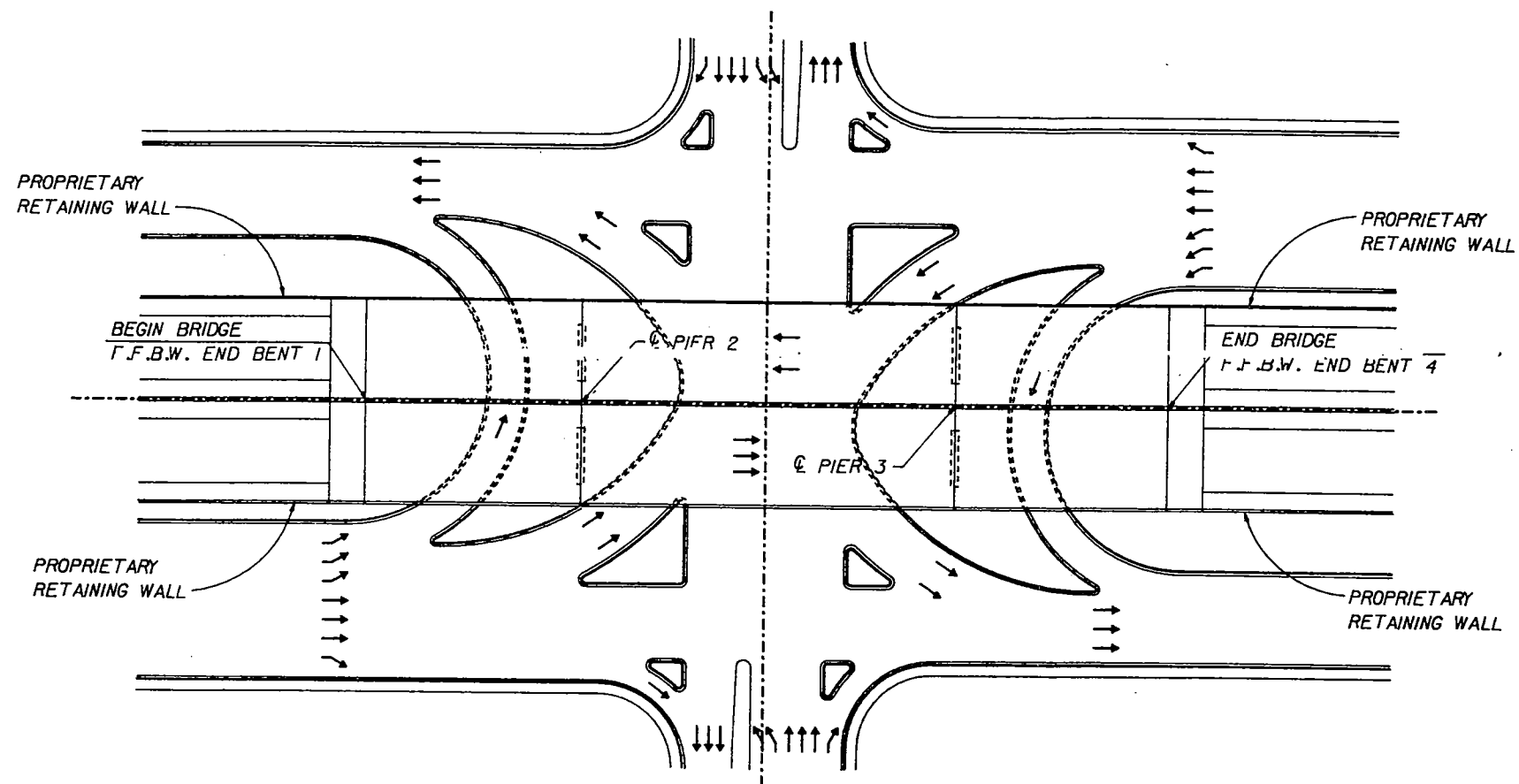
Centered Alignment	\$ 8,542,000
Southern Shift	12,468,000
Modified Southern Shift	11,302,000

While there are substantial differences between the right-of-way costs, all three alignments impact seven parcels and involve five relocations based on data provided by the Department.

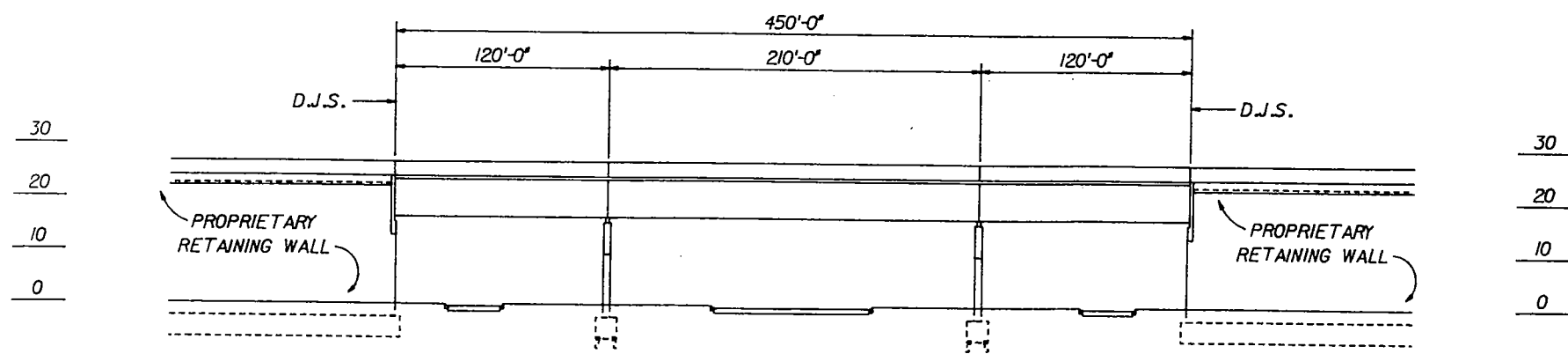
#### **5.304 Bridge and Structure Concepts**

The required structures for the S.R. 686 improvements were evaluated with regard to establishing the structural depth, pier placement and the corresponding structure costs. As discuss previously, there are a number of structures associated with the interchanges for preferred alternative, Alternative 3D. The structures basically include typical three span structures at urban interchanges, typical overpasses, a third level overpass and third level flyovers. The following discusses each of these.

The concept includes urban interchanges at 49th Street, 34th Street and Roosevelt Boulevard east interchange with Ulmerton Road. A typical three-span structure is required at these locations to provide frontage road U-turn movements beneath each end span. Exhibit 5-C illustrates the typical plan and elevation for the three-span structure. Exhibit 5-D illustrates the typical half section for the steel box girder bridge. Steel box girders have been illustrated for these structures since they have proven to provide an economical and aesthetically pleasing solution for similar



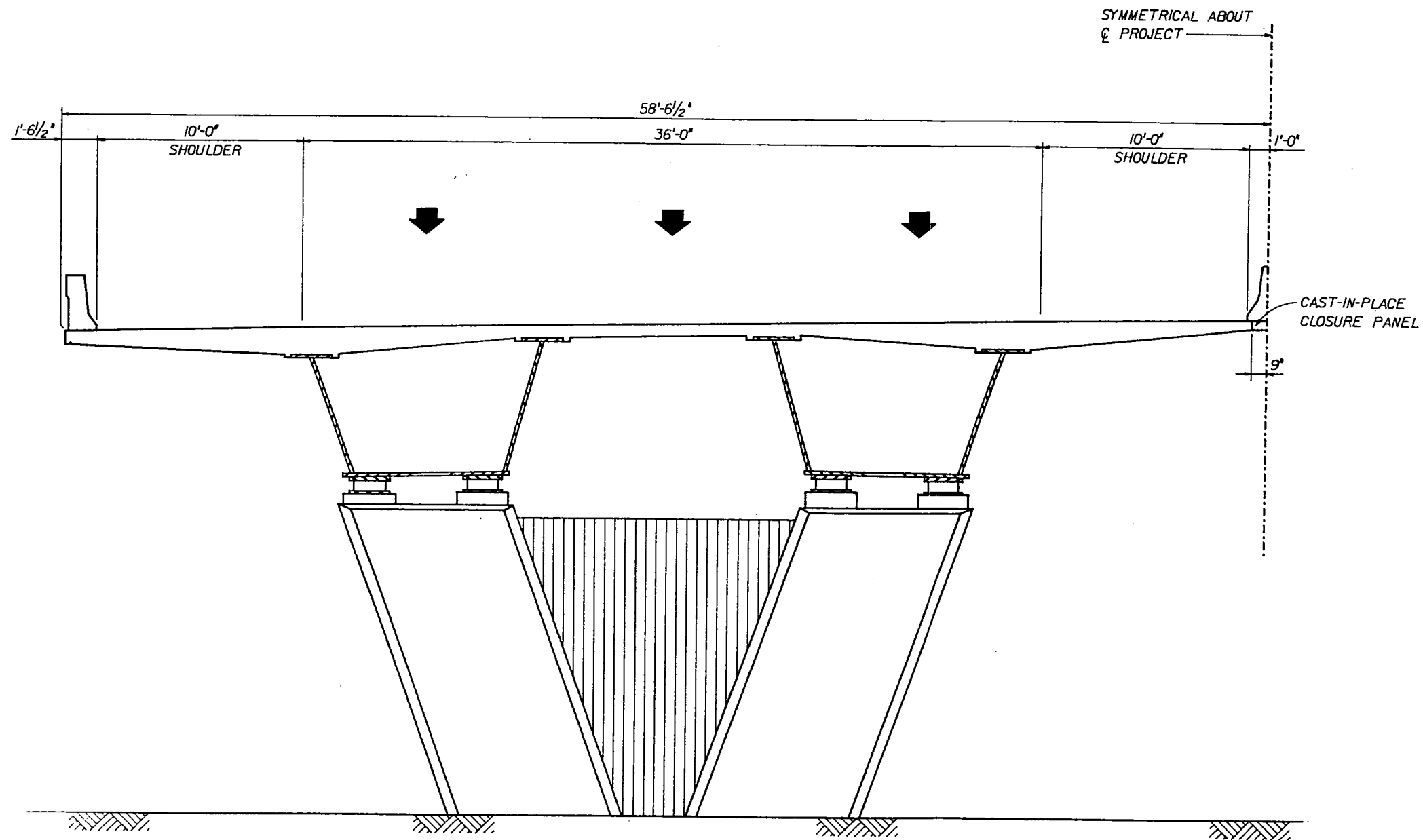
PLAN



ELEVATION

**THREE SPAN STRUCTURE  
URBAN INTERCHANGE**

**FLORIDA DEPARTMENT OF TRANSPORTATION**  
**ENGINEERING REPORT**  
**S.R. 686**  
**(EAST BAY DR./ROOSEVELT BLVD.)**  
 Pinellas County, Florida  
**PROPOSED TYPICAL SECTION**  
**THREE SPAN STRUCTURE**  
**URBAN INTERCHANGE**



**PROPOSED TYPICAL SECTION  
GRADE SEPARATION - 4 STEEL BOX GIRDERS**

**FLORIDA DEPARTMENT OF TRANSPORTATION**  
**ENGINEERING REPORT**  
**S.R. 686**  
**(EAST BAY DR./ROOSEVELT BLVD.)**  
 Pinellas County, Florida  
**PROPOSED TYPICAL SECTION**  
**GRADE SEPARATION**  
**4 STEEL BOX GIRDERS**



applications. Traffic will be maintained on the frontage roads during the bridge construction, eliminating the need to stage construct the proposed bridges.

At the interchange of 49th Street and Roosevelt Boulevard, the staged construction includes a diamond interchange with 49th Street over Roosevelt Boulevard in Phase I and the expressway lanes on a third level directional flyover movement in Phase II. Phase I is being implemented by Pinellas County and the details of the structures are included in the 49th Street Bridge project documentation.

The proposed directional flyover ramp for the southbound 49th Street to eastbound East Bay Drive connection consists of a two-lane elevated structure. The section provides a four-foot inside shoulder width and a six-foot outside shoulder width throughout the tangent sections for a total structural width of 37'-1". The inside shoulder tapers from four feet to 10 feet in the curved portion of the alignment to provide adequate horizontal stopping sight distance for the 45 mph design speed, resulting in a total structural width of 43'-1" in the curved section. A steel plate girder structure was conceptually established as a viable structural alternative. This framing system was selected based on the required length of span and the horizontal alignment requirements. A total of three continuous steel plate girder units were utilized for the alignment. Exhibit 5-E illustrates the typical section for the tangent section steel plate girder. The curved section would have the wider shoulder. This has been illustrated on the plan set.

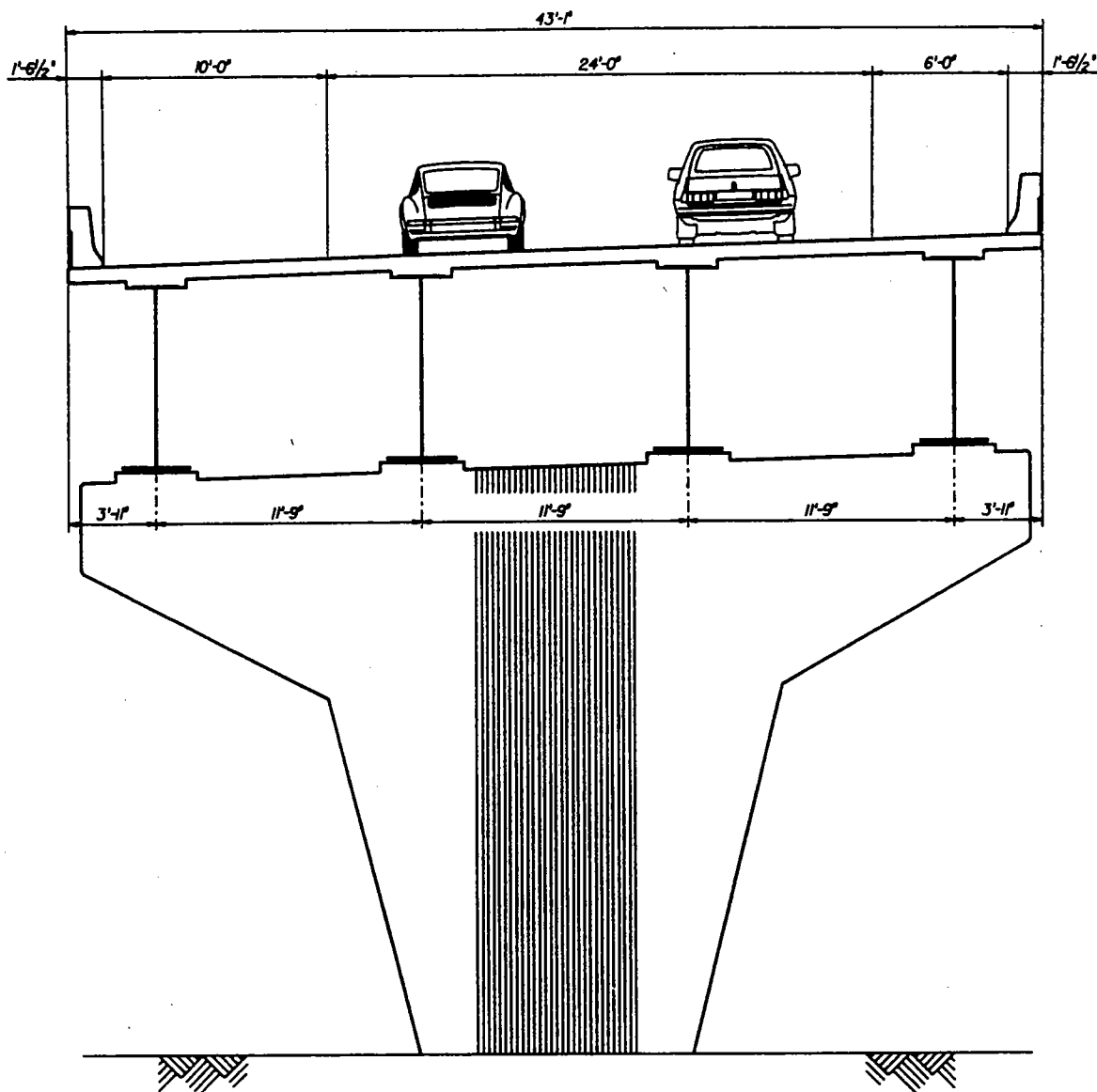
The first unit consists of three continuous spans of 240 feet-250 feet-240 feet. The center span length was established to provide 16 feet of clear recovery distance over Roosevelt Boulevard. The anticipated structure depth for this unit is 10.5 feet excluding roadway cross slope. This unit is located in the horizontally curved portion of the alignment. The second unit also consists of three continuous spans of 175 feet-

185 feet-175 feet. This unit carries the southbound to eastbound flyover ramp across the proposed 49th Street mainline and ramps. The anticipated structural depth for this unit is 7.5 feet excluding cross slope. The third unit consist of four continuous spans of 125 feet- 145 feet- 145 feet- 125 feet. The anticipated structural depth for this unit is 5.5 feet excluding cross slope.

During the final design phase, the use of either a cast-in-place or a precast segmental box girder should be investigated for the flyover. Additionally, an integral bent cap should be considered for the piers adjacent to Roosevelt Boulevard to minimize the required span length.

The existing 10'x12' four cell box culvert which carries Roosevelt Boulevard over the Cross Bayou Canal will require lengthening to accommodate the proposed East Bay Drive improvements. Hydraulically the existing culvert capacity has been judged to be acceptable since its conveyance is controlled primarily by the tidal conditions of Tampa Bay. Details of the hydraulic conditions of the culvert are discussed in the Location Hydraulic Report Addendum included in Appendix 6.3. Structurally, the existing culvert is in good condition and is suitable for widening. This opinion is supported by the Department's District Bridge Inspection office. The widening will be required at each end of the culvert for a distance of approximately 20 feet.

Several structures are required to carry the Roosevelt Boulevard expressway lanes over the frontage roads as well as the entrance and exit for the St. Petersburg-Clearwater International Airport. These single span structures have span widths ranging from approximately 52 feet (two 12-foot lanes with 14-foot clear zones) to nearly 80 feet. For spans less than 60 feet, Type II AASHTO prestress girders are recommended. For spans greater than 60 feet, Type III AASHTO prestressed girders are recommended. The prestressed girders were selected based on their proven economy for short span



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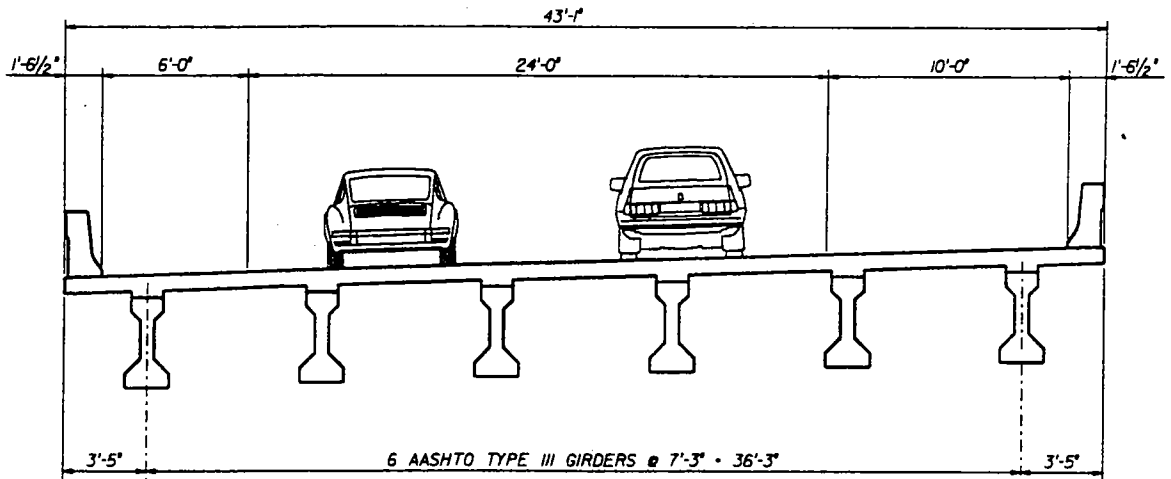
**PROPOSED TYPICAL SECTION  
-GRADE SEPARATION  
-STEEL PLATE GIRDER**

EXHIBIT 5-E

structures. The structural depth for these short bridges is approximately 4.75 feet, excluding the roadway cross slope. Exhibit 5-F illustrates the typical section for the Type III AASHTO prestressed girders.

For the Roosevelt Boulevard/Ulmerton Road interchange, a third level overpass structure is required on Roosevelt Boulevard. A three span steel box girder structure is proposed. The span configuration is 280 feet - 365 feet - 280 feet. The estimated structure depth is 10.75 feet. The second level bridge carries Ulmerton Road over the at-grade turning movements. As with the typical urban interchange, a three-span steel box girder is proposed. With a 240-foot, 300-foot, 240-foot span arrangement, the structural depth is estimated at 9.5 feet. The third major structural component of the interchange is the second and third level fly-over ramp for the northbound to westbound movement. Alternative superstructure concepts were developed. The alternative superstructure concepts include curved steel plate girders, curved steel box girders and concrete precast segmental box girders. For analysis purposes, the concrete segmental box alternative was assumed. When the design phase of the project is initiated, a bridge development report will need to be completed to evaluate the economies of the alternative concepts.

The use of retaining walls, particularly proprietary type wall systems, has proven to be a cost effective means of reducing bridge and right-of-way costs for recent projects in Florida. The walls are used as full height abutment walls in conjunction with stub end bents as a means of eliminating bridge end spans, thereby reducing bridge costs. Walls are also employed in certain locations as fill slope cut-off walls, to permit shortening of the bridge while maintaining necessary horizontal clear recovery zones. Retaining walls are also extensively employed at urban interchanges to permit ramps to closely parallel the expressway lanes and reduce the right-of-way requirements.



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**-GRADE SEPARATION**  
**-PRESTRESSED GIRDERS**

EXHIBIT 5-F

The construction costs related to the structures were developed and include the cost of new bridge construction as well as any necessary special approach structures, including retaining walls. The cost estimates listed in the tables were based on the following unit prices:

AASHTO PSC Beams	\$40/sf
Steel Box Girder (Urban Interchange)	\$60/sf
Long Span Steel Box Girders Roosevelt Boulevard at Ulmerton Road	\$70/sf
Curved Ramp Structures	
Segmental Concrete Box	65/sf
Curved Steel Box	65/sf

#### 5.4 Comparative Evaluation of Alternatives

A comparative evaluation of alternatives was conducted to assess the advantages and limitations, their relative merits and feasibility. The evaluation involved the engineering elements and included traffic operations, relocation impacts, and estimated costs. The environmental evaluations are discussed in a separate environmental document.

Intersection and roadway capacity analyses were conducted using the procedures outlined in the 1985 Highway Capacity Manual for the critical roadway segments and intersections. The analyses documented in Section 2.3 indicate that only Alternative 3D is projected to provided an acceptable level of service at each of the critical intersections, ramp junctions, and weaving areas. Therefore, from a traffic operations perspective, Alternative 3D is preferred over all other options.

The total construction costs for the alternatives range from a low of \$142,336,200 for Alternative 2A to a high of \$166,708,700 for Alternative 3D, with Alternative 2B at

\$139,291,800 and Alternative 3C at \$162,515,900. These costs do not include the costs for relocating the utilities. The utilities are all located within the existing right-of-way and relocation costs would be borne by the utility companies. All alternatives would require major relocations and would not be a significant factor in selecting the preferred alignment. Utility relocation costs for the preferred alignment are included in Section 5.7. Alternatives 3C and 3D are more expensive due to the longer expressway on the Roosevelt Boulevard alignment and the six-laning of 49th Street. With the right-of-way costs added, however, the total costs range from a low of \$185,258,200 for Alternative 2A to a high of \$216,737,800 for Alternative 2B. Alternative 3C is estimated at \$189,490,700 and Alternative 3D is estimated at \$198,490,700. From a cost perspective, Alternative 2A is the least expensive, however, Alternative 3D is only \$13,232,500 or approximately 7 percent higher. This is within the limits considered as not significantly different, whereas Alternative 2B is \$31,479,600 or nearly 17 percent higher than Alternative 2A. Thus, Alternatives 2A, 3C and 3D are preferred over Alternative 2B.

The comparison of right-of-way impacts included the number of relocations as well as the right-of-way costs. Alternatives 3C and 3D require only 12 relocations each, substantially lower than the 28 relocations associated with Alternative 2A and the 35 relocations associated with Alternative 2B. In addition, the right-of-way is more costly on the 49th Street expressway options (Alternatives 2A and 2B). Thus, based on right-of-way costs and relocations, both Alternatives 3C and 3D are preferred to Alternatives 2A and 2B.

Based on the traffic operations, right-of-way impacts and relocations, Alternative 3D is the preferred alternative. This is consistent with the majority of the comments

received from the Alternatives Public Meeting. The comments received favored the Roosevelt Boulevard alignment over the 49th Street alignment.

The last comparison conducted involved the three alignments adjacent to the St. Petersburg-Clearwater International Airport. The three items compared included impact on the involvement of the St. Petersburg-Clearwater International Airport, the roadway design criteria and the right-of-way costs and associated relocations. The following summarizes each of these key items.

The centered alignment requires the maximum amount of right-of-way acquisition from the St. Petersburg-Clearwater International Airport. The most significant impacts are associated with relocating the hangers at the northwest side of the landside complex and realigning the internal security roadway. The southern shift virtually eliminates right-of-way acquisition from the airport property. This alternative will, however, require major modifications to the S.R. 686/49th Street interchange which is currently designed. The modified southern alignment was developed to maintain the location of the S.R. 686/49th Street interchange and minimize the acquisition of right-of-way from the airport.

To maintain the existing roadway alignment under the Centered Alignment alternative, the design speed for the curve at the existing Terminal Parkway is approximately 50 mph. The southern shift and modified southern shift relocate this curve to the west and provide a design speed of approximately 60 mph. Thus, from a design criteria stand point, the southern and modified southern shift alignments provide for more desirable design and operating speeds.



With the higher design speeds, more right-of-way is required. The right-of-way cost estimates indicate the southern shift and modified southern alignments are \$3,926,000 and \$2,760,000 higher than the centered alignment, respectively. This represents an increase of 32 to 46 percent over the centered alignment right-of-way costs in this area. It should be noted, however, that these alignments represent increases in the total project costs of approximately 1.4 to nearly 2.0 percent. The relocations for each of the alignments, based on data provided by the department, are the same.

Overall, Alternative 3D will best serve the demand in this area of Pinellas County and has been determined to be the preferred alternative.

#### **5.401 Refinements to the Preferred Alternative**

A Public Hearing for the project was held on May 21, 1991 to receive input on the preferred alternative. Two areas of specific concern were raised at the Public Hearing. One was the tight diamond interchange proposed at the intersection of Roosevelt Boulevard and 9th Street North and the associated impacts on the access to Village Lake Condominiums. The second area concerned the alignment adjacent to the St. Petersburg Clearwater International Airport and the impacts on access to the airport and future airport development. The following addresses each of these.

**Roosevelt Boulevard and 9th Street North** - Four alternatives were developed to evaluate the potential to provide full access to the Village Lake Condominium complex to/from Roosevelt Boulevard. The traffic projections indicated the need to implement a grade separated interchange at Roosevelt and 9th Street North to provide Level of Service D operations in the design year. The implementation of the interchange required closing the existing median opening for the complex. The alternatives evaluated are as follows:

Alternative A - Provide a grade separated interchange at 9th Street North and Roosevelt Boulevard, closing the median opening serving Village Lakes Condominium (alternative shown at the Public Hearing).

Alternative A1 - Provide a grade separated interchange at 9th Street North and Roosevelt Boulevard, closing the median opening serving Village Lakes Condominium and extend 106th Avenue from 4th Street North to serve the condominium complex. The extension of 110th Avenue is also a potential access route for the complex.

Alternative B - Provide a grade separated interchange at 9th Street North and Roosevelt Boulevard, extending the structure to provide access from Village Lake Condominium to/from both directions on Roosevelt Boulevard.

Alternative C - Provide a grade separated interchange at 9th Street North and Roosevelt Boulevard, extending the structure to provide access from Village Lake Condominium to/from both directions on Roosevelt Boulevard and providing one-way frontage roads from north of 9th Street North to Gandy Boulevard.

Alternative D - Provide the maximum reasonable at-grade improvements at the intersection of 9th Street North and Roosevelt Boulevard, maintaining the existing median opening serving Village Lake Condominium.

The alternatives were evaluated relative to the level of service to be provided in the design year, the ability to provide direct access to Village Lake Condominium complex to/from Roosevelt Boulevard and the interface with other proposed improvements in the area, particularly the Gandy Boulevard PD&E Study currently being conducted for the Department. The following summarizes the evaluation of each of the alternatives.

**Alternative A** - This alternative provides Level of Service D during both peak hours with the grade separated interchange. The at-grade portion of the interchange is projected to operate at Level of Service B with a v/c ratio of 0.96 and an average delay of 13.1 seconds per vehicle in the a.m. peak hour. The p.m. peak hour in the design year is projected to operate at Level of Service B with a v/c ratio of 0.79 and an average delay of 13.4 seconds per vehicle. The interchange requires closing the existing median opening serving Village Lake Condominium. Access to the condominium complex would be via right-turns in and out on Roosevelt Boulevard.

Traffic accessing the complex from the north of Roosevelt Boulevard or from 9th Street would be required to make a U-turn movement at the median opening for Maria Manor.

This alternative provides free-flow movement for the through movements on Roosevelt Boulevard. The southbound Roosevelt to southbound 9th Street North and return movements are required to turn through a signalized intersection. This may result in constraining the opportunities for improvements on Gandy Boulevard from east of 4th Street North to west of 9th Street North, particularly for the 9th Street North movements.

**Alternative A1** - This alternative provides the same traffic operations in the design year, the same access to/from Roosevelt Boulevard and the same impacts on improvements to Gandy Boulevard as Alternative A. One additional aspect of this alternative is that additional access is provided in the condominium complex from 4th Street North via the extension of 106th Avenue and/or the extension of 110th Avenue. While this will not specifically respond to the homeowners request for full access to/from Roosevelt Boulevard, the access to/from the complex is enhanced.

**Alternative B** - This alternative provides the same traffic operations in the design year as Alternatives A and A1. The significant difference in the alternative is the provision of an overpass at the existing median opening on Roosevelt Boulevard to provide full access to the condominium complex from Roosevelt Boulevard. The provision of this access results in a distance of approximately 600 feet between the ramp gores and the existing median opening serving Maria Manor. A copy of the profile illustrating the end of the vertical curve from the overpasses is attached. Thus, the median opening would need to be closed and access to the nursing home

would be provided only from 4th Street North. In addition, the extension of the bridge structure would increase the cost to provide the additional structure.

This alternative would result in the same impacts to improvements on Gandy Boulevard as Alternatives A and A1.

**Alternative C** - This alternative provides the same traffic operations at the interchange of 9th Street North and Roosevelt Boulevard as Alternatives A, A1 and B. Access to both the Village Lake Condominium and Maria Manor complexes would be provided via the one-way frontage road system. This alternative would require one additional bridge to provide access to Maria Manor, adding to the cost of the project.

This alternative would have the most impact on potential improvements on Gandy Boulevard from west of 9th Street North to east of 4th Street North. With the implementation of the frontage road system, both the mainline and the frontage roads would need to be tied into the interchange improvement on Gandy Boulevard. The addition of the frontage road connections may result in complicating the interchange design and operations. In addition, this alternative would favor the through movement on Roosevelt Boulevard.

**Alternative D** - This alternative maintains the existing median opening serving Village Lake Condominiums by providing the maximum reasonable at-grade improvements at the intersection of 9th Street North and Roosevelt Boulevard. The intersection is projected to operate at Level of Service E with a v/c ratio of 1.10 and an average delay of 47.8 seconds per vehicle in the a.m. peak hour of the design year. In the p.m. peak hour of the design year, the intersection is projected to operate at Level of

Service E with a v/c ratio of 1.07 and an average delay of 41.4 seconds per vehicle. These levels of service are less than desirable and six movements are projected to operate at unacceptable levels of service during both the a.m. and p.m. peak hours. Copies of the intersection capacity analyses are attached.

Assuming traffic in the area grows at a rate of approximately two percent per year, the at-grade intersection would operate at acceptable levels of service through the year 2006. In 2006, the intersection is projected to operate at Level of Service D with a v/c ratio of 1.00 and an average delay per vehicle of 33.0 seconds in the a.m. peak hour. In the p.m. peak hour, the intersection is projected to operate at Level of Service D with a v/c ratio of 0.99 and an average delay of 30.0 seconds per vehicle. Copies of these analyses are attached.

This alternative will permit a variety of alternatives to be implemented on Gandy Boulevard from 4th Street North through 9th Street North as no specific movements through the Roosevelt Boulevard intersection are given priority or are free flow. Concept design alternatives have been prepared for this alternative and are enclosed for review.

**Conclusions** - Based on the evaluations documented above, Alternative D is recommended for implementation. This alternative is projected to provide an acceptable level of service through the year 2006. In addition, the maximum feasible at-grade improvement will maintain the existing access to the Village Lake Condominium complex. Due to the orientation and location of 4th Street North, Roosevelt Boulevard and 9th Street North intersecting with Gandy Boulevard, this improvement provides the maximum amount of flexibility in developing and

evaluating improvements in the corridor. The Gandy Boulevard PD&E study currently being conducted for the Department include the intersection of 9th Street North and Roosevelt Boulevard, particularly as it relates to priority movements and potential improvements.

St. Petersburg-Clearwater International Airport - The concerns related to the alignment adjacent to the St. Petersburg-Clearwater International Airport involved the right-of-way acquisition from the airport and the impact on potential future expansion at the airport. An additional concern involved access to the airport including the potential for direct access ramps to/from the S.R. 686 express lanes and the location of the airport access drives.

The preferred alternative required relocation of existing T-hangars at the airport and an area indicated for potential future commercial development in the airport's master plan. To minimize the impacts to potential future development, the slip ramps between the expressway lanes and frontage roads were relocated to the northwest and the existing curve at Terminal Parkway was flattened slightly. While this alignment requires slightly more right-of-way from the southwest side of S.R. 686, it eliminates the relocation of the airport T-hangars.

The ability to provide direct access ramps to/from the airport and the expressway lanes was also evaluated. The preferred alternative shown at the Public Hearing required all traffic accessing the airport to exit the S.R. 686 expressway at 49th Street (from the north or west), S.R. 688 (from the east or west on S.R. 688), or C.R. 296 (from the west on C.R. 296). Due to the spacing between the two major freeway to freeway interchanges (49th Street and S.R. 688) it is not practical to provide an

interchange for full access to/from the airport. In addition, a single interchange is not consistent with the one-way circulation plan proposed for the terminal area. Therefore, the provision of ramps for individual movements were evaluated.

A slip ramp was added from the southbound 49th Street to eastbound S.R. 686 flyover ramp to connect directly to the frontage roads. This eliminates the need for traffic accessing the airport from the north on 49th Street. An additional ramp from northbound S.R. 686 (south of S.R. 688) expressway lanes to the frontage road was added. This ramp is braided over the northbound frontage road and provides direct access to the airport from C.R. 296. To provide direct access ramps from eastbound and westbound S.R. 688 will require a significant amount of right-of-way and an additional level in the interchange of S.R. 686 and S.R. 688. Due to the significant cost increases and the magnitude of the current design year traffic projections, these ramp connections were determined to be infeasible and not cost effective.

The revised concepts were reviewed with representatives of Pinellas County and the St. Petersburg Clearwater Airport. The revised concept resolved the outstanding issues and was approved by both county and airport staff. The revisions to the concepts result in a decrease of \$417,000 for right-of-way and an increase of \$34,000 for construction. The total estimated cost for the refined alternative is as follows:

Construction	\$166,742,700
Right-of-Way	<u>31,365,000</u>
TOTAL	\$198,107,700

## 5.5 Construction Segments

Due to limitations on available funding and current project commitments, neither the design nor construction for the project is included in the current work program. For programming purposes, however, tentative construction segments have been identified in priority order. The segments were developed in conjunction with other improvement projects the Department and County are pursuing. The County has indicated that the 49th Street Bridge, the six-laning of 49th Street and the first stage of the 118th Avenue project (a six-lane arterial from U.S. 19 to 28th Street) will all be open to traffic by 1993. In addition, the County is pursuing the construction of the 118th Avenue extension to I-275, including the interchange modifications to S.R. 686 and I-275, to be completed in 1993.

Given these implementation plans and schedules identified by Pinellas County, the following construction segments have been identified in priority order:

- \* 49th Street and Ulmerton Road urban interchange and approaches,
- \* Roosevelt Boulevard from 49th Street to 118th Avenue, including initial phases of Roosevelt Boulevard and Ulmerton Road interchange,
- \* Ulmerton Road from 49th Street to Roosevelt Boulevard east interchange,
- \* Roosevelt Boulevard from Ulmerton Road east interchange to Gandy Boulevard.

These segments have been identified to balance the traffic flow in the existing corridors until the system can be completed. If the implementation plan and schedule identified by Pinellas County changes substantially, the priority order of these construction segments should be reevaluated.



## 5.6 Maintenance of Traffic

Two distinct maintenance of traffic scenarios will be implemented during the construction of S.R. 686. One scheme will correspond to the six-lane arterial improvements proposed for the segment from the Ulmerton Road east interchange to U.S. 92. The second deals with the expressway/frontage road improvements on S.R. 686 from 49th Street to 118th Avenue and on Ulmerton Road from 49th Street to the S.R. 686 east interchange.

For the arterial section, the maintenance of traffic scheme will be a function of the final vertical profile, including cross slopes for drainage. With the widening being proposed in the median, and the rural cross section being maintained, it is likely the minimum modifications to the existing profile will be required. With the minimum changes, the lane additions will be implemented with traffic travelling on the existing pavement and a minimum of lane closures. If required, lane closures could be limited to off-peak and night-time hours.

The construction of the expressway/frontage road system will be staged in two phases for maintenance of traffic. During the first phase, traffic would remain on the existing roadway while the frontage roads are constructed. After completion of the frontage roads, traffic would be diverted from the existing facility. During the second phase of construction, the expressway mainline lanes, ramps and bridges would be constructed with traffic travelling on the service roads.

The maintenance of traffic plan will be developed in detail during the final design phase of the project and will comply with all Department requirements. Where feasible, lane closures will be kept to minimum and restricted to off-peak hours if necessary.

## 5.7 Impacts to Existing Utilities

As discussed in Section 3.10, a number of existing utilities will be impacted by the project. All utility relocations required by the improvements to S.R. 686 are within the existing right-of-way and are the responsibility of the utility companies. The costs for the utility relocations were provided by the utility companies involved and are listed in Table 5.3. The major relocation impacts are in the expressway sections where electric, telephone, water, sewer and cable television will need to be relocated. There are minimal utility relocations involved in the section of Roosevelt Boulevard from the Ulmerton Road east interchange to Gandy Boulevard. Due to the magnitude of the roadway improvements proposed for the expressway facilities on both Roosevelt Boulevard and Ulmerton Road, there is minimal difference between the alternatives associated with the utility relocations.

TABLE 5.3

UTILITY RELOCATION COST ESTIMATES - ALTERNATIVE 3D  
 S.R. 686 (East Bay Drive/Roosevelt Boulevard)  
 Segments 2B & 3

<u>Utility Company</u>	<u>Estimated Cost<sup>1</sup></u>
GTE of Florida	\$ 4,800,000
MCI Telecommunications Corporation	N/A <sup>2</sup>
Florida Power Corporation	\$ 2,374,600
Vision Cable	\$ 201,650
Paragon Cable	\$ 250,000
People's Gas Systems, Inc.	\$ 500,000
Pinellas County Water	N/A <sup>2</sup>
Pinellas Park Water	\$ 280,000
City of St. Petersburg Water	\$ 1,063,000
City of Largo Sanitary Sewer	\$ 446,500
City of Pinellas Park Sanitary Sewer	0
City of St. Petersburg Sanitary Sewer	0
<b>TOTAL</b>	<b>\$ 9,915,750</b>

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<sup>1</sup> Estimated costs provided by the utility companies.

<sup>2</sup> Estimated costs requested but not provided. Will need to be determined during the design phase of the project.