STATE ROAD 699
BLIND PASS ROAD/GULF BOULEVARD
PROJECT DEVELOPMENT
AND
ENVIRONMENTAL STUDIES
PINELLAS COUNTY,FLORIDA
STATE PROJECT NO. 15100-1546

PRELIMINARY ENGINEERING REPORT

74TH AVENUE TO 105TH AVENUE

Submitted To
THE FLORIDA DEPARTMENT OF TRANSPORTATION

Submitted by
GREINER,INC.
Tampa,Florida

REVISED
Date

AUGUST 1989

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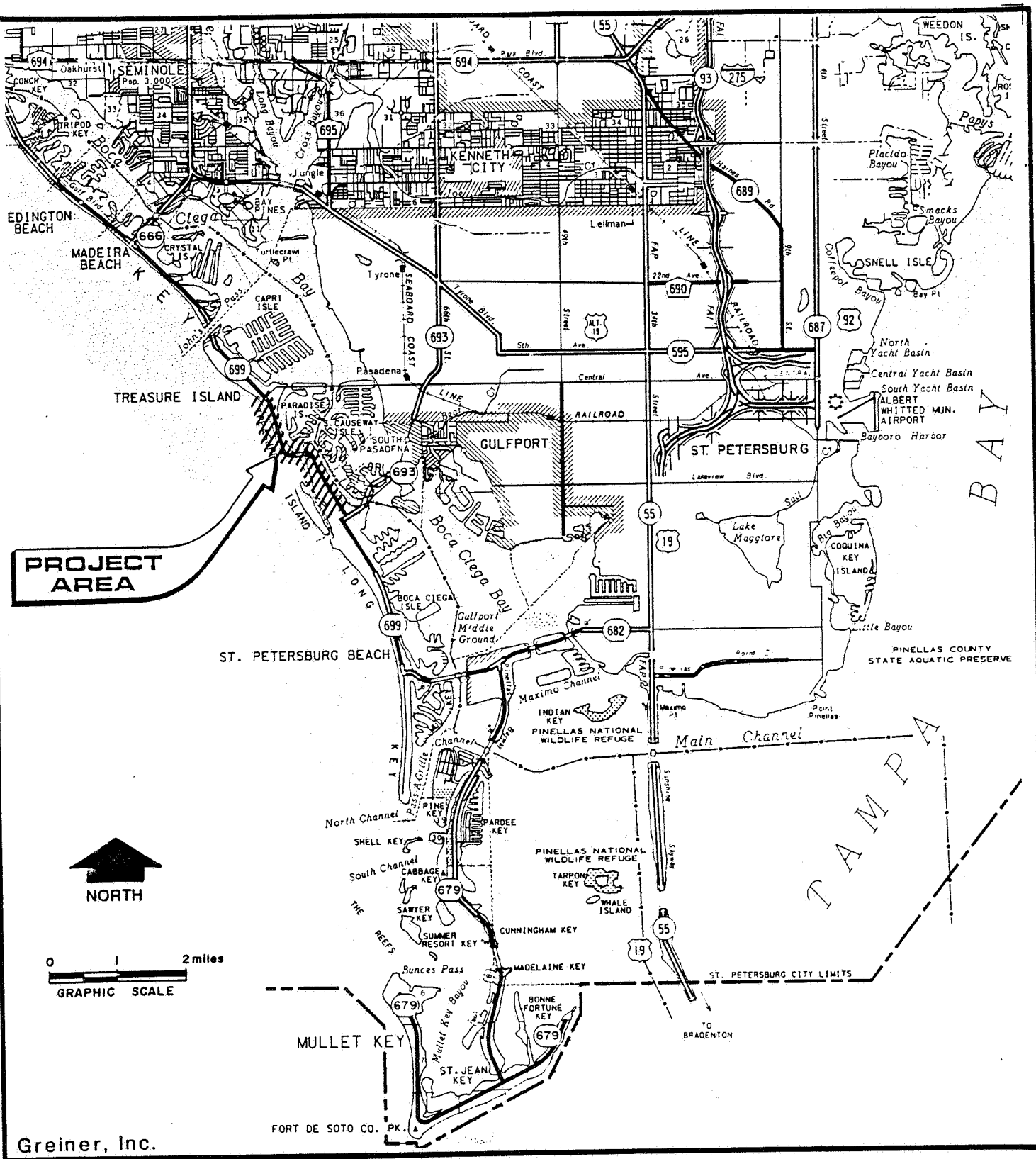
1.0 ABSTRACT

1.1 Background of Project

The Florida Department of Transportation (FDOT) has identified the need to study the possibilities of providing roadway improvements along a 2.3-mile section of S.R. 699 (Blind Pass Road/Gulf Boulevard) between 75th Avenue and 105th Avenue. The location of this project is graphically shown on Exhibit 1-A. Greiner, Inc. has been selected by FDOT to provide services in the areas of project planning, conceptual engineering, and environmental studies (PD&E Study) in order to identify necessary improvements. This study includes alternatives analysis to replace the existing Blind Pass Bridge with an improved facility.

The original limits of this study were extended due to locating appropriate connecting points to other facilities and due to a supplemental work to the original study which necessitated alternative concepts that extended beyond the original project limits. For the purposes of this study, the project has been divided into three segment areas. Segment A begins at the south end of the project at 74th Avenue, extends north to 93rd Avenue, and includes the north-south segments of S.R. 699, Gulf Boulevard and Boca Ciega Drive. Segment A also includes the east-west roadways of 74th and 75th Avenues from Gulf Boulevard to the St. Petersburg Beach Causeway. Segment B runs from 93rd Avenue and 2nd Street/Harrell Avenue and includes the Blind Pass Bridge. Segment C includes the area north of 2nd Street to 106th Avenue. The location of these segment study areas is shown on Exhibit 1-B.

This report outlines the preliminary engineering tasks for the entire project. Environmental documentation for this project will be provided in separate reports.



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FLORIDA DEPARTMENT OF TRANSPORTATION

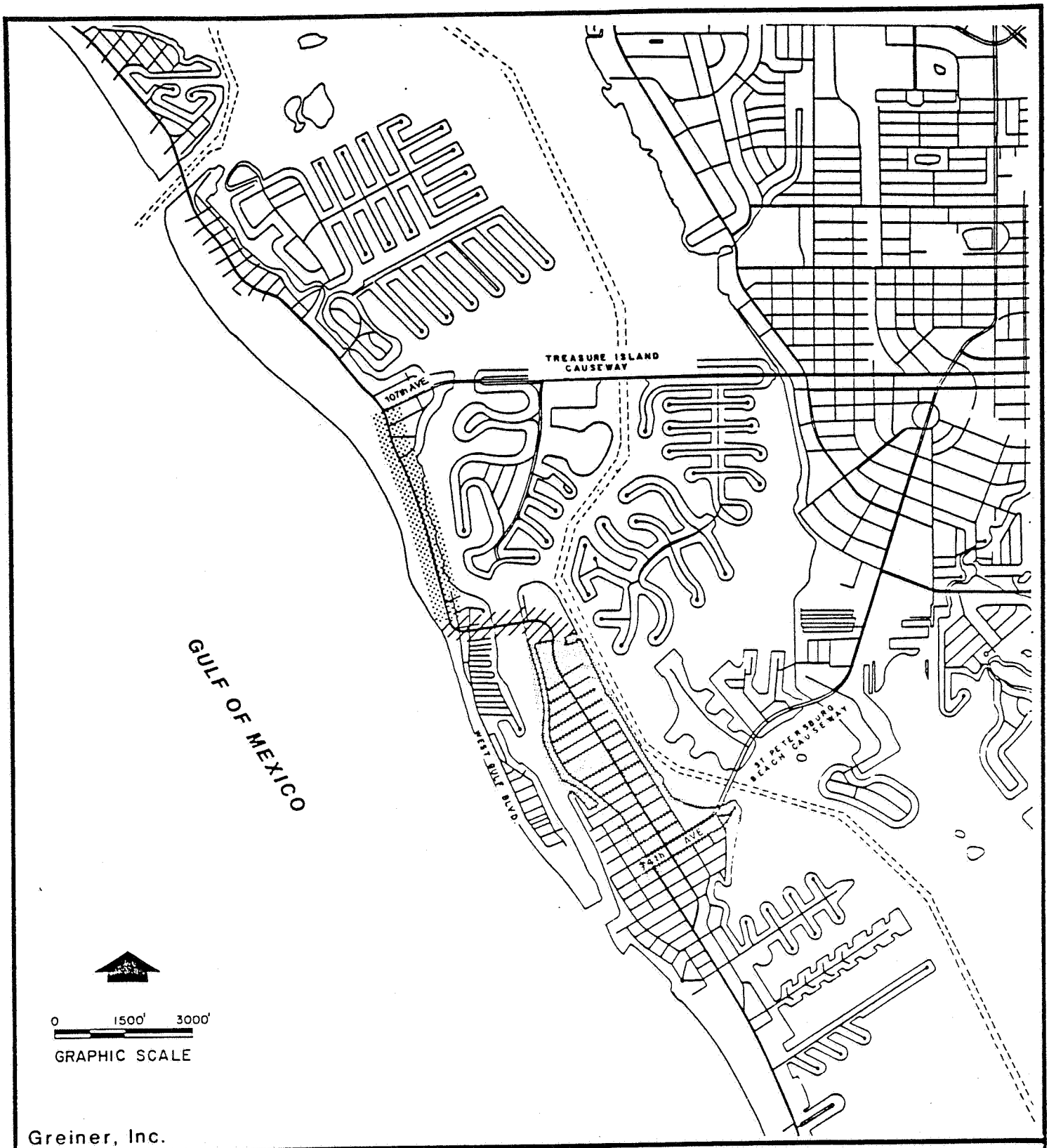
PRELIMINARY ENGINEERING REPORT

S.R. 699 (GULF BLVD./BLIND PASS ROAD)

Pinellas County, Florida

LOCATION MAP

EXHIBIT 1-A



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LEGEND

- Segment A
- Segment B
- Segment C

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PRELIMINARY ENGINEERING REPORT

S.R. 699 (GULF BLVD./BLIND PASS ROAD)

Pinellas County, Florida

PROJECT SEGMENT LIMITS

EXHIBIT 1-B

This document addresses the issues and the need for improvements, future traffic demand, existing physical features, corridor alternatives and conceptual design alternatives.

1.2 Description of the Proposed Action

Proposed improvements to S.R. 699 will include widening this facility to five lanes (two through lanes northbound and southbound and a center left-turn lane) from 75th Avenue to 105th Avenue and a new four-lane bridge for the Blind Pass crossing. Alternatives to these improvements may include providing one-way pair, north/south and east/west facilities in Segment A. The existing Blind Pass Road is a two-lane facility from 75th Avenue north/south and east/west to the signalized intersection at Gulf Boulevard/1st Street including a two-lane bridge crossing over Blind Pass. Between the West Gulf Boulevard intersection and 105th Avenue, the segment known as Gulf Boulevard is a four-lane undivided facility. The Blind Pass Road (St. Petersburg Beach) portion of this project currently contains sidewalks on both sides of the street, while the Gulf Boulevard (Treasure Island) side does not provide a defined area for sidewalks. Although no curb and gutter sections are present along the corridor, a closed drainage system exists.

The new facility will provide pedestrians with 6-foot sidewalks on both sides of the roadway. The bridge section will provide pedestrians with a 5-foot walkway on both sides of the structure. Bicycle traffic will be accommodated with an extra wide 14-foot outside curb lane on the at-grade roadway segments and a 10-foot outside shoulder across Blind Pass Bridge on both sides of the roadway.

2.0 NEED

This section addresses the need to improve S.R. 699. Improvements to the corridor are based upon the planning basis for proposed action and the projected transportation demand which dictates changes in the corridor's available capacity.

2.1 Planning Basis for the Proposed Action

S.R. 699 is the primary north-south roadway serving the south and central beaches of Pinellas County. This major route extends from S.R. 60 at Clearwater Beach south through St. Petersburg Beach to S.R. 682 (Pinellas Bayway). The 2010 Long Range Plan for Pinellas County identifies S.R. 699 as a four-lane divided facility throughout the limits of the project.

Immediate need for improvements is focused on the Blind Pass Bridge crossing. According to a March 4, 1987 report, Structure Inventory and Appraisal (SIA), prepared by FDOT, the existing structure is described as being in "poor condition - repair or rehabilitation required immediately." This structure, constructed in 1927 and rehabilitated in 1969, is estimated to have only 7 years of remaining life. The SIA report is included in the Preliminary Structural Engineering Report prepared by Greiner, Inc.

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 Metropolitan Planning Organization (MPO) conforms to this mandated process.

As indicated, the proposed improvements to S.R. 699 are consistent with the current 2010 Long-Range Transportation Plan for Pinellas County. In addition, the MPO, its Technical Review and Citizens Advisory Committees, the St. Petersburg Beach and Treasure Island City Commissions, and the engineering and planning staffs of the cities of St. Petersburg Beach and Treasure Island and Pinellas County have been involved in the development and evaluation of alternatives for the proposed action. Correspondence documenting the coordination is included in Appendix 6.1.

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. In general, the capacity of a facility is defined as the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given period of time under prevailing roadway, traffic, and control conditions.

Performance of roadways may be measured in two ways. One is the level of service at which the facility functions; the other is the percent of capacity at a given level of service. Level of Service is defined as a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or

passengers. A level of service definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.

Six levels of service are defined for each type of facility for which analysis procedures are available. They are given letter designations, from A to F, with level of service A representing the best operating conditions and level of service F the worst.

1. Level of Service definitions - In general, the various levels of service are defined as follows for uninterrupted flow facilities:

   * Level of Service A represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.

   * Level of Service B is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual behavior.

* Level of Service C is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is now affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines notieably at this level.

* Level of Service D represents high-density, but stable, flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.

* Level of Service E represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high. Operations at this level are usually unstable, because small increases in flow or minor perturbations within the traffic stream will cause breakdowns.

* Level of Service F is used to define forced or breakdown flow. this condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Operations

within the queue are characterized by stop-and-go waves, and they are extremely unstable. Vehicles may progress at reasonable speeds for several hundred feet or more, then be required to stop in a cyclic fashion. Level of Service F is used to describe the operating conditions within the queue, as well as the point of the breakdown. It should be noted, however, that in many cases operating conditions of vehicles or pedestrians discharged from the queue may be quite good. Nevertheless, it is the point at which arrival flow exceeds discharge flow which causes the queue to from, and level of service F is an appropriate designation for such points.

An acceptable level of service for the roadway must be established in order to provide a basis for the analysis of current and future traffic conditions. Based on past experience of similar studies a minimum standard of level of service C on an average annual basis and level of service D during the peak hours have been established.

Another measure used to describe roadway performance is the percent of level of service E capacity at which the facility operates under the stated traffic conditions. These measures are expressed as a ratio between the volume and the capacity, called the V/C ratio. This ratio or percentage is used to identify the actual level of service at which the roadway is operating. For example: level of service "C"= .71 to .80; level of service "D"= .81 to .90.

It should be noted that in urban areas in general, the greatest congestion along a corridor occurs at the intersections, rather than the sections of roadway between intersections. This is because conflicting movements occur with much greater

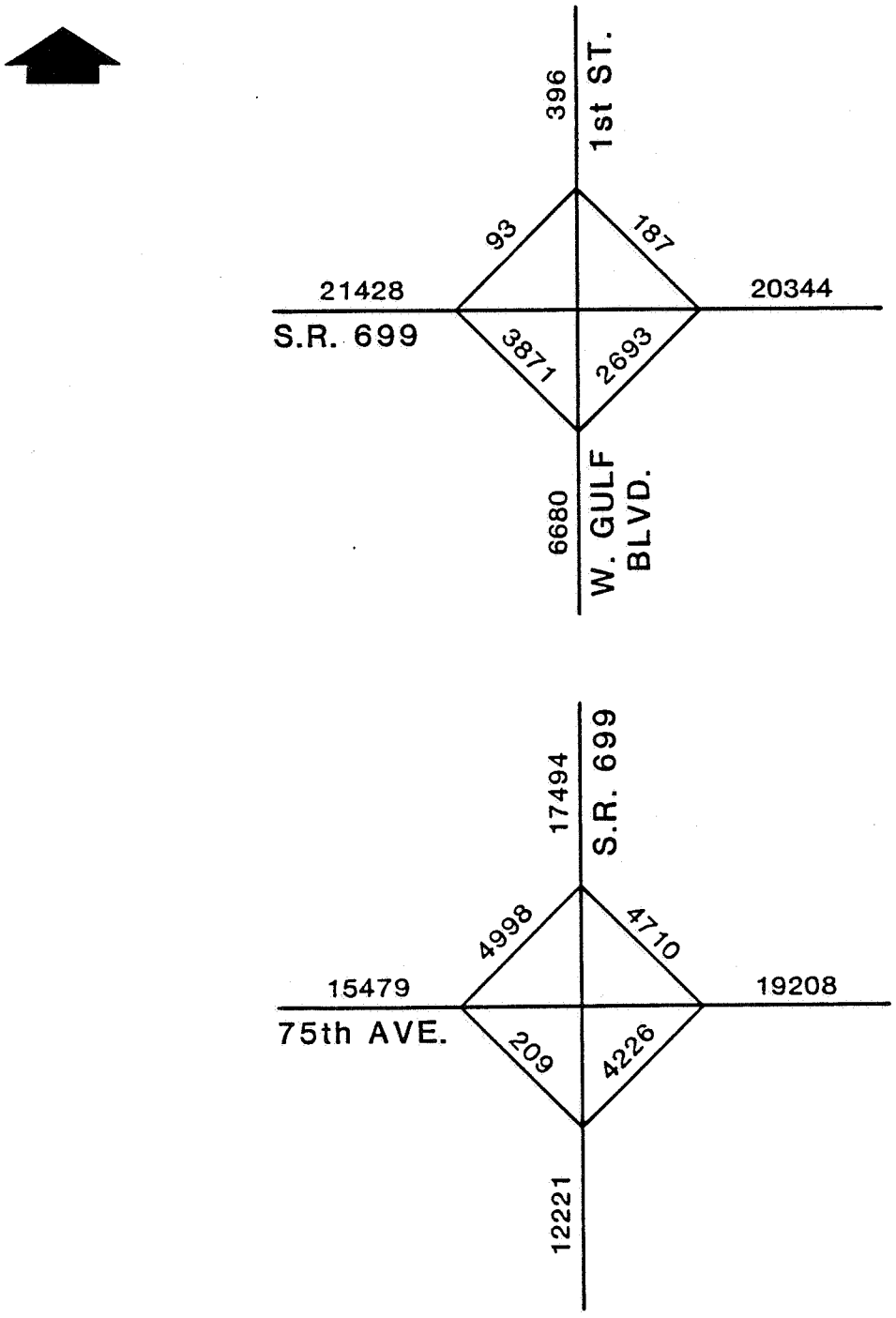
frequency and with much more serious delay at intersections then on uninterrupted sections of roadway, where traffic flow is typically much smoother. Optimum intersection operation depends significantly on existing geometrics and optimal signal timing. Thus, once corridor improvements are in place, efficient operation requires carefull design.

An evaluation of existing and projected conditions in the corridor has been conducted. The Traffic Memorandum, published separately, documents these evaluations. The following briefly summarizes the existing and projected conditions.

Traffic count data were collected by Greiner, Inc. along S.R. 699 for both daily and peak periods. Traffic data collection included seven-day counts at control stations, 24-hour approach counts, and peak period turning movement counts. Exhibit 2-A illustrates the daily directional volumes collected by Greiner. Exhibit 2-B illustrates both the A.M. and P.M. peak hour turning movements at the major intersections.

Capacity evaluations were conducted at the critical intersections to assess current operating conditions. The evaluations were conducted using the procedures outlined in the Highway Capacity Manual (HCM), Special Report 209, Transportation Research Board, 1985. The results of the existing A.M. and P.M. peak hour capacity evaluations are listed in Table 2.1. The summaries of the HCM intersection analyses are contained in Appendix 6.3. As shown in the table, both intersections currently provide acceptable levels of service. The existing arterial analysis is contained in Table 2.2.

The system's traffic projections provided by FDOT reflect annual average traffic counts. Greiner's traffic counts were conducted during the highest peak time of



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FLORIDA DEPARTMENT OF TRANSPORTATION

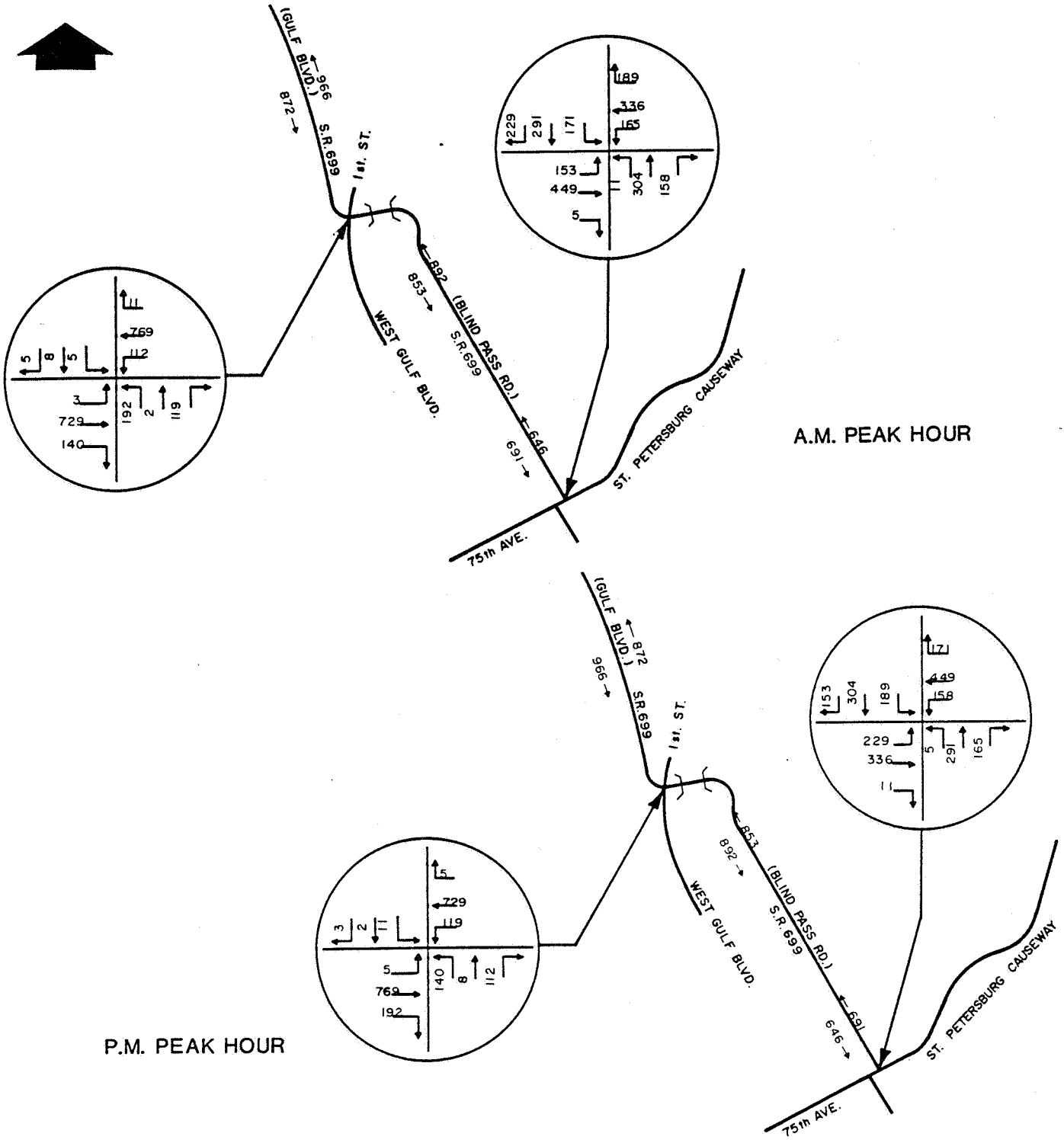
PRELIMINARY ENGINEERING REPORT

S.R. 699 (GULF BLVD./BLIND PASS ROAD)

Pinellas County, Florida

EXISTING 1988 AVERAGE DAILY TRAFFIC AVERAGE PEAK SEASON

EXHIBIT 2-A



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PRELIMINARY ENGINEERING REPORT

S.R. 699 (GULF BLVD./BLIND PASS ROAD)

Pinellas County, Florida

1988 PEAK HOUR TRAFFIC VOLUMES

EXHIBIT 2-B

TABLE 2.1

EXISTING INTERSECTION LEVELS OF SERVICE
S.R. 699 (Gulf Boulevard/Blind Pass Road)

Intersection	A.M. Peak Hour V/C	A.M. Peak Hour Average Delay	A.M. Peak Hour LOS	P.M. Peak Hour V/C	P.M. Peak Hour Average Delay	P.M. Peak Hour LOS
S.R. 699 at 75th Ave	1.01	31.0	D	0.98	28.8	D
S.R. 699 at W. Gulf Blvd/ 1st Street	1.05	35.0	D	0.90	11.1	B

TABLE 2.2

EXISTING (1988)
ARTERIAL LEVELS OF SERVICE - AVERAGE PEAK SEASON
S.R. 699 (Gulf Boulevard/Blind Pass Road)

Roadway	Link	Existing Laneage	Existing Volume	Existing LOS "E" Capacity*	V/C	LOS	Proposed Laneage	LOS "E" Proposed Capacity*	Proposed V/C	Proposed LOS
S.R. 699	75th Ave to 93rd Ave	2L(U)	16,444	17,450	0.94	E	4L(D)	40,000	0.41	B
S.R. 699	93rd Ave to W. Gulf Blvd	4L(U)	20,344	30,225	0.67	C	4L(D)	40,000	0.51	B
S.R. 699	W. Gulf Blvd to 105th Ave	4L(U)	22,947	30,225	0.76	D	4L(D)	40,000	0.57	C

The following V/C ratios are used to determine Level of Service.

V/C	Level of Service
.60 -	A
.61 - .70	B
.71 - .80	C
.81 - .90	D
.91 - 1.00	E
1.01+	F

*Based on FDOT's Generalized Highway Capacity Table (9 percent peak-hour factor).

(U) undivided facility.

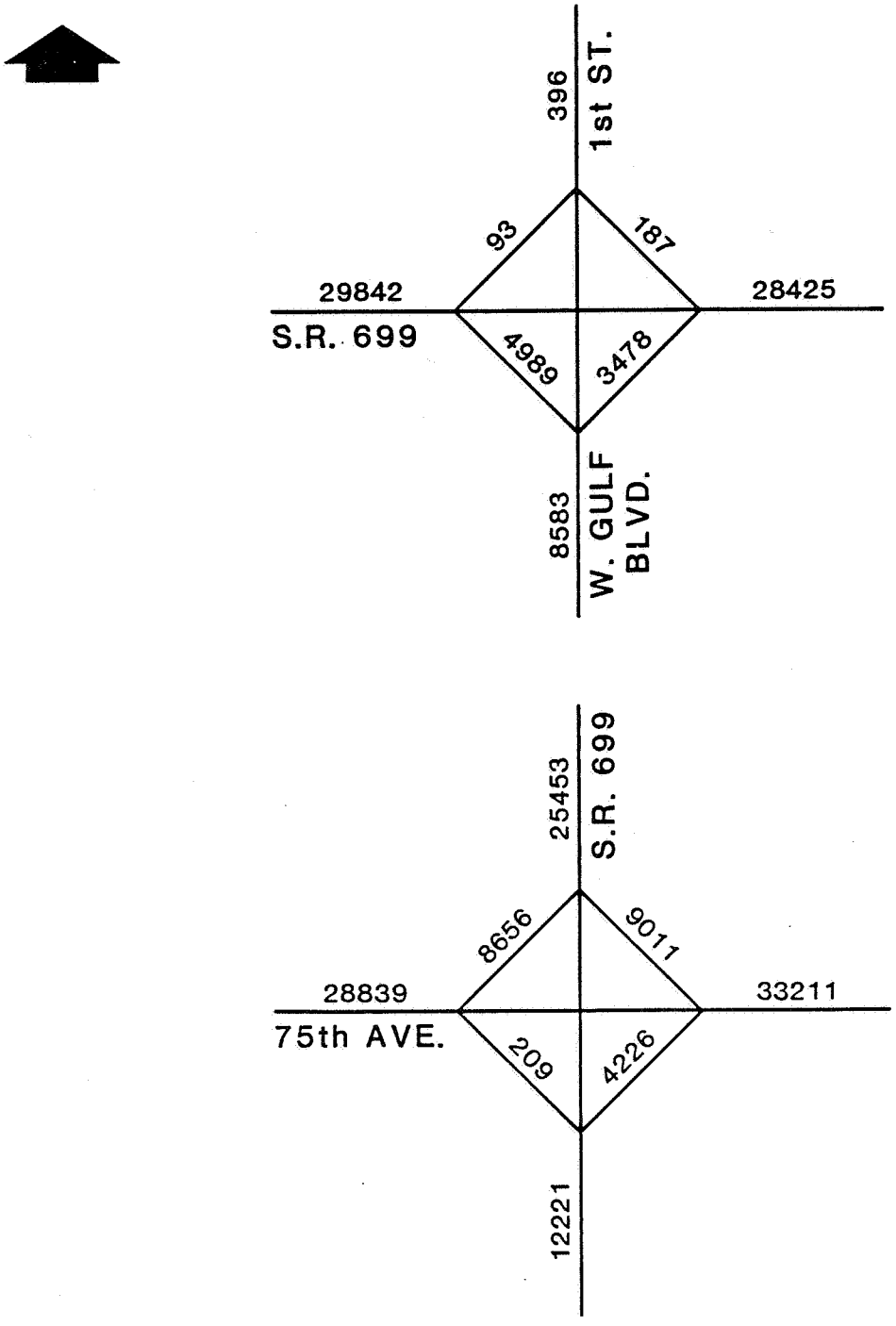
(D) divided facility.

the year for Pinellas County. According to FDOT's seasonal adjustment table, these traffic counts are 24 percent greater than the annual average daily traffic (AADT) counts. If the system's traffic projections were increased by 24 percent, the traffic counts would correspond to the existing peak season traffic counts conducted by Greiner.

It was determined that the traffic analysis contained in this report should be based on the average peak season from January 20 to April 21. The average increase in traffic during this time frame is 18 percent greater than the annual average traffic. There is a period in this time frame (February 17 to March 31) where the traffic is slightly greater than the 18 percent; however, this would be an over design of the roadway. The design year 2010 average daily traffic volumes, as shown on Exhibit 2-C, are based on the average peak season.

A peak hour (K) percentage factor of 9 percent was applied to the system's traffic projections (increased by 18 percent to reflect average peak season) provided by FDOT for S.R. 699. Subsequently, a directional distribution factor (D) of 55 percent northbound for the A.M. peak hour and 55 percent southbound for the P.M. peak hour was applied to determine the peak-hour directional link traffic volumes. The existing turning movement count percentages at the intersections were then applied to the peak hour directional link traffic volumes to obtain the projected peak-hour turning movement counts for analysis of the future intersections. The A.M. and P.M. peak-hour turning movement counts for the design year 2010 for each intersection are shown in Exhibit 2-D.

The existing truck percentages were very low in the peak hours. This is primarily due to the adjacent beach areas along S.R. 699. The existing truck percentages ranged



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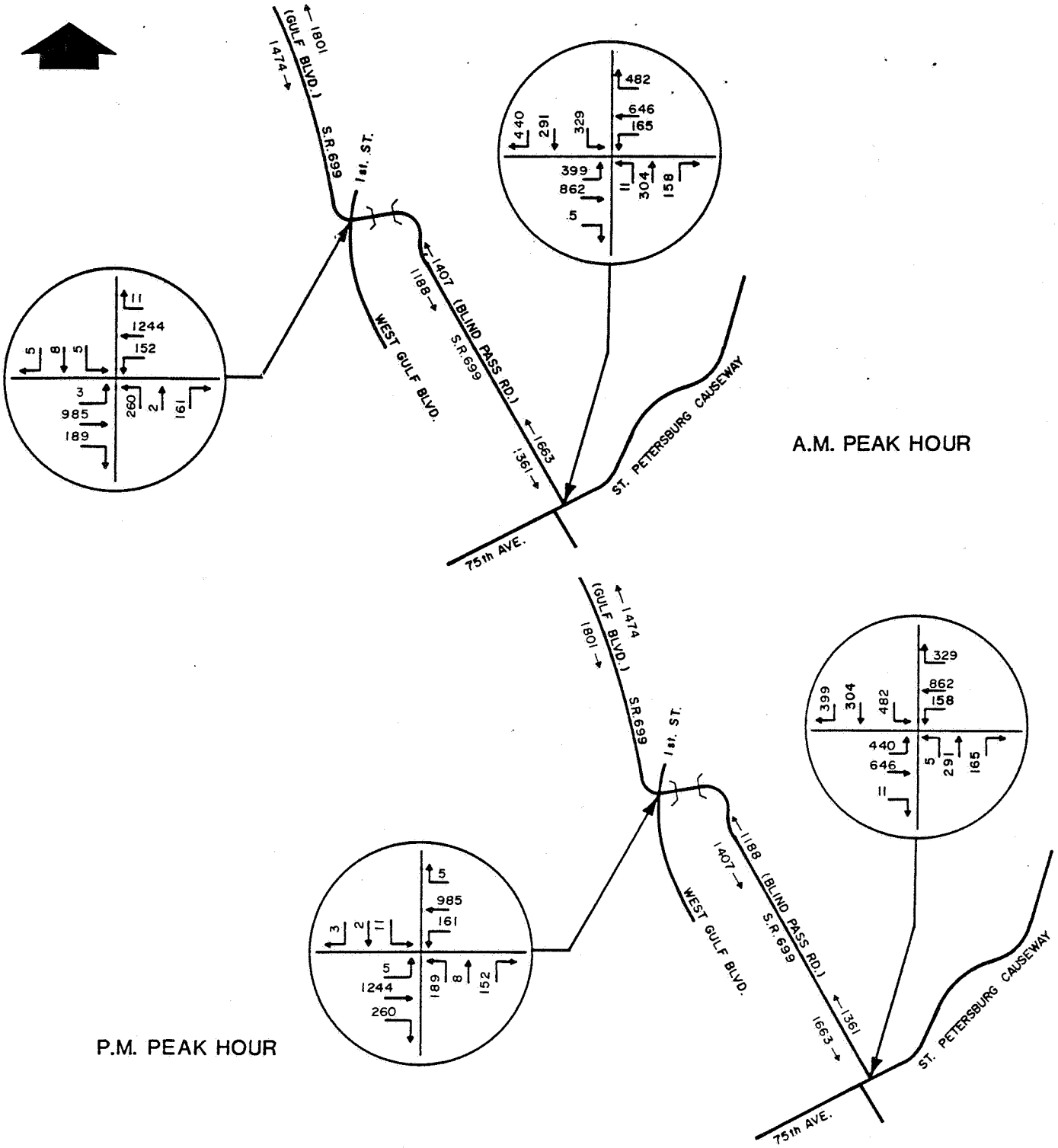
S.R. 699 (GULF BLVD./BLIND PASS ROAD)

Pinellas County, Florida

2010 AVERAGE DAILY TRAFFIC
AVERAGE PEAK SEASON

EXHIBIT 2-C



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PRELIMINARY ENGINEERING REPORT

S.R. 699 (GULF BLVD./BLIND PASS ROAD)

Pinellas County, Florida

2010 PEAK HOUR VOLUMES

EXHIBIT 2-D

from 0.00 to 0.04. A truck percentage of 0.04 was used for the opening year (1995) and design year (2010) analysis as a worse case scenario was assumed.

Capacity analyses were conducted for the peak hour of the design year at the critical intersections. The capacity analyses were conducted for both existing intersections and for intersections with improvements. The capacity analyses are included in the Traffic Memorandum. The results are summarized in Table 2.3. The design year arterial link analysis results are contained in Table 2.4.

The intersections are projected to operate at Level of Service (LOS) F with existing geometry (No-Action Alternative) during the A.M. and P.M. peak hours. The Build Alternatives, providing a four-lane divided facility on S.R. 699 with exclusive turn-lanes for the heavy turning movement volumes at the intersections, will improve conditions to acceptable levels of service.

The link analysis indicates that two of the three S.R. 699 link segments would operate beyond LOS F with existing geometry while the other would operate at LOS E. With geometric improvements of a four-lane divided facility, all three segments would operate at an acceptable level of service (LOS D or higher).

The analysis of future conditions based on the existing roadway network configuration substantiates the need for major roadway improvements, particularly at the S.R. 699 and 75th Avenue intersection. The proximity of residences and businesses to S.R. 699 in some sections of the study area makes it extremely difficult to obtain the necessary right-of-way required for roadway improvements without disrupting the residences and businesses along the corridor. To alleviate the problem of disruption, two additional alternative design concepts (A-3 and A-4) were developed and analyzed.

TABLE 2.3

DESIGN YEAR INTERSECTION LEVELS OF SERVICE
S.R. 699 (Gulf Boulevard/Blind Pass Road)

Intersection	Peak Hour	Year 2010 - Existing Geometry V/C	Vehicle Delay	LOS	Year 2010 - Recommended Geometry V/C	Vehicle Delay	LOS
S.R. 699 at 75th Ave (Alternatives A-1 and A-2)	A.M.	1.93	*	*	0.82	25.3	D
	P.M.	1.65	*	*	0.87	28.4	D
S.R. 699 at W. Gulf Blvd/1st Street (Alternatives A-1 and A-2)	A.M.	1.32	*	*	1.18	29.6	D
	P.M.	1.36	*	*	1.31	27.7	D

TABLE 2.4

FUTURE ARTERIAL LEVELS OF SERVICE - AVERAGE PEAK SEASON
S.R. 699 (Gulf Boulevard/Blind Pass Road)

Roadway	Link	Existing Laneage	Peak Season Volume	Existing LOS "E" Capacity*	V/C	LOS	Proposed Laneage	LOS "E" Proposed Capacity*	Proposed V/C	Proposed LOS
2010 LINK ANALYSIS - ALTERNATIVES A-1 AND A-2										
S.R. 699	75th Ave to 93rd Ave	2L(U)	25,453	17,450	1.46	F	4L(D)	40,000	.64	C
	93rd Ave to W. Gulf Blvd	2L(U)	28,425	17,450	1.63	F	4L(D)	40,000	.71	C
	W. Gulf Blvd to 105th Ave	4L(U)	36,389	30,225	1.20	F	4L(D)	40,000	.91	D

The following V/C ratios are used to determine Level of Service.

V/C	Level of Service
.60 -	A
.61 - .70	B
.71 - .80	C
.81 - .90	D
.91 - 1.00	E
1.01+	F

*Based on FDOT's Generalized Highway Capacity Table (9 percent peak-hour factor)

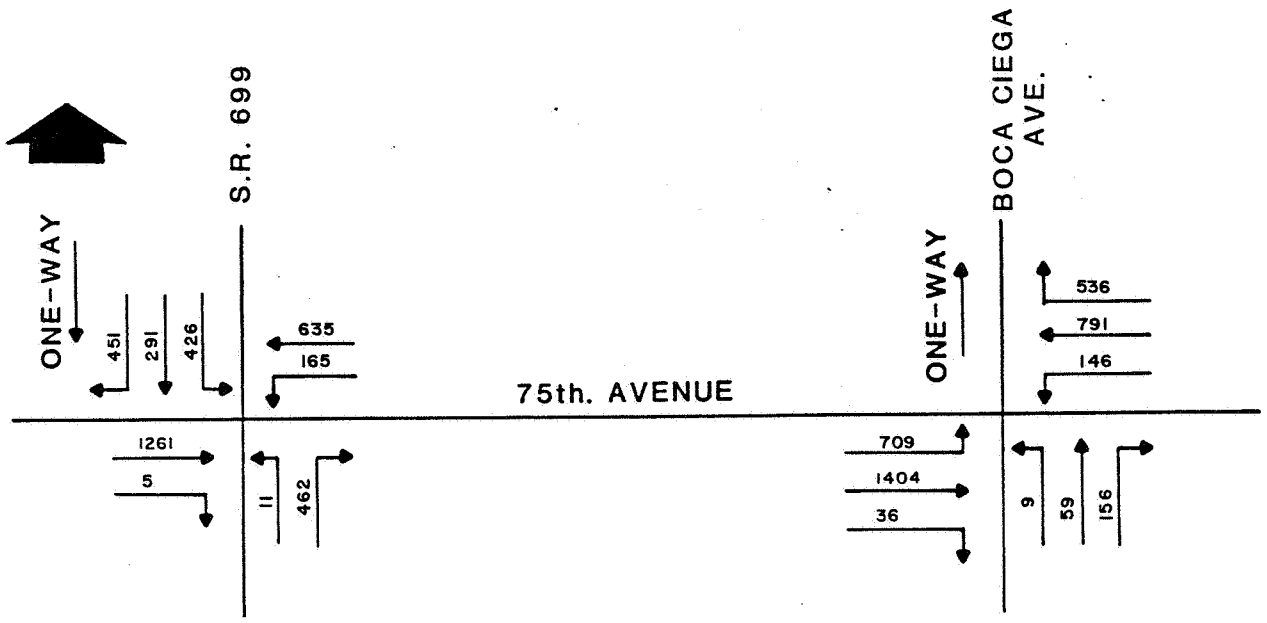
(U) undivided facility

(D) divided facility

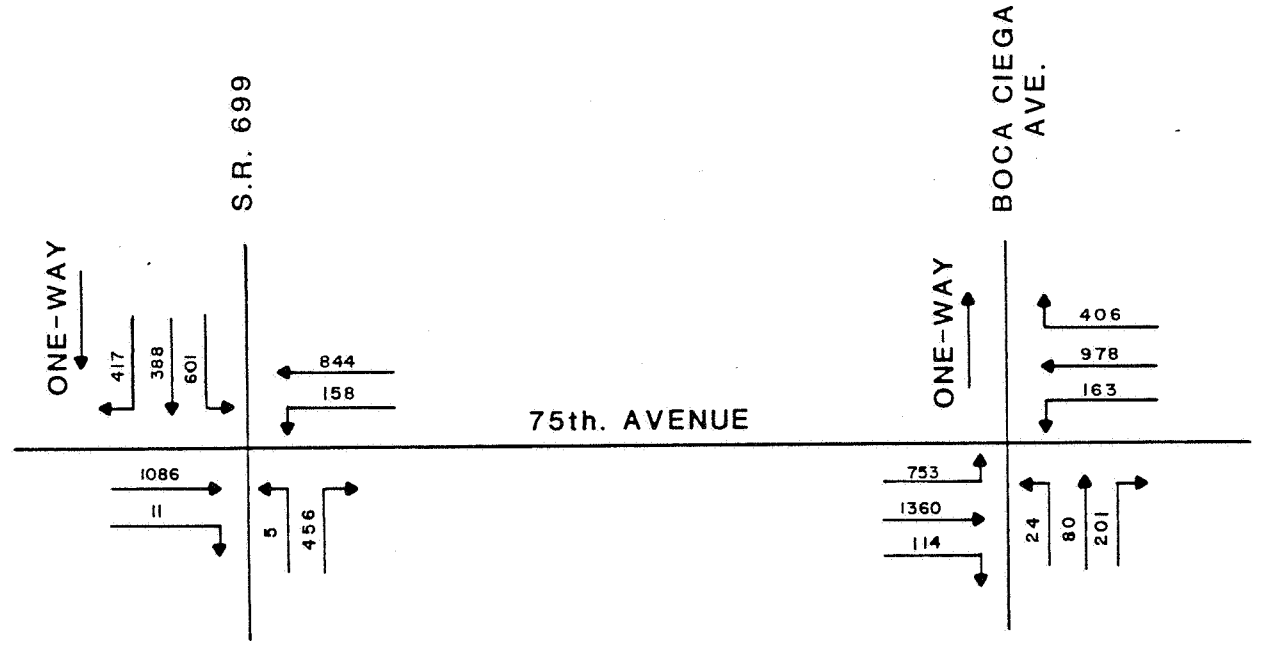
The two alternative design concepts, A-3 and A-4 (described in Section 5.3), were analyzed based on the A.M. and P.M. peak hour volumes for design year 2010. The design year 2010 traffic volumes presented previously in this report for the S.R. 699 and 75th Avenue intersection were used to determine the design year 2010 traffic volumes at the 75th Avenue and Boca Ciega intersection and at the 75th Avenue and Gulf Boulevard intersection. These two-way traffic volumes were then redistributed based on the one-way pair design for Alternatives A-3 and A-4. Further details for the traffic methodology for the one-way pair alternatives are contained in the Traffic Memorandum prepared for this project. The S.R. 699 and Boca Ciega Drive one-way pair (Alternative A-3) design year A.M. and P.M. peak hour traffic volumes are displayed in Exhibit 2-E. The S.R. 699/Gulf Boulevard and 75th Avenue/74th Avenue one-way pair (Alternative A-4) design year A.M. and P.M. peak hour traffic volumes are displayed in Exhibits 2-F and 2-G, respectively.

The results of the intersection analysis, based on year 2010 peak hour volumes for Alternatives A-3 and A-4, are contained in Tables 2.5 and 2.6, respectively.

Alternative A-3 provides an adequate LOS D during the peak hours; however, congestion may continue at the 75th Avenue and Gulf Boulevard intersection. Alternative A-4 provides a safe and efficient traffic flow for the entire southern area of the project. All six intersections maintain a high LOS B in both the A.M. and P.M. peak hours for design year 2010 traffic volumes.



AM PEAK HOUR



PM PEAK HOUR

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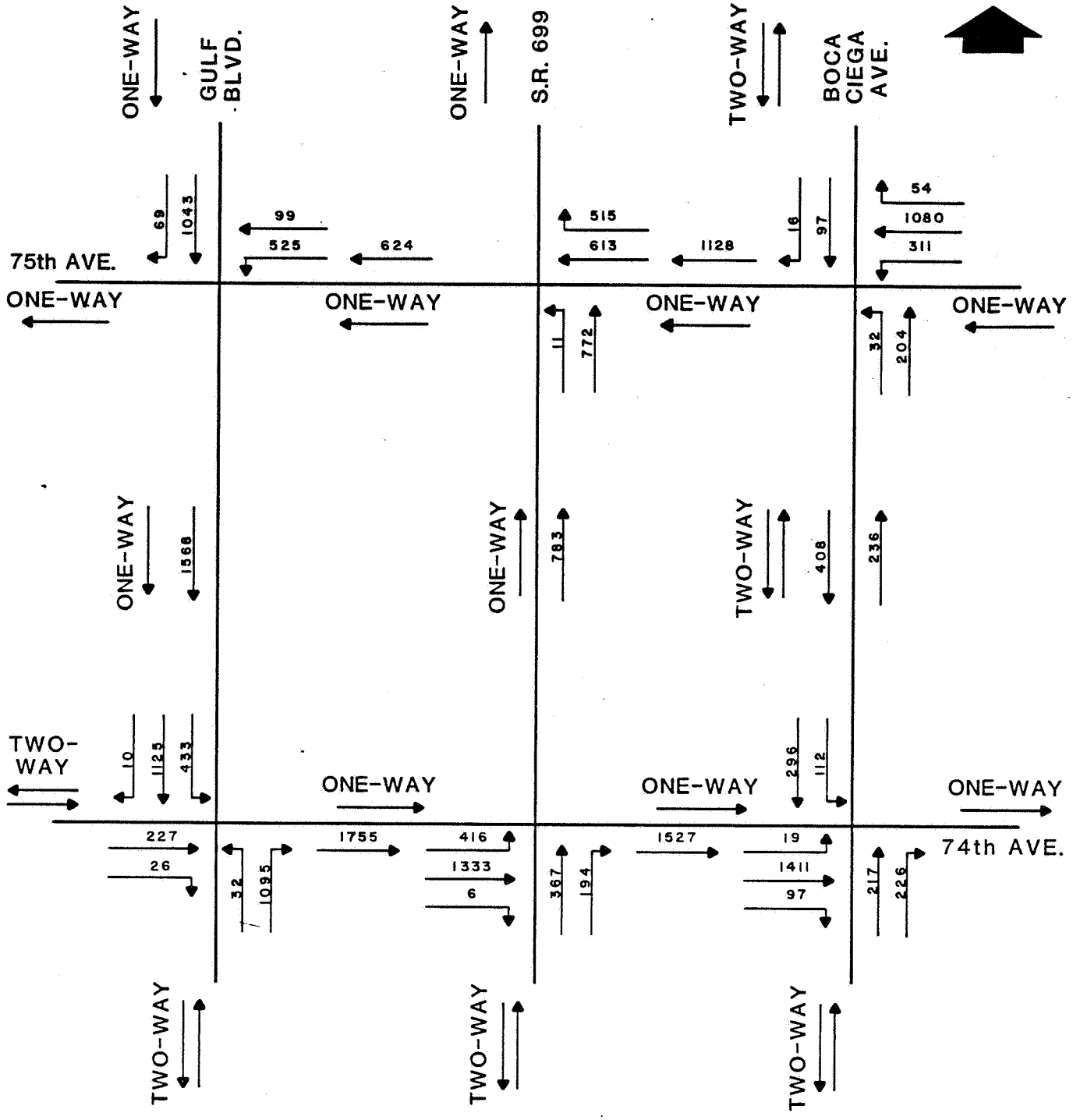
DESIGN YEAR 2010 PEAK HOUR TRAFFIC VOLUMES - 1 WAY OPERATION ALTERNATIVE A-3

EXHIBIT 2-E



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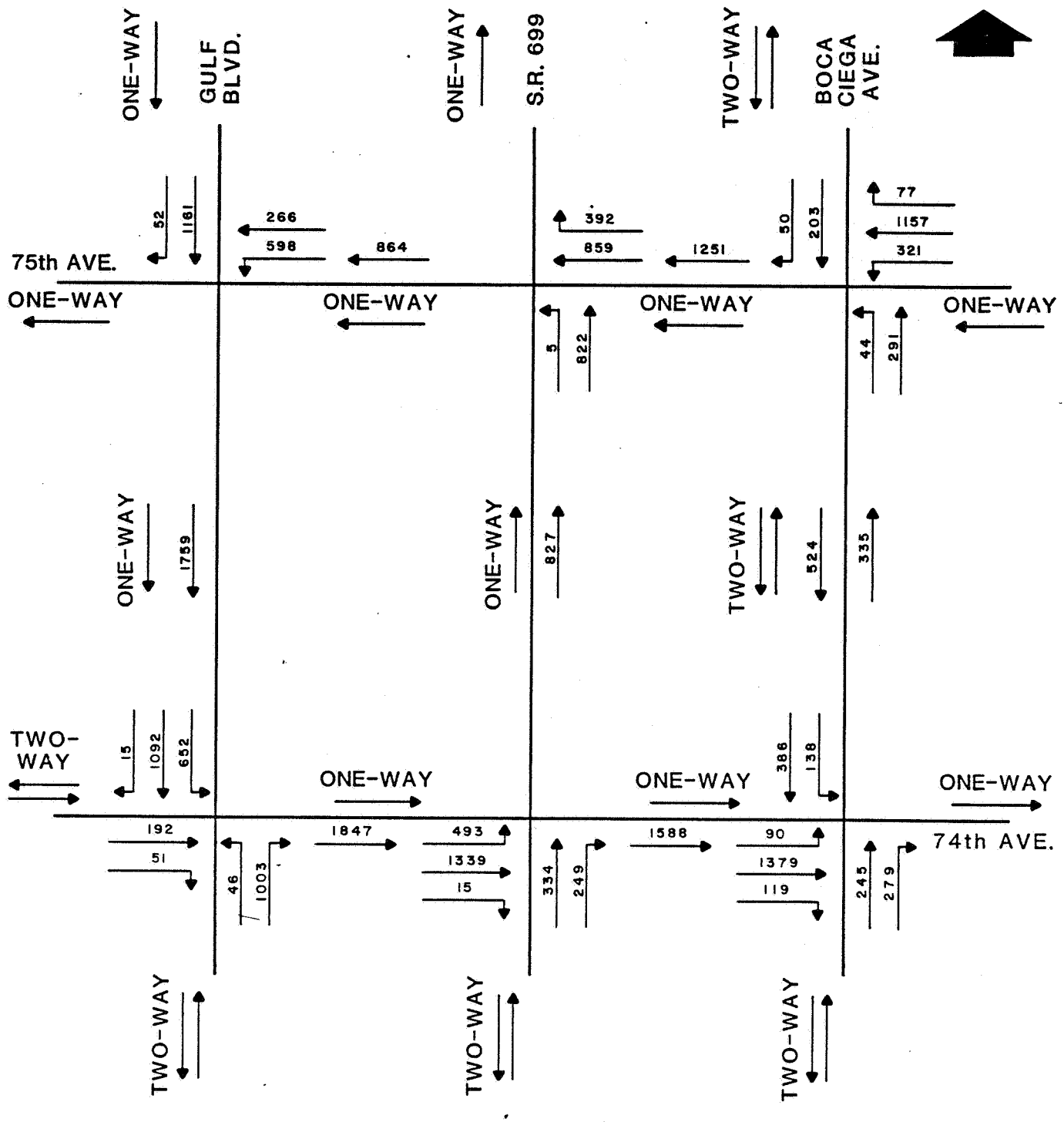
DESIGN YEAR 2010 AM PEAK HOUR TRAFFIC VOLUMES- 1 WAY OPERATION ALTERNATIVE A-4

EXHIBIT 2-F



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DESIGN YEAR 2010 PM PEAK HOUR TRAFFIC VOLUMES- 1 WAY OPERATION ALTERNATIVE A-4

EXHIBIT 2-G

TABLE 2.5

ALTERNATIVE A-3 INTERSECTION ANALYSES
S.R. 699 (Gulf Boulevard/Blind Pass Road)

Intersection	Peak Hour	V/C	Delay (sec/veh)	LOS
S.R. 699 at 75th Ave.	AM	0.82	28.5	D
	PM	0.82	28.4	D
Boca Ciega Drive at 75th Ave.	AM	0.71	26.3	D
	PM	0.78	27.6	D

TABLE 2.6

ALTERNATIVE A-4 INTERSECTION ANALYSES
S.R. 699 (Gulf Boulevard/Blind Pass Road)

Intersection	Peak Hour	V/C	Delay (sec/veh)	LOS
75th Ave. at Boca Ciega Drive	AM	0.45	9.3	B
	PM	0.54	9.5	B
75th Ave. at S.R. 699	AM	0.65	8.4	B
	PM	0.56	7.8	B
75th Ave. at Gulf Blvd.	AM	0.50	12.2	B
	PM	0.55	12.1	B
74th Ave. at Gulf Blvd.	AM	0.54	11.1	B
	PM	0.53	13.7	B
74th Ave. at S.R. 699	AM	0.68	14.2	B
	PM	0.72	14.4	B
74th Ave. at Boca Ciega Drive	AM	0.66	8.2	B
	PM	0.75	8.7	B

3.0 EXISTING PHYSICAL FEATURES

This section reports on the existing physical features of the S.R. 699 corridor. Existing facilities such as drainage, lighting, roadway characteristics, utilities, and pedestrian and bicycle facilities are summarized in this section.

3.1 System Linkage

The limits of the S.R. 699 project extend from 75th Avenue to 105th Avenue. The S.R. 699 corridor provides the only direct link between Treasure Island and St. Petersburg Beach. North of the project limits, S.R. 699 extends into the City of Madeira Beach with one bridge crossing at John's Pass. South of the project, S.R. 699 becomes a major beach front arterial, via 75th Avenue, serving the hotel, condominium, business and residential sections of St. Petersburg Beach. Service to the mainland areas to the east is provided by two causeway connections. South of the project, the St. Petersburg Beach Causeway (75th Avenue) provides a connection to South Pasadena, while the Treasure Island Causeway (107th Avenue) provides service into St. Petersburg where it becomes Central Avenue.

North of the project, S.R. 699 has recently been improved to a four-lane divided and five-lane roadway northward to within the vicinity of the John's Pass Bridge. No other major improvements surrounding the corridor are planned.

3.2 Roadway Characteristics

S.R. 699 currently has inconsistent laneage throughout and adjoining the project. South of the project, S.R. 699 (Gulf Boulevard) is a five-lane arterial. Gulf Boulevard connects with Blind Pass Road via 75th Avenue (S.R. 693). Blind Pass Road is currently a two-lane roadway from 75th Avenue to West Gulf Boulevard (1st Street), west of the Blind Pass Bridge. This roadway is considered rural because no curb and gutter exists and narrow shoulders are provided along its limits. However, drainage along the facility is provided for by a closed system.

The 34-foot-wide Blind Pass Bridge provides a two-lane connection between St. Petersburg Beach and Treasure Island. The vertical high point of the bridge is currently situated approximately 144 feet west of the center of the pass.

From the signalized intersection of S.R. 699 and West Gulf Boulevard north to 105th Avenue, S.R. 699 is known as Gulf Boulevard. Gulf Boulevard is a four-lane undivided facility which serves the beach front community at the south end of Treasure Island. This narrow roadway section is also considered rural due to the absence of curb and gutter along it borders; however, a closed drainage system is also provided along the corridor.

The horizontal alignment of the approaches to the Blind Pass Bridge include curved sections. On the east end of the bridge, the curved roadway radius is approximately 410 feet (along the centerline) with superelevation. Driveways and local street connections are provided within the curved area. West of the bridge, a centerline turning radius of approximately 300 feet is provided with a superelevated roadway.

The signalized intersection of S.R. 699 and West Gulf Boulevard is located at approximately the center of this curved section.

3.3 Drainage

The existing roadway drainage system for S.R. 699 consists of a storm sewer system with ditch bottom/curb inlets. Site investigations showed that the storm sewer systems with the project limits convey only roadway drainage and insignificant gradients of off-site drainage.

The fixed bridge over Blind Pass is the only drainage structure within the project area that is classified as a cross drain. The existing bridge has a total deck width of 33.8 feet and a total length of 600 feet (see Appendix 6.2, Figure CD-1 of the Location Hydraulic Report). The structure functions adequately, but has been recommended for replacement as part of the proposed roadway improvements from a two-lane bridge section to a four-lane structure with a raised median and walkways.

3.4 Highway Lighting

Lighting is provided for the full length of the study corridor with the exception of Blind Pass Bridge. Lighting on S.R. 699 is mounted on wooden poles between the sidewalk and the roadway on the east side from 75th Avenue to 84th Avenue and outside the sidewalk on the west side north of 84th Avenue to 105th Avenue. At this point, the poles on the east are located outside of the sidewalk and located between the sidewalk and the roadway on the west. All street lighting throughout Segment B is maintained by Florida Power Corporation.

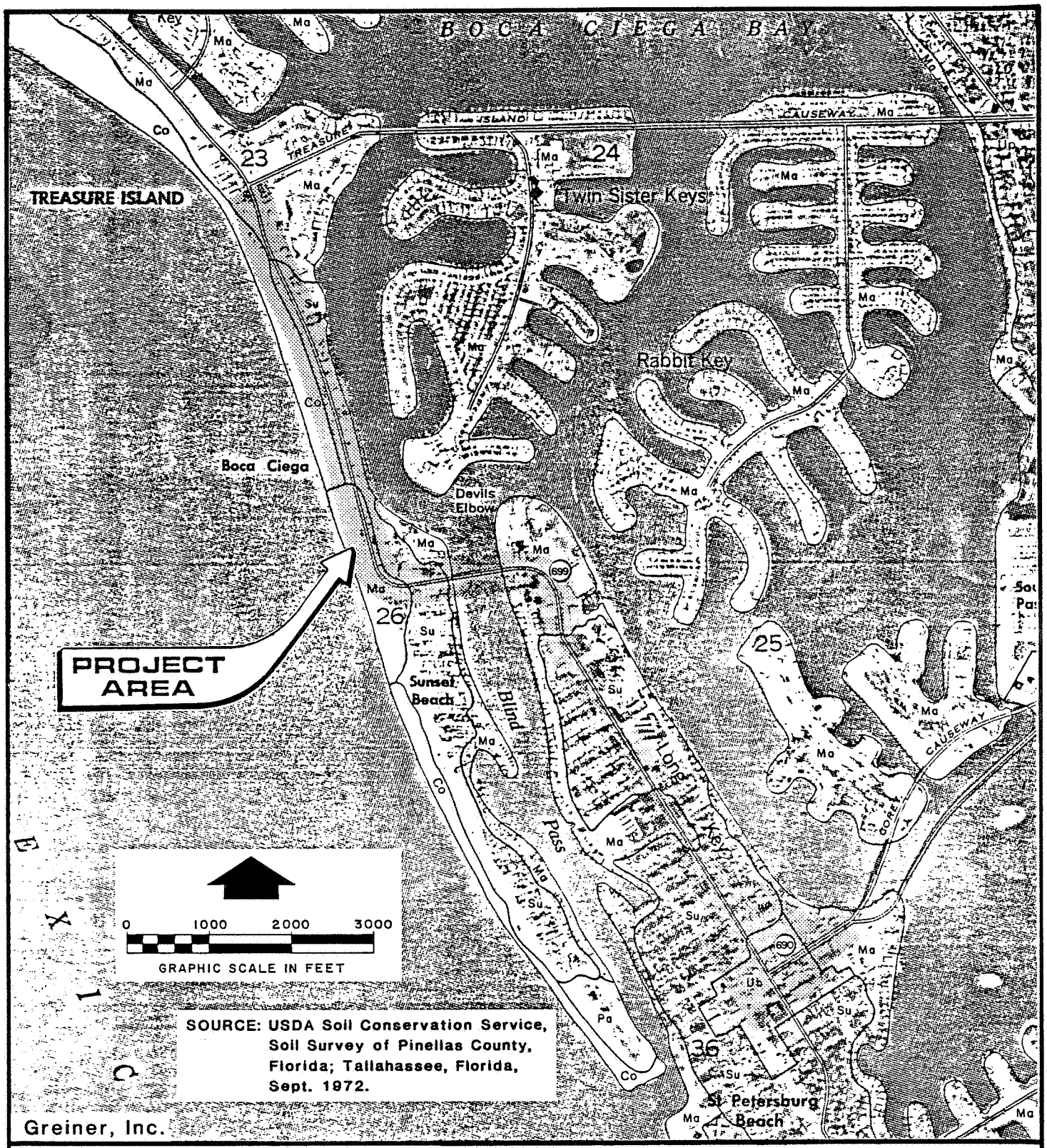
3.5 Bicycle/Pedestrian Considerations

Currently, there are no facilities designated for bicycles along the S.R. 699 corridor. Narrow shoulder sections are currently being used for bicycle traffic, but these facilities are inconsistent and disjointed. Although the study area is not included in the MPO's Comprehensive Bike Plan, it is general state policy to design improvements with a minimum of 14-foot outside lanes for all state roads where found feasible and safe.

Sidewalks are provided for pedestrians along the Blind Pass Road portion of the facility through St. Petersburg Beach. The Blind Pass Bridge does not provide a protected area for pedestrians, yet pedestrians use the bridge by crossing the extra wide roadway section provided for vehicles. The Gulf Boulevard section of S.R. 699 through Treasure Island does not provide designated sidewalks, though paved asphalt areas near drainage inlets allow some pedestrian movement along this narrow right-of-way section.

3.6 Geotechnical Data

The soil association which underlies the study area has been classified by the U.S. Department of Agriculture Soil Conservation Service (USDA/SCS) (1972) as the Made land - Palm Beach Association. Soil groups within the association include Made land, St. Lucie soils, Urban land, Palm Beach soils and Coastal beaches. These soils have been extensively altered by human development. The project area is underlain by St. Lucie soils, Made land, and Urban land. Descriptions of these three soil groups are graphically shown on Exhibit 3-A and discussed below.



LEGEND

- Ma Made Land
- Ub Urban Land
- Co Coastal Beaches
- Pa Palm Beach Sand
- Su St. Lucie Fine Sand (Shell Substratum

FLORIDA DEPARTMENT OF TRANSPORTATION

S.R. 699 (GULF BLVD./BLIND PASS ROAD)

Pinellas County, Florida

SOIL CLASSIFICATION MAP

EXHIBIT 3-A

St. Lucie soils consist of fine-grained sands which extend from the ground surface to a depth of 40 inches and grade into layers of shell and shell fragments to a depth of 80 inches. These acidic marine soils are highly permeable with infiltration rates which exceed 20 inches per hour. They are excessively drained; no surface drainage pattern exists, rather, all drainage infiltrates the soil. Soils of this group have low available water capacities (less than 0.05 inch/inch of soil) and low shrink swell potentials. According to the USDA/SCS (1972),[1] St. Lucie soils provide a good source of road fill and are favorable for roadway development.

Made land consists of dredged or fill material which contains variable percentages of clay, sand, rocks and shell fragments and ranges in thickness from 2 to 8 feet (USDA/SCS, 1972). Urban land is characterized as intensely developed land that has large areas of impermeable surfaces. As a result of the extensively altered nature of the Made and Urban land soil groups, estimates of permeability, drainage and other factors affecting roadway expansion would be highly subject to error with site-specific geotechnical testing. The improvements proposed in the corridor will require only minor modifications to soils in the project area. Foundation work and soil survey calculations will be provided in accordance with FDOT standards.

3.7 Existing Multi-Model Transportation

Public transit service within the municipalities of St. Petersburg Beach and Treasure Island is provided by the Beach Area Transit System and the Treasure Island Transit

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1/ USDA Soil Conservation Service, Soil Survey of Pinellas County, Florida; Tallahassee, Florida, September, 1972.

System, respectively. These transit systems link up with the Pinellas Suncoast Transit Authority (PSTA), the county-wide public transportation system, at Central Avenue and Park Street, John's Pass Village, and the Pasadena Shopping Center. The Treasure Island Transit System connects to the Beach Area Transit System at Egan Park, located just south of Blind Pass Bridge, in St. Petersburg Beach.

Each municipal transit system within the project services from 20,000 to 30,000 people annually. The buses run on an hourly basis, Monday through Saturday. The Beach Transit System also provides hourly service on Sunday. S.R. 699 Gulf Boulevard/Blind Pass Road is the major route used by both systems.

A current study in Pinellas County is investigating the feasibility of a fixed guideway rapid transit system. None of the alternative alignments being investigated for the fixed guideway system traverse the project limits.

3.8 Traffic Safety

Accident data was obtained from FDOT for the years 1983-1987. Both detailed and summary accident data were reviewed. Tables 3.1 through 3.3 summarize the accident data for each of the major roadway links in the project. The three major roadway links are 75th Avenue to 93rd Avenue, 93rd Avenue to Gulf Boulevard, Gulf Boulevard to 105th Avenue.

The tables (supplied by FDOT) 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, economic loss, and property loss. The safety ratio, the ratio of the actual accident rate to critical accident rate, is

TABLE 3.1

ACCIDENT SUMMARY
75th AVENUE TO 93rd AVENUE
S.R. 699 (Blind Pass Road/Gulf Boulevard)

Year	Roadway Type	ADT[a]	Accidents	Actual[b] Accident Rate	Critical[b] Accident Rate	Safety Ratio	Fatality	Injury	Property	Economic Loss
1983	2LU	14,152	19	3.313	9.214	.359	0	10	10	$113,000
1984	2LU	12,111	12	2.445	6.581	.371	0	10	6	105,000
1985	2LU	14,781	12	2.215	5.182	.427	0	6	9	$100,800
1986	2LU	14,860	23	4.253	5.061	.840	0	19	13	272,700
1987	2LU	13,786	16	3.189	4.935	.646	0	17	6	227,100
TOTAL			82				0	62	44	$818,600

Source: Data supplied by the Florida Department of Transportation

[a]Average Daily Traffic Volume

[b]Accident per million vehicle miles

TABLE 3.2

ACCIDENT SUMMARY
93rd AVENUE TO GULF BOULEVARD
S.R. 699 (Blind Pass Road/Gulf Boulevard)

Year	Roadway Type	ADT[a]	Accidents	Actual[b] Accident Rate	Critical[b] Accident Rate	Safety Ratio	Fatality	Injury	Property	Economic Loss
1983	2LU	15,427	12	5.272	15.917	.324	0	1	11	$31,300
1984	2LU	11,953	8	4.450	6.697	.664	0	5	5	56,500
1985	2LU	14,781	16	7.200	7.671	.938	0	9	9	$137,700
1986	2LU	15,955	11	4.753	6.879	.690	0	9	4	122,700
1987	2LU	16,413	11	4.934	6.819	.723	0	11	5	150,300
TOTAL			58				0	35	34	$498,500

Source: Data supplied by the Florida Department of Transportation

[a]Average Daily Traffic Volume

[b]Accidents per million vehicle miles

TABLE 3.3

ACCIDENT SUMMARY
GULF BOULEVARD TO 105TH AVENUE
S.R. 699 (Blind Pass Road/Gulf Boulevard)

Year	Roadway Type	ADT[a]	Accidents	Actual[b] Accident Rate	Critical[b] Accident Rate	Safety Ratio	Fatality	Injury	Property	Economic Loss
1983	4LU	15,427	18	3.743	13.997	.267	0	8	14	$102,400
1984	4LU	13,677	15	3.518	9.720	.361	0	15	4	147,500
1985	4LU	16,060	12	2.397	10.209	.234	0	2	8	$134,700
1986	4LU	17,269	28	5.202	6.713	.774	0	25	11	340,500
1987	4LU	19,566	18	2.951	7.784	.379	0	11	9	162,300
TOTAL			91				0	68	46	$887,400

Source: Data supplied by the Florida Department of Transportation

[a]Average Daily Traffic Volume

[b]Accidents per million vehicle miles

the criteria used to identify safety problems and/or high accident locations. The critical addicent 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.

Accidents from 1983 to 1987 total 231. This includes 165 injuries, and 124 accidents involving property damage. Approximately 71 percent of accidents along the corridor during this period involved injuries and 54 percent involved property damage of some kind. An examination of accident types indicated that the most prevalent types of accidents types are rear-end (28 percent), left-turn (15 percent), angle (11 percent), side swipe (9 percent), and collisions involving pedestrians/bicycles (8 percent).

Given the number of rear-end, left turn accidents and angle accidents, improvements to reduce accident potential in the corridor should be examined. The addition of a center turn lane will separate the left turning vehicles from the through vehicles thus preventing conflicts from through vehicles rear-ending left-turn vehicles due to sudden left-turns without warning or drivers of through vehicles being inattentative of vehicles turning left. The addition of a 14-foot outside lane and an improved sidewalk section should reduce accidents involving bicyclists and pedestrians.

3.9 Emergency and Evacuation Services

According to Pinellas County Emergency Management, the Standard Operating Procedures for emergency evacuation call for all citizens to be evacuated from the

subject area for any category of hurricane. The St. Petersburg Beach Causeway, just southeast of the project, is a major evacuation route for residents of St. Petersburg Beach. The Treasure Island Causeway at the north end of the project serves as the primary evacuation route for residents of Treasure Island.

Any hurricane-related evacuation of Pinellas County is expected to require as much as 24 to 30 hours to complete. Clearance time alone is estimated at 9 to 11 hours.

S.R. 699 Gulf Boulevard/Blind Pass Road is the only arterial route providing access to each major evacuation route. As such, improvements to increase capacity could facilitate evacuation during hurricanes or other severe weather conditions.

3.10 Existing Utility Systems

The existing utilities within the corridor include electric, water, sanitary sewer, telephone, and television cable. Exhibits 3-B through 3-G illustrate the approximate locations of utilities in the study area.

Electric service is provided by Florida Power Corporation. Transmission lines run the full length of the corridor on the east side of the roadway in St. Petersburg Beach and varied between the east and west side in Treasure Island. The cable crossing at Blind Pass is submarine.

Pinellas County provides water service to both communities in the study area. A 16-inch pipe runs the length of the corridor on the east and an 8-inch pipe runs the

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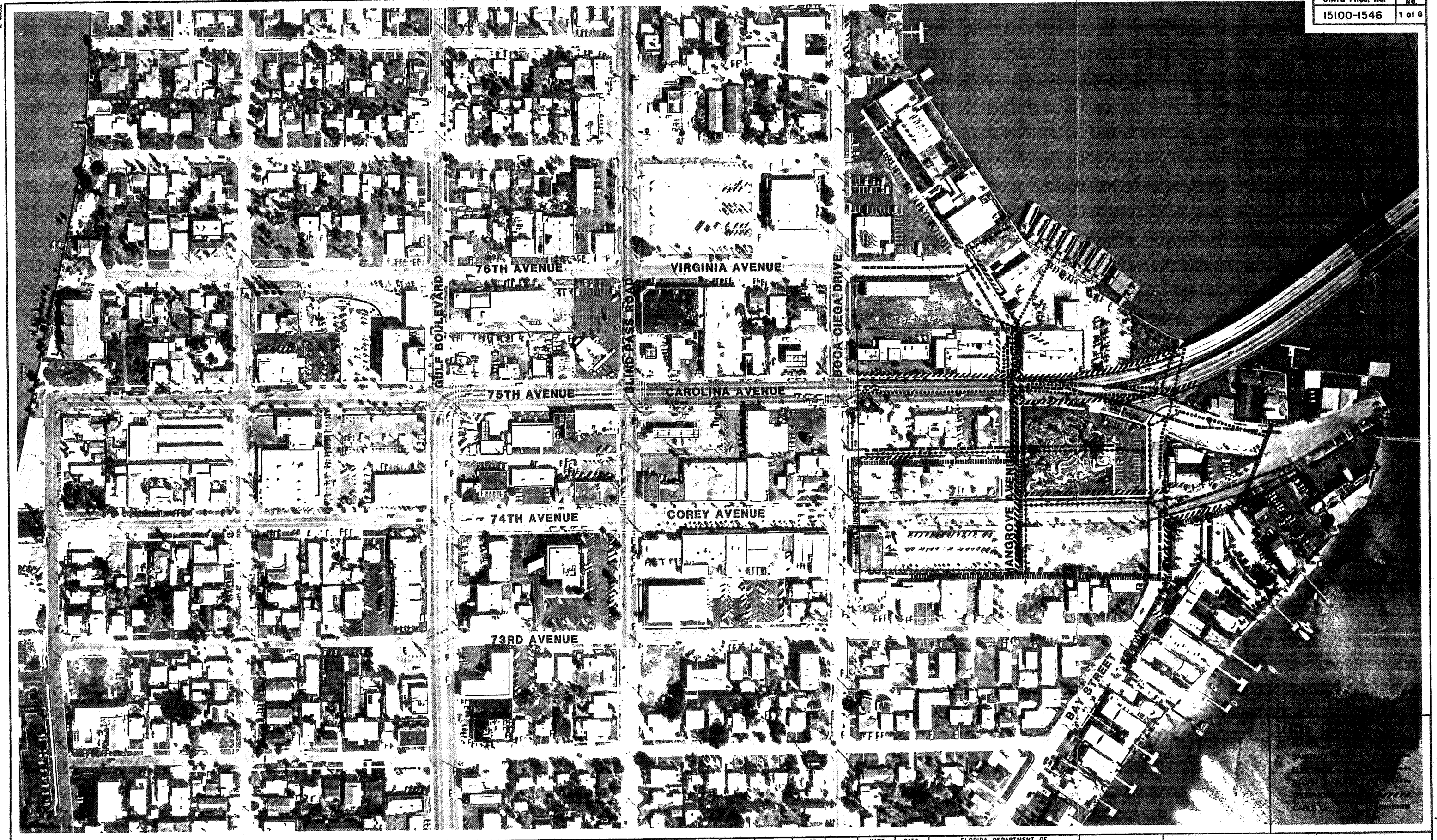

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FLORIDA DEPARTMENT OF TRANSPORTATION

S.R. 699 (GULF BLVD / BLIND PASS RD.)

Project Development and Environmental Study

Greiner
Greiner, Inc
Tampa, Florida

UTILITIES

EXHIBIT 3-B

STATE PROJ. NO.	SHEET NO.
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FLORIDA DEPARTMENT OF TRANSPORTATION

S.R. 699 (GULF BLVD / BLIND PASS RD.)
Project Development and Environmental Study

Greiner
Greiner, Inc
Tampa, Florida

UTILITIES

EXHIBIT 3-C

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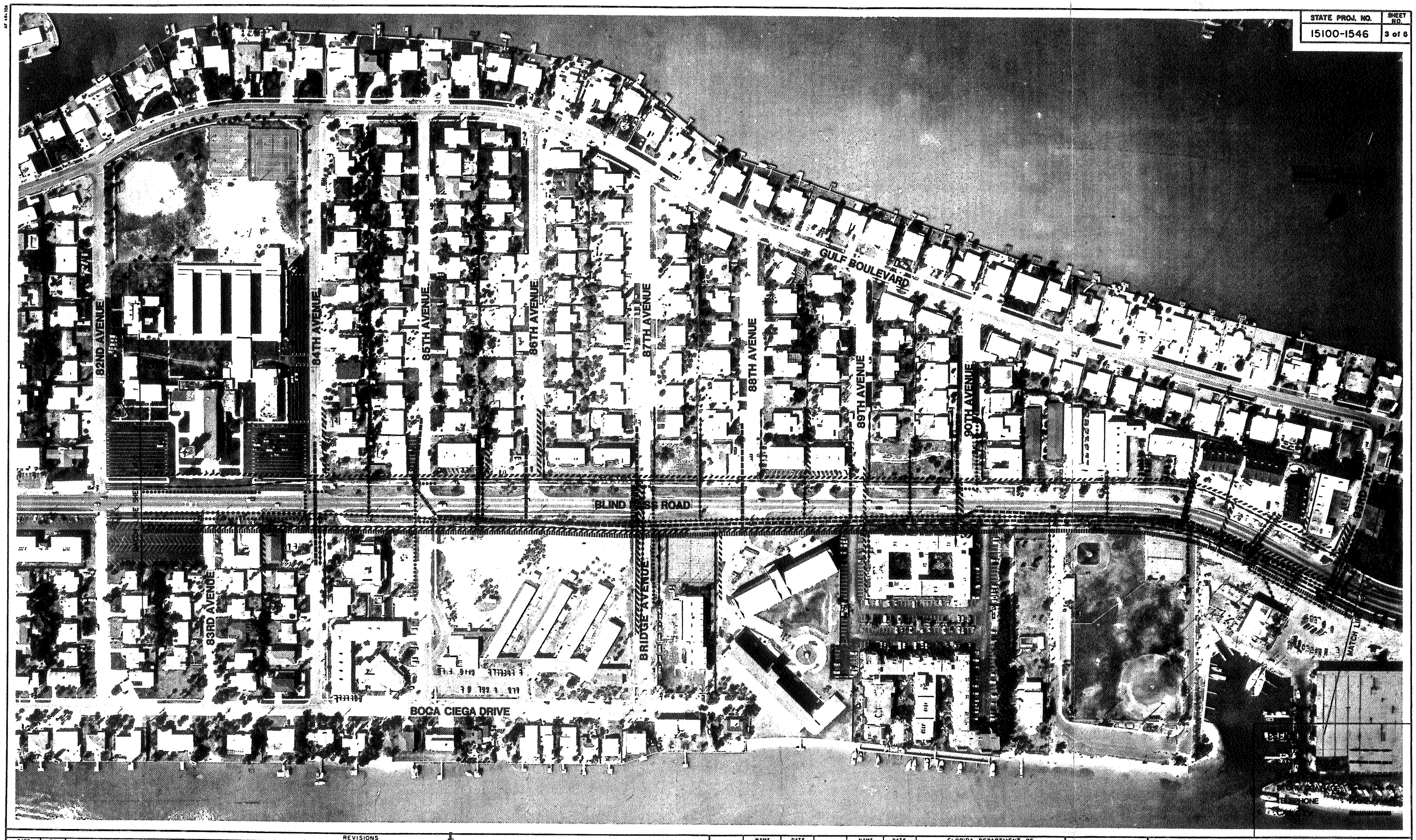

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FLORIDA DEPARTMENT OF TRANSPORTATION

SR 699 (GULF BLVD / BLIND PASS RD.)

Project Development and Environmental Study

Greiner
Greiner, Inc.
Tampa, Florida

UTILITIES

EXHIBIT 3-D

STATE PROJ. NO.	SHEET NO.
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BLIND PASS

GULF BOULEVARD

93RD AVENUE

96TH AVENUE

97TH AVENUE

98TH AVENUE

99TH AVENUE

99TH STREET

PARADISE DRIVE

MATCH LINE SHEET 3

END SEG B

BEGIN SEG B

LEGEND

SANITARY

ELECTRIC

TELEPHONE

CABLE T.V.

REVISIONS											
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S.R. 699 (GULF BLVD./BLIND PASS RD.)

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Tampa, Florida

UTILITIES

EXHIBIT 3-E

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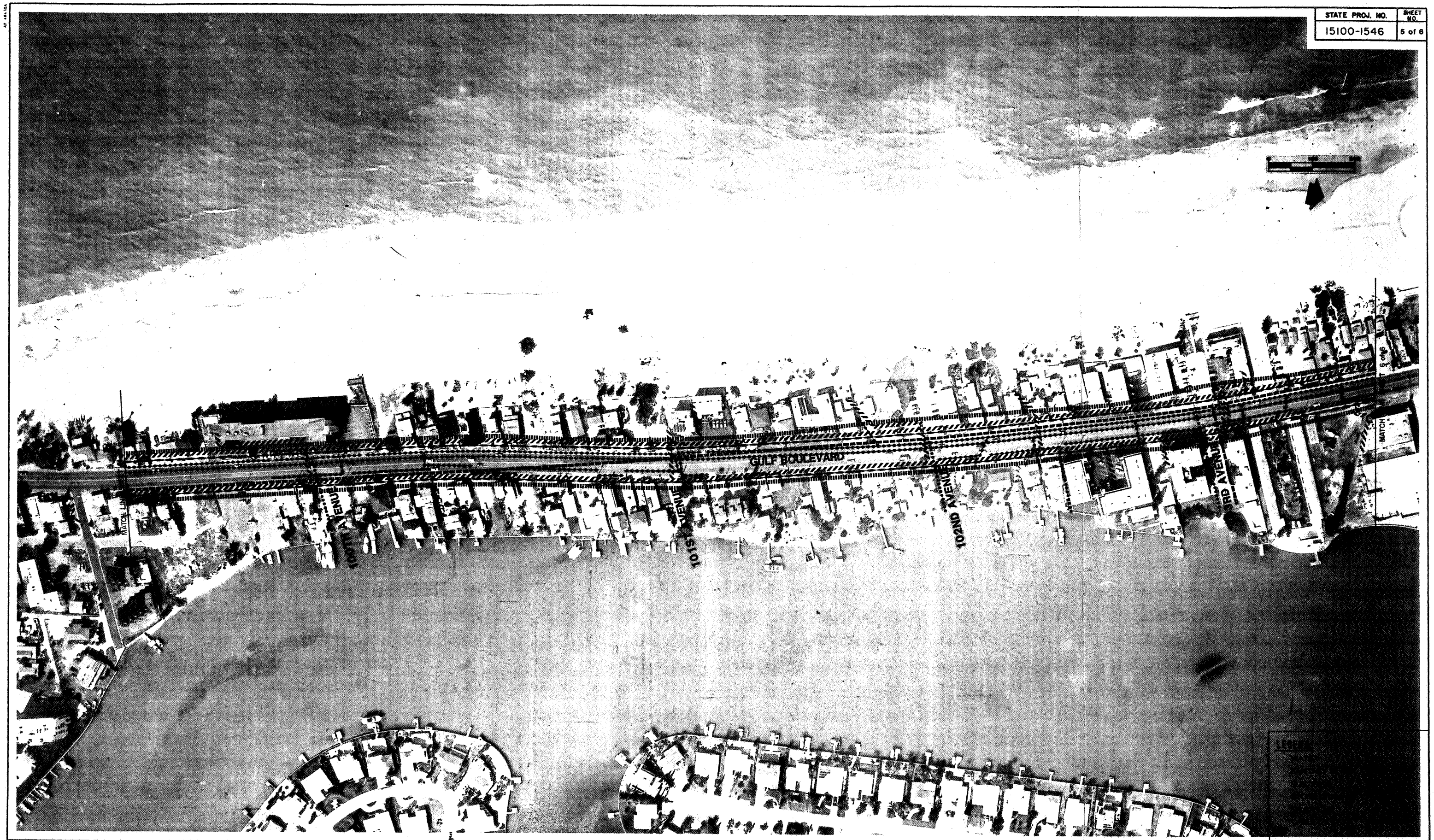

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FLORIDA DEPARTMENT OF TRANSPORTATION

S R 699 (GULF BLVD / BLIND PASS RD.)

Project Development and Environmental Study

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UTILITIES

EXHIBIT 3-F

STATE PROJ. NO.	SHEET NO.
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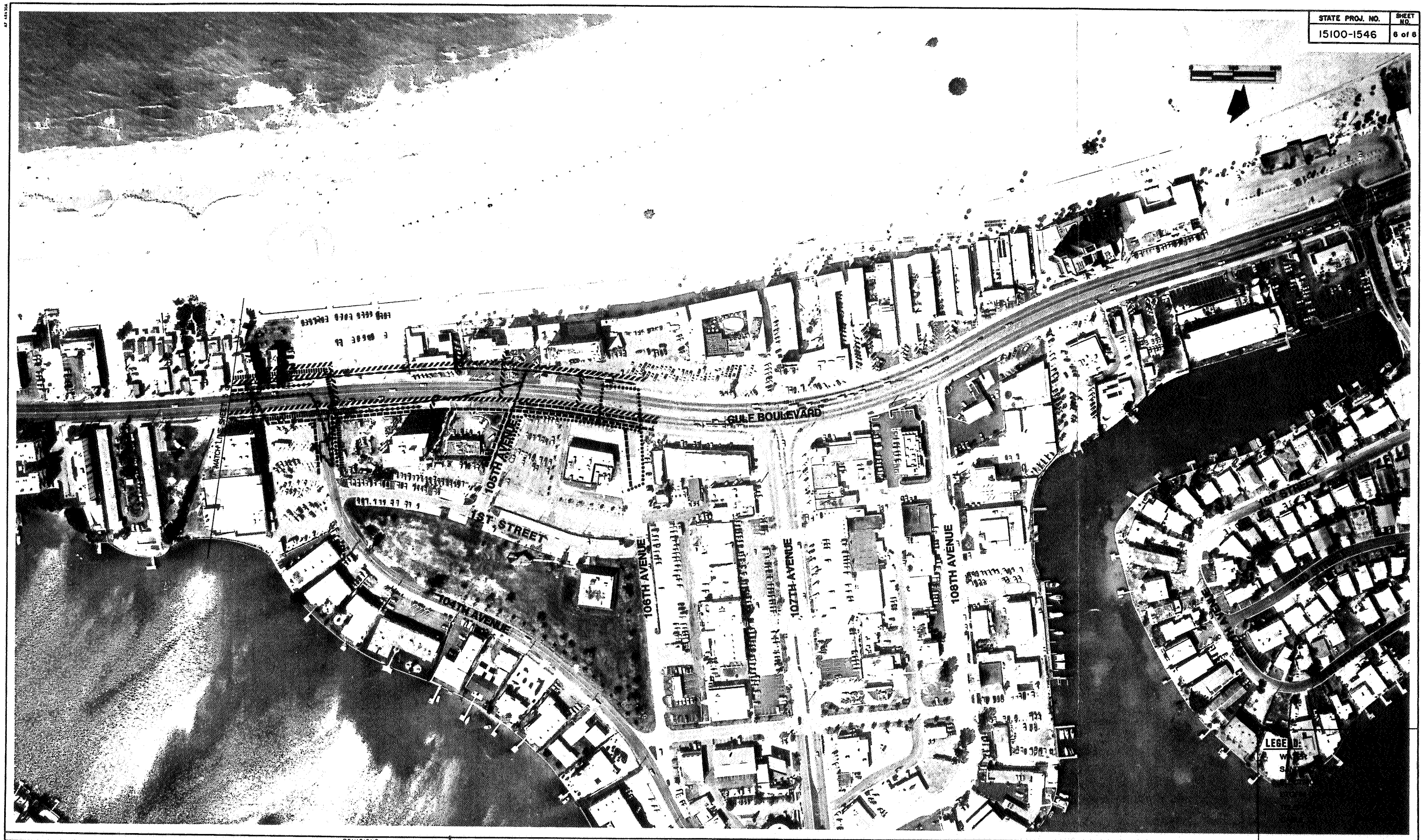

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SR 699 (GULF BLVD / BLIND PASS RD.)
Project Development and Environmental Study

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UTILITIES

EXHIBIT 3-G

length of the corridor on the west. Presently, there are two submarine pipes at Blind Pass: a 16-inch pipe on the north side and an 8-inch pipe on the south (out-of-service).

St. Petersburg Beach maintains the sanitary sewer and storm drain systems within the city limits. All facilities are underground within the existing right-of-way with pipe variance from 12 to 14 inches.

The City of Treasure Island also maintains its own sanitary sewer and storm drain systems. Sanitary sewer lines vary in size from 8 to 18 inches and lie within the existing right-of-way. Storm drains cross S.R. 699 at 2nd Street/Harrell Avenue, 102nd, 103rd, 105th and 106th Avenues. Other sections of storm drain include S.R. 699 between 99th and 100th Avenues, and 103rd and 104th Avenues.

Telephone service is provided by General Telephone (GTE). The GTE Central Office is located on the southeast corner of 76th Avenue and Gulf Boulevard. Transmission lines extend the length of the corridor within existing right-of-way with a submarine crossing at Blind Pass.

Paragon Cable supplies television cable service to St. Petersburg Beach and Treasure Island. Aerial facilities are within the existing right-of-way on the eastern side of the roadway from 75th Avenue to the Blind Pass Bridge. Currently, there is a bridge attachment on the south side of the bridge. Aerial facilities are within the existing right-of-way on the east and west side from 99th Avenue to 104th Avenue.

3.11 Land Uses Which Modify The Alignment

In most cases, a basic widening of the S.R. 699 corridor would require the acquisition of right-of-way. Along the Blind Pass Road section (Segment A), the widening of S.R. 699, especially in the St. Petersburg Beach business district (74th Avenue to 76th Avenue), would require several relocations of businesses. As a result of these considerations, some alternatives were developed using one-way pair configurations that would minimize acquisitions. One-way pair corridors considered are Blind Pass Road with Gulf Boulevard, and Blind Pass Road with Boca Ciega Boulevard. In addition, in an effort to minimize acquisitions along 75th Avenue a one-way pair with 75th Avenue and 74th Avenue was also considered.

Minimizing right-of-way acquisition along Segments B and C is difficult due to the make up of the narrow stretch of land in this area. Since Gulf Boulevard is the only significant north-south roadway in this section, the widening of the existing facility is the only feasible option for constructing improvements. Acquisitions and relocations will be necessary along most of Segment C if improvements are made. However, an alternative to widening the roadway section of Segment C has been considered since it is already a four-lane facility that could function under capacity for some time without widening for a center left-turn lane. Alternatives C-3 and C-3A improve the intersection of S.R. 699/Gulf Boulevard and alleviate the numerous relocations that would be required with Alternatives C-1 and C-2.

Alternatives have been developed to construct the new Blind Pass Bridge at a higher elevation due to recommendations in the Location Hydraulic Report. These

alternatives result in some driveway improvements for businesses along the approaches to the bridge due to vertical constraints of reaching a roadway at a higher elevation.

4.0 ANALYSIS AND INDICATED DEFICIENCIES

This section of the report addresses all considered corridor alternatives ranging from the use of different corridors, to a no-build condition, to using alternative methods of transportation. The results summarized in this section provided the basis for developing conceptual design alternatives.

4.1 Alternatives Considered

Traffic projections for year 2010 show that the existing S.R. 699 corridor must be improved to handle future demand (see Section 2.3). In order to provide for a complete analysis of this transportation corridor on a system-wide basis, an analysis of alternative corridors was undertaken. In addition, an analysis of transit considerations and a no-build alternative were evaluated.

4.1.1 Alternative Corridors

The development of alternatives resulted in an evaluation of several concepts in Segments A and B. Alternative corridors were evaluated based on the potential disruption of residences and businesses, the availability of right-of-way along the corridors, the sensitivity of specific land uses and the ability of maintaining traffic flow along the existing facility during construction.

The concern on right-of-way takings in Segment A brought on considerations for alternative corridors. Facilities parallel with Blind Pass Road, such as Gulf Boulevard and Boca Ciega Drive, have been considered as a one-way pair alternative in order to

minimize acquisitions in the highly concentrated development areas between 74th Avenue and 79th Avenue. In addition, considerations were given to providing a one-way pair along 74th Avenue and 75th Avenue to minimize takings along east-west facilities.

Segment B corridor considerations were centered on developing means by which to maintain traffic on the existing structure while the new Blind Pass Bridge is constructed. The effects of a high level crossing on the area and how such a crossing would be located in this segment was also evaluated.

After determining that the new structure could be built in partial sections, alternative corridors were considered that would locate the new structure near the existing bridge. Structures that maintain the existing vertical alignment or those that provide a higher clearance (not high level) could utilize corridors near the existing structure. However, a 45-foot-high level structure would require that the alignment of S.R. 699 be shifted south to avoid locating tight horizontal curves on the structure and to avoid a park located just south of the bridge. The extensive right-of-way takings and excessive costs associated with this alternative alignment resulted in eliminating the high level alternative from consideration as a viable concept.

Since Gulf Boulevard is the only significant north-south roadway located in Segment C, it was the only corridor considered for improvements. All alternatives in this segment will utilize the existing right-of-way along Gulf Boulevard (S.R. 699).

4.1.2 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. 699. It should be noted that the No-Action Alternative is not consistent with adopted transportation plans. As discussed in Section 2.3, it represents a scenario of extreme congestion on S.R. 699 which will not be relieved by improvements to parallel facilities.

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 (LOS 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 2.3, the intersections within the study area now operate at a marginal level of service during peak hours. Table 4.1 summarizes the capacity analyses for existing conditions and the No-Action Alternative. Under the No-Action

TABLE 4.1

INTERSECTION LEVELS OF SERVICE - NO-ACTION ALTERNATIVE
S.R. 699 (Gulf Boulevard/Blind Pass Road)

Intersection	Peak Hour	Year 1988 Existing Geometry V/C	Year 1988 Existing Geometry Vehicle Delay	Year 1988 Existing Geometry LOS	Year 2010 Existing Geometry V/C	Year 2010 Existing Geometry Vehicle Delay	Year 2010 Existing Geometry LOS
S.R 699 at 75th Ave.	AM	1.01	31.0	D	1.93	*	*
	PM	0.98	28.8	D	1.65	*	*
S.R. 699 at W. Gulf Blvd.	AM	1.05	35.0	D	1.32	*	*
	PM	0.90	11.0	B	1.36	*	*

Alternative, the travel demand exceeds intersection capacity with excessive vehicle delays and levels of service beyond LOS F, as seen in the table. Given the projected operating conditions, the No-Action Alternative does not service the travel demand and is inconsistent with transportation planning goals in the region.

While traffic flow may be moderately impeded there are, however, benefits associated with the No-Action alternative. There are no residential or business displacements 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 will remain a valid alternative until after the public hearing when a final recommendation will be made.

4.1.3 Multi-Model Alternative

The reduction of automobile travel by diverting to other modes such as mass transit is an alternative which was considered. Transit services within the municipalities of St. Petersburg Beach and Treasure Island are provided by transit systems which link up with Pinellas Suncoast Transit Authority (PSTA), the county-wide public transportation system.

According to PSTA, 8.1 million trips were made on transit in 1987, representing a 1 percent modal split. Transit typically best serves non-discretionary, frequent, scheduled trips such as home-based work trips. St. Petersburg Beach and Treasure Island residents, with their large percentage of retirees and tourists who are not bound by a work schedule, make up a large percentage of other discretionary trip 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 to serve with scheduled bus service on fixed routes.

A current study in Pinellas County is investigating the feasibility of a fixed guideway rapid transit system. None of the alternative alignments being investigated for the guideway system involve S.R. 699.

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

4.1.4 Transportation System Management Alternative

An alternative to the No-Action Alternative is a Transportation System Management (TSM) improvement 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.

For the interim years various TSM improvements, such as, signal timing optimization and /or turn prohibition may enabel S.R. 699 to maintain an acceptable level of service or minimize traffic congestion to a tolerable level until major roadway improvements could be provided. The projected capacity deficiencies for the design

year 2010 on S.R. 699 are significant. In addition, the capacity is constrained by operations at intersections; therefore, improving signal timing or instituting turn prohibitions will not alleviate these deficiencies for design year 2010. The traffic is not sufficiently directional (i.e., eastbound in the morning and 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 for the design year 2010.

4.1.5 Right-of-Way Considerations

In order to improve S.R. 699 to a five-lane facility from 75th Avenue to 105th Avenue, right-of-way acquisitions will be necessary throughout the corridor. As discussed in Section 4.1.1, one-way pair alternatives have been developed in order to minimize damages along Segment A. In Segment B, acquisition will be necessary for both bridge approaches. As mentioned in Section 4.1.2, Segment C (Gulf Boulevard) can operate at a reasonable level of service as it does today as a four-lane undivided facility until 1996. All other Segment C alternatives will require extensive right-of-way acquisitions.

4.1.6 Drainage Considerations

As discussed, the fixed bridge over Blind Pass is the only cross drain within the project limits. Design of the replacement structure must consider navigational as well as flooding design criteria. Center span clearances must meet United States Coast Guard specifications for navigation. The remainder of the structure must meet the

Florida Department of Transportation criteria to resist flooding. Details of the recommended design clearances are given in the Location Hydraulic Report (Appendix 6.2).

The existing two-lane, rural section roadway will be upgraded to a four-lane, urban section with a painted median. The addition of new pavement to the project area will require the provision of stormwater treatment. Due to the limited right-of-way (60 to 100 feet) and a high water table, treatment of the required volume will be difficult. The purchase of additional land to provide stormwater treatment may be required. If treatment along the proposed corridor is not possible, mitigation will be required.

Some consideration has been given to locate possible drainage retention areas. Based upon Southwest Florida Water Management District (SWFWMD) criteria, the size and location of retention ponds were developed for the preferred alternative. These ponds are graphically, shown in section 5.3.3 and are discussed in greater detail in the Permit Coordination Report for this project. In discussions with the City of St. Petersburg Beach, it was suggested that an underground exfiltration system be used in place of the pond locations shown on Segment A. At this time, it is felt that this type of system maybe more costly than using ponds, however a determination of the best alternative will require perk tests and soil borings that could be performed during the final design stage of this segment.

4.1.7 Use of Existing Pavement

Preliminary findings show that the S.R. 699 corridor would require a new pavement section for the entire length of the project as well as the one-way pair option for north-south connectors. The 79th Avenue connections, as shown in Alternatives A-3

and A-4, would also require a new pavement section. It is foreseen that roadway improvements to the 74th and 75th Avenue roadway sections would be constructed using the existing pavement.

It would appear that the conversion from a rural section to an urban section would require new pavement; however, it should be noted that no studies have been initiated at this time to warrant such action. As this study progresses to recommend a preferred alternative and preliminary and final design phases commence, a determination will be made as to whether the existing pavement can be utilized on any of the affected facilities.

5.0 PROPOSED ALTERNATIVE SOLUTIONS

Traffic projections reveal a substantial increase in volumes by the year 2010. As a result, there is a need to improve the S.R. 699 corridor in order to accommodate future traffic demand. Capacity analysis show that this facility should be improved to accommodate a five-lane roadway throughout the limits of the project. Alternative concepts were developed to provide the necessary vehicular capacity for future conditions with consideration given to major issues such as right-of-way acquisition, safety, environmental impacts and access to existing land uses. This section of the report evaluates the engineering aspects of the proposed alternatives. An evaluation of environmental impacts are addressed in separate environmental documents.

5.1 Roadway Design Standards

Design criteria for the alternative concepts were prepared using guidelines provided in the Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways prepared by FDOT and in A Policy of Geometric Design of Highway and Streets prepared by the American Association of State Highway and Transportation Officials (AASHTO). The design criteria prepared specific to this project is summarized in Table 5.1.

5.2 Preliminary Alternative Alignments

As discussed in Section 4.1.1, several alternative alignments were considered in the evaluation of alternatives. Initially in Segment A, the existing S.R. 699 (Blind Pass Road) corridor was selected for two alternatives with different alignments in areas

TABLE 5.1

ROADWAY DESIGN CRITERIA
S.R. 699 (Gulf Boulevard/Blind Pass Road)

Design Speed	-	35 mph
Horizontal Alignment	-	Minimum (inside radius) 300 feet
Vertical Grades	-	5% maximum grade (Blind Pass Bridge)
Superelevation	-	.05 maximum for urban sections
Drainage	-	Closed system throughout with curb and gutter section
Minimum Vertical Clearance over Blind Pass	-	Elevation 11.2 feet-50 year flood event
Enbankment Slopes	-	2:1 Minimum where needed at superelevation sections
Retaining Walls	-	Conventional type walls to be used at bridge

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Sources: Manual of Uniform Minimum Standards for Design Construction and Maintenance for Streets and Highways, FDOT, 1986.

A Policy on Geometric Design of Highways and Streets, AASHTO, 1984.

where additional right-of-way would be needed. In an effort to reduce right-of-way takings in this segment, other alternative alignments were selected to function as one-way pair corridors with Blind Pass Road. One alternative alignment considered is using Boca Ciega Drive as a one-way roadway northbound and Blind Pass Road as a one-way roadway southbound between 75th Avenue and 79th Avenue. The other alternative alignment considered utilizes Gulf Boulevard as a one-way roadway southbound and Blind Pass Road one-way northbound between 74th Avenue and 79th Avenue along with a one-way pair at 75th Avenue (westbound) and 74th Avenue (eastbound) between Gulf Boulevard and the St. Petersburg Beach Causeway.

An evaluation of Segment B has resulted in locating the new roadway and bridge in approximately the same location as the existing alignment. The new alignments for the Blind Pass Bridge have been located on either side of the existing bridge. These alignments were selected in order to reduce additional right-of-way acquisitions, in addition to maintaining traffic flow on the existing bridge while the new structure is being constructed.

Segment C will consist of three alternatives all using the same corridor. Since Gulf Boulevard (S.R. 699) is the only significant north-south facility in this segment and there is no available land to locate another corridor, Gulf Boulevard is the only feasible alignment to use.

5.3 Reasonable and Feasible Alternative Alignments

Alternative concept alignments were designed for all three study segments. Typical sections were developed for the various roadway and bridge alternatives that show

lane widths, sidewalks, curb and medians (where necessary). Typical sections for all of the alternative concepts are shown on Exhibits 5-A, 5-B, and 5-C. Segment A extends from 74th Avenue to 93rd Avenue, Segment B is located between 93rd and 2nd Street, and Segment C extends from 2nd Street to 106th Avenue.

5.3.1 Typical Sections

Typical sections for all of the alternatives were developed for S.R. 699 and other affected roadways in close coordination with FDOT. An urban, curb and gutter section has been proposed for all roadways to be improved along with a completely new structure for the Blind Pass Bridge. Typical sections for the alternatives are graphically shown on Exhibits 5-A through 5-C and described below.

Along the existing rural roadway portions of S.R. 699 and the other affected corridors, some segments may contain vertical grades of zero percent. These areas will require modification to provide the necessary slopes to accommodate the proposed urban section. The only significant horizontal curves along the S.R. 699 corridor are located near the approaches to the Blind Pass Bridge. South of the bridge, a pair of reverse curves will be accommodated within the proper tangent distance required for a .05 superelevation.

All of the horizontal geometry proposed has been designed to accommodate a 35 miles per hour (mph) design speed with the exception of Alternative C-3. The curve located in the vicinity of the S.R. 699 and 1st Street intersection was designed for a 30 mph design in Alternative C-3 in order to minimize right-of-way acquisitions.

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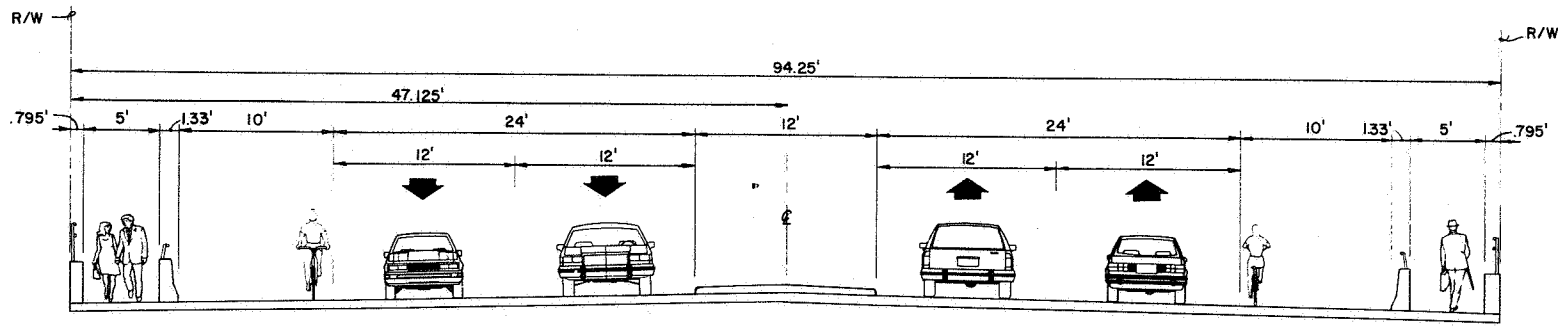
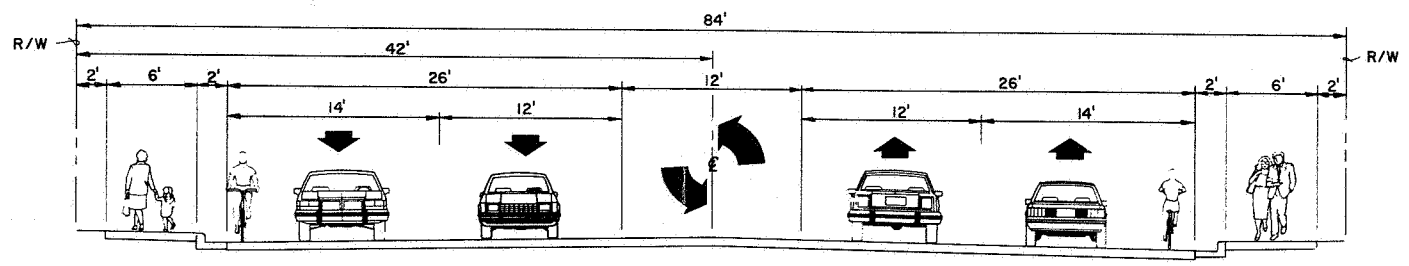


BLIND PASS BRIDGE
(All Segment B Alternatives)



BLIND PASS ROAD
(All Segment A & B Alternatives)
GULF BLVD
(Alternatives C1 & C2)

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S.R. 699 (GULF BLVD./BLIND PASS RD)
Project Development and Environmental Study

Greiner
Greiner, Inc.
Tampa, Florida.

TYPICAL SECTIONS

EXHIBIT 5-A

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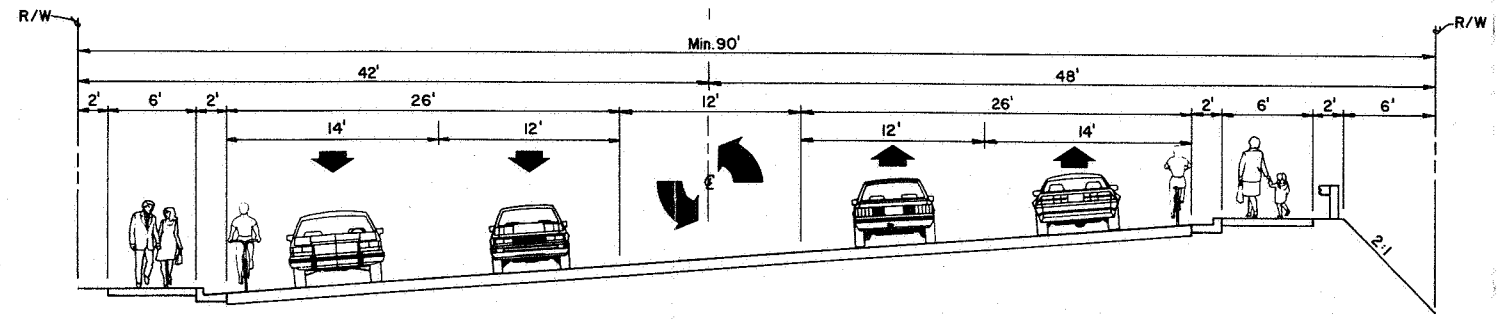
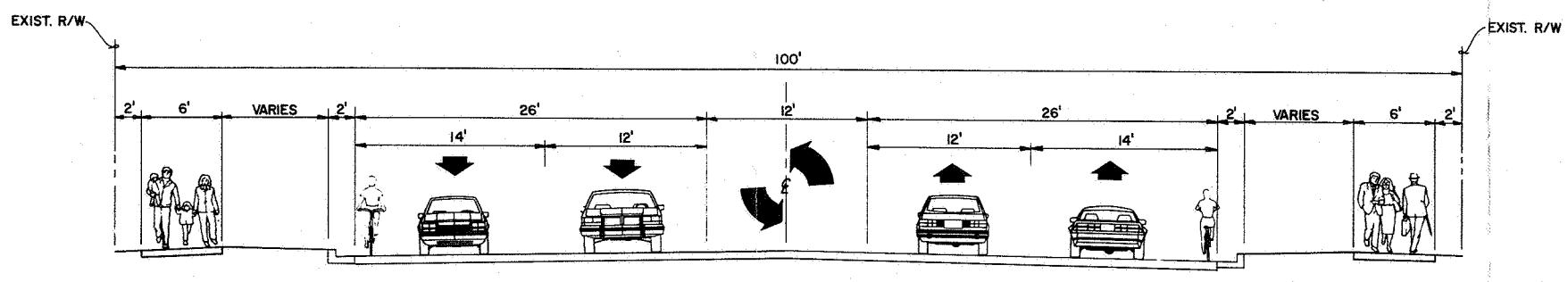


BLIND PASS ROAD

(Superelevated Curve Sections)



BLIND PASS ROAD

(All Segment A Alternatives
North of 80th Avenue)

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Tampa, Florida.

TYPICAL SECTIONS

EXHIBIT 5-B

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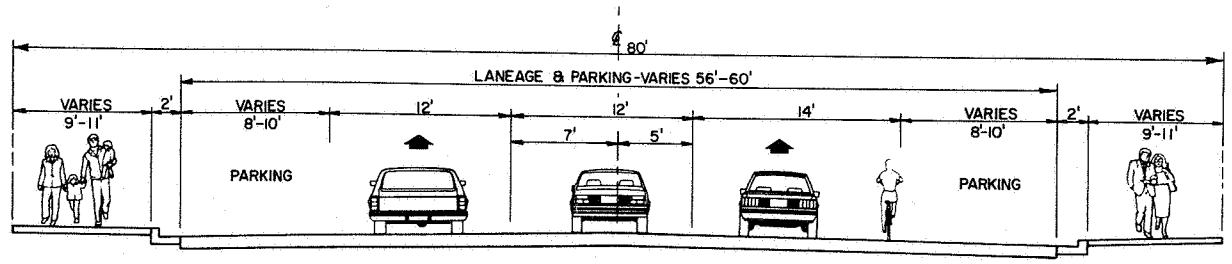
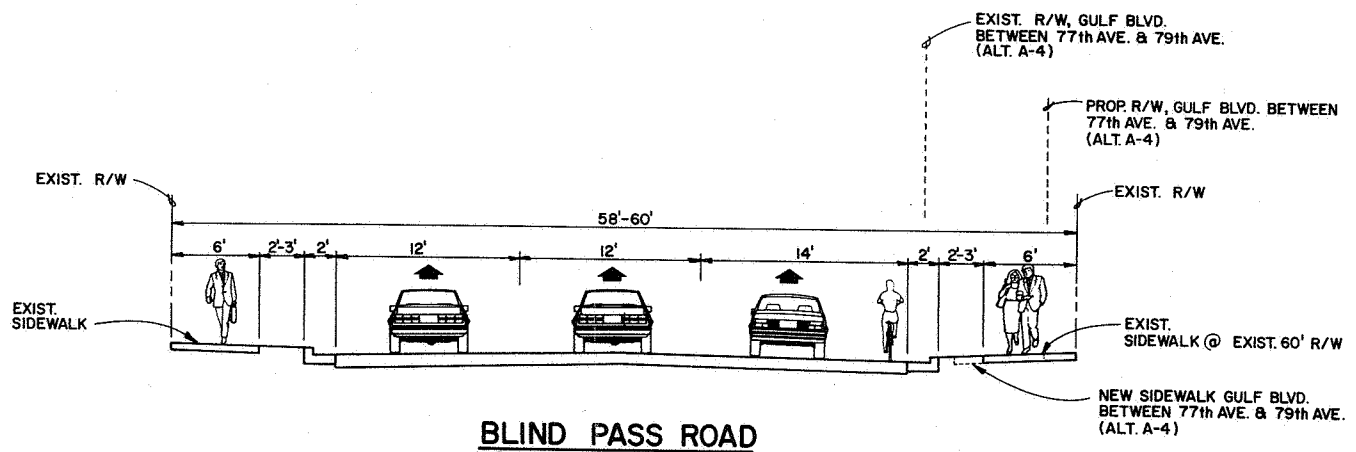


74th AVENUE
75th AVENUE
(Segment "A" Alternative A-4)



BLIND PASS ROAD
GULF BOULEVARD
BOCA CIEGA DRIVE
79th AVENUE
(Segment "A" Alternatives A-3 & A-4)

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TYPICAL SECTIONS

EXHIBIT 5-C

For the proposed five-lane sections of S.R. 699, an 84-foot section is recommended with wider segments where intersection improvements or sloped areas require more right-of-way. Some minimal areas in Segment A and Segment C contain the five-lane facility within an existing right-of-way of 100 feet. However, most of the S.R. 699 corridor requires additional right-of-way to attain the 84-foot section.

The five-lane section would include a 12-foot-painted median (continuous left-turn lane), two 12-foot inside lanes, and two 14-foot outside lanes. A buffer area of a minimum 10 feet would be needed on both sides of the roadway to accommodate 2-foot curb, 6-foot sidewalks and a 2-foot buffer area between the sidewalk and curb.

Typical sections for the one-way pair Alternatives A-3 and A-4 at the S.R. 699, Gulf Boulevard, Boca Ciega Drive and 79th Avenue corridors would require a minimum of 58 feet of right-of-way. This section would accommodate two 12-foot lanes, a 14-foot outside lane (total three lanes) and a 10-foot buffer on both sides of the roadway including curbs and sidewalks. Most of these one-way corridors can be contained within the existing right-of-way of 60 feet.

The 74th and 75th Avenue corridors have varied sections containing either three or four-lanes with and without parking. All of the improvements along these roadways would be contained within the existing right-of-way with the exception of a two-lane roadway segment to connect 74th Avenue with the St. Petersburg Beach Causeway.

The new Blind Pass Bridge is proposed to contain two 12-foot lanes in each direction, a 12-foot raised median, 10-foot outside shoulders (8-foot shoulder, 2-foot bike lane) in both directions, and 5-foot walkways in each direction. With barrier walls and outside pedestrian walks, the typical section would be approximately 94 feet.

5.3.2 Segment A

Alternative A-1 utilizes the existing S.R. 699 (Blind Pass Road) corridor. A five-lane curb and gutter roadway section is proposed from 74th Avenue north to 93th Avenue. This segment is contained mostly by an 84-foot right-of-way section. For this alternative, additional right-of-way between 74th and 79th Avenues would be provided on the east side of the roadway. In some areas (near 93rd Avenue) where additional widening is needed for superelevation, a larger section would be required. In addition, an existing right-of-way of 100 feet is provided between 79th Avenue and 82nd Avenue and between 84th Avenue and 87th Avenue. The roadway sections include 12-foot-wide inside lanes and 14-foot-wide outside curb lanes to allow for bicycle traffic.

Between 76th Avenue and 74th Avenue, the roadway section widens to a maximum width of 96 feet to accommodate the lane geometrics necessary to improve the 75th Avenue and S.R. 699 intersection to an acceptable level of service. Laneage requirements at this signalized intersection would include: eastbound to northbound and southbound to eastbound dual left-turn lanes; single left-turn lanes at the remaining approaches; separate right-turn lanes southbound to westbound, westbound

to northbound, and northbound to eastbound; one through lane southbound and two lanes northbound; and two through lanes each way eastbound and westbound. The widening of S.R. 699 in Alternative A-1 occurs on the east side of the existing right-of-way within the limits of 74th Avenue to 79th Avenue. By holding the existing west side right-of-way line, all acquisitions on S.R. 699 in this area would occur on the east side of the roadway. It would also be necessary to widen 75th Avenue for additional turn lanes. Acquisitions on 75th Avenue would be located between Boca Ciega Drive and Gulf Boulevard. Alternative A-1 is shown on Exhibits 5-D and 5-I.

Alternative A-2 contains the same lane characteristics as Alternative A-1. The difference in this concept occurs between 74th Avenue and 79th Avenue where the roadway is shifted to the west of the existing right-of-way. By holding the existing right-of-way line on the east side, all acquisitions in this area would occur on the west side of S.R. 699. Alternative A-2 is shown on Exhibits 5-E and 5-I.

Alternative A-3 is a concept that uses one-way flow at Boca Ciega Drive, 79th Avenue, and S.R. 699 (Blind Pass Road). In this concept, Boca Ciega Drive would function as a three-lane, one-way roadway northbound between 75th Avenue and 79th Avenue. 79th Avenue would also function as a one-way roadway providing three lanes for westbound only traffic between Boca Ciega Drive and S.R. 699. Three southbound only lanes would be provided along S.R. 699 between 79th Avenue and 75th Avenue. The three-lane one-way section would be contained within a minimum right-of-way section of 60 feet as shown on Exhibit 5-C. A 72-foot right-of-way would be needed between 75th Avenue and 76th Avenue to handle intersection improvements at 75th

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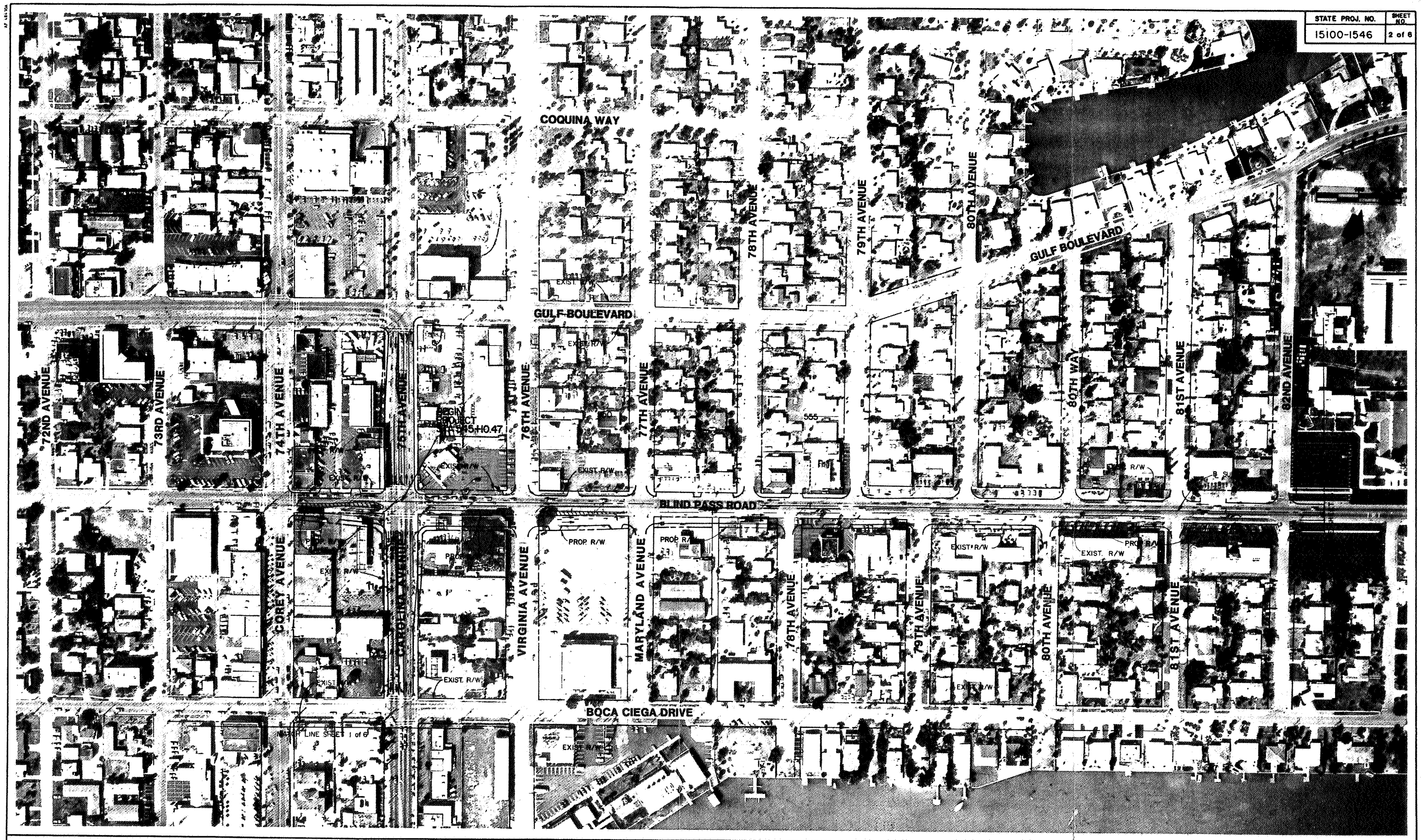

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SR 699 (GULF BLVD / BLIND PASS RD.)
Project Development and Environmental Study

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Greiner, Inc.
Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT A
ALTERNATIVE A-1

EXHIBIT 5-D

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Project Development and Environmental Study

Greiner

CONCEPT DESIGN ALTERNATIVES
SEGMENT A
ALTERNATIVE A-2

EXHIBIT 6-E

Avenue and Blind Pass Road. North of 79th Avenue, S.R. 699 would be a five-lane section, as discussed in the previous Segment A alternatives.

Lane requirements at the signalized intersection of 75th Avenue and S.R. 699 would include: two through lanes eastbound and westbound and one through lane southbound; dual left-turn lanes southbound to eastbound; separate left-turn lanes northbound to westbound and westbound to southbound; and a separate southbound to westbound right-turn lane. Lane geometrics at the signalized intersection of Boca Ciega Drive and 75th Avenue would consist of: two through lanes northbound, eastbound and westbound; dual left-turn lanes eastbound to northbound; and a separate right-turn lane westbound to northbound.

The Alternative A-3 one-way concept provides a scenario of reducing right-of-way acquisitions along S.R. 699 between the critical congested areas from 74th Avenue to 76th Avenue. However, acquisitions would still occur along 75th Avenue between S.R. 699 and Mangrove Avenue. Alternative A-3 is graphically shown on Exhibits 5-F and 5-I.

Alternative A-4 also employs the one-way pair concept. In this alternative, three-lane, one-way, north-south roadways would include S.R. 699 and Gulf Boulevard between 74th Avenue and 79th Avenue. 79th Avenue provides a three-lane, one-way, westbound connection between these roadways. All of these three-lane facilities would be contained within an existing 60-foot right-of-way except for a section on Gulf Boulevard between 77th Avenue and 79th Avenue which would require additional right-of-way for a 58-foot section.

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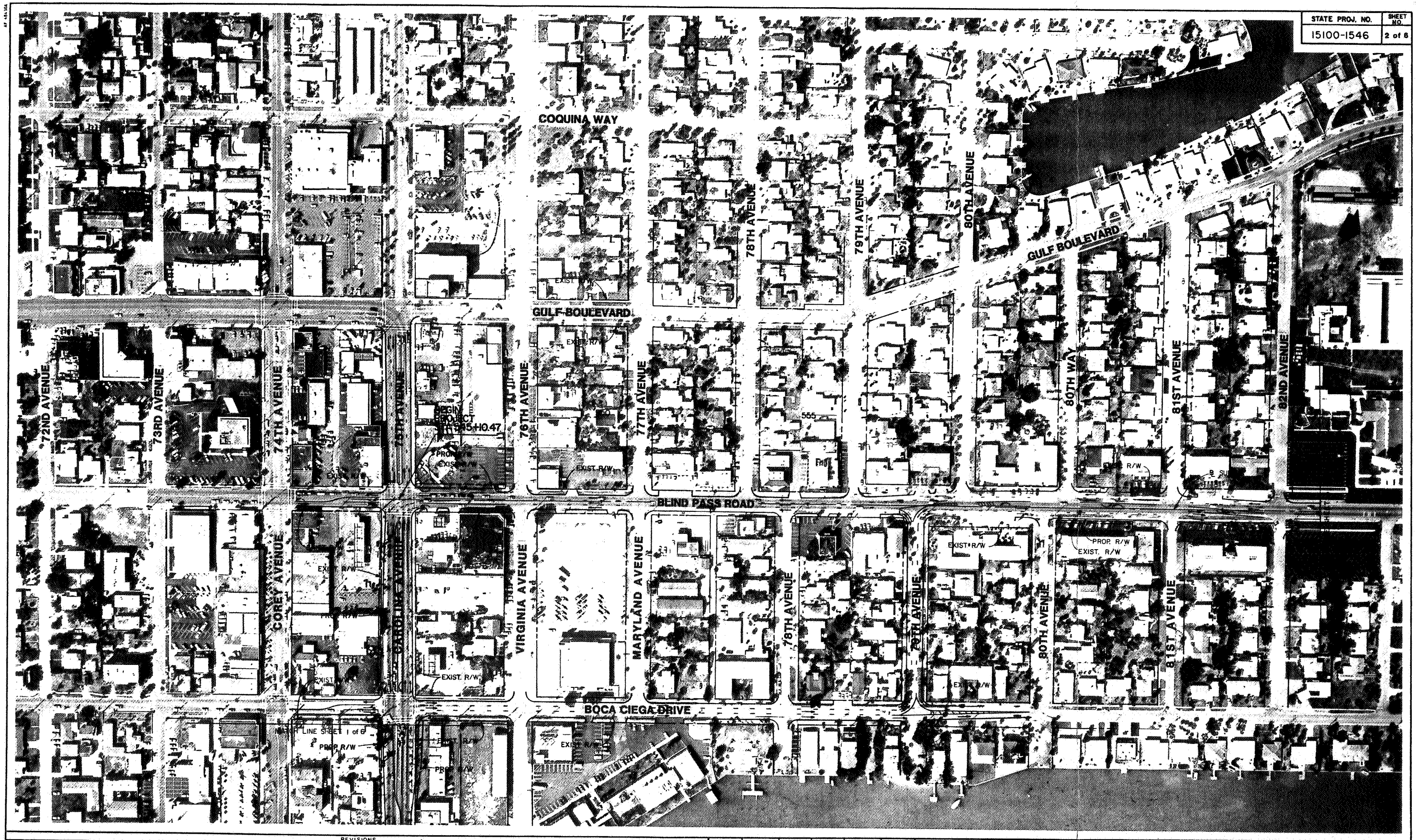

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Project Development and Environmental Study

Greiner, Inc. Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT A
ALTERNATIVE A-3

EXHIBIT 5-F

In addition, a one-way pair would be developed along 74th and 75th Avenues from the St. Petersburg Beach Causeway to Gulf Boulevard. On 75th Avenue, a four-lane, one-way westbound section would be developed just east of Boca Ciega Drive to S.R. 699 and three-lanes from S.R. 699 to Gulf Boulevard. This corridor could be improved within the existing right-of-way with enough excess pavement to provide additional parking in some areas. 74th Avenue would provide a three-lane section from Gulf Boulevard eastbound to Mangrove Avenue. All improvements to 74th and 75th Avenues would also be contained within the existing (not including retention areas) right-of-way with the exception of the section south of Mangrove Avenue and the section where a two-lane 74th Avenue connects to the causeway. A plan view of Alternative A-4 is shown on Exhibits 5-G, 5-H, and 5-I.

5.3.3 Segment B

All Segment B alternatives provide a new Blind Pass Bridge near the existing location. The bridge typical section would consist of two 12-foot lanes eastbound and westbound, a 12-foot raised median, 10-foot outside shoulders and a 5-foot protected walkway located on both sides of the structure. At the approaches to the bridge, the alignment of S.R. 699 would be adjusted back to near the center of its original right-of-way section.

As in all of the Segment B alternatives, the horizontal curves located at both bridge approaches were designed to handle a posted speed of 35 mph. A maximum urban section superelevation of .05 was used to attain this speed.

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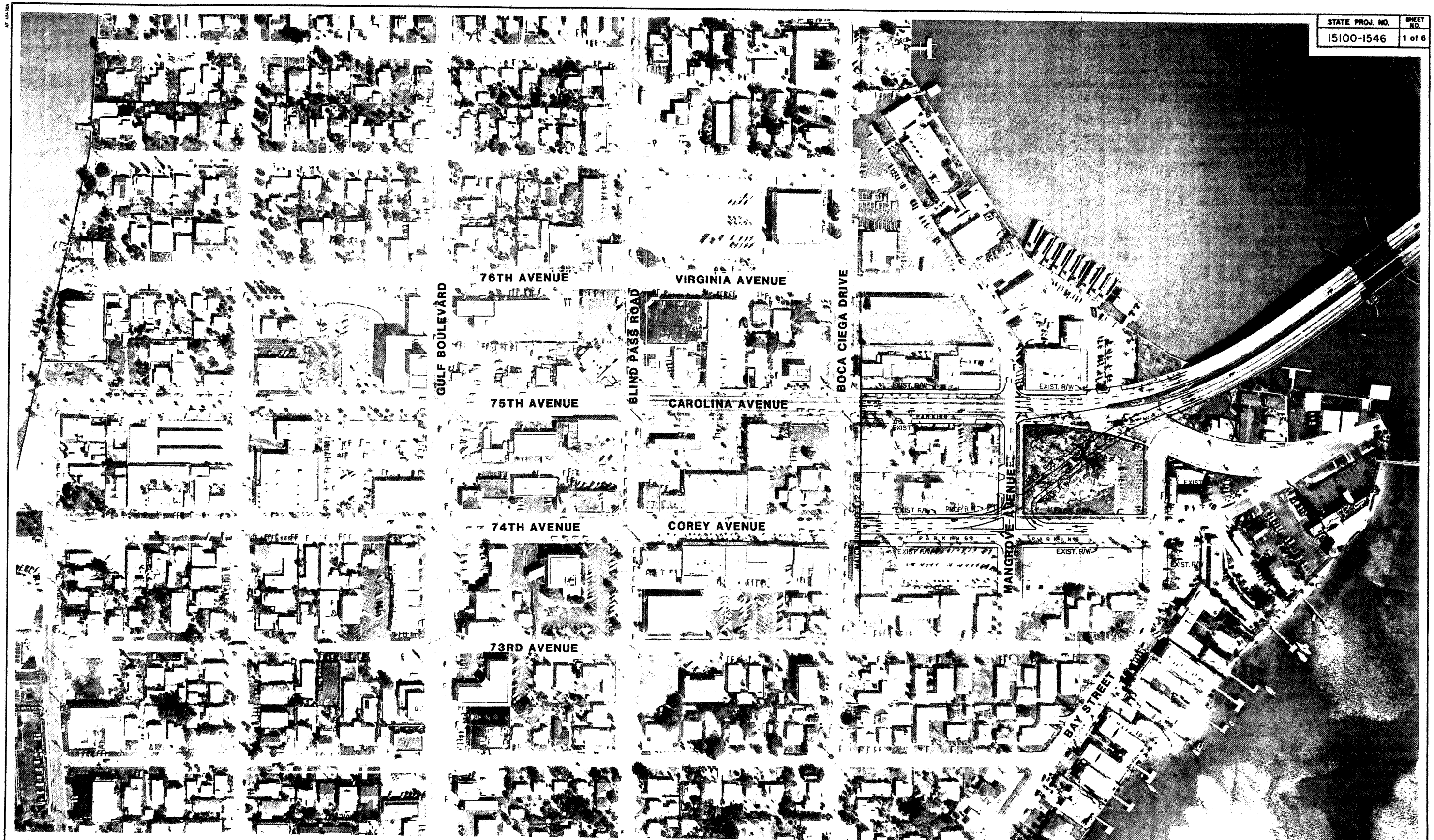

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Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT A
ALTERNATIVE A-4

EXHIBIT 5-G

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Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT A
ALTERNATIVE A-4

EXHIBIT 5-H

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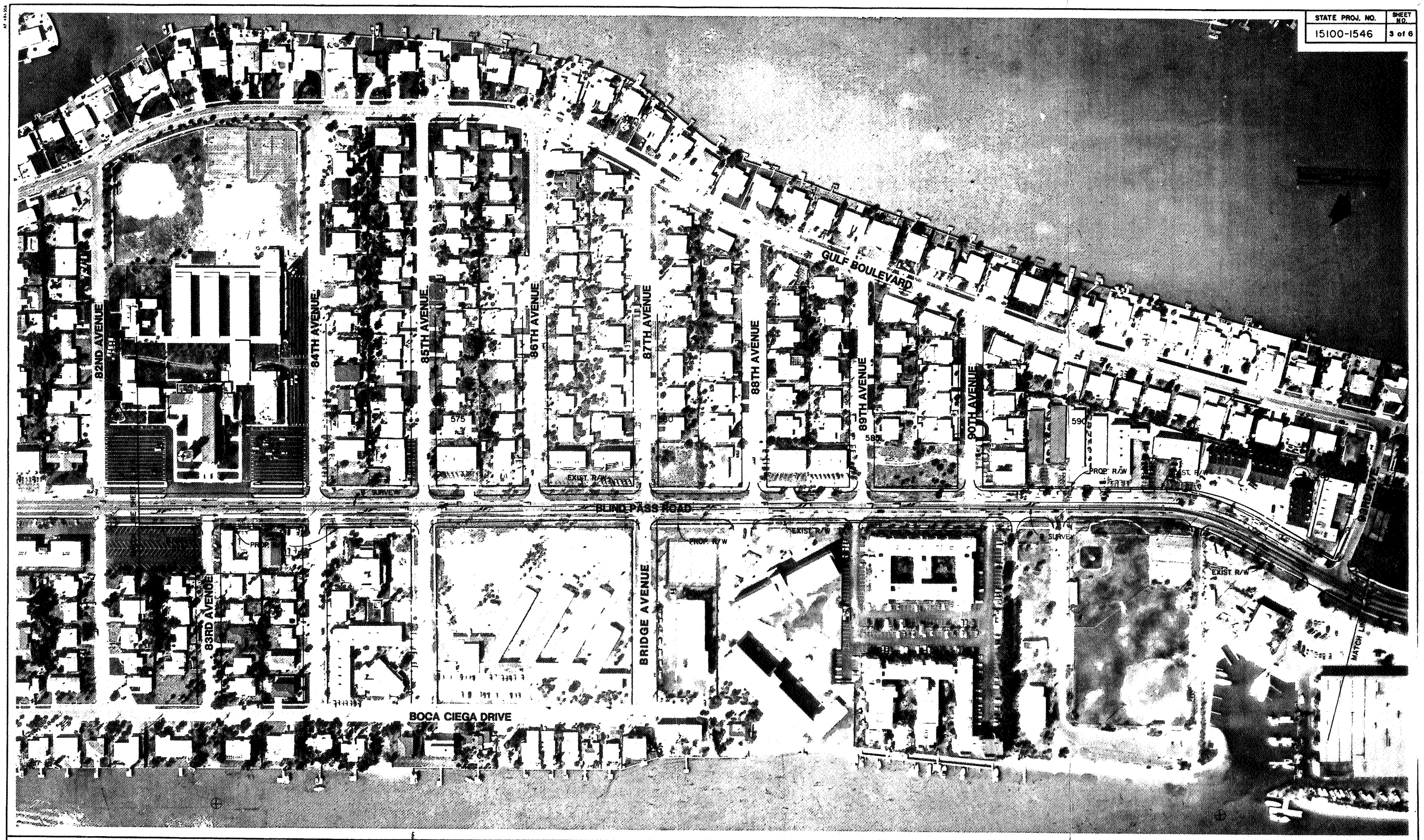

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SR 699 (GULF BLVD / BLIND PASS RD.)
Project Development and Environmental Study

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Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT A
ALTERNATIVES A-1, A-2, A-3, & A-4

EXHIBIT 5-I

Alternative B-1 would locate the new Blind Pass Bridge slightly north of the existing bridge. The alignment of the outside edge of the new structure would be a minimum of approximately 38 feet north of the existing outside edge of the bridge on the west end and a maximum of approximately 68 feet on the east end. In Alternative B-1, the vertical alignment of the new bridge would have a minimum elevation of 11.2 feet over the entire water crossing and a minimum center span vertical clearance elevation of 11.59, in order to satisfy recommendations stated in the Location Hydraulic Report prepared by Greiner, Inc.

The clearances per the FDOT Manual, Volume 2, Chapter 9, are as follows. The design event for a high use essential highway such as S.R. 699 (Gulf Boulevard/Blind Pass Road) is the 50-year event with 2 or 3 feet of clearance. The 50-year stillwater elevation as reported in the Flood Insurance Studies for Treasure Island and St. Petersburg Beach is 9.2 feet National Geodetic Vertical Datum (NGVD). Therefore, per this criteria, the minimum Low Member Elevation (LME) should be at least 11.2 feet NGVD.

According to the Structures Design Guidelines publication prepared by FDOT, the minimum vertical clearance for bridges over corrosive water should be at least 12 feet above the mean high water elevation. This criteria would supersede the 50-year flood requirements for bridges utilizing prestressed/post-tensioned or structural steel members. At this point in the study, the cast-in-place constriction method was assumed in order to allow for a lower bridge elevation to maintain access for existing driveways that border the bridge approaches for Alternatives B-1 and B-3. Alternative B-1 is shown on Exhibit 5-J.

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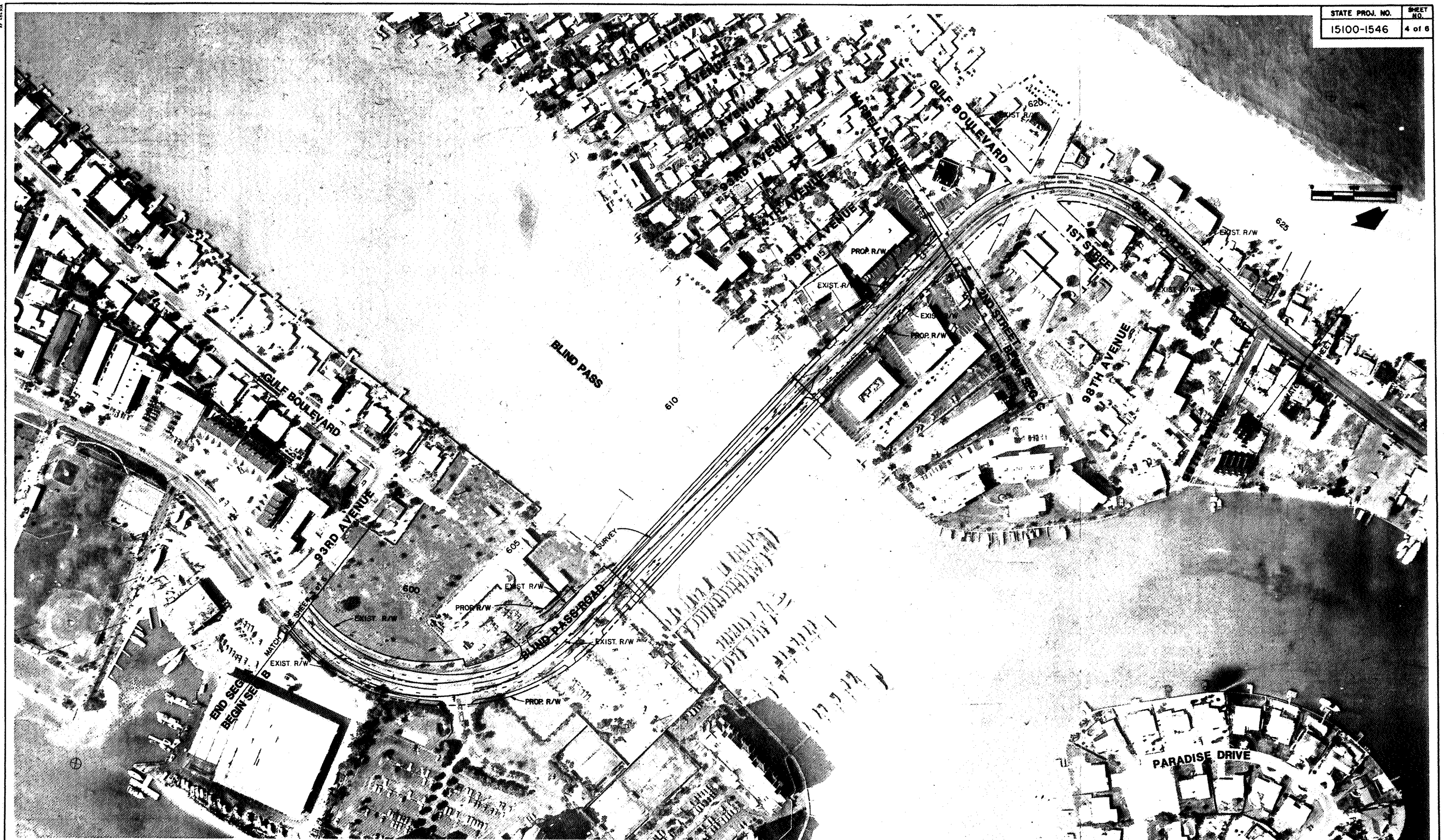

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Project Development and Environmental Study

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Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT B
ALTERNATIVE B-1 (CAST-IN PLACE STRUCTURE)

EXHIBIT 5-J

Alternative B-3 would locate the new Blind Pass structure approximately 38 feet south of the existing bridge. Alternative B-3 would use the same vertical alignment (cast-in-place bridge) as the Alternative B-1 profile. This alternative is shown on Exhibit 5-K.

Alternative B-2 utilizes the same alignment as Alternative B-1. The difference in this alternative is in the vertical alignment of the new structure. As recommended in the previously mentioned structures publication, for prestressed/post-tensioned members, this alternative adheres to the vertical clearance of 12 feet above mean high water over the entire Blind Pass crossing. Type II AASHTO beams would be used to construct this structure.

Alternative B-4 would use the same horizontal alignment as Alternative B-3 (south alignment) but would provide a 12-foot clearance (approx. El. 13.3) above mean high water over the entire section of water as discussed in Alternative B-2. As with Alternative B-2, Type II AASHTO beams would be used in this structure.

The profiles for the Segment B alternatives would provide 5 percent grades cresting at the middle of the pass. Alternatives B-1 and B-3 utilize a vertical alignment providing a minimum LME of 11.2 feet as discussed in the Alternatives Found Feasible section using a cast-in-place structure. Both alternatives adhere to recommendations outlined in the Location Hydraulic Report.

The proposed profile for Alternatives B-1 and B-3 consists of 5 percent grades on both approaches. The high point at the structure will be located at the center of the pass. The existing high point of structure is offset approximately 130 feet west of the

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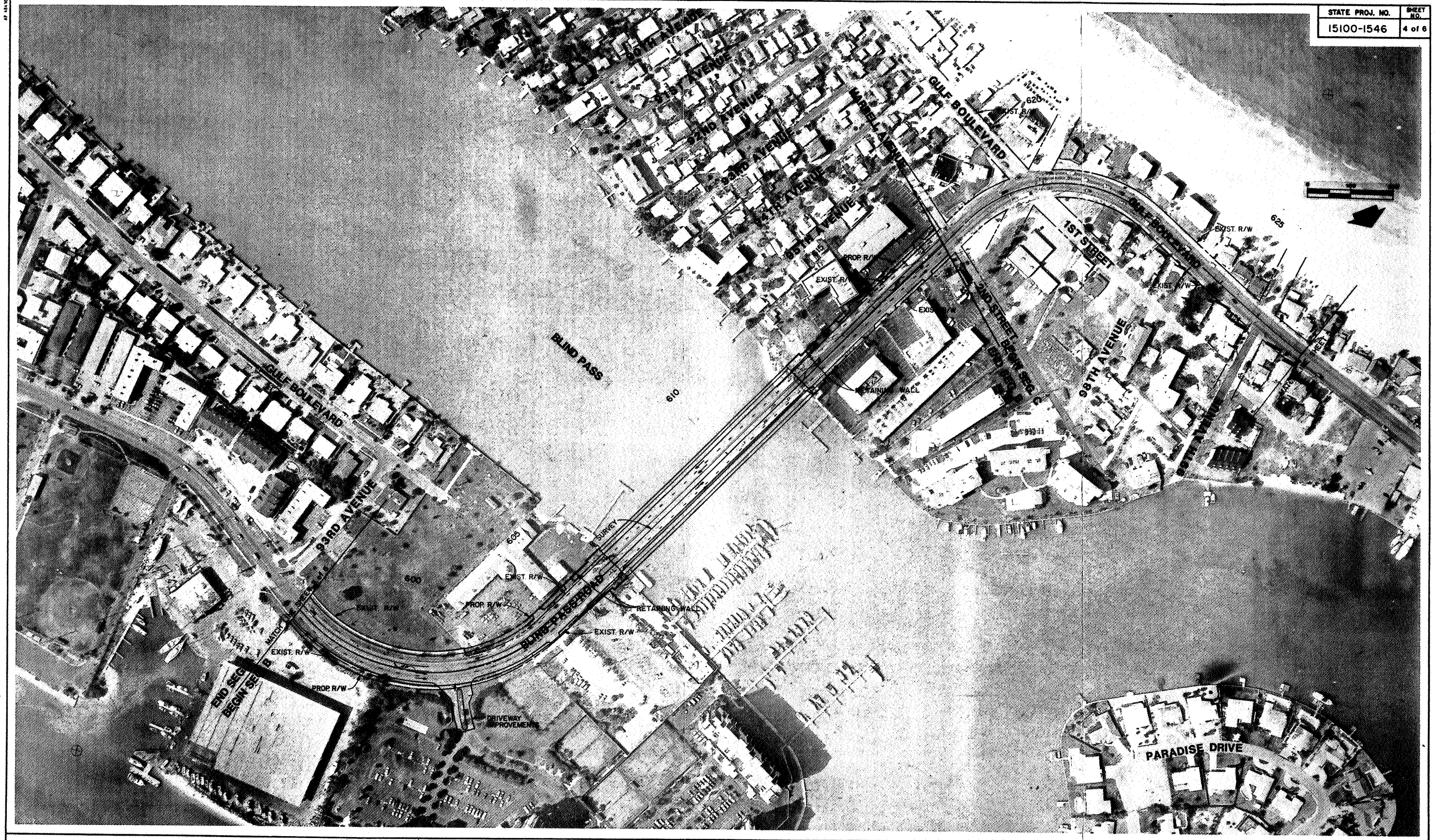

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FLORIDA DEPARTMENT OF TRANSPORTATION

S.R. 699 (GULF BLVD./BLIND PASS RD.)
Project Development and Environmental Study

Greiner
Greiner, Inc.
Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT B
ALTERNATIVE B-3 (CAST-IN-PLACE STRUCTURE)

EXHIBIT 5-K

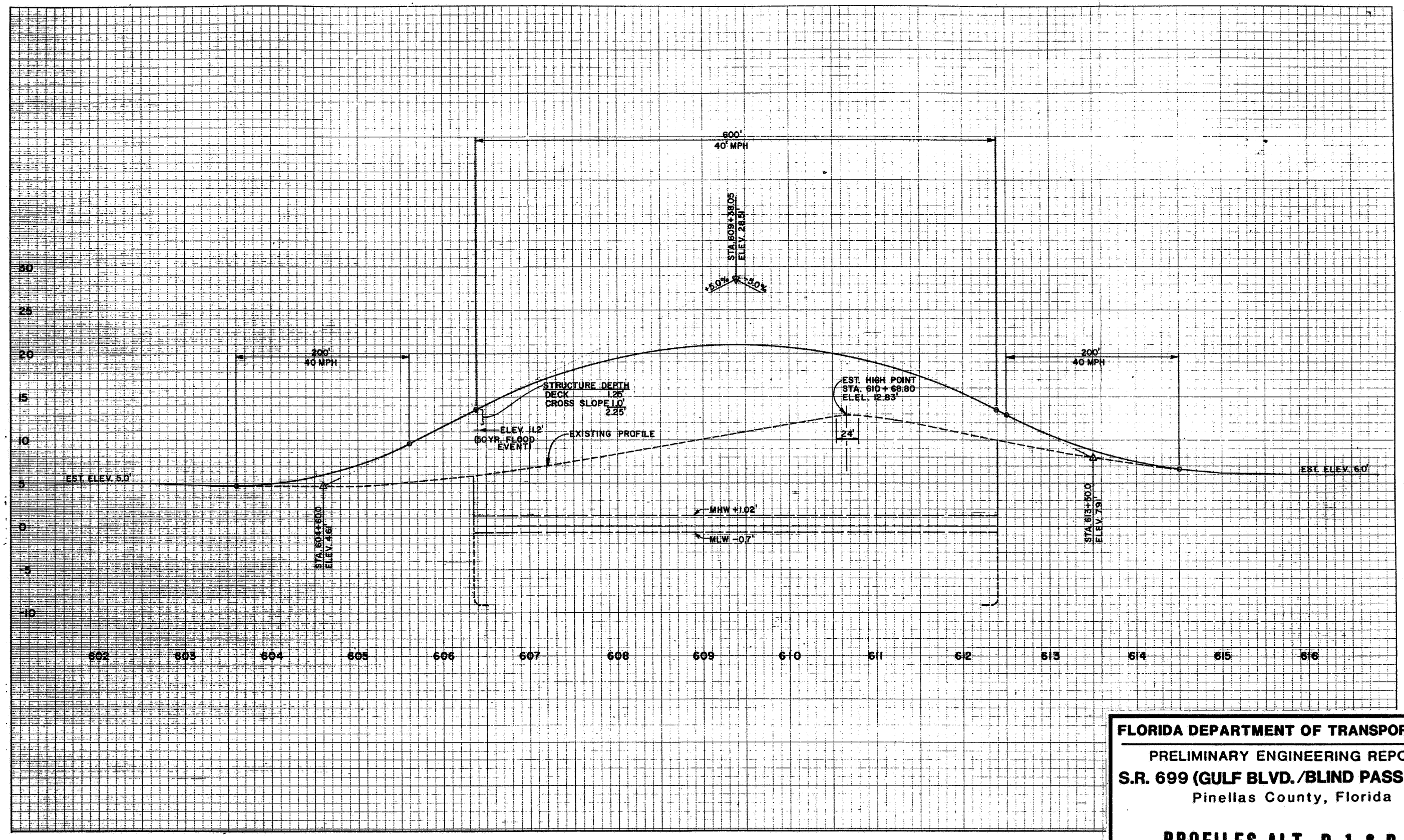
center of the pass. The existing crossing should still be used for navigation through this area in order to direct boat traffic away from the marina located on the east side of the pass. It is recommended that the crossing of the structure be marked in order to direct boat traffic through the correct passage. A conceptual profile for Alternatives B-1 and B-3 is provided on Exhibit 5-Ka.

An alternatives review meeting was held to discuss the feasibility of all of the concepts developed for this study. Both FHWA and FDOT reviewers agreed that the AASHTO beam section proposed for Alternatives B-2 and B-4 would not be feasible concepts because the excessive approach elevations needed to construct this type of structure would make it difficult to effectively provide access to existing businesses and residences in the areas near the bridge approaches. Therefore, Alternatives B-2 and B-4 were withdrawn from consideration.

5.3.4 Segment C

Through most of the alignment of Alternative C-1, as shown on Exhibits 5-L, 5-M and 5-P, the existing right-of-way line on the west side of S.R. 699 is held with additional right-of-way acquisitions occurring on the east side of the roadway. A five-lane 84-foot section would be constructed throughout Segment C tying into the existing five-lane section in the vicinity of 106th Avenue.

Intersection improvements at the existing signalized intersection of S.R. 699 and 1st Street/West Gulf Boulevard include: two through lanes in each direction along S.R.



FLORIDA DEPARTMENT OF TRANSPORTATION

PRELIMINARY ENGINEERING REPORT

S.R. 699 (GULF BLVD./BLIND PASS ROAD)

Pinellas County, Florida

PROFILES ALT. B-1 & B-3

EXHIBIT 5-Ka

Greiner, Inc.

STATE PROJ. NO.	SHEET NO.
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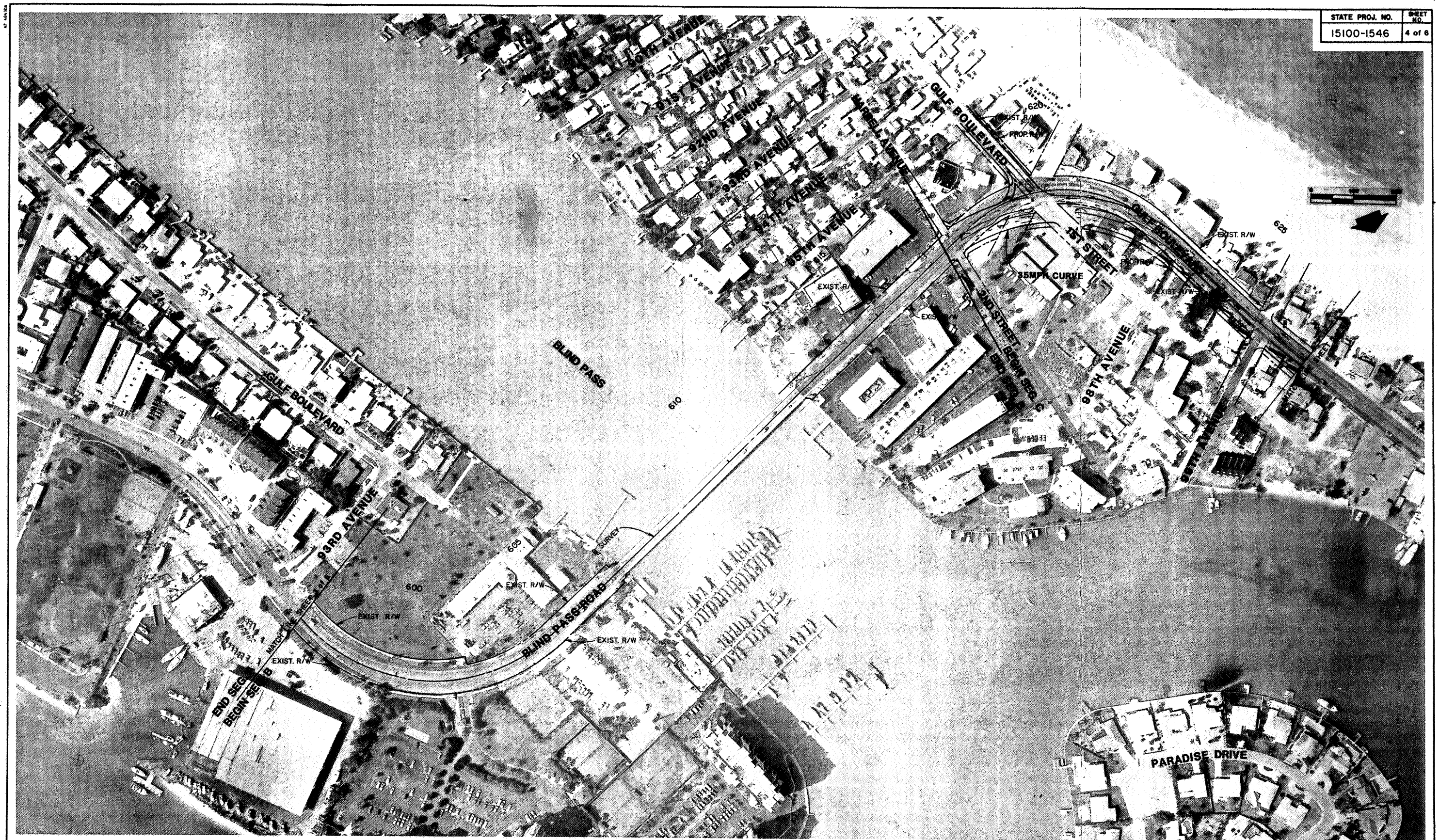

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S.R.699 (GULF BLVD./BLIND PASS RD.)
Project Development and Environmental Study

Greiner
Greiner, Inc
Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT C
ALTERNATIVE C-1

EXHIBIT 5-L

STATE PROJ. NO.	SHEET NO.
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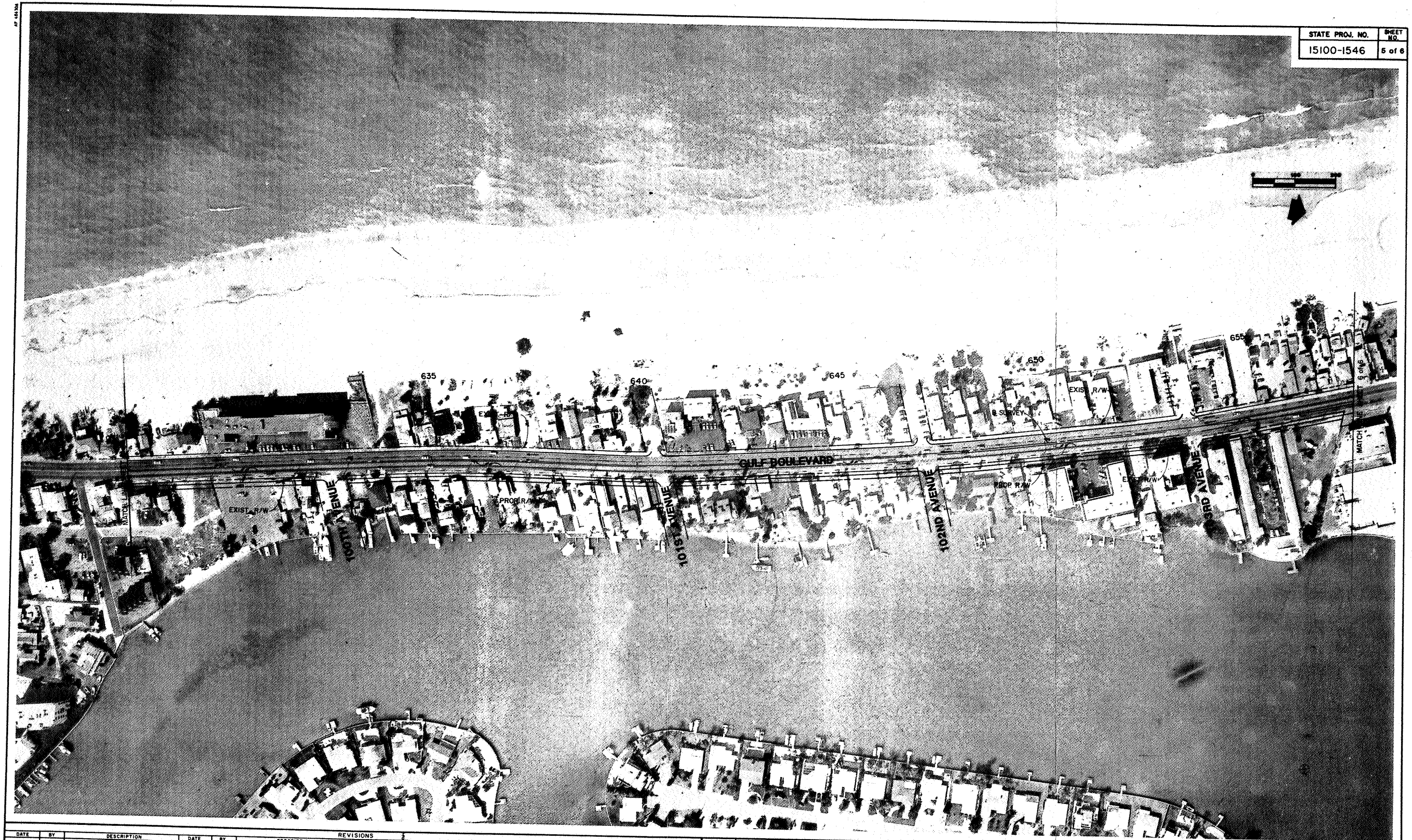

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S.R. 699 (GULF BLVD./BLIND PASS RD.)
Project Development and Environmental Study

Greiner
Greiner, Inc
Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT C
ALTERNATIVE C-1

EXHIBIT 5-M

699, one through lane each direction on West Gulf Boulevard/1st Street, and separate left-turn lanes on S.R. 699 and West Gulf Boulevard.

These improvements are included in all of the Segment C alternatives. The horizontal curve that occurs through this intersection on S.R. 699 would be improved to provide a flatter curve in order to accommodate a 35 mph design speed with an urban curb and gutter roadway. The existing horizontal curvature of the roadway is posted at 35 mph with a rural section.

Alternative C-2, as shown on Exhibits 5-N, 5-O, and 5-P, contains the same geometric characteristics as the previously mentioned concept. The difference is in the horizontal alignment of this concept in that most acquisitions would occur on the west side of S.R. 699. In this concept, the east side right-of-way line remains intact between 99th Avenue and 103rd Avenue and between 104th Avenue and 106th Avenue.

In an effort to reduce right-of-way acquisitions along Segment C an alternative (Alternative C-3) was developed that maintains the existing four-lane undivided section of S.R. 699 from 99th Avenue to 106th Avenue. In order to provide an acceptable level of service at the intersection of S.R. 699 and 1st Street, the necessary improvements mentioned in the previous alternatives would be constructed. However, the basic existing curvature of the horizontal alignment would be held with an urban section. This would result in a lower design speed of 30 mph through this curved section of roadway. The improved section would terminate in the vicinity of 99th Avenue.

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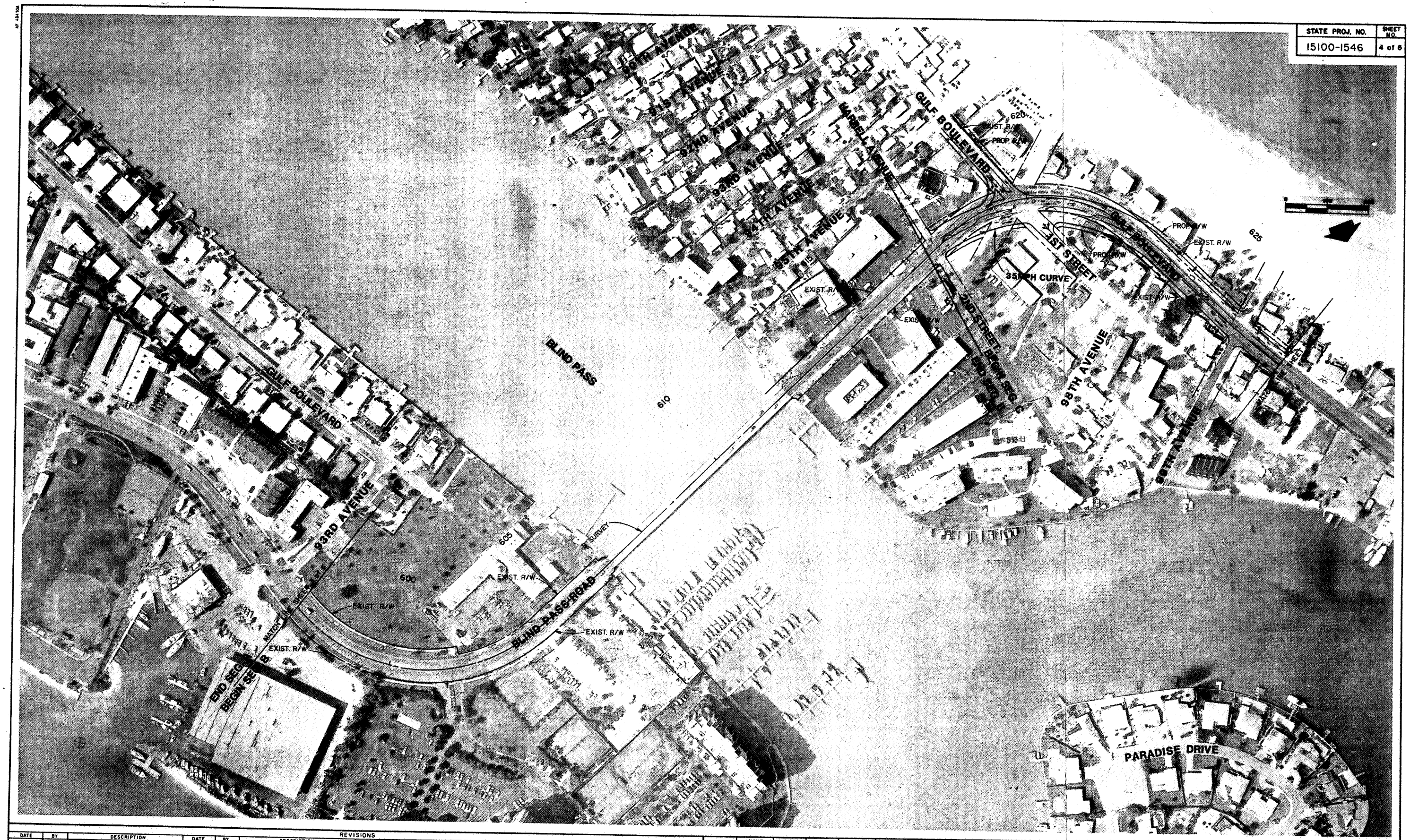

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FLORIDA DEPARTMENT OF TRANSPORTATION

S.R. 699 (GULF BLVD./BLIND PASS RD.)
Project Development and Environmental Study

Greiner
Greiner, Inc
Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT C
ALTERNATIVE C-2

EXHIBIT 5-N

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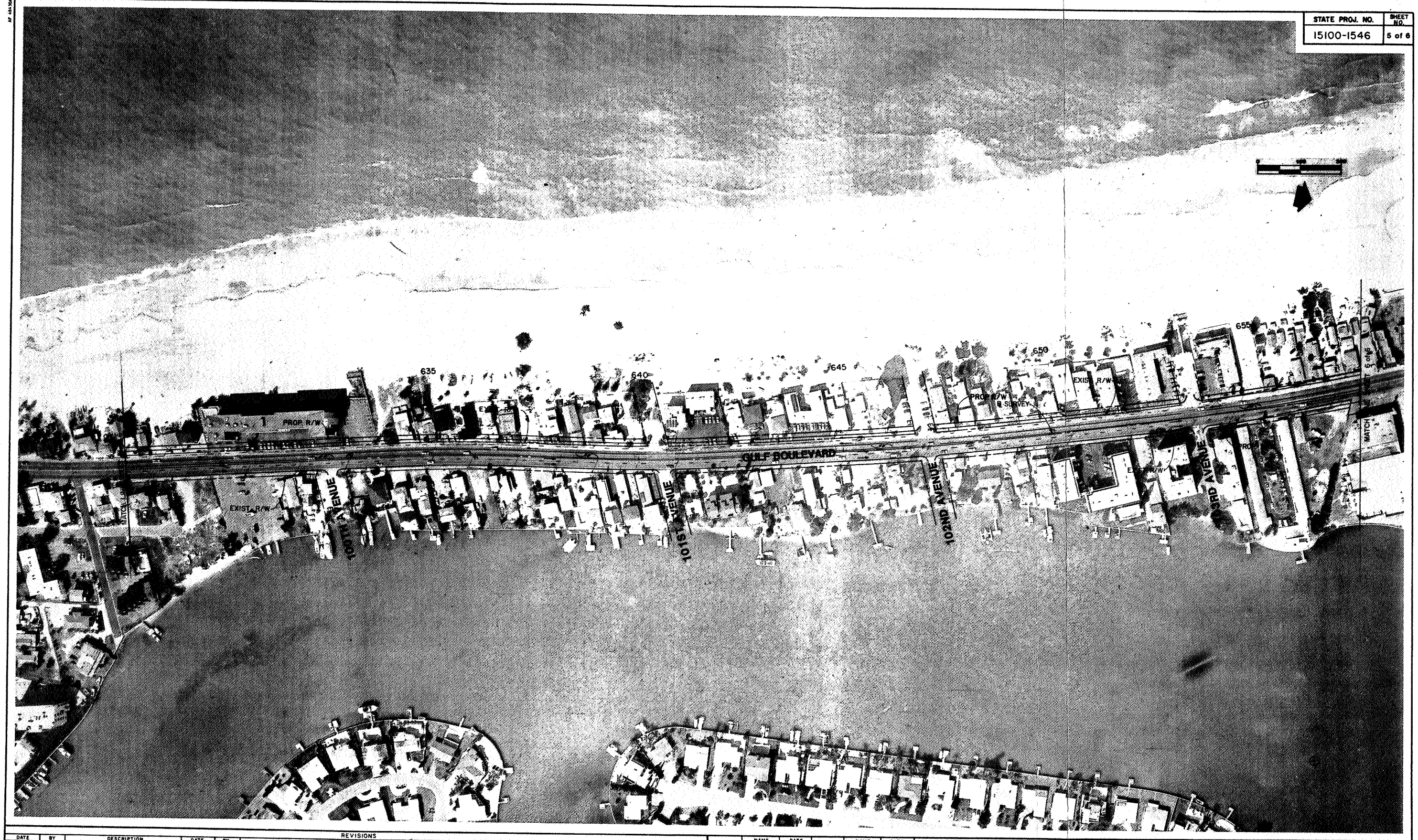

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FLORIDA DEPARTMENT OF TRANSPORTATION

S.R. 699 (GULF BLVD / BLIND PASS RD.)
Project Development and Environmental Study

Greiner
Greiner, Inc.
Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT C
ALTERNATIVE C-2

EXHIBIT 5-O

STATE PROJ. NO.	SHEET NO.
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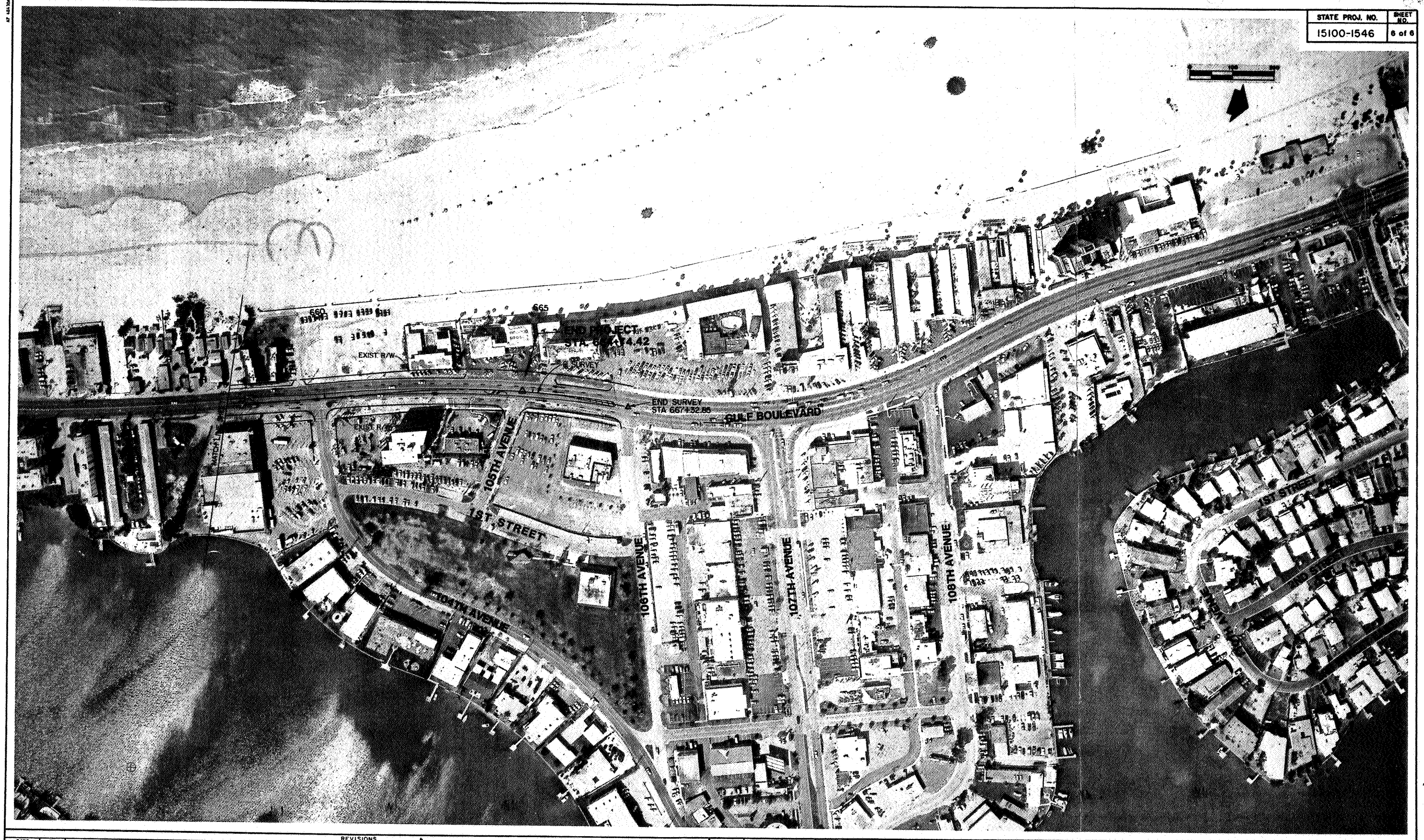

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S.R. 699 (GULF BLVD / BLIND PASS RD.)
Project Development and Environmental Study

Greiner
Greiner, Inc.
Tampa, Florida

CONCEPT DESIGN ALTERNATIVES SEGMENT C ALTERNATIVES C-1 & C-2

EXHIBIT 5-P

If the section between 99th Avenue and 106th Avenue is not upgraded, traffic projections estimate that this link will operate under capacity until year 1996. However, intersection improvements called for at 1st Street and S.R. 699 will allow an under capacity operation at this intersection beyond the year 2010. In the analysis of arterial roadways that contain signalized intersections, it is generally thought that intersection level of service dictates the level of service between connecting links. Alternative C-3 is shown on Exhibit 5-Q.

In an effort to further improve the intersection of 1st Street and S.R. 699, a sub-alternative to Alternative C-3 was developed. Alternative C-3A would eliminate the southbound approach to this intersection from 1st Street. Land uses on the north side of S.R. 699 would access 1st Street via 99th Avenue. By creating a "T" type intersection at this location (S.R. 699 and West Gulf Boulevard), the intersection should operate more efficiently. In addition, the northbound approach (West Gulf Boulevard) would be situated at more of a right angle with S.R. 699, thereby improving vehicle sight distance at the intersection. Alternative C-3A is shown on Exhibit 5-R.

5.4 Construction Segments

The Blind Pass Bridge would be the first segment to be constructed. The limits of construction will most likely extend from the vicinity of 93rd Avenue to 99th Avenue. This construction segment includes all of the roadway sections previously discussed in Segment B and a small portion of Segment C, including the S.R. 699/West Gulf

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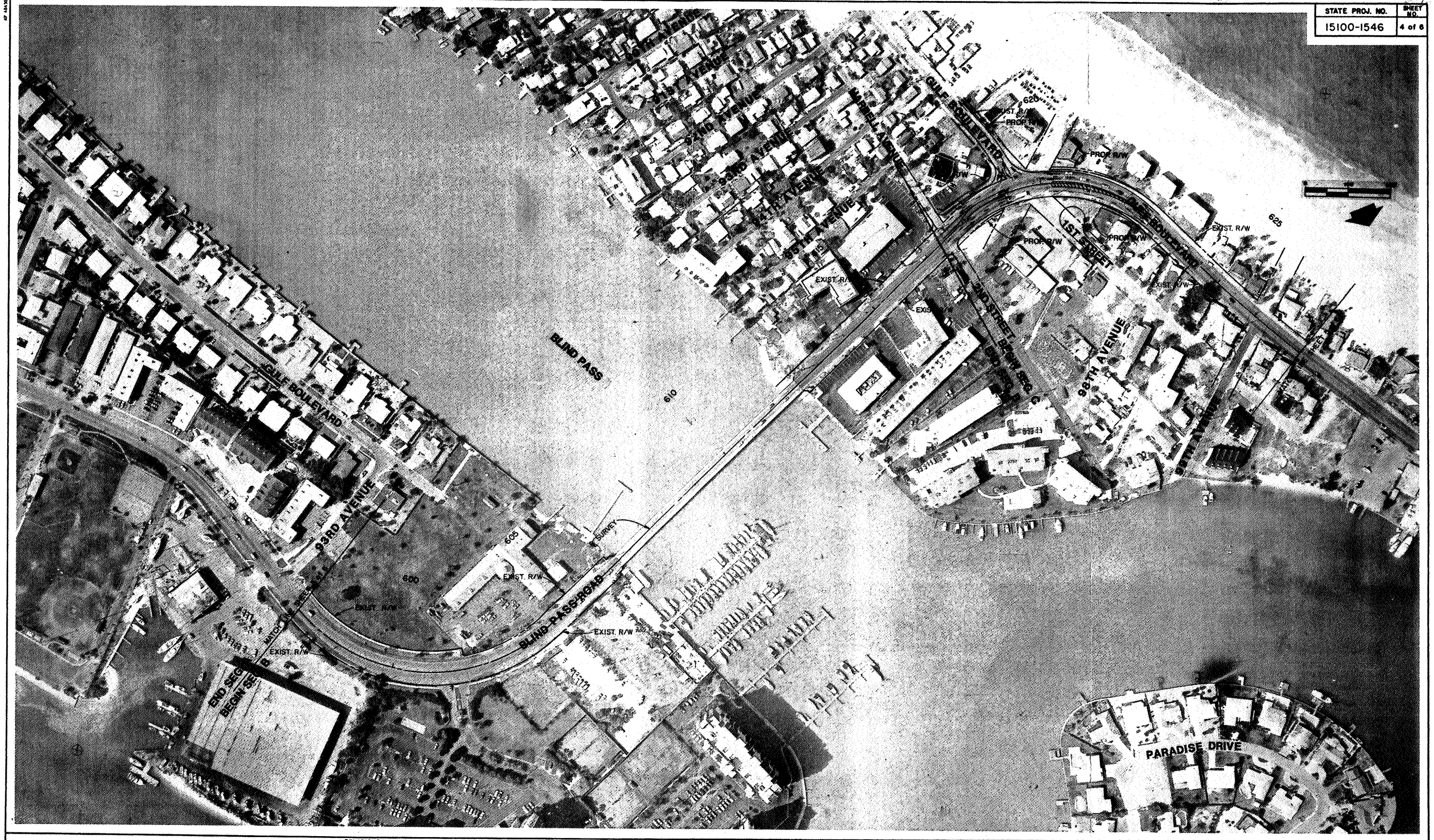

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S.R. 699 (GULF BLVD./BLIND PASS RD.)
Project Development and Environmental Study

Greiner
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Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT C
ALTERNATIVE C-3a

EXHIBIT 5-R

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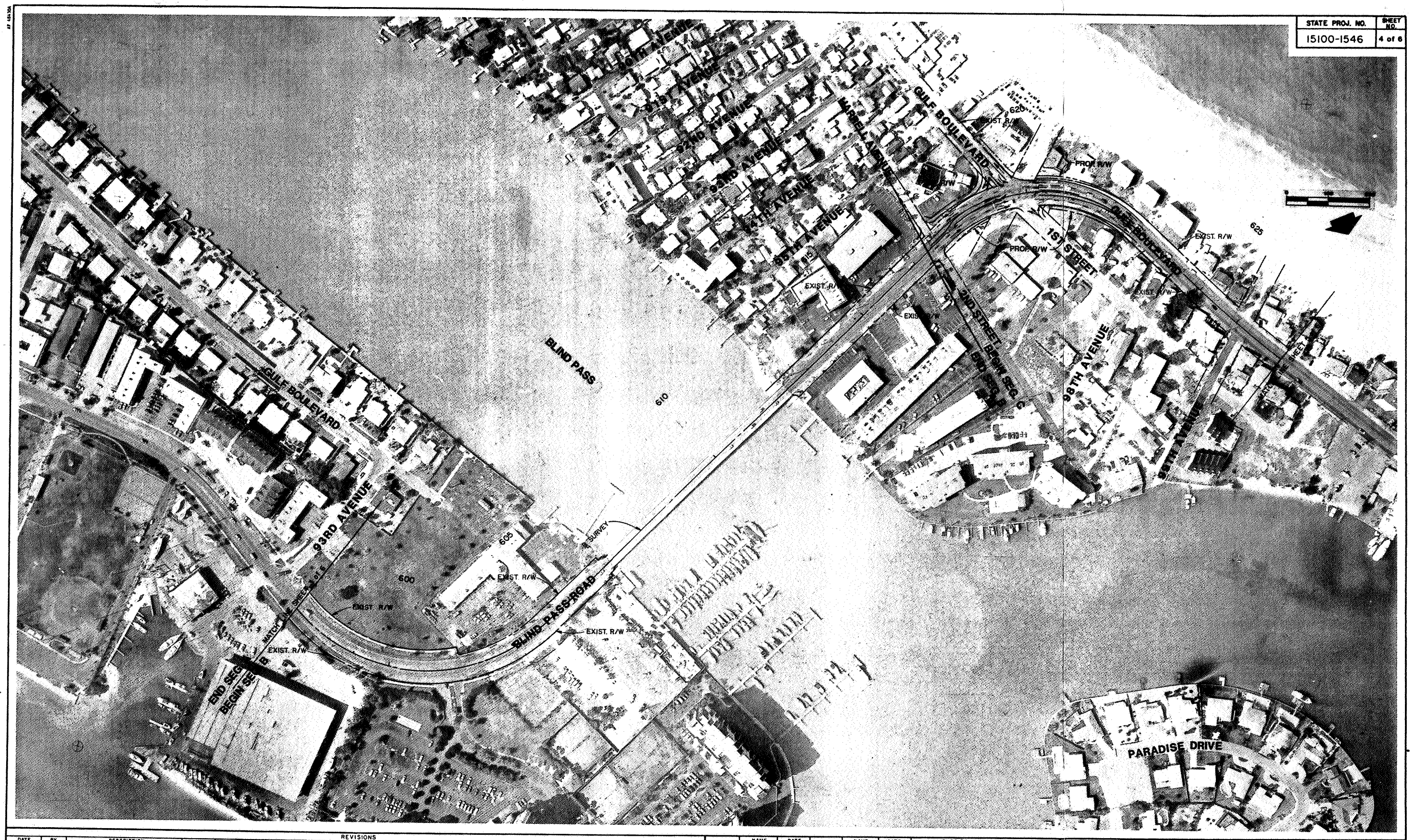

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S.R. 699 (GULF BLVD./BLIND PASS RD.)
Project Development and Environmental Study

Greiner
Greiner, Inc.
Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT C
ALTERNATIVE C-3

EXHIBIT 5-Q

Boulevard intersection. Right-of-way acquisition within these limits should take place during 1990-91 and construction, including Blind Pass Bridge, should take place during 1992-1993. At this time, the other segment of this project has not been funded and has no schedule for construction.

5.5 Comparative Evaluation of Alternatives

An evaluation of alternatives was conducted for all three design segment areas. The evaluation focused on traffic operations, estimated costs and the impacts on relocations of structures. Evaluation of environmental issues for this project are discussed in separate documents.

5.5.1 Traffic Conditions

As indicated in Section 4.0 of this document and in the Traffic Memorandum prepared for this project, an extensive traffic analysis was conducted for each design segment. The results of the analyses indicated that LOS D operation is considered an acceptable condition for peak hour conditions in the design year 2010.

As indicated in Table 5.2, all alternatives provide an acceptable future year level of service. However, Alternative A-4 reports the highest level of service (LOS B) for all six of the intersections evaluated. One-way pair facilities provide for greater traffic capacity by reducing the number of signal phases required for each cycle. As a result, operations through the St. Petersburg Beach Central Business District (CBD) show a much improved level of service with Alternative A-4.

TABLE 5.2

SUMMARY OF 2010 TRAFFIC CONDITIONS
Segment A

Intersection	Peak Hour Level of Service[1]/Alternative A-1	A-2	A-3	A-4
S.R. 699/75th Ave.	D	D	D	B
Gulf Boulevard/75th Ave.	--	--	--	B
Boca Ciega Dr./75th Ave.	--	--	D	B
S.R. 699/74th Ave.	--	--	--	B
Gulf Boulevard/74th Ave.	--	--	--	B
Boca Ciega Dr./74th Ave.	--	--	--	B

[1]Represents both A.M. and P.M. peak hours.

In Segment B, there are no differences in the lane configurations of the two alternatives analyzed. Therefore, the level of service operation would be identical forthese two alternatives. A daily LOS C condition would be attained with the proposed four-lane bridge section and five-lane roadway configuration.

An evaluation of Segment C shows the difference between constructing a five-lane section along S.R. 699 (Gulf Boulevard) or maintaining the existing four-lane undivided section. Alternatives C-1 and C-2 would provide a daily LOS D condition on S.R. 699 between West Gulf Boulevard and 105th Avenue, as shown on Table 5.3. Alternatives C-3 and C-3A show a daily LOS F condition along the same link with no improvements between 99th Avenue and 105th Avenue. Although these alternatives would operate at an unacceptable level in year 2010, these alternatives would operate under capacity until 1996, according to FDOT projections.

The intersection improvements recommended for West Gulf Boulevard and S.R. 699 would provide a peak hour LOS D operation for Alternatives C-1, C-2 and C-3. The "T" intersection proposed in Alternative C-3A would provide a LOS C condition during the peak hours in year 2010.

5.5.2 Costs and Relocations

Preliminary cost and relocation estimates for Segment A are shown on Table 5.4. Alternative A-3 shows a comparative construction cost at approximately $2,189,300. However, its relatively low right-of-way cost allows this alternative to provide the overall least expensive improvements estimated at $4,432,900. The minimal right-of-way required through the St. Petersburg Beach CBD results in the fewest number of relocations with just one business. Alternatives A-1 and A-2 show preliminary costs at

TABLE 5.3

SUMMARY OF 2010 TRAFFIC CONDITIONS
Segment C

	Peak Hour Level of Service[1]/Alternative			
Intersection	**C-1**	**C-2**	**C-3**	**C-3A**
S.R. 699/W. Gulf Blvd.	D	D	D	C
Link	**Daily Level of Service**			
W. Gulf Blvd. to 105th Ave.	D	D	F[2]	F[2]

1 Represents both A.M. and P.M. peak hours.
2 Level of Service is based upon 2010 conditions with the existing lane configuration as a four-lane undivided facility.

TABLE 5.4

PRELIMINARY COST AND RELOCATION ESTIMATES
Segment A

	Alternative			
	A-1	A-2	A-3	A-4
Costs				
Construction	$2,135,900	$2,152,000	$2,189,300	$2,465,800
Utilities[1]	759,600	759,600	895,400	945,100
Right-Of-Way[2]	2,566,300	2,731,700	1,348,200	1,820,600
Total Cost	$5,461,800	$5,643,300	$4,432,900	$5,231,500
Relocations				
Businesses	8	9	1	1
Residential Dwelling Units	0	0	0	0
Total Relocations	8	9	1	1

[1]Estimate does not include possible relocation of telephone lines.

[2]Estimate does not include possible retention area locations.

approximately $5,461,800 and $5,643,300 respectively, while the cost of Alternative A-4 is at estimated $5,231,500. Relocations for Alternatives A-1 and A-2 are extensive along S.R. 699 and 75th Avenue. A total of eight relocations would be expected for Alternative A-1 with nine relocations for Alternative A-2.

The total construction and utilities costs for the Segment B alternatives would be approximately the same at $3,320,000. However, right-of-way acquisitions for Alternative B-1 result in a cost of approximately $1,700,000 as compared to a cost of approximately $1,192,000 for Alternative B-3. The total cost for Alternative B-1 would be approximately $5,015,600 as compared with an approximate cost of $4,511,000 for Alternative B-3. One relocation would be necessary for Alternative B-3. Preliminary cost and relocation estimates for Segment B are shown in Table 5.5..

Due to the major differences in the proposed improvements for Segment C alternatives, the costs and relocations associated with C-1 and C-2 versus C-3 and C-3A are significantly different. With improvements proposed throughout the corridor, Alternatives C-1 and C-2 show total costs at approximately $7,913,100 and $11,210,190 respectively. A large percentage of the costs for these alternatives are due to the high number of relocations. Relocations required for these alternatives range from 26 for Alternative C-1 to 32 for Alternative C-2.

Improvements proposed for Alternatives C-3 and C-3A are limited to the intersection of S.R. 699 and West Gulf Boulevard. Total costs would be approximately $881,80 for Alternative C-3 and $899,500 for Alternative C-3A. No relocations are expected for either alternative. Preliminary cost and relocation estimates for Segment C are provided in Table 5.6.

TABLE 5.5

PRELIMINARY COST AND RELOCATION ESTIMATES
Segment B

	Alternative	
	B-1	**B-3**
Costs		
Construction	$3,159,600	$3,163,000
Utilities[1]	156,000	156,000
Right-Of-Way[2]	1,700,000	1,192,000
Total Cost	$5,015,600	$4,511,000
Relocations		
Businesses	0	1
Residential Dwelling Units	0	0
Total Relocations	0	1

[1]Estimate does not include possible relocation of telephone lines.

[2]Estimate does not include retention area locations.

TABLE 5.6

PRELIMINARY COST AND RELOCATION ESTIMATES
Segment C

	Alternative			
	C-1	C-2	C-3	C-3A
Costs				
Construction	$1,608,400	$1,611,700	$380,100	$410,000
Utilities[1]	446,200	446,200	57,800	57,800
Right-Of-Way[2]	5,858,500	9,152,300	443,900	431,700
Total Cost	$7,913,100	$11,210,190	$881,800	$899,500
Relocations				
Businesses	26	32	0	0
Residential Dwelling Units	0	0	0	0
Total Relocations	26	32	0	0

[1]Estimate does not include possible relocation of telephone lines.

[2]Estimate does not include possible retention area locations.

It should be noted that the costs provided in these estimates are based upon preliminary data. Estimated property acquisitions for possible retention areas have not been included in these estimates. Costs are expressed in 1988 dollars with no allowance for inflation.

5.5.3 Evaluation Summary

In Segment A, Alternative A-4 provides the highest level of service for 2010 traffic conditions along with the highest construction cost, while Alternative A-3 shows the lowest overall cost for construction. Although Alternative A-3 is the least expensive concept, its operational value on the entire roadway network is the least desirable of all of the alternatives evaluated. The main north-south route through the St. Petersburg Beach hotel and commercial district is Gulf Boulevard, the Boca Ciega one-way northbound connection to Blind Pass Road (Alternative A-3) provides a rather circuitous means of traveling from St. Petersburg Beach to Treasure Island. Alternative A-4 provides a direct connection with Gulf Boulevard with a one-way southbound roadway between 79th and 74th Avenues. However, both alternatives A-3 and A-4 have significant noise and traffic impacts within an existing residential neighborhood.

Alternative A-4 would result in the highest level of service, but this must be accomplished by routing mainline traffic through residential areas along 79th Avenue and Gulf Boulevard. The impacts of this dramatic increase in traffic congestion and high noise levels through these areas resulted in dropping this design from consideration. As for Alternative A-3, its poor operational characteristics will

preclude this concept from further evaluation. Alternatives A-1 and A-2 provide an acceptable level of service and the same traffic patterns as the current network operation with comparative costs to Alternative A-4. According to preliminary estimates, Alternative A-1 (widening to the east side of S.R. 699) could be constructed for a lower cost than Alternative A-2 (widening to the west side of S.R. 699). Therefore, Alternative A-1 is the preferred alternative for this segment.

In conjunction with the final design phase of this segment, some consideration should be given to providing pedestrian walkways between 82nd and 85th Avenues. According to the City of St. Petersburg Beach, these limits are conjested by pedestrian and vehicle traffic on weekends due to the two churches located in the area.

In Segment B, the major difference in the two alternatives is in the estimated costs for right-of-way acquisition. These costs would be a difference of approximately $500,000 in favor of Alternative B-3. With no other differences of operations or impacts in these alternatives, it is recommended that Alternative B-3 be the preferred alignment for Segment B.

After the submittal of the Draft Engineering Report, FDOT provided an evaluation of the vertical clearance criteria that was used in determining the height of the new Blind Pass Bridge. In meetings with FDOT, it was decided that the bridge clearance could be lowered from that which was set for the floodplain criteria and the requirement for clearing corrosive water. It was decided that an elevation of 7.0 feet for the low member of the structure would provide an adequate minimum clearance across the pass (see documentation in Appendix 6.1).

In addition, it was recommended that the AASHTO beam construction be used instead of the cast-in-place structure that was recommended in Section 5.3.3 of this report. This recommendation was based in part on the low construction costs coupled with the fact that the deeper bridge section would not pose a problem with elevation in accessing existing driveways due to the decision on using the 7.0 elevation criteria rather than the higher elevations proposed earlier. A preliminary profile of the revised preferred Alternative B-3 is shown on Exhibit 5-S.

During the evaluation process of Segment B alternatives, it was discovered that the shoulder areas and barrier walls along the new bridge introduced a somewhat unique condition that required some analysis. The barrier wall section on the bridge requires a transition area at the beginning and end of the bridge section. Another problem exists with the treatment of the 8-foot shoulder areas at the bridge approaches. This situation is further complicated due to the driveway locations that need to be maintained close to the bridge and the high expense at right-of-way in this area. A brief analysis was conducted to determine how to treat these areas by referring to FDOT and AASHTO guidelines on vertical and horizontal sight distance requirements and treatments of bridge wall hazards by using barrier walls. The analysis (see Appendix 6.1) concluded that the barrier wall treatment at the south side of the bridge (westbound lanes) should begin at the curb cut return (driveway) approximately located at Station 613+45 and end at the curb return (driveway) on the east side of the bridge at about Station 605+25. This would also be the limits of the 8-foot shoulder area. Beyond these limits, the normal urban (curb and gutter) section would be in place. Since the driveways on the north side of the bridge are not as close to the structure, a 12.5 to 1 taper was used to develop and end the wall and shoulders on this side. The shoulder areas at the bridge approaches on both sides should include raised reflective pavement markers in order to discourage vehicle usage outside the travel lane beyond the these areas.

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PROFILE

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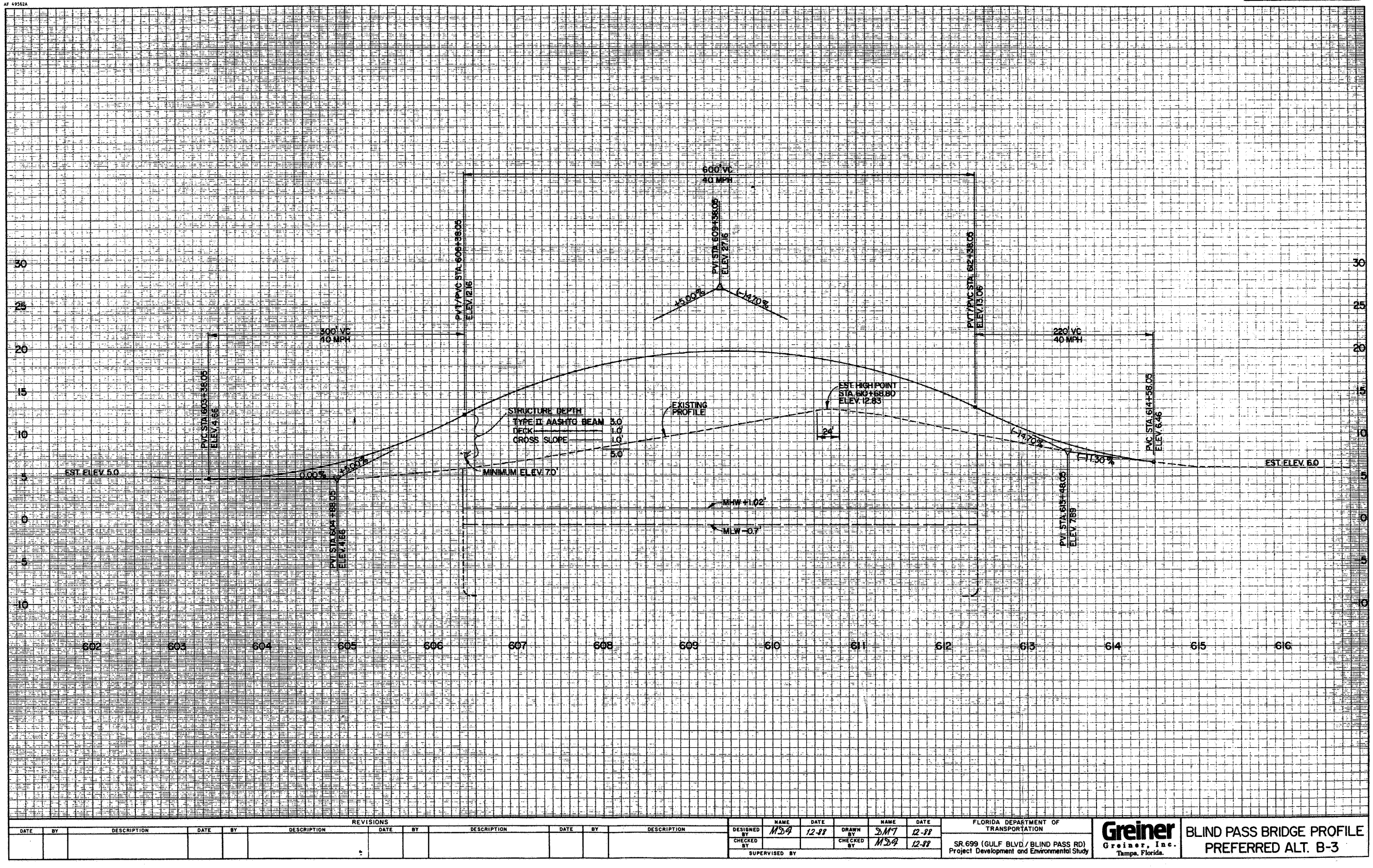

Greiner, Inc.
CONSULTING ENGINEERS TAMPA, FLORIDA

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FLORIDA DEPARTMENT OF TRANSPORTATION

SR 699 (GULF BLVD./ BLIND PASS RD)
Project Development and Environmental Study

Greiner
Greiner, Inc.
Tampa, Florida.

BLIND PASS BRIDGE PROFILE PREFERRED ALT. B-3

EXHIBIT 5-S

Sight distance calculations were developed to be certain that vehicles exiting these driveways would have ample time to see an approaching vehicle before entering the S.R. 699. The analysis, as reported in Appendix 6.1, shows that there should be enough vertical and horizontal sight distance with the plan shown on the preferred Alternative B-3. However, it should be understood that these driveways must be built up to an elevation that is approximately the same as the new roadway so that vehicles can see oncoming traffic. The special treatments of these areas will be addressed in much greater detail during the final design phase of this project. As a result of public comment, bridge lighting will be provided for pedestrians; this issue will also be addressed in greater detail during the final design phase of the project.

Alternatives C-3 and C-3A provide the lowest costs for the Segment C alternatives while Alternatives C-1 and C-2 provide the best overall link level of service. Alternative C-3A would provide the best intersection level of service for S.R. 699 and West Gulf Boulevard.

The expensive right-of-way costs associated with Alternatives C-1 and C-2 result in total construction costs in the range of $7.9 to $11 million to widen only a 0.73 mile stretch of roadway. These costs appear high for just adding a center left-turn lane through this segment. It is felt at this time that the capacity improvements that would be realized for the costs of this land would not be a feasible project to pursue. Therefore, Alternatives C-1 and C-2 were dropped from consideration.

Alternative C-3A was developed as a way to improve capacity of the S.R. 699/West Gulf Boulevard intersection. However, by doing so there is at least one business along the north side of S.R. 699 that may be impacted in terms of accessibility if this

alternative were constructed. Therefore, Alternative C-3A was elir
Alternative C-3 still provides for an acceptable level of service at this inte
Alternative C-3 is the preferred concept for Segment C.

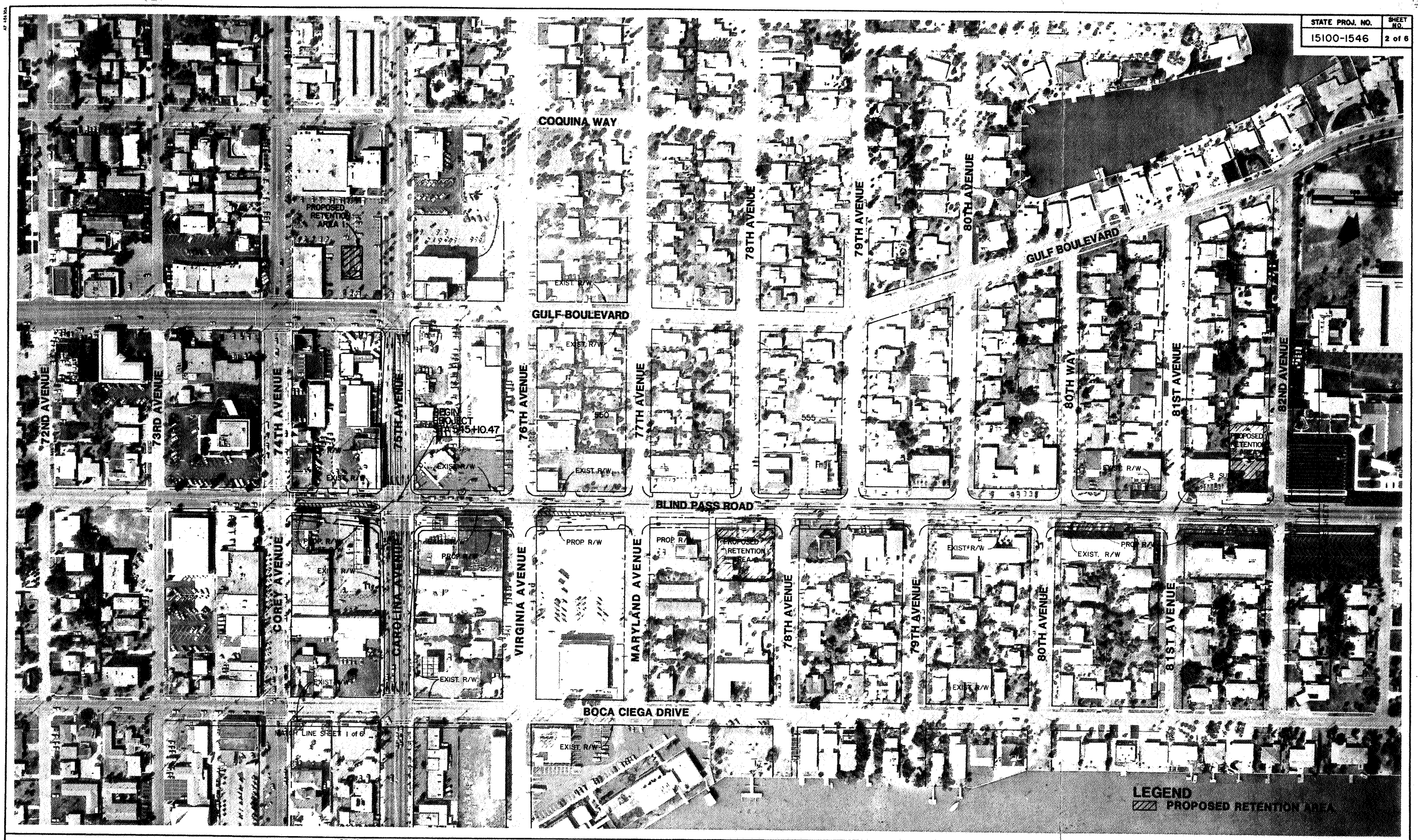
The curve approaching this intersection has been revised slightly by sugge
FHWA to provide a flatter radius around this section. As a result the
Alternative C-3 is now estimated at $1,106,200.00. This cost includes the addition of a separate eastbound to southbound right-turn land from S.R. 699 due to the additional right-of-way created by the flatter curve.

A plan view of the combined Preferred Alternative A-1/B-3/C-3 is shown on Exhibits 5-T, 5-U, and 5-V. Candidate retention areas are also shown on these concepts. Costs for the preferred alternative, which include a revised cost for the Blind Pass Bridge and additional right-of-way costs for retention areas, are summarized in Table 5.7.

5.6 Maintenance of Traffic

Along the roadway segments, construction of improvements may require some temporary rerouting of traffic during critical phases of construction. The construction of Segment A and the south bridge approach of Segment B may be fairly easy to accommodate since only two lanes of traffic are in use today. The outside lanes of the new roadway could most likely be constructed while maintaining traffic on the existing roadway. At this time, it appears that Alternatives C-3 may cause more inconvenience to drivers during construction because four lanes are already provided along a portion of this narrow right-of-way section and the widening improvements would occur at an existing signalized intersection.

STATE PROJ. NO.	SHEET NO.
15100-1546	2 of 6



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

	NAME	DATE		NAME	DATE
DESIGNED BY	[illegible]	5-88	DRAWN BY	[illegible]	7-88
CHECKED BY			CHECKED BY	[illegible]	7-88
SUPERVISED BY					

FLORIDA DEPARTMENT OF TRANSPORTATION

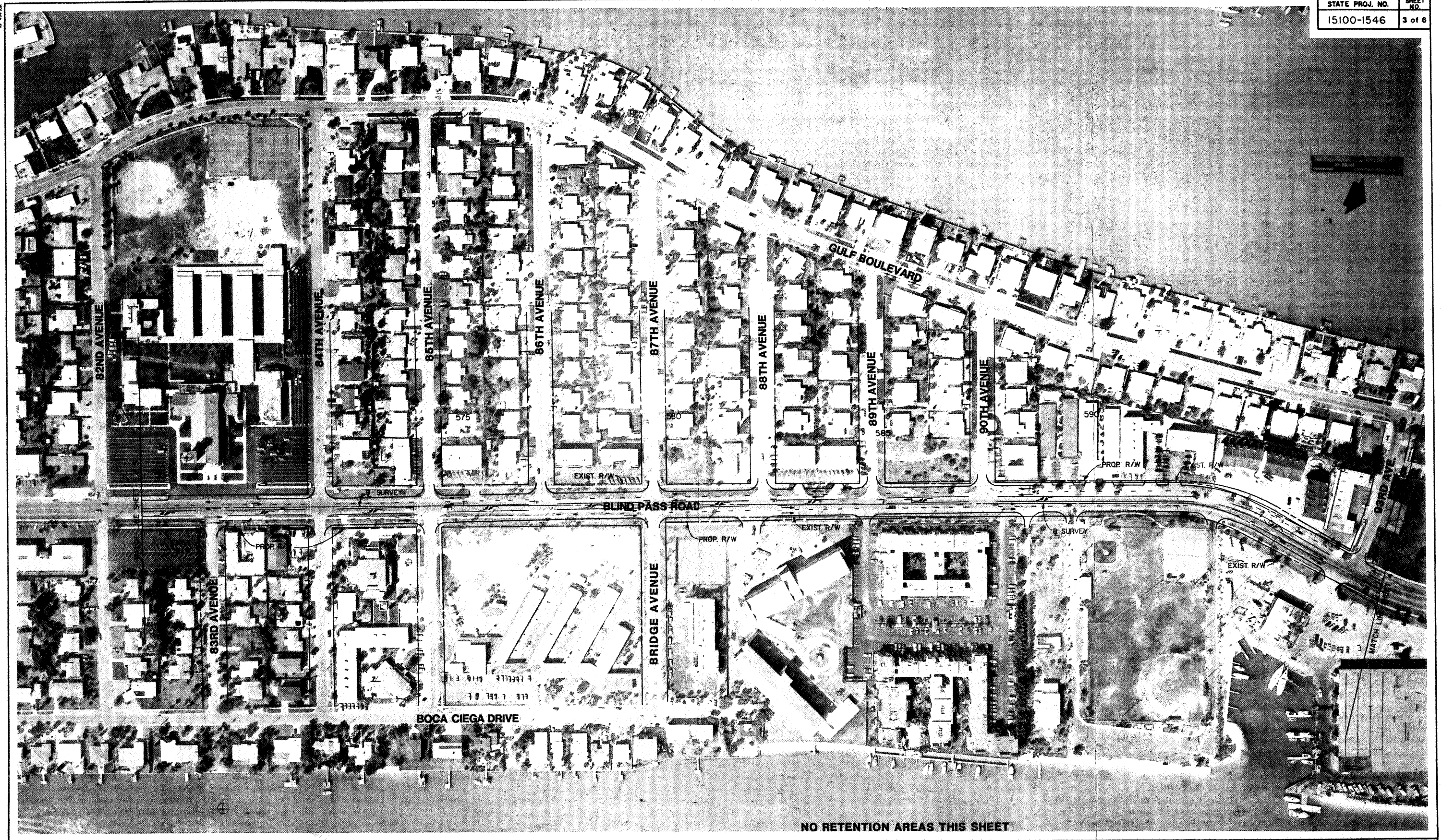
S.R. 699 (GULF BLVD./BLIND PASS RD.)
Project Development and Environmental Study

Greiner
Greiner, Inc
Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT A
PREFERRED ALTERNATIVE A-1

EXHIBIT 5-T

STATE PROJ. NO.	SHEET NO.
15100-1546	3 of 6



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DESIGNED BY	[illegible]	5-88	DRAWN BY	[illegible]	7-88
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SUPERVISED BY					

FLORIDA DEPARTMENT OF TRANSPORTATION

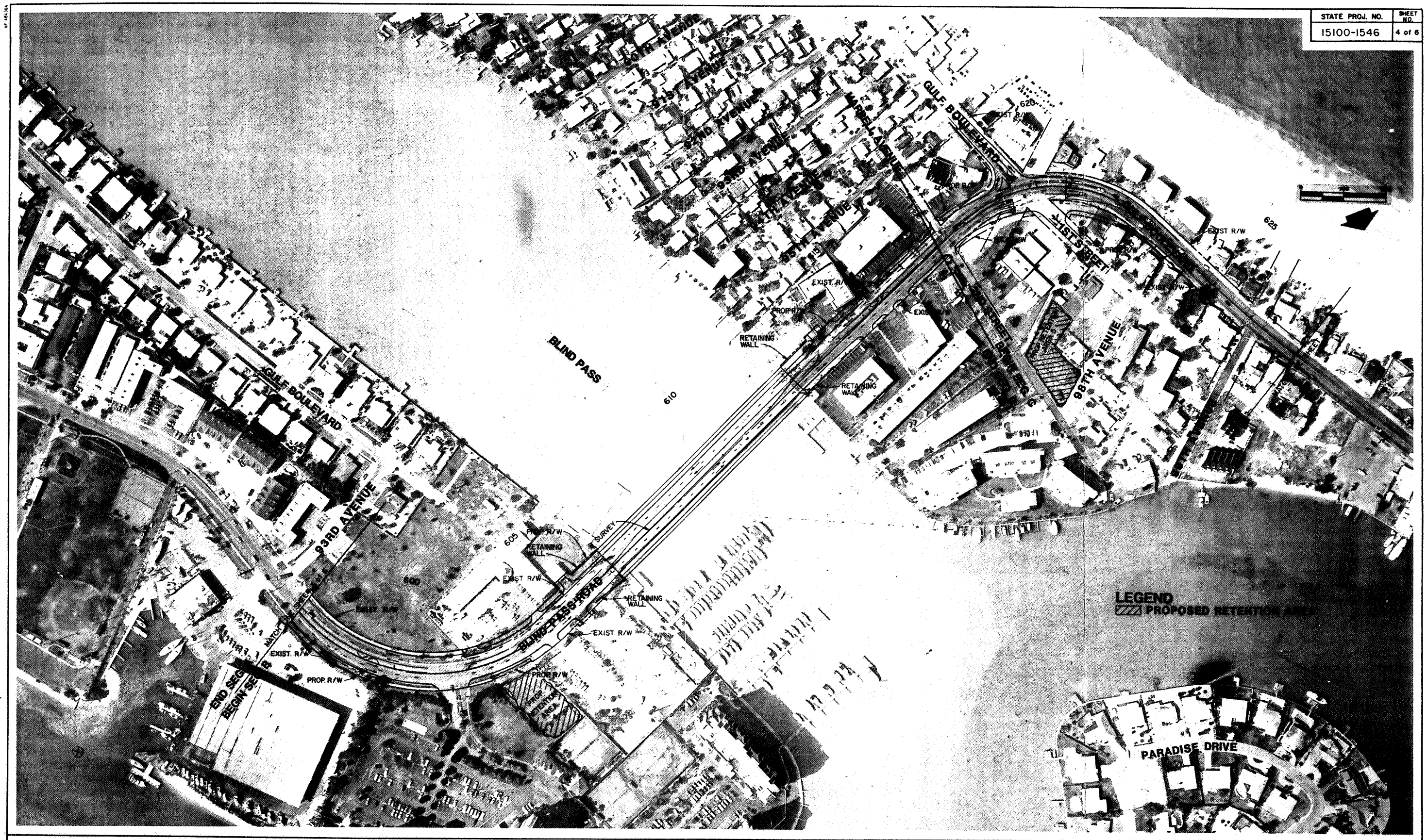
SR 699 (GULF BLVD./BLIND PASS RD.)
Project Development and Environmental Study

Greiner

CONCEPT DESIGN ALTERNATIVES
SEGMENT A
PREFERRED ALTERNATIVE A-1

EXHIBIT 5-U

STATE PROJ. NO.	SHEET NO.
15100-1546	4 of 6



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SUPERVISED BY					

FLORIDA DEPARTMENT OF TRANSPORTATION

SR 699 (GULF BLVD / BLIND PASS RD.)
Project Development and Environmental Study

Greiner
Greiner, Inc.
Tampa, Florida

CONCEPT DESIGN ALTERNATIVES
SEGMENT B/C
PREFERRED ALTERNATIVE B-3/C-3

EXHIBIT 5-V

TABLE 5.7

PRELIMINARY COST ESTIMATES FOR PREFERRED ALTERNATIVE (All Segments)

Item	Preferred Alternatives A-1	B-3	C-3	Total
Construction	$2,135,900	$2,400,000	$387,500	$4,916,000
Utilities[1]	759,600	156,000	57,800	973,400
Right-of-Way[2]	3,837,490	1,987,000	510,900	6,268,390
Total Cost	$6,732,990	$4,543,000	$956,200	$12,157,790

[1] Estimate does not include possible relocation of telephone lines.

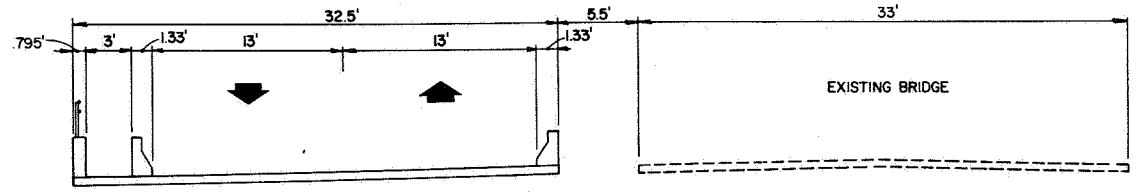
[2] Estimate does include candidate retention area locations.

The Blind Pass Bridge could be constructed in two segments to accommodate the alignments proposed. The first segment to be built would be a 32.5-foot-wide section of bridge south of the existing structure. This segment would be constructed with approximately 5.5 feet of working room between the old and new structures. Once the 32.5-foot segment is constructed, two lanes of traffic (one lane in each direction) and a three foot pedestrian walkway would be diverted to the new bridge while the existing bridge is removed and replaced with the remainder of the new structure. A maintenance of traffic plan for the Blind Pass Bridge is provided on Exhibit 5-W.

5.7 Impacts to Existing Utilities

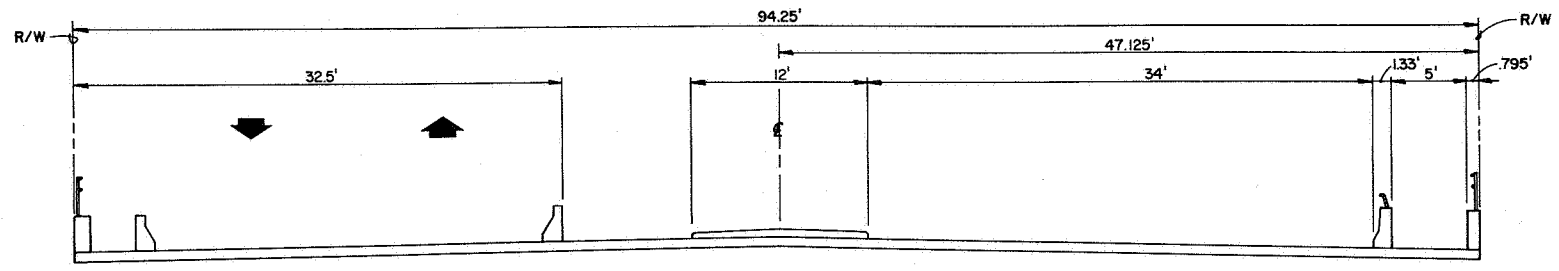
All utility relocations required by the improvements to S.R. 699 and other affected roadways are within the existing right-of-way and are the responsibility of the utility companies. The estimated costs for relocations are provided in Tables 5.4, 5.5, 5.6. and Table 5.7 for the preferred alternative. Preliminary indications show major relocation impacts for all above ground utilities located along S.R. 699. These include electric, telephone and cable lines. Other relocations will include existing storm sewer inlets, fire hydrants and manholes connected with the sanitary sewer system.

STATE PROJ. NO.	SHEET NO.
15100-1546	1 of 1



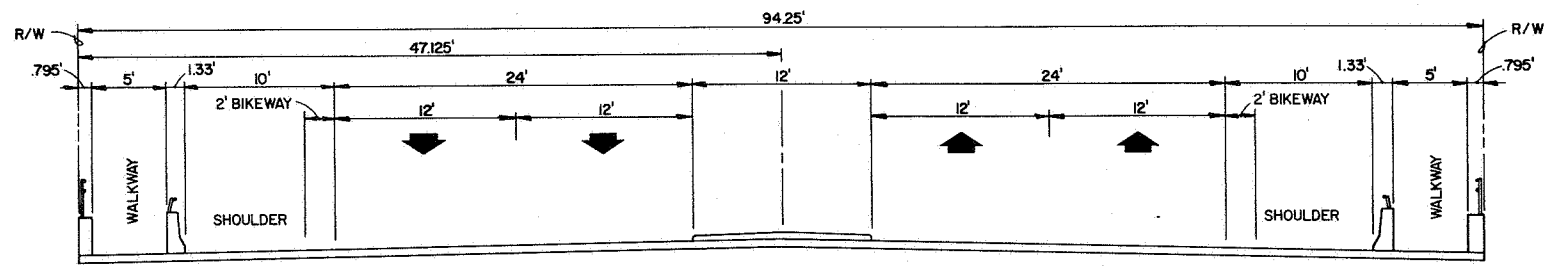
STAGE 1

- CONSTRUCT 32.5' OF NEW STRUCTURE. DIVERT TRAFFIC TO NEW STRUCTURE.
- REMOVE OLD STRUCTURE



STAGE 2

- CONSTRUCT REMAINING PORTION OF NEW STRUCTURE
- KEEP TRAFFIC ON PORTION OF NEW STRUCTURE CONSTRUCTED IN STAGE 1



STAGE 3

- ROUTE TRAFFIC TO ULTIMATE ALIGNMENT OF NEW STRUCTURE

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

	NAME	DATE		NAME	DATE
DESIGNED BY	MDA	5-88	DRAWN BY	DMT	6-88
CHECKED BY			CHECKED BY	MDA	6-88
SUPERVISED BY					

FLORIDA DEPARTMENT OF TRANSPORTATION

S.R 699 (GULF BLVD./BLIND PASS RD.)
Project Development and Environmental Study

Greiner
Greiner, Inc.
Tampa, Florida.

BLIND PASS BRIDGE
STAGES OF CONSTRUCTION

EXHIBIT 5-W

APPENDICES 6.1

Florida Department of Transportation

BOB MARTINEZ
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

KAYE N. HENDERSON
SECRETARY

August 14, 1988

Metropolitan Planning Organization
Chairman Greer
440 Court Street
Clearwater, Florida 34616

Reference: **Public Information Workshop**
MPO Participation
State Project Number: 15100-1546

Dear Chairman Greer:

The Florida Department of Transportation invites representatives of the Pinellas County Metropolitan Planning Organization (MPO) to attend an informal public information workshop on the above referenced project. The workshop is part of the detailed engineering and environmental study process that the Department undertakes on all major transportation improvement proposals. The date, time and place for the meeting appear below.

The purpose of this meeting is to solicit input from area residents, local public officials and other interested persons and organizations relative to the transportation improvement project described below.

The project examines feasible alternatives relative to corridor location, conceptual design, and environmental impacts for the proposed widening of S.R. 699 (Blind Pass Road/Gulf Boulevard) as it extends from 74th Avenue in St. Petersburg Beach to 106th Avenue in Treasure Island. The study area also includes Gulf Boulevard and Boca Ciega Drive from 74th Avenue to 79th Avenue and 74th and 75th Avenues from Boca Ciega Drive to Gulf Boulevard.

During the workshop, representatives of the Florida Department of Transportation will be available to discuss the project, answer questions and receive comments. In addition, a brief slide presentation regarding all elements of the study will be shown every 30 minutes. Aerial photographs and alternative concept plans will be on display for public viewing.

Enclosed are copies of the aerial maps showing the design concepts currently under consideration by the Department. These are the same as those to be displayed at the workshop. If you have any question regarding these concepts, you or a MPO member may attend the Local Officials Meeting on Thursday, August 25, 1988 at 10:00 a.m. in the St. Petersburg Beach City Chambers.

The Department requests that you provide written comments on the alternatives displayed at the workshop. Department of Transportation representatives will be on hand to explain the alternates under consideration.

Please understand that this is an informal workshop, not a public hearing. The formal public hearing, required by Federal and State law, will be held at a later date.

INFORMATION WORKSHOP

DATE: September 8, 1988

TIME: 4:00 p.m. - 8:00 p.m.

PLACE: Treasure Island City AUditorium
120 108th Avenue
Treasure Island, Florida

Sincerely,

Dick Combs
Project Manager

DC:lvh

FLORIDA DEPARTMENT OF TRANSPORTATION

BOB MARTINEZ
GOVERNOR

KAYE N. HENDERSON
SECRETARY

Date: August 12, 1988
Reference: Work Program Item No. 7116995
State Job No. 15100-1546
Federal Aid Project No.
S.R. 699 (Blind Pass Road/Gulf Boulevard)
Pinellas County

TO PROPERTY OWNERS AND INTERESTED CITIZENS

This notice is to advise you that the Florida Department of Transportation has scheduled a public information workshop regarding the above referenced project. The date, time and location of the workshop are listed below.

The project will examine feasible alternatives relative to corridor location, conceptual design and environmental impacts for the proposed improvements to S.R. 699 (Blind Pass Road/Gulf Boulevard) as it extends from 74th Avenue in St. Petersburg Beach to 105th Avenue in Treasure Island. The study area also includes Gulf Boulevard and Boca Ceiga Avenue from 74th Avenue to 79th Avenue and 74th and 75th Avenues from Boca Ceiga Avenue to Gulf Boulevard.

The purpose of this workshop is to inform the public about the study's inception, to outline the scope and intent of the project and to solicit input from concerned citizens on the alternative concepts for improvements to S.R. 699.

During the workshop, representatives of the Florida Department of Transportation will be available to discuss the project, answer questions and receive comments. In addition, a brief slide presentation regarding all elements of the study will be shown every half hour on the hour and half hour. Aerial photographs and alternative concept plans for the Project will be on display for public viewing.

Please understand that this is an informal public information workshop and not a public hearing. A public hearing, if required by Federal and State Law, will be held later in the project development process.

We invite and encourage you to come in at any time during the workshop hours to discuss this transportation improvement proposal.

Sincerely,

James G. Kennedy, P.E.
Deputy Assistant Secretary

Dick Combs
Project Manager

INFORMATION WORKSHOP

DATE: September 8, 1988
TIME: 4:00 P.M. - 8:00 P.M.
PLACE: Treasure Island City Auditorium
120 108th Avenue
Treasure Island, Florida

FLORIDA DEPARTMENT OF TRANSPORTATION

BOB MARTINEZ
GOVERNOR

KAYE N. HENDERSON
SECRETARY

August 12, 1988

RE: WPI No. 7116995
State Job No. : 15100-1546
Federal Aid Project No. : N/A
S.R. 699 - Gulf Boulevard/Blind Pass Road
From 75th Avenue to 105th Avenue
Pinellas County, Florida

Dear St. Petersburg Beach City Official:

The Florida Department of Transportation has scheduled a coordination meeting with the city officials of St. Petersburg Beach and Treasure Island to display and discuss conceptual design alternatives for the above referenced project. The meeting is held to afford local officials the opportunity to view plan sets and comment on the concepts prior to the Alternatives Public Workshop.

You, or a department representative, are invited to attend the coordination meeting on August 25th at 10:00 a.m. in the St. Petersburg Beach Commission Chambers located at 7701 Boca Ciega Drive.

We welcome your participation in this process. If you have any questions or comments, please contact me at your earliest convenience.

Sincerely,

Dick Combs
Project Manager

DC:kjw

FLORIDA DEPARTMENT OF TRANSPORTATION

BOB MARTINEZ
GOVERNOR

KAYE N. HENDERSON
SECRETARY

August 12, 1988

RE: **WPI No. 7116995**
State Job No. : 15100-1546
Federal Aid Project No. : N/A
S.R. 699 - Gulf Boulevard/Blind Pass Road
From 75th Avenue to 105th Avenue
Pinellas County, Florida

Dear Treasure Island City Official:

The Florida Department of Transportation has scheduled a coordination meeting with the city officials of St. Petersburg Beach and Treasure Island to display and discuss conceptual design alternatives for the above referenced project. The meeting is held to afford local officials the opportunity to view plan sets and comment on the concepts prior to the Alternatives Public Workshop.

You, or a department representative, are invited to attend the coordination meeting on August 25th at 10:00 a.m. in the St. Petersburg Beach Commission Chambers located at 7701 Boca Ciega Drive.

We welcome your participation in this process. If you have any questions or comments, please contact me at your earliest convenience.

Sincerely,

Dick Combs
Project Manager

DC:kjw

MEMORANDUM

TO: File
FROM: Dean Tisdale
DATE: December 7, 1988
SUBJECT: 7116995
Blind Pass Meeting

I attended a meeting on the subject project with Jean Dorzback and Larry Gaddy from FDOT, Mike Falini, Elliot Silverston, and Elaine Marple from Greiner and Dean Tisdale and Theunis Van Der Veen from HDR. The purpose of the meeting was to obtain a decision from Mr. Gaddy (District Drainage Engineer) concerning vertical clearance requirements for Blind Pass Bridge.

Mr. Gaddy commented that the FDOT did not design bridges to accommodate a 100 year flood where they are subject to tidal influence. It was agreed that drift clearance (2 to 3 feet) could be waived because surrounding areas would flood before the bridge. It was also agreed that tidal surge would not be a problem for the same reason.

Mr. Gaddy recommended that the low chord of the structure be set at elevation 7.0. This elevation would provide over five feet clearance over MHW.

HDR will again contact the FDOT Bureau of Materials and Research in Gainesville to request salt water protection design criteria. Our previous request of July 21 has not been answered.

Greiner will consider two alternatives in the preliminary design phase: A flat slab of approximately two foot thickness and an AASHTO Type II GIRDER of approximately 4.0 foot total thickness.

cc: Larry Gaddy (FDOT)
Jean Dorzback (FDOT)
Shawn Murphy (FDOT)
Elaine Marple (Greiner)
Tom Twining (HDR)

File 402.1.6

WP M-321

C1360.00
January 27, 1989

MEMORANDUM

To: Mike Falini

From: Lee Coop

Reference: **Sight Distance Analysis**
Blind Pass Bridge, Segment B

The following is a summary of the analysis conducted for the driveways to land uses east and west of the Blind Pass Bridge.

The intersection sight distance is determined by the lesser of the two values of the horizontal sight distance and the vertical sight distance; the minimum value of which cannot be less than the value given in Table V-11, page 468 AASHTO. [1] Horizontal sight distance in this case, is affected by both the 2 feet 8 inches high wall as well as the profile. For the determination of the location that the profile will cause the wall to affect the horizontal line of sight it was assumed that the height of eye of the driver on the minor street was 3.5 feet at a point 15 feet from the edge of pavement of the major street and a 4.25 foot object height on the major street as found in AASHTO page 468.

All driveways at the bridge approaches were analyzed. However, the worst case occurs at the driveway located on the east side approach in the south quadrant of the pass area. Taking into account cross slope, the critical point was located at station 606+10. The actual horizontal sight distance is found by running a straight line from the point 15 feet from the edge of pavement of the major road through the critical point at station 606+10 to the intersection of the centerline of the outside travel lane.

Vertical sight distance was determined by the use of the profile and utilizing criteria found in AASHTO page 158-161. The criteria called for the height of drivers eye to be 3.5 feet and the height of object to be 4.25 feet. The vertical sight distance was determined to be 500 feet from the centerline of the turning lane on the minor roadway.

Using Table V-11 page 468 AASHTO Standards it was found that the minimum corner sight distance required was approximately 363 feet. From the procedure stated above the horizontal sight distance was 375 feet for the 10 foot shoulder alternatives (8 foot shoulder and a 2-foot bike lane). The vertical sight distance was 500 feet for all alternatives; therefore it was concluded that the required corner sight distance was met for all cases.

LC:sas

1/A Policy on Geometric Design of Highway and Streets, AASHTO, 1984.

Height of Driver's Eye

For all sight distance calculations, the height of the driver's eye is considered to be 3.50 ft above the road surface. This value is based on studies (**14, 15, 16, 17**) which show that average vehicle heights decreased since 1960 to 4.25 ft with a comparable decrease in average eye heights to 3.50 ft. The average vehicle heights decreased 2.6 in. in this period, which correlates well with the 2.1-in. reduction in average eye heights. In the same time period the minimum height of eye decreased 2.5 in. to 3.31 ft. Because of this significant change in the minimum eye heights, the design eye height has been reduced from 3.75 ft to 3.50 ft. This change in eye height has the effect of lengthening minimum crest vertical curves by approximately 5 percent, thereby providing about 2.5 percent more sight distance. Because of various factors that appear to place practical limits on any further decreases in passenger car heights and the relatively small increases that further change would mandate in lengths of vertical curves, 3.50 ft is considered to be the height of driver's eye for measuring both stopping and passing sight distances.

Height of Object

For stopping sight distance calculations, the height of object is considered to be 6 in. above the road surface. For passing sight distance calculations, the height of object is considered to be 4.25 ft above the road surface.

Stopping sight distance object. The object height of 6 in. was adopted for stopping sight distance calculation purposes in 1965. The basis for its selection was largely an arbitrary rationalization of possible hazardous object size and a driver's ability to perceive and react to a hazardous situation. If other vehicles were the only likely hazard to be encountered, the height of vehicle taillights, 1.5 to 2.0 ft, would be a sufficient object height. Such a height, however, would preclude a driver's seeing small animals, rocks, or other debris that are likely to be encountered in the roadway. It is considered that a 6-in.-high object is representative of the lowest object that can create a hazardous condition and be perceived as a hazard by a driver in time to stop before reaching it. Using object heights of less than 6 in. for stopping sight distance calculations results in considerably longer crest vertical

curves. For example, if the roadway surface is used as the sighted object, crest vertical curves would have to be about 85 percent longer than when 6 in. is used as the object height. The object height of less than 6 in. could substantially increase construction costs because additional excavation would be required to provide the longer crest vertical curves. It is also doubtful that the driver's ability to perceive a hazardous situation would be increased.

Passing sight distance object. The object height of 4.25 ft is adopted for passing sight distance calculations, superseding the 4.5-ft object height, which has been used since 1940. Because vehicles are the objects that must be seen when passing and because the height of the average passenger vehicle body has been reduced to its current 4.25-ft height above the pavement, this height will be used for calculation purposes. Passing sight distances calculated on this basis are also considered adequate for night conditions because the beams of the headlights of an opposing vehicle generally are seen from a greater distance than its top could be seen in the daytime.

Sight Obstructions

On tangents the obstruction that limits the driver's sight distance is the road surface at some point on a crest vertical curve. On horizontal curves the obstruction that limits the driver's sight distance may be the road surface at some point on a crest vertical curve, or it may be some physical feature outside of the traveled way, such as a longitudinal barrier, a bridge-approach fill slope, a tree, foliage, or the backslope of a cut section. Accordingly, all highway construction plans should be checked in both the vertical and horizontal plane for sight distance obstructions.

Measuring and Recording Sight Distance on Plans

The design of horizontal alinement and vertical profile using sight distance and other criteria is covered later in this chapter, particularly the detail design of horizontal and vertical curves. Sight distance, however, should be considered in the preliminary stages of design when both the horizontal and vertical alinement are still subject to adjustment. By determining graphically the sight distances on the

plans and recording them at frequent intervals, the designer can appraise the overall layout and effect a more balanced design by minor adjustments in the plan or profile. Methods for scaling sight distances are demonstrated in Figure III-3. The figure also shows a typical sight distance record that would be shown on the final plans.

Because the view of the highway ahead may change rapidly in a short distance, it is desirable to measure and record sight distance for both directions of travel at each station. Both horizontal and vertical sight distances should be measured and the shorter lengths recorded. In the case of two-lane highways, passing sight distance in addition to stopping sight distance should be measured and recorded.

Sight distance charts such as those in Figures III-39 and III-40 may be used to establish minimum lengths of vertical curves. Charts similar to Figures III-25A and III-25B are useful for determining the degree of horizontal curve or the lateral offset therefrom needed to provide the required sight distance. Once the horizontal and vertical alinements are tentatively established, the practical means of examining sight distances along the proposed highway is by direct scaling on the plans.

Horizontal sight distance on the inside of a curve is limited by obstructions such as buildings, hedges, wooded areas, high ground, or other topographic features. These generally are plotted on the plans. Horizontal sight is measured with a straightedge, as indicated at the upper left in Figure III-3. The cut slope obstruction is shown on the worksheets by a line representing the proposed excavation slope at a point 2.0 ft (average of 3.50 and 0.5 ft) above the road surface for stopping sight distance and at a point about 3.75 ft above the road surface for passing sight distance. The position of this line with respect to the centerline may be scaled from the plotted highway cross sections. Preferably, the stopping sight distance should be measured between points on the one traffic lane, and passing sight distance from the middle of one lane to the middle of the other lane. Such refinement on two-lane highways generally is not necessary and measurement to the centerline or pavement edge is suitable. Where there are changes of grade coincident with horizontal curves that have sight-limiting cut slopes on the inside, the line-of-sight intercepts the slope at a level either lower or higher than the assumed average height. In measuring sight distance the error in the use of the assumed 2.0- or 3.75-ft height usually can be ignored.

Vertical sight distance may be scaled from a plotted profile by the method illustrated at the right center of Figure III-3. A transparent strip with parallel edges 4.25 ft apart and with scratched lines 6 in. and

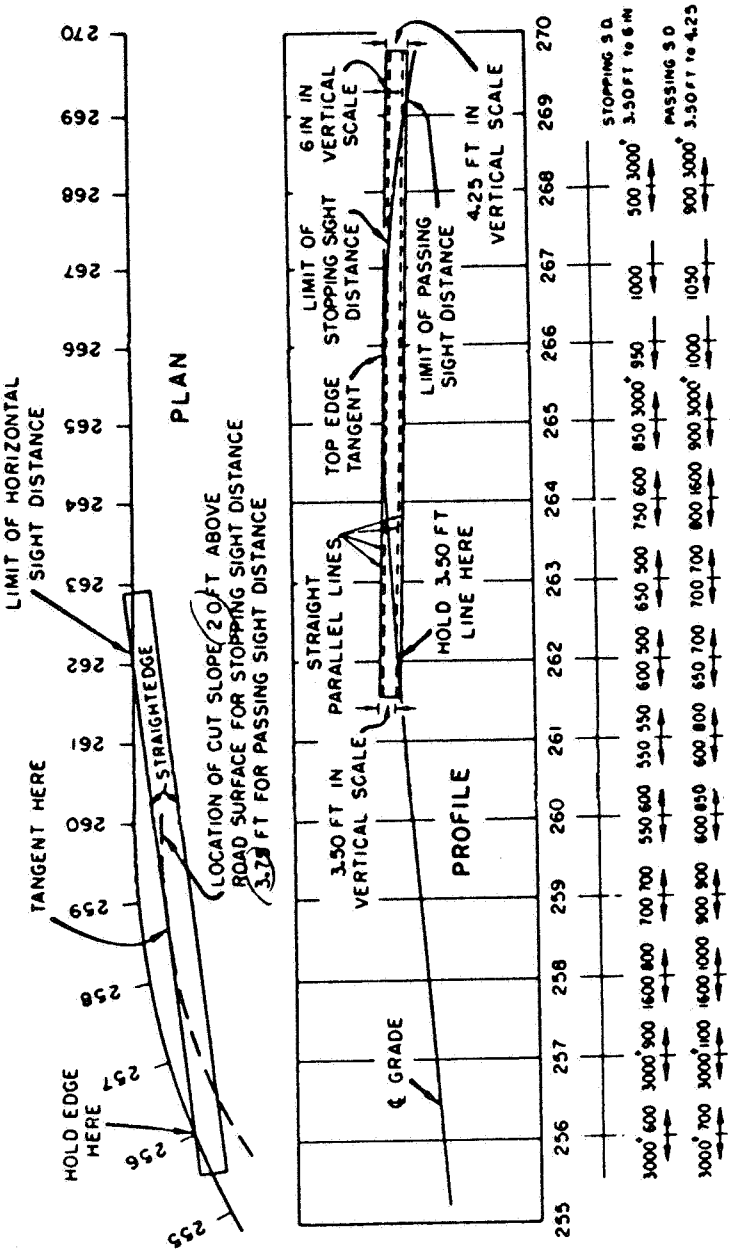


Figure III-3. Scaling and recording sight distances on plans.

Intersection Design

Intersections should be carefully situated to avoid steep profile grades and to ensure adequate approach site distance. An intersection should not be situated on a short-crest vertical curve, just beyond a short-crest vertical curve, or on a sharp horizontal curve. When there is no practical alternate to such a location, the approach sight distance on each leg should be checked carefully. Where necessary, backslopes should be flattened and horizontal or vertical curves lengthened to provide additional sight distance. Sight distance should be sufficient to permit a vehicle on the minor leg of the intersection to cross the traveled way without requiring the approaching through traffic to slow down. As a general rule, there should be a minimum of 7 sec available to the driver of a passenger vehicle crossing the through lanes. On this basis, the suggested corner sight distance for each design speed would be as given in Table V-11. For further details see section on sight distance in Chapter IX.

Design Speed (mph)	Corner Intersection Sight Distance (ft)[a]
60	650[b]
50	515
40	415
30	310
20	210

[a]Corner sight distance measured from a point on the minor road at least 15 ft from the edge of the major road pavement and measured from a height of eye at 3.50 ft on the minor road to a height of object at 4.25 ft on the major road.

[b]At 60 mph stopping sight distance governs.

Table V-11. Corner sight distances at rural intersections.

Intersections should be designed with a corner radius of the pavement or surfacing that is adequate for the larger vehicles anticipated. For minimum edge radius, see Table II-2, Chapter II. Where

turning volumes are significant, consideration should be given to speed change lanes and channelization.

Intersection legs that operate under stop control preferably should be 90° if possible, but in no case less than 60°. For further details see Chapter IX.

Railroad - Local-Road Grade Crossing

Appropriate grade-crossing warning devices shall be installed at all railroad - local-road grade crossings. Details of the devices to be used are given in the MUTCD (2). In some States the final approval of the devices to be used may be vested in the Public Utility Commission.

Sight distance is an important consideration at railroad grade crossings. There must be sufficient sight distance on the road for the driver to recognize the crossing, perceive the warning device as well as the trains, and stop if necessary. (See Chapter IX.)

The roadway width at all railroad crossings should be the same as the width of the approach roadway.

Traffic Control Devices

Signs, pavement and other markings, and, where pertinent, traffic signal controls are essential elements for all local roads and streets. Refer to the *Manual on Uniform Traffic Control Devices* (MUTCD) (2) for details of the devices to be used and, for some conditions, warrants for their use.

Erosion Control

All slopes and drainage areas should be designed with proper regard for the desired natural ground cover and growth regeneration on areas opened during construction. Various acceptable methods of erosion control including seeding and mulching of slopes, sodding, or other protection of swales and other erodible areas should be included in the local road design. Consideration should also be given to maintenance requirements and overall economics.

In roadside design the preservation of natural ground covers and desirable growth of shrubs and trees should be considered, provided that such growth does not constitute a hazard in the recovery area.

APPENDICES 6.2

STATE ROAD 699
BLIND PASS ROAD/GULF BOULEVARD
PROJECT DEVELOPMENT
AND
ENVIRONMENTAL STUDIES
PINELLAS COUNTY, FLORIDA
STATE PROJECT NO. 15100-1546

LOCATION HYDRAULIC REPORT

75 TH AVENUE TO 105 TH AVENUE

Submitted for

THE FLORIDA DEPARTMENT OF TRANSPORTATION

Submitted by
GREINER INC.
Tampa, Florida

SEPTEMBER 1988

TABLE OF CONTENTS

LIST OF TABLES

LIST OF EXHIBITS

I. INTRODUCTION

Purpose Of The Location Hydraulic Report

This report was completed in accordance with the requirement set forth in the Federal-Aid Highway Program Manual (FHPM) 6-7-3(2), Paragraph 7 and provides preliminary information on existing cross drain structures, floodplains and soils which may be impacted due to the construction of the proposed improvements to S.R. 699 (Gulf Boulevard/Blind Pass Road) including the replacement of the fixed bridge over Blind Pass. The corridor is located in Southwest Pinellas County, Florida.

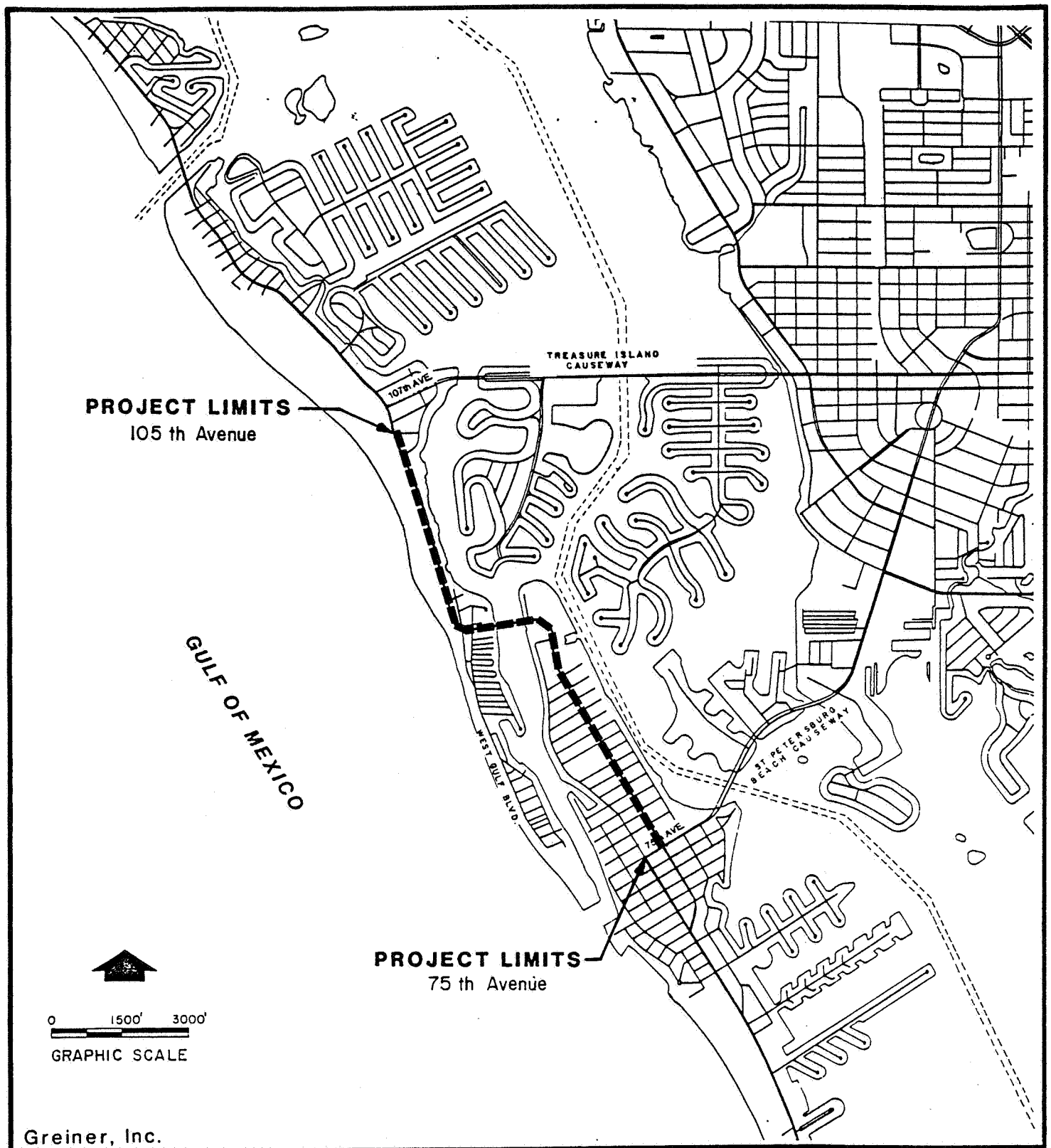
Site/Project Description

S.R. 699 (Gulf Boulevard/Blind Pass Road) is the only North/South Route connecting the Barrier Island from St. Petersburg Beach northerly to Clearwater Beach. Exhibits 1 and 2 show the location of the site. The project corridor extends approximately 2.3 miles from 75th Avenue in St. Petersburg Beach northerly to 105th Avenue in Treasure Island. The existing facility is a two lane rural design section from 75th Avenue to West Gulf Boulevard (1st Street) and is a four-lane undivided facility from 1st Street to 105th Avenue. The corridor connects on the north end to a four-lane divided section. Treasure Island Causeway and the St. Petersburg Beach Causeway are approximately 1.2 miles north and south of S.R. 699 crossing of Blind Pass, respectively. The two causeways provide access to Central Avenue which is a major East/West connector to I-275 from the Barrier Islands on the mainland of Pinellas County.

The proposed project includes upgrading the roadway to a five-lane, urban design, (2 through lanes in each direction divided with a painted median) and to replace the bridge over Blind Pass with a four-lane fixed bridge.

Soils

Based on the Soil Conservation Service (SCS) Pinellas County Soil Survey (1976 Issue) soil types within the S.R. 699 Gulf Boulevard/Blind Pass Road corridor are Coastal Beaches, Made Land, and St. Lucie fine sand with a shell substratum. The Coastal



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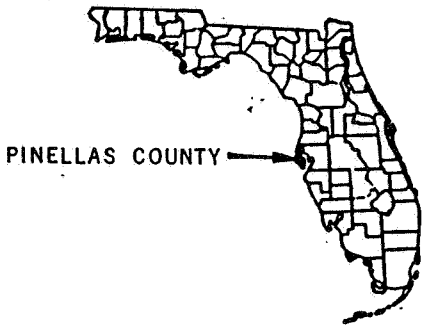


FLORIDA DEPARTMENT OF TRANSPORTATION

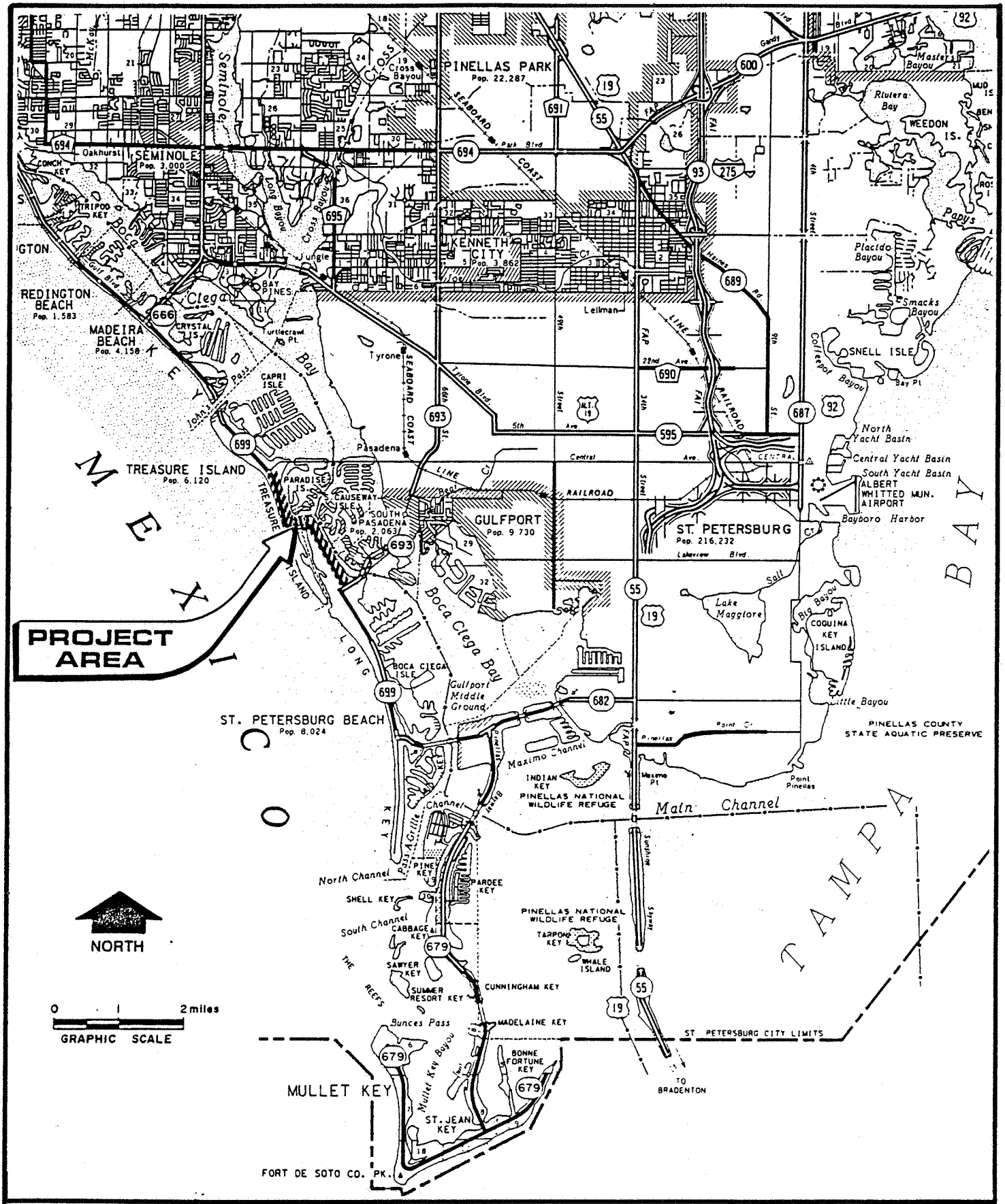
LOCATION HYDRAULIC REPORT

S.R. 699 (GULF BLVD./BLIND PASS ROAD)

Pinellas County, Florida

PROJECT VICINITY MAP

Exhibit 2



SR 699 (GULF BLVD./BLIND PASS RD.) PD&E STUDY

PINELLAS COUNTY, FLORIDA

FLORIDA DEPARTMENT OF TRANSPORTATION

District Seven, Tampa, Florida

PROJECT LOCATION MAP

Exhibit 1

Beach areas parallel the corridor to the west and are not actually crossed by the roadway. Generally, urban soils are too variable for valid estimates of soil description parameters.

Flood Zone Designations

The majority of the area within the Gulf Boulevard/Blind Pass Road project limits are located within Zone "A12" with 100-year base flood elevations ranging from 11 to 13 feet N.G.V.D. (National Geodetic Vertical Datum). The study area is flooded by stillwater storm surge, and wave runup is not considered to be a major factor in the determination of the base flood elevations as determined in the detailed flood study. Velocity Zone, "V", exist between S.R. 699 (Gulf Boulevard/Blind Pass Road) and the Gulf of Mexico. From the FEMA Flood Insurance Rate Maps and the Flood Insurance Studies for the cities of Treasure Island and St. Petersburg Beach, flood zones and appropriate FIRM map panel numbers along the S.R. 699 (Gulf Boulevard/Blind Pass) Corridor are illustrated in Appendix 2. An explanation of the flood zone designations are shown in Table 1. There are no designated floodways within the S.R. 699 (Gulf Boulevard/Blind Pass) project limits.

TABLE 1
FEMA FLOOD ZONE DESIGNATIONS

Designation	Description
Zone A12	Special Flood Hazard Areas inundated by the 100-year flood, with base flood elevations and flood hazard factors determined. The boundaries and flood hazard factors for these areas are determined by detailed methods and whole-foot base flood elevations are shown.
Zone V16	Special Flood Hazard Areas inundated by the 100-year coastal flood and have additional hazards due to velocity (3 feet or more of wave action). Base flood elevations and flood hazard factors for these areas were determined by detailed methods, and whole-foot base elevations are shown.

Source: FEMA Flood Insurance Rate Maps, Community Panel Numbers 125149 0001 B, 125149 0003 B, and 125153 0004 C, and the Flood Insurance Studies for the cities of Treasure Island and St. Petersburg Beach, Florida.

II. DESCRIPTION OF DRAINAGE STRUCTURES

Available existing information and a site visit showed that the fixed bridge over Blind Pass is the only drainage structure that is classified as a cross drain. A site visit showed that the storm sewer systems within the project limits convey only roadway drainage and insignificant amounts of off-site drainage. The existing drainage system within the project limits utilizes ditch bottom/curb inlets and storm sewers to convey untreated roadway runoff into Boca Ciega Bay and Blind Pass.

Design Criteria

The vertical and horizontal clearances for the S.R. 699 (Gulf Boulevard/Blind Pass Road) bridge across Blind Pass were evaluated for both flood and navigational design criteria. Blind Pass is a tidally influenced waterway. Design criteria for clearances are referenced to tidal elevations.

The tide elevations for Blind Pass were provided by the Florida Department of Natural Resources. Table 2 lists the tide elevations for the Blind Pass.

TABLE 2
TIDAL ELEVATIONS

Description	Elevation (N.G.V.D.)
Mean Higher High Water (MHHW)	1.38
Mean High Water (MHW)	1.02
Mean Tide Level (MTL)	0.31
*National Geodetic Vertical Datum-1929 (NGVD)	0.00
Mean Low Water (MLW)	-0.41
Mean Lower Low Water (MLLW)	-0.89

*NGVD is based on elevations published in Quad 270824, July 1973 and NOS leveling of 1943-43.

Blind Pass is not considered a navigable channel by the Corps of Engineers. The only dredging activities planned within the bridge vicinity is the periodic dredging at the mouth of Blind Pass for beach renourishing material. The United States Coast Guard, USCG, per the advance notification package, has proposed the following main span

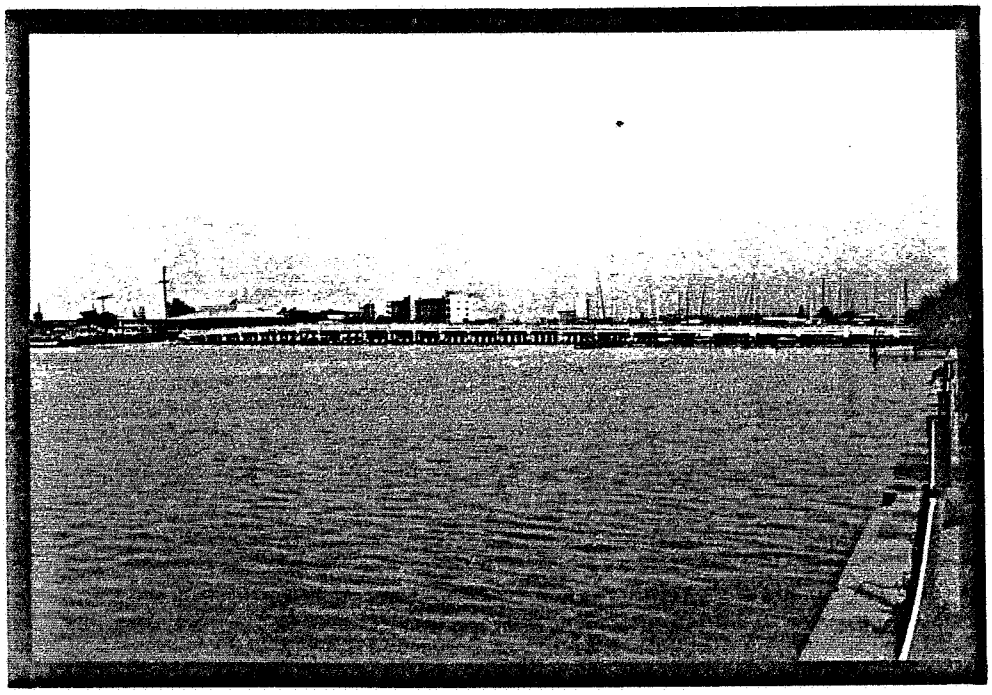
guide clearances for the bridge replacement, 24 feet for horizontal clearance perpendicular to center line of channel and the greater of 10 feet vertically above mean high water (10 + 1.02 = 11.02) or 12 feet vertically above mean low water (12 + (-).41 = 11.59) for a fixed bridge. Therefore, per USCG's criteria, the Low Member Elevation (LME) for the center span should be at least 11.59 feet N.G.V.D.

The clearances per the Florida Department of Transportation's (FDOT) Drainage Manual, Volume 2, Chapter 9, are as follows. The design event for a high use essential highway such as S.R. 699 (Gulf Boulevard/Blind Pass Road) is the 50-year event with 2 or 3 feet of clearance. The 50-year stillwater elevation as reported in the Flood Insurance Studies for Treasure Island and St. Petersburg Beach is 9.2 feet N.G.V.D. Therefore, per this criteria, the minimum LME should be at least 11.2 feet N.G.V.D. The second criteria per FDOT's drainage manual is a 6-foot clearance above spring high tide for tidewater bays. Assuming spring high tide and mean higher high water are equal, the vertical clearance should be at least 7.38 feet N.G.V.D. (1.38 + 6.0). The LME for the proposed Blind Pass Bridge should be at least 11.2 feet N.G.V.D.

Existing Blind Pass Bridge Structure

The existing Gulf Boulevard/Blind Pass Road crossing of Blind Pass is a two-lane fixed bridge (No. 150026) (see Exhibit 3). This structure was built in 1927 and has been recommended for replacement. The existing bridge has a total deck width of 33.8 feet and a total length of 600 feet (see Appendix 2, CD-1). The existing structure has no defined channel and therefore, no delineated channel span. The existing bridge clearances are approximately 21 feet horizontally and 9 feet vertically for navigation. Neither a fender system nor any other method of pier protection are currently provided.

The existing bridge has a LME of approximately 4.0 feet N.G.V.D. A storm surge event greater than the five-year will wet the existing LME and an event greater than the 25-year will overtop the facility on the east end (see Appendix 1). The eastern roadway approach elevations range from 2.0 to 3.0 feet N.G.V.D. and will be overtopped by an event less than the two-year event. Traffic interruption to flooding for the existing facility should be anticipated once every two years.



Blind Pass Bridge
(Looking North)

Area Between Bridge and Marina
(Looking West)

Greiner, Inc.

FLORIDA DEPARTMENT OF TRANSPORTATION

LOCATION HYDRAULIC REPORT

S.R. 699 (Gulf Blvd. / Blind Pass Road)
PD&E Study

Pinellas County, Florida

BRIDGE PHOTOGRAPHS

Exhibit 3

Proposed Blind Pass Bridge Structure

The proposed structure over Blind Pass is a four-lane fixed bridge with at least a 11.59 foot LME for the main channel span and at least a 11.20 foot LME for the entire structure. The 100-year base flood elevation per the March 3, 1983 FEMA maps for the bridge area is 12.0 feet NGVD. The bridge structure should be designed for wetting if the LME's for the bridge are below 12.0 feet NGVD.

The proposed structure is 600 feet long and has a deck width of 94.25 feet. The structure does not encroach into the existing Blind Pass Waterway and therefore, will not significantly alter flood elevations in the areas surrounding the bridge. As stated in the advance notification Package, the proposed improvements are fully consistent with the plans, programs, and objectives of the Pinellas County Metropolitan Planning Organization.

The proposed roadway profile changes which will occur beyond the approaches to the bridge crossing of Blind Pass are of a magnitude normally associated with resurfacing. The existing roadway drainage patterns will be maintained throughout the corridor. Therefore, as a result of the proposed roadway improvements, this project will not significantly affect flood heights or floodplain limits. The proposed roadway will have no significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, it has been determined that the encroachments associated with the roadway improvements are not significant.

III. STRUCTURE CATEGORIZATION

In accordance with the requirements set forth in FHPM 6-7-3(2), Paragraph 7, the proposed project corridor was evaluated to determine the impact of the proposed hydraulic improvements. The hydraulic improvements were categorized into the seven categories based upon the type of the hydraulic improvement and estimated floodplain impact. The drainage structures identified are Category 5 structures. The following briefly discusses the categorization and analysis.

Category 5: Projects On Existing Alignment Involving Replacement Of Structures In Heavily Urbanized Floodplains

The structures in this category include those replacement projects in flood-sensitive, heavily urbanized floodplains, where the condition of flooding is largely attributable to the low lying terrain.

Replacement drainage structures in this category are limited to hydraulically equivalent structures in most instances. This imitation is basically due to restrictions imposed by design geometry, existing development, cost feasibility, or practicability. An alternative encroachment location is not included in this category since it defeats the project purpose or is economically unfeasible. Flooding conditions in the project area are inherent in the topography and are a result of storm surges. There are not practicable alternatives to totally eradicate flood impacts, or even reduce them in any significant amount. Flooding is caused by storm surge and therefore, the receptors will continue to experience flooding problems. Structure CD-1, Blind Pass Bridge, is a Category 5 structure.

The proposed bridge structure spans beyond the Blind Pass Waterway and will equal or exceed the clearances specified by F.D.O.T. and U.S.C.G. The Blind Pass Waterway is a tidally influenced waterway with a streamline profile. Therefore, the additional piers associated with the new bridge structure should not produce measurable differences in backwater elevations across the S.R. 699 (Gulf Boulevard/Blind Pass Road) crossing.

For these reasons, the following statements can be addressed for the proposed improvements to the S.R. 699 (Gulf Boulevard/Blind Pass Road) crossing of the Blind Pass Waterway. The replacement drainage structure for this project is limited to a hydraulically equivalent structure. Since flooding conditions in the project area are inherent in the topography, there is not a practical alternative to totally eradicate flood impacts or even reduce them in any significant amount. Existing flooding will continue, but not be increased.

IV. REGULATORY AGENCY COORDINATION

Local Agencies

The cities of Treasure Island and St. Petersburg Beach are the local agencies with jurisdiction for the proposed replacement of the fixed bridge on S.R. 699 (Gulf Boulevard/Blind Pass Road). Coordination with these agencies will be required during preliminary and final design.

State Agencies

The State agencies that have permitting responsibilities relevant to the proposed S.R. 699 (Gulf Boulevard/Blind Pass Road) drainage facility improvements include the Florida Department of Environmental Regulation (FDER), Florida Department of Natural Resources (FDNR), Florida Game and Fresh Water Fish Commission (FGFWFC), and the Southwest Florida Water Management District (SWFWMD).

FDER requires permits for all dredge and fill activities conducted in areas either in or connected to waters of the State, pursuant to Chapter 17-4.28, F.A.C. The majority of FDER dredge and fill permits are processed and issued by the local District office. Permits for major dredge and fill projects (greater than ten thousand cubic yards) are issued from the central office in Tallahassee.

FDNR requires easements for any crossing of state owned lands. Coordination for easements should be accomplished during final design.

SWFWMD requires permits for the stormwater quantity and quality aspects of the proposed improvements. Coordination with this agency will be required during preliminary and final design to address stormwater issues.

Federal Agencies

The Federal agencies which could require permits for the proposed S.R. 699 (Gulf Boulevard/Blind Pass Road) improvements are the U.S. Coast Guard, U.S. Army Corps of Engineers (COE), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS) and the U.S. Environmental Protection Agency (EPA).

Coordination with these agencies will be required during preliminary and/or final design of the proposed improvements.

V. CONCLUSIONS

The major drainage improvement proposed as a result of the improvements to S.R. 699 (Gulf Boulevard/Blind Pass Road), is the replacement of the existing fixed bridge. The proposed roadway project should not significantly contribute to an increase in the flood zone area, since the existing flood designations are inherent in the topography of the surrounding area.

The clearances for the proposed bridge are controlled by hydraulic performance criteria. The proposed structure will perform hydraulically, in a manner equal to or greater than the existing structure, while improving the use of the facility for emergency services and evacuation. For these reasons, the proposed structure is hydraulically acceptable.

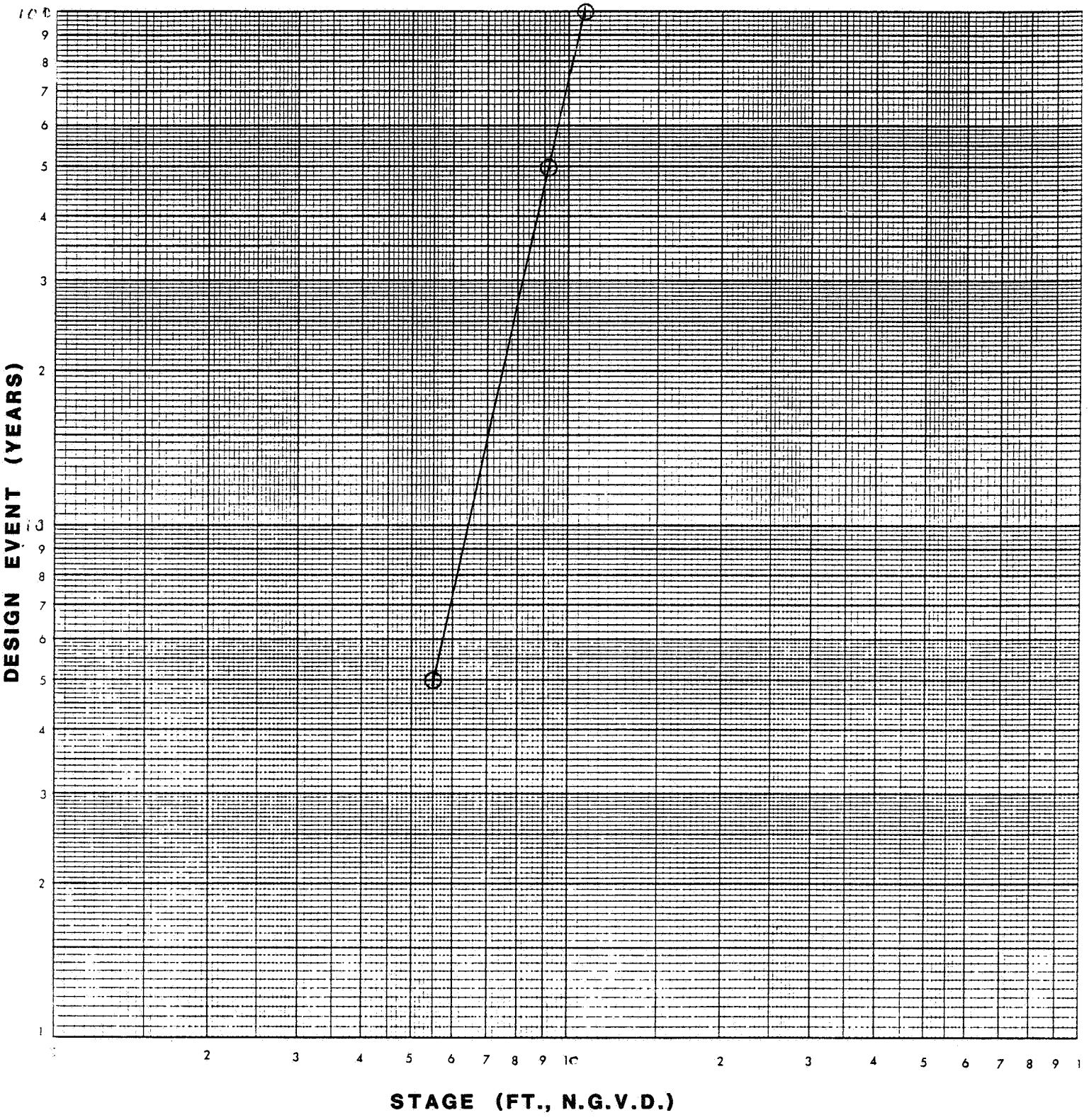
VI. REFERENCES

1. Federal Emergency Management Agency, Flood Insurance Rate Maps for Treasure Island (March 2, 1983) and St. Petersburg Beach (March 2, 1983), Florida.

2. Federal Emergency Management Agency, Flood Insurance Studies for Treasure Island (September 2, 1982) and St. Petersburg Beach (September 2, 1982), Florida.

3. U.S. Department of Agriculture Soil Conservation Service, Soil Survey (September 1972) for Pinellas County, Florida.

4. U.S. Geological Survey, Quadrangle Maps for Pass-A-Grille Beach (1981) and Seminole (1974), Florida.



SOURCE: FLOOD STUDIES FOR THE CITIES OF TREASURE ISLAND AND ST. PETERSBURG BEACH DATED: SEPTEMBER 2, 1982

APPENDIX 1

STAGE / FREQUENCY GRAPH

STATE ROAD 699
BLIND PASS ROAD/GULF BOULEVARD
PROJECT DEVELOPMENT
AND
ENVIRONMENTAL STUDIES
PINELLAS COUNTY, FLORIDA
STATE PROJECT NO. 15100-1546

LOCATION HYDRAULIC REPORT

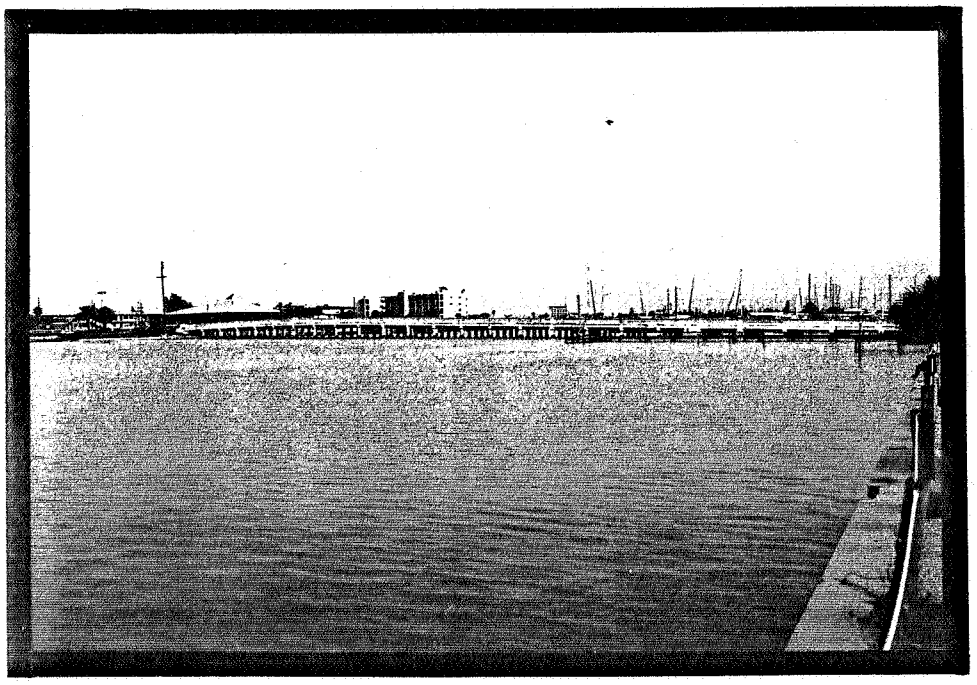
75 TH AVENUE TO 105 TH AVENUE

Submitted for

THE FLORIDA DEPARTMENT OF TRANSPORTATION

Submitted by
GREINER INC.
Tampa, Florida

SEPTEMBER 1988



Blind Pass Bridge
(Looking North)

Area Between Bridge and Marina
(Looking West)

Greiner, Inc.

FLORIDA DEPARTMENT OF TRANSPORTATION

LOCATION HYDRAULIC REPORT

S.R. 699 (Gulf Blvd. / Blind Pass Road)
PD&E Study

Pinellas County, Florida

BRIDGE PHOTOGRAPHS

Exhibit 3

APPENDICES 6.3

TABLE
GENERALIZED HIGHWAY CAPACITIES

Level of Service	A	B	C	D	E
Freeways					
Four Lane	25,325	42,225	63,350	76,000	84,450
Six Lane	38,000	63,325	95,000	114,000	126,675
Eight Lane	50,650	84,450	126,675	152,000	169,000
Expressways					
Four Lane	20,225	33,775	50,675	60,775	67,550
Six Lane	30,500	50,675	76,000	91,225	101,325
Eight Lane	40,550	67,550	101,325	121,550	135,100
Divided Arterials					
Two Lane	6,550	11,000	16,450	19,775	22,000
Four Lane	12,450	20,675	31,000	37,225	40,000
Six Lane	19,000	31,675	47,450	57,000	61,900
Eight lane	24,500	40,900	61,325	73,550	80,000
Undivided Arterials					
Two Lane	5,225	8,775	13,100	15,775	17,450
Four Lane	9,100	15,100	22,675	27,225	30,225
One Way Arterials					
Two Lane	4,775	8,000	12,000	14,450	15,000
Three Lane	7,775	13,000	19,450	23,325	24,225
Four Lane	11,325	18,900	28,325	34,000	36,000
Collectors					
Two Lane (Undivided)	4,325	7,225	10,775	12,225	14,325
Two Lane (Divided)	5,675	9,450	14,100	16,900	18,775
Bridges and Causeways					
Two Lane	7,325	12,100	18,225	22,775	27,325
Four Lane	16,325	27,225	40,775	50,000	55,550

* 9% Peak-hour factor

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75th Ave/SR 699 (Blind Pass Rd)
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....5/9/88
TIME.....AM PEAK HOUR - EXIST
COMMENT.....BP6

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	153	165	11	171	L	12.0	L	12.0	L	12.0	L	12.0	
TH	449	336	304	291	T	12.0	T	12.0	TR	12.0	TR	12.0	
RT	5	189	158	229	TR	12.0	TR	12.0		12.0		12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	2.00	N	0	0	0.90	50	N	14.5	3
WB	0.00	4.00	N	0	0	0.80	50	N	14.5	3
NB	0.00	1.00	N	0	0	0.70	50	N	20.5	3
SB	0.00	4.00	N	0	0	0.80	50	N	20.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X	X			NB	LT	X	X		
	TH		X				TH		X		
	RT		X				RT		X		
	PD						PD				
WB	LT	X	X			SB	LT	X	X		
	TH		X				TH		X		
	RT		X				RT		X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.039	0.417	15.8	C	30.8	D
	TR	0.558	0.267	25.0	C		
WB	L	0.040	0.417	15.8	C	30.6	D
	TR	0.774	0.267	28.8	D		
NB	L	0.141	0.467	13.9	B	32.0	D
	TR	0.914	0.425	30.8	D		
SB	L	0.143	0.467	14.0	B	31.2	D
	TR	0.928	0.425	32.7	D		

INTERSECTION: Delay = 31.0 (sec/veh) V/C = 1.009 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75th Ave/SR 699 (Blind Pass Rd)
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....5/9/88
TIME.....PM PEAK HOUR EXIST
COMMENT.....BP7

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	229	158	5	189	L	12.0	L	12.0	L	12.0	L	12.0	
TH	336	449	291	304	T	12.0	T	12.0	TR	12.0	TR	12.0	
RT	11	171	165	153	TR	12.0	TR	12.0		12.0		12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	2.00	N	0	0	0.90	50	N	14.5	3
WB	0.00	4.00	N	0	0	0.80	50	N	14.5	3
NB	0.00	1.00	N	0	0	0.80	50	N	20.5	3
SB	0.00	2.00	N	0	0	0.80	50	N	20.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X	X			NB	LT	X	X		
	TH		X				TH		X		
	RT		X				RT		X		
	PD						PD				
WB	LT	X	X			SB	LT	X	X		
	TH		X				TH		X		
	RT		X				RT		X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.337	0.417	18.5	C	29.7	D
	TR	0.370	0.308	21.0	C		
WB	L	0.055	0.417	15.9	C	29.4	D
	TR	0.780	0.308	26.7	D		
NB	L	0.141	0.450	14.8	B	28.1	D
	TR	0.824	0.408	25.2	D		
SB	L	0.142	0.450	14.8	B	27.4	D
	TR	0.827	0.408	25.3	D		

INTERSECTION: Delay = 28.8 (sec/veh) V/C = 0.978 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75th Ave/SR 699 (Blind Pass Rd)
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....7/5/88
TIME.....AM PEAK HOUR - 1995
COMMENT.....BP20

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	235	165	11	193	L	12.0	L	12.0	L	12.0	L	12.0	
TH	507	380	304	291	T	12.0	T	12.0	T	12.0	T	12.0	
RT	5	283	158	259	TR	12.0	TR	12.0	TR	12.0	TR	12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR.	TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	34.8		3
WB	0.00	4.00	N	0	0	0.90	50	N	34.8		3
NB	0.00	4.00	N	0	0	0.90	50	N	34.8		3
SB	0.00	4.00	N	0	0	0.90	50	N	34.8		3

SIGNAL SETTINGS — CYCLE LENGTH = 90.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X	X			NB	LT		X		
	TH		X				TH		X		
	RT		X				RT		X		
	PD						PD				
WB	LT	X	X			SB	LT	X	X		
	TH		X				TH	X	X		
	RT		X				RT	X	X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.307	0.411	14.0	B	15.3	C
	TR	0.508	0.333	15.8	C		
WB	L	0.077	0.411	12.3	B	17.0	C
	TR	0.703	0.333	18.1	C		
NB	L	0.061	0.300	17.1	C	17.4	C
	TR	0.537	0.300	17.4	C		
SB	L	0.054	0.522	8.0	B	11.5	B
	TR	0.476	0.411	12.7	B		

INTERSECTION: Delay = 15.1 (sec/veh) V/C = 0.552 LOS = C

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75th Ave/SR 699 (Blind Pass Rd)
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....7/5/88
TIME.....PM PEAK HOUR - 1995
COMMENT.....BP18

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	259	158	5	283	L	12.0	L	12.0	L	12.0	L	12.0	
TH	380	507	291	304	T	12.0	T	12.0	T	12.0	T	12.0	
RT	11	193	165	235	TR	12.0	TR	12.0	TR	12.0	TR	12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	34.8	3
WB	0.00	4.00	N	0	0	0.90	50	N	34.8	3
NB	0.00	4.00	N	0	0	0.90	50	N	34.8	3
SB	0.00	4.00	N	0	0	0.90	50	N	34.8	3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X	X			NB	LT		X		
	TH		X				TH		X		
	RT		X				RT		X		
	PD						PD				
WB	LT	X	X			SB	LT	X	X		
	TH		X				TH	X	X		
	RT		X				RT	X	X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.501	0.433	21.1	C	19.7	C
	TR	0.371	0.350	18.9	C		
WB	L	0.072	0.433	15.1	C	21.3	C
	TR	0.690	0.350	22.6	C		
NB	L	0.025	0.342	19.9	C	20.2	C
	TR	0.467	0.342	20.2	C		
SB	L	0.072	0.425	15.6	C	15.8	C
	TR	0.449	0.425	16.0	C		

INTERSECTION: Delay = 19.1 (sec/veh) V/C = 0.569 LOS = C

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75th Ave/SR 699 (Blind Pass Rd)
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....7/5/88
TIME.....AM PEAK HOUR - 2000
COMMENT.....BP19

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	280	165	11	230	: L	12.0	L	12.0	L	12.0	L	12.0	
TH	603	452	304	291	: T	12.0	T	12.0	T	12.0	L	12.0	
RT	5	339	158	308	: TR	12.0	TR	12.0	R	12.0	T	12.0	
RR	0	60	60	60	:	12.0		12.0		12.0	R	12.0	
					:	12.0		12.0		12.0		12.0	
					:	12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR.	TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	34.8		3
WB	0.00	4.00	N	0	0	0.90	50	N	34.8		3
NB	0.00	4.00	N	0	0	0.90	50	N	34.8		3
SB	0.00	4.00	N	0	0	0.90	50	N	34.8		3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4
EB	LT	X	X		
	TH		X		
	RT		X		
	PD				
WB	LT	X	X		
	TH		X		
	RT		X		
	PD				
NB	LT		X		
	TH		X		
	RT		X		
	PD				
SB	LT	X			
	TH	X	X		
	RT	X	X		
	PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.769	0.400	35.7	D	28.6	D
	TR	0.689	0.292	25.5	D		
WB	L	0.055	0.400	16.8	C	29.1	D
	TR	0.879	0.292	31.8	D		
NB	L	0.208	0.242	27.9	D	29.5	D
	T	0.792	0.242	33.3	D		
	R	0.207	0.350	17.7	C		
SB	L	0.367	0.225	30.0	D	22.6	C
	T	0.564	0.325	22.5	C		
	R	0.424	0.433	15.5	C		

INTERSECTION: Delay = 27.3 (sec/veh) V/C = 0.708 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75th Ave/SR 699 (Blind Pass Rd)
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....7/5/88
TIME.....PM PEAK HOUR - 2000
COMMENT.....BP17

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	308	158	5	339	: L	12.0	L	12.0	L	12.0	L	12.0	
TH	452	603	291	304	: T	12.0	T	12.0	T	12.0	L	12.0	
RT	11	230	165	280	: TR	12.0	TR	12.0	R	12.0	T	12.0	
RR	0	60	60	60	:	12.0		12.0		12.0	R	12.0	
					:	12.0		12.0		12.0		12.0	
					:	12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	34.8	3
WB	0.00	4.00	N	0	0	0.90	50	N	34.8	3
NB	0.00	4.00	N	0	0	0.90	50	N	34.8	3
SB	0.00	4.00	N	0	0	0.90	50	N	34.8	3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X	X			NB	LT		X		
	TH		X				TH		X		
	RT		X				RT		X		
	PD						PD				
WB	LT	X	X			SB	LT	X			
	TH		X				TH	X	X		
	RT		X				RT	X	X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.825	0.425	37.9	D	29.0	D
	TR	0.527	0.292	23.3	C		
WB	L	0.045	0.425	15.4	C	30.6	D
	TR	0.906	0.292	33.5	D		
NB	L	0.094	0.217	28.6	D	33.1	D
	T	0.846	0.217	38.5	D		
	R	0.227	0.342	18.2	C		
SB	L	0.542	0.225	31.8	D	19.6	C
	T	0.410	0.467	13.8	B		
	R	0.275	0.592	7.8	B		

INTERSECTION: Delay = 27.3 (sec/veh) V/C = 0.784 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75th Ave/SR 699 (Blind Pass Rd)
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....6/7/88
TIME.....AM PEAK HOUR - 2010
COMMENT.....BP31

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	399	165	11	329	: L	12.0	L	12.0	L	12.0	L	12.0	
TH	862	646	304	291	: L	12.0	T	12.0	T	12.0	L	12.0	
RT	5	482	158	440	: T	12.0	T	12.0	R	12.0	T	12.0	
RR	0	60	60	60	: TR	12.0	R	12.0		12.0	R	12.0	
					:	12.0		12.0		12.0		12.0	
					:	12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	34.8	3
WB	0.00	4.00	N	0	0	0.90	50	N	34.8	3
NB	0.00	4.00	N	0	0	0.90	50	N	34.8	3
SB	0.00	4.00	N	0	0	0.90	50	N	34.8	3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X				NB	LT		X		
	TH		X				TH		X		
	RT		X				RT		X		
	PD						PD				
WB	LT	X				SB	LT	X	X		
	TH		X				TH	X	X		
	RT		X				RT	X	X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.662	0.217	34.3	D	32.6	D
	TR	0.905	0.317	31.8	D		
WB	L	0.505	0.217	32.4	D	23.9	C
	T	0.675	0.317	24.0	C		
	R	0.721	0.433	20.4	C		
NB	L	0.208	0.250	27.3	D	27.4	D
	T	0.766	0.250	31.6	D		
	R	0.177	0.408	14.6	B		
SB	L	0.486	0.325	25.9	D	16.7	C
	T	0.564	0.325	22.5	C		
	R	0.384	0.733	3.9	A		

INTERSECTION: Delay = 25.3 (sec/veh) V/C = 0.821 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75th Ave/SR 699 (Blind Pass Rd)
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....6/6/88
TIME.....PM Peak Hour - 2010
COMMENT.....BP30

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	440	158	5	482	L	12.0	L	12.0	L	12.0	L	12.0	
TH	646	862	291	304	L	12.0	T	12.0	T	12.0	L	12.0	
RT	11	329	165	399	T	12.0	T	12.0	R	12.0	T	12.0	
RR	0	60	60	60	TR	12.0	R	12.0		12.0	R	12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	20.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	20.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	26.5	3
SB	0.00	4.00	N	0	0	0.90	50	N	26.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X				NB	LT		X		
	TH		X				TH		X		
	RT						RT		X		
	PD						PD				
WB	LT	X				SB	LT	X	X		
	TH		X				TH	X	X		
	RT						RT	X	X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.703	0.225	34.7	D	29.3	D
	TR	0.726	0.300	25.8	D		
WB	L	0.466	0.225	31.3	D	32.0	D
	T	0.950	0.300	37.2	D		
	R	0.442	0.450	14.9	B		
NB	L	0.094	0.217	28.6	D	32.0	D
	T	0.846	0.217	38.5	D		
	R	0.183	0.425	13.9	B		
SB	L	0.811	0.342	35.4	D	22.1	C
	T	0.560	0.342	21.5	C		
	R	0.324	0.775	2.7	A		

INTERSECTION: Delay = 28.4 (sec/veh) V/C = 0.873 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..SR 699 (BLIND PASS RD)/W. GULF BLVD/1ST ST
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....5/9/88
TIME.....AM PEAK HOUR - EXIST
COMMENT.....BP2

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	3	11	192	5	LT	12.0	LT	12.0	LTR	12.0	LTR	12.0	
TH	729	769	2	8	TR	12.0	TR	12.0		12.0		12.0	
RT	140	112	119	5		12.0		12.0		12.0		12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	3.00	N	0	0	0.80	50	N	13.8	3
WB	0.00	0.00	N	0	0	0.50	50	N	13.8	3
NB	0.00	3.00	N	0	0	0.90	50	N	19.8	3
SB	0.00	3.00	N	0	0	0.70	50	N	19.8	3

SIGNAL SETTINGS — CYCLE LENGTH = 90.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X				NB	LT	X			
	TH	X					TH	X			
	RT	X					RT	X			
	PD						PD				
WB	LT	X				SB	LT	X			
	TH	X					TH	X			
	RT	X					RT	X			
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.047	0.678	3.7	A	15.7	C
	TR	0.926	0.678	15.8	C		
WB	LTR	1.067	0.678	42.1	E	42.1	E
NB	LTR	1.018	0.233	58.5	E	58.5	E
SB	LTR	0.081	0.233	17.4	C	17.4	C

INTERSECTION: Delay = 35.0 (sec/veh) V/C = 1.054 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..SR 699 (BLIND PASS RD)/W. GULF BLVD/1ST ST
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....5/9/88
TIME.....PM PEAK HOUR - EXIST
COMMENT.....BP3

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	5	119	140	11	LT	12.0	LT	12.0	LTR	12.0	LTR	12.0	
TH	769	729	8	2	TR	12.0	TR	12.0		12.0		12.0	
RT	192	5	112	3		12.0		12.0		12.0		12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	2.00	N	0	0	0.80	50	N	13.8	3
WB	0.00	0.00	N	0	0	0.70	50	N	13.8	3
NB	0.00	1.00	N	0	0	0.90	50	N	19.8	3
SB	0.00	2.00	N	0	0	0.90	50	N	19.8	3

SIGNAL SETTINGS — CYCLE LENGTH = 60.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X				NB	LT	X			
	TH	X					TH	X			
	RT	X					RT	X			
	PD						PD				
WB	LT	X				SB	LT	X			
	TH	X					TH	X			
	RT	X					RT	X			
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	LTR	0.636	0.633	4.8	A	4.8	A
WB	L	0.829	0.633	22.5	C	14.8	B
	TR	0.920	0.633	13.6	B		
NB	LTR	0.831	0.233	23.2	C	23.2	C
SB	LTR	0.059	0.233	11.6	B	11.6	B

INTERSECTION: Delay = 11.1 (sec/veh) V/C = 0.896 LOS = B

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..SR 699 (BLIND PASS RD)/W. GULF BLVD/1ST ST
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....5/11/88
TIME.....AM PEAK HOUR - 1995
COMMENT.....BP23

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	3	124	213	5	LT	12.0	L	12.0	L	12.0	LTR	12.0	
TH	769	957	2	8	TR	12.0	T	12.0	TR	12.0		12.0	
RT	155	11	132	5		12.0	TR	12.0		12.0		12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

.

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	20.5	3
SB	0.00	0.00	N	0	0	0.90	50	N	20.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X	X			NB	LT	X			
	TH	X	X				TH	X			
	RT	X	X				RT	X			
	PD						PD				
WB	LT			X		SB	LT		X		
	TH		X	X			TH		X		
	RT		X	X			RT		X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	LTR	0.956	0.333	36.0	D	36.0	D
WB	L	0.448	0.183	33.9	D	20.5	C
	TR	0.726	0.442	18.8	C		
NB	L	0.547	0.258	30.3	D	27.9	D
	TR	0.383	0.258	23.9	C		
SB	LTR	0.226	0.058	35.0	D	35.0	D

INTERSECTION: Delay = 27.7 (sec/veh) V/C = 0.666 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..SR 699 (BLIND PASS RD)/W. GULF BLVD/1ST ST
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....5/9/88
TIME.....PM PEAK HOUR - 1995
COMMENT.....BP24

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	5	132	135	11	LT	12.0	L	12.0	L	12.0	LTR	12.0	
TH	957	769	8	2	TR	12.0	T	12.0	TR	12.0		12.0	
RT	213	5	124	3		12.0	TR	12.0		12.0		12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	20.5	3
SB	0.00	0.00	N	0	0	0.90	50	N	20.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X	X			NB	LT	X			
	TH	X	X				TH	X			
	RT	X	X				RT	X			
	PD						PD				
WB	LT			X		SB	LT		X		
	TH		X	X			TH		X		
	RT		X	X			RT		X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	LTR	1.006	0.400	40.4	E	40.4	E
WB	L	0.525	0.167	36.2	D	19.3	C
	TR	0.580	0.442	16.6	C		
NB	L	0.398	0.225	30.5	D	28.4	D
	TR	0.430	0.225	26.2	D		
SB	LTR	0.282	0.042	36.6	D	36.6	D

INTERSECTION: Delay = 31.0 (sec/veh) V/C = 0.718 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..SR 699 (BLIND PASS RD)/W. GULF BLVD/1ST ST
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....5/9/88
TIME.....AM PEAK HOUR - 2000
COMMENT.....BP21

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	3	133	228	5	LT	12.0	L	12.0	L	12.0	LTR	12.0	
TH	826	1044	2	8	TR	12.0	T	12.0	TR	12.0		12.0	
RT	166	11	141	5		12.0	TR	12.0		12.0		12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	20.5	3
SB	0.00	0.00	N	0	0	0.90	50	N	20.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X	X			NB	LT	X			
	TH	X	X				TH	X			
	RT	X	X				RT	X			
	PD						PD				
WB	LT			X		SB	LT		X		
	TH		X	X			TH		X		
	RT		X	X			RT		X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	LTR	0.855	0.400	24.6	C	24.6	C
WB	L	0.529	0.167	36.2	D	18.9	C
	TR	0.723	0.483	16.8	C		
NB	L	0.672	0.225	35.5	D	32.1	D
	TR	0.470	0.225	26.7	D		
SB	LTR	0.316	0.042	36.9	D	36.9	D

INTERSECTION: Delay = 23.1 (sec/veh) V/C = 0.714 LOS = C

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..SR 699 (BLIND PASS RD)/W. GULF BLVD/1ST ST
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....5/9/88
TIME.....PM PEAK HOUR - 2000
COMMENT.....BP22

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	5	141	166	11	: LT	12.0	L	12.0	L	12.0	LTR	12.0	
TH	1044	826	8	2	: TR	12.0	T	12.0	TR	12.0		12.0	
RT	228	5	133	3	:	12.0	TR	12.0		12.0		12.0	
RR	0	0	0	0	:	12.0		12.0		12.0		12.0	
					:	12.0		12.0		12.0		12.0	
					:	12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. . min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	20.5	3
SB	0.00	0.00	N	0	0	0.90	50	N	20.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X	X			NB	LT	X			
	TH	X	X				TH	X			
	RT	X	X				RT	X			
	PD						PD				
WB	LT			X		SB	LT		X		
	TH		X	X			TH		X		
	RT		X	X			RT		X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	LTR	0.991	0.442	35.1	D	35.0	D
WB	L	0.623	0.150	39.7	D	16.8	C
	TR	0.541	0.508	13.1	B		
NB	L	0.550	0.200	34.3	D	31.7	D
	TR	0.517	0.200	28.8	D		
SB	LTR	0.282	0.042	36.6	D	36.6	D

INTERSECTION: Delay = 27.8 (sec/veh) V/C = 0.784 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..SR 699 (BLIND PASS RD)/W. GULF BLVD/1ST ST
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....5/9/88
TIME.....AM PEAK HOUR - 2010
COMMENT.....BP4

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	3	152	260	5	L	12.0	L	12.0	L	12.0	LTR	12.0	
TH	985	1244	2	8	T	12.0	T	12.0	TR	12.0		12.0	
RT	189	11	161	5	TR	12.0	TR	12.0		12.0		12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	20.5	3
SB	0.00	0.00	N	0	0	0.90	50	N	20.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X				NB	LT	X			
	TH	X					TH	X			
	RT	X					RT	X			
	PD						PD				
WB	LT		X			SB	LT		X		
	TH	X	X				TH		X		
	RT	X	X				RT		X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.057	0.400	16.8	C	38.0	D
	TR	0.995	0.400	38.0	D		
WB	L	0.605	0.167	37.8	D	19.4	C
	TR	0.732	0.567	13.3	B		
NB	L	0.713	0.242	35.7	D	34.8	D
	TR	0.499	0.242	26.1	D		
SB	LTR	0.226	0.058	35.0	D	38.6	D

INTERSECTION: Delay = 29.6 (sec/veh) V/C = 1.177 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..SR 699 (BLIND PASS RD)/W. GULF BLVD/1ST ST
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....5/9/88
TIME.....PM PEAK HOUR - 2010
COMMENT.....BP5

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	5	161	189	11	L	12.0	L	12.0	L	12.0	LTR	12.0	
TH	1244	985	8	2	T	12.0	T	12.0	TR	12.0		12.0	
RT	260	5	152	3	TR	12.0	TR	12.0		12.0		12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	2.00	N	0	0	0.90	50	N	11.5	3
WB	0.00	2.00	N	0	0	0.90	50	N	11.5	3
NB	0.00	2.00	N	0	0	0.90	50	N	17.5	3
SB	0.00	0.00	N	0	0	0.90	50	N	17.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X				NB	LT	X			
	TH	X					TH	X			
	RT	X					RT	X			
	PD						PD				
WB	LT		X			SB	LT		X		
	TH	X	X				TH		X		
	RT	X	X				RT		X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.038	0.508	11.2	B	31.9	D
	TR	0.994	0.508	31.9	D		
WB	L	0.634	0.167	38.6	D	15.7	C
	TR	0.480	0.675	6.2	B		
NB	L	0.677	0.183	38.7	D	37.1	D
	TR	0.635	0.183	32.0	D		
SB	LTR	0.352	0.033	38.1	D	38.8	D

INTERSECTION: Delay = 27.7 (sec/veh) V/C = 1.307 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75th Ave/SR 699 (Blind Pass Rd)
AREA TYPE.....OTHER
ANALYST.......SRK
DATE.....7/5/88
TIME.....AM PEAK HOUR - 2010
COMMENT.....BP41 - ONE WAY PAIR WITH BOCA CIEGA

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	0	165	11	425	T	12.0	L	12.0	L	12.0	L	12.0	
TH	1261	635	0	291	TR	12.0	T	12.0	R	12.0	L	12.0	
RT	5	0	462	451		12.0	T	12.0		12.0	T	12.0	
RR	0	0	150	50		12.0		12.0		12.0	R	12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ PKG Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR.	TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	17.5		3
WB	0.00	4.00	N	0	0	0.90	50	N	17.5		3
NB	0.00	4.00	N	0	0	0.90	50	N	17.5		3
SB	0.00	4.00	N	0	0	0.90	50	N	17.5		3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT					NB	LT		X		
	TH		X				TH		X		
	RT		X				RT		X		
	PD						PD				
WB	LT	X				SB	LT	X			
	TH	X	X				TH	X	X		
	RT						RT	X	X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	TR	1.005	0.417	38.9	D	38.9	D
WB	L	0.875	0.542	39.7	D	16.2	C
	T	0.388	0.542	10.4	B		
NB	L	0.208	0.092	38.6	D	24.4	C
	R	0.676	0.342	23.9	C		
SB	L	0.656	0.233	33.1	D	26.4	D
	T	0.564	0.325	22.5	C		
	R	0.727	0.408	21.8	C		

INTERSECTION: Delay = 28.5 (sec/veh) V/C = 0.831 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75th Ave/BOCA CIEGA
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....7/5/88
TIME.....PM PEAK HOUR - 2010
COMMENT.....BP43 - ONE WAY PAIR WITH BOCA CIEGA

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB	:	EB		WB		NB		SB	
LT	753	163	24	0	: L	12.0	L	12.0	LT	12.0	L	12.0	
TH	1360	978	80	0	: L	12.0	T	12.0	TR	12.0	L	12.0	
RT	114	406	201	0	: T	12.0	T	12.0		12.0	T	12.0	
RR	0	0	100	0	: TR	12.0	R	12.0		12.0	R	12.0	
					:	12.0		12.0		12.0		12.0	
					:	12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ PKG Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. BUT. Y/N	BUT. min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	17.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	17.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	17.5	3
SB	0.00	4.00	N	0	0	0.90	50	N	17.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X				NB	LT	X			
	TH	X	X				TH	X			
	RT	X	X				RT	X			
	PD						PD				
WB	LT			X		SB	LT				
	TH		X	X			TH				
	RT		X	X			RT				
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.773	0.350	29.8	D	20.2	D
	TR	0.970	0.508	27.9	D		
WB	L	0.480	0.225	31.5	D	25.6	D
	T	0.844	0.383	24.8	C		
	R	0.785	0.383	25.2	D		
NB	LTR	0.559	0.133	32.5	D	27.2	D

INTERSECTION: Delay = 27.6 (sec/veh) V/C = 0.780 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75th Ave/BOCA CIEGA
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....7/5/88
TIME.....AM PEAK HOUR - 2010
COMMENT.....BP42 - ONE WAY PAIR WITH BOCA CIEGA

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB	:	EB		WB		NB		SB	
LT	709	146	9	0	: L	12.0	L	12.0	LT	12.0	L	12.0	
TH	1404	791	59	0	: L	12.0	T	12.0	TR	12.0	L	12.0	
RT	36	536	156	0	: T	12.0	T	12.0		12.0	T	12.0	
RR	0	0	100	0	: TR	12.0	R	12.0		12.0	R	12.0	
					:	12.0		12.0		12.0		12.0	
					:	12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. BUT. Y/N	min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	17.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	17.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	17.5	3
SB	0.00	4.00	N	0	0	0.90	50	N	17.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 122.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X				NB	LT	X			
	TH	X	X				TH	X			
	RT	X	X				RT	X			
	PD						PD				
WB	LT			X		SB	LT				
	TH		X	X			TH				
	RT		X	X			RT				
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.827	0.308	33.4	D	29.8	D
	TR	0.956	0.500	26.5	D		
WB	L	0.363	0.267	27.4	D	20.4	C
	T	0.571	0.458	15.7	C		
	R	0.867	0.458	25.7	D		
NB	LTR	0.445	0.100	33.4	D	24.7	C

INTERSECTION: Delay = 26.3 (sec/veh) V/C = 0.715 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75th Ave/SR 699 (Blind Pass Rd)
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....7/5/88
TIME.....PM PEAK HOUR - 2010
COMMENT.....BP40 - ONE WAY PAIR WITH BOCA CIEGA

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	0	158	5	601	T	12.0	L	12.0	L	12.0	L	12.0	
TH	1086	844	0	388	TR	12.0	T	12.0	R	12.0	L	12.0	
RT	11	0	456	417		12.0	T	12.0		12.0	T	12.0	
RR	0	0	150	50		12.0		12.0		12.0	R	12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. BUT. Y/N	min. T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	17.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	17.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	17.5	3
SB	0.00	4.00	N	0	0	0.90	50	N	17.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 120.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT					NB	LT		X		
	TH		X				TH		X		
	RT		X				RT		X		
	PD						PD				
WB	LT	X				SB	LT	X			
	TH	X	X				TH	X	X		
	RT						RT	X	X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	TR	0.991	0.367	39.1	D	39.1	D
WB	L	0.739	0.508	25.5	D	15.1	C
	T	0.549	0.508	13.2	B		
NB	L	0.094	0.108	36.7	D	30.3	D
	R	0.777	0.292	30.2	D		
SB	L	0.864	0.250	30.5	D	29.1	D
	T	0.682	0.358	22.9	C		
	R	0.515	0.442	17.6	C		

INTERSECTION: Delay = 28.4 (sec/veh) V/C = 0.922 LOS = D

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75TH AVE./S.R. 699
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....8-8-88
TIME.....2010 - AM PEAK HOUR
COMMENT.....1-WAY PAIR ALT. - 74 & 75 AVE., GULF BLVD AND S.R. 699

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	0	0	11	0	LT	12.0	T	12.0	LT	12.0	TR	12.0	
TH	0	613	772	0	T	12.0	T	12.0	T	12.0		12.0	
RT	0	515	0	0	TR	12.0	T	12.0	T	12.0		12.0	
RR	0	0	0	0		12.0	R	12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR.	TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	11.5		3
WB	0.00	4.00	N	0	0	0.90	50	N	11.5		3
NB	0.00	4.00	N	0	0	0.90	50	N	14.5		3
SB	0.00	4.00	N	0	0	0.90	50	N	14.5		3

SIGNAL SETTINGS — CYCLE LENGTH = 60.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT					NB	LT	X			
	TH						TH	X			
	RT						RT				
	PD						PD				
WB	LT					SB	LT				
	TH	X					TH				
	RT	X					RT				
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
WB	T	0.283	0.500	5.7	B	7.4	B
	R	0.763	0.500	10.6	B		
NB	LT	0.494	0.367	9.6	B	9.6	B

INTERSECTION: Delay = 8.4 (sec/veh) V/C = 0.649 LOS = B

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75TH AVE./S.R. 699
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....8-8-88
TIME.....2010 - PM PEAK HOUR
COMMENT.....1-WAY PAIR ALT. - 74 & 75 AVE., GULF BLVD AND S.R. 699

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	0	0	5	0	LT	12.0	T	12.0	LT	12.0	TR	12.0	
TH	0	859	822	0	T	12.0	T	12.0	T	12.0		12.0	
RT	0	392	0	0	TR	12.0	T	12.0	T	12.0		12.0	
RR	0	0	0	0		12.0	R	12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	14.5	3
SB	0.00	4.00	N	0	0	0.90	50	N	14.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 60.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT					NB	LT	X			
	TH						TH	X			
	RT						RT				
	PD						PD				
WB	LT					SB	LT				
	TH	X					TH				
	RT	X					RT				
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
WB	T	0.397	0.500	6.1	B	6.4	B
	R	0.581	0.500	7.6	B		
NB	LT	0.521	0.367	9.8	B	9.8	B

INTERSECTION: Delay = 7.8 (sec/veh) V/C = 0.556 LOS = B

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75TH AVE./GULF BLVD.
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....8-8-88
TIME.....2010 - AM PEAK HOUR
COMMENT.....1-WAY PAIR ALT. - 74 & 75 AVE., GULF BLVD AND S.R. 699

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	0	525	0	0	: LT	12.0	L	12.0	LT	12.0	T	12.0	
TH	0	99	0	1043	: T	12.0	L	12.0	T	12.0	T	12.0	
RT	0	0	0	69	: TR	12.0	T	12.0	T	12.0	TR	12.0	
RR	0	0	0	0	:	12.0		12.0		12.0		12.0	
					:	12.0		12.0		12.0		12.0	
					:	12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. MIN. T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	14.5	3
SB	0.00	4.00	N	0	0	0.90	50	N	14.5	3

SIGNAL SETTINGS CYCLE LENGTH = 60.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT					NB	LT				
	TH						TH				
	RT						RT				
	PD						PD				
WB	LT		X			SB	LT				
	TH		X				TH		X		
	RT						RT		X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
WB	L	0.419	0.450	8.5	B	8.3	B
	T	0.139	0.450	6.3	B		
SB	TR	0.575	0.450	6.1	B	13.4	B

INTERSECTION: Delay = 12.2 (sec/veh) V/C = 0.456 LOS = B

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

INTERSECTION..75TH AVE./GULF BLVD.
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....8-8-88
TIME.....2010 - PM PEAK HOUR
COMMENT.....1-WAY PAIR ALT. - 74 & 75 AVE., GULF BLVD AND S.R. 699

VOLUMES

	EB	WB	NB	SB
LT	0	598	0	0
TH	0	266	0	1161
RT	0	0	0	52
RR	0	0	0	0

GEOMETRY

	EB		WB		NB		SB
LT	12.0	L	12.0	LT	12.0	T	12.0
TH	12.0	L	12.0	T	12.0	T	12.0
TR	12.0	T	12.0	T	12.0	TR	12.0
	12.0		12.0		12.0		12.0
	12.0		12.0		12.0		12.0
	12.0		12.0		12.0		12.0

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. mim	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	14.5	3
SB	0.00	4.00	N	0	0	0.90	50	N	14.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 60.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT					NB	LT				
	TH						TH				
	RT						RT				
	PD						PD				
WB	LT	X				SB	LT				
	TH	X					TH		X		
	RT						RT		X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
WB	L	0.478	0.450	9.0	B	8.4	B
	T	0.372	0.450	7.8	B		
SB	TR	0.627	0.450	8.5	B	12.3	B

INTERSECTION: Delay = 12.1 (sec/veh) V/C = 0.522 LOS = B

C:\>

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

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INTERSECTION..74TH AVE./GULF BLVD.
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....8-8-88
TIME.....2010 - AM PEAK HOUR
COMMENT.....1-WAY PAIR ALT. - 74 & 75 AVE., GULF BLVD AND S.R. 699

	VOLUMES					GEOMETRY					
	EB	WB	NB	SB		EB		WB		NB	SB
LT	0	0	32	433	T	12.0		12.0	L	12.0	L 12.0
TH	287	0	0	1125	TR	12.0		12.0	R	12.0	L 12.0
RT	35	0	1095	10		12.0		12.0	R	12.0	T 12.0
RR	0	0	0	0		12.0		12.0		12.0	TR 12.0
						12.0		12.0		12.0	12.0
						12.0		12.0		12.0	12.0

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BLT. min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	55.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	55.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	6.3	3
SB	0.00	4.00	N	0	0	0.90	50	N	3.2	3

SIGNAL SETTINGS — CYCLE LENGTH = 60.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
SB	LT					NB	LT	X			
	TH	X					TH				
	RT	X					RT	X			
	PD						PD				
WB	LT					EB	LT		X		
	TH						TH	X	X		
	RT						RT	X	X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	TR	0.698	0.122	19.3	C	19.3	C
NB	L	0.830	0.528	8.7	B	14.8	B
	R	0.914	0.528	14.2	B		
SB	L	0.778	0.200	21.4	C	7.7	B
	TR	0.515	0.728	8.4	A		

INTERSECTION: Delay = 11.1 (sec/veh) V/C = 0.842 LOS = B

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..74TH AVE./GULF BLVD.
AREA TYPE.....OTHER
ANALYST.....ERK
DATE.....8-8-88
TIME.....2010 - PM PEAK HOUR
COMMENT.....1-WAY PAIR ALT. - 74 & 75 AVE., GULF BLVD AND S.R. 699

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	0	0	46	652	T	12.0		12.0	L	12.0	L	12.0	
TH	158	0	0	1052	TR	12.0		12.0	T	12.0	T	12.0	
RT	51	0	1003	15		12.0		12.0	R	12.0	T	12.0	
RR	0	0	0	0		12.0		12.0		12.0	TR	12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BLT. min	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	25.0	3
WB	0.00	4.00	N	0	0	0.90	50	N	15.0	3
NB	0.00	4.00	N	0	0	0.90	50	N	5.0	3
SB	0.00	4.00	N	0	0	0.90	50	N	5.0	3

SIGNAL SETTINGS — CYCLE LENGTH = 60.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT					NB	LT	X			
	TH	X					TH				
	RT	X					RT	X			
	PD						PD				
WB	LT					EB	LT		X		
	TH						TH	X	X		
	RT						RT	X	X		
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	TR	0.721	0.115	20.3	C	20.3	C
NB	L	0.342	0.467	8.3	B	13.7	C
	R	0.948	0.467	19.2	C		
SB	L	0.873	0.268	33.9	D	3.3	B
	TR	0.499	0.735	2.3	A		

INTERSECTION: Delay = 13.7 (sec/veh) V/C = 0.829 LOS = B

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..74TH AVE./S.R. 699
AREA TYPE.....OTHER
ANALYST.....SRK
DATE.....3-8-88
TIME.....2010 - AM PEAK HOUR
COMMENT.....1-WAY PAIR ALT. - 74 & 75 AVE., GULF BLVD AND S.R. 699

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	415	0	0	0	LT	12.0	T	12.0	T	12.0	TR	12.0	
TH	1333	0	367	0	T	12.0	T	12.0	TR	12.0		12.0	
RT	6	0	194	0	TR	12.0	T	12.0		12.0		12.0	
RR	0	0	0	0		12.0	R	12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT.	ARR.	TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	11.5	3	
WB	0.00	4.00	N	0	0	0.90	50	N	11.5	3	
NB	0.00	4.00	N	0	0	0.90	50	N	14.5	3	
SB	0.00	4.00	N	0	0	0.90	50	N	14.5	3	

SIGNAL SETTINGS — CYCLE LENGTH = 80.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X				NB	LT				
	TH	X					TH		X		
	RT	X					RT		X		
	PD						PD				
WB	LT					SB	LT				
	TH						TH				
	RT						RT				
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	LTR	0.788	0.533	8.3	E	8.3	E
NB	TR	0.534	0.367	10.0	B	15.1	C

INTERSECTION: Delay = 14.2 (sec/veh) V/C = 0.664 LOS = B

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..74TH AVE./S.R. 699
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....8-8-88
TIME.....2010 - PM PEAK HOUR
COMMENT.....1-WAY PAIR ALT. - 74 & 75 AVE., GULF BLVD AND S.R. 699

VOLUMES

	EB	WB	NB	SB
LT	493	0	0	0
TH	1339	0	334	0
RT	15	0	249	0
RR	0	0	0	0

GEOMETRY

	EB		WB		NB		SB
LT	12.0	T	12.0	T	12.0	TR	12.0
T	12.0	T	12.0	TR	12.0		12.0
TR	12.0	T	12.0		12.0		12.0
	12.0	R	12.0		12.0		12.0
	12.0		12.0		12.0		12.0
	12.0		12.0		12.0		12.0

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. ACT. Y/N	PED. ACT. min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	14.5	3
SB	0.00	4.00	N	0	0	0.90	50	N	14.5	3

SIGNAL SETTINGS

CYCLE LENGTH = 60.0

		PH-1	PH-2	PH-3	PH-4
EB	LT	X			
	TH	X			
	RT	X			
	PD				
WB	LT				
	TH				
	RT				
	PD				

		PH-1	PH-2	PH-3	PH-4
NB	LT				
	TH	X			
	RT	X			
	PD				
SB	LT				
	TH				
	RT				
	PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	LTR	0.833	0.533	9.0	B	9.0	B
NB	TR	0.562	0.367	19.4	B	19.4	C

INTERSECTION: Delay = 14.4 (sec/veh) V/C = 0.720 LOS = B

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..74TH AVE./BOCA CIEGA AVE.
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....8-8-88
TIME.....2010 - AM PEAK HOUR
COMMENT.....1-WAY PAIR ALT. - 74 & 75 AVE., GULF BLVD AND S.R. 699

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	19	0	0	112	LT	12.0		12.0	T	12.0	L	12.0	
TH	1411	0	217	296	T	12.0		12.0	TR	12.0	T	12.0	
RT	97	0	226	0	TR	12.0		12.0		12.0		12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR.	TYPE
EB	0.00	4.00	Y	20	0	0.90	50	N	14.5	3	
WB	0.00	4.00	N	0	0	0.90	50	N	14.5	3	
NB	0.00	4.00	N	0	0	0.90	50	N	11.5	3	
SB	0.00	4.00	N	0	0	0.90	50	N	11.5	3	

SIGNAL SETTINGS — CYCLE LENGTH = 60.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X				NB	LT				
	TH	X					TH	X			
	RT	X					RT	X			
	PD						PD				
WB	LT					SB	LT	X			
	TH						TH	X			
	RT						RT				
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	LTR	0.767	0.500	8.8	B	8.8	B
NB	TR	0.433	0.367	9.4	B	10.5	B
SB	L	0.351	0.367	10.8	B	10.2	B
	T	0.508	0.367	10.0	B		

INTERSECTION: Delay = 8.2 (sec/veh) V/C = 0.558 LOS = B

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..74TH AVE./BOCA CIEGA AVE.
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....8-8-88
TIME.....2010 - PM PEAK HOUR
COMMENT.....1-WAY PAIR ALT. - 74 & 75 AVE., GULF BLVD AND S.R. 699

	VOLUMES					GEOMETRY					
	EB	WB	NB	SB		EB	WB		NB		SB
LT	90	0	0	138	LT	12.0	12.0	T	12.0	L	12.0
TH	1379	0	245	386	T	12.0	12.0	TR	12.0	T	12.0
RT	119	0	279	0	TR	12.0	12.0		12.0		12.0
RR	0	0	0	0		12.0	12.0		12.0		12.0
						12.0	12.0		12.0		12.0
						12.0	12.0		12.0		12.0

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	4.00	Y	20	0	0.90	50	N	14.5	3
WB	0.00	4.00	N	0	0	0.90	50	N	14.5	3
NB	0.00	4.00	N	0	0	0.90	50	N	11.5	3
SB	0.00	4.00	N	0	0	0.90	50	N	11.5	3

SIGNAL SETTINGS — CYCLE LENGTH = 60.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X				NB	LT				
	TH	X					TH	X			
	RT	X					RT	X			
	PD						PD				
WB	LT					SB	LT	X			
	TH						TH	X			
	RT						RT				
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	LTR	0.805	0.500	9.4	B	9.4	B
NB	TR	0.514	0.367	9.9	B	10.6	B
SB	L	0.489	0.367	12.1	B	11.9	B
	T	0.663	0.367	11.8	B		

INTERSECTION: Delay = 8.7 (sec/veh) V/C = 0.745 LOS = B

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75TH AVE./BOCA CIEGA AVE.
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....8-8-88
TIME.....2010 - AM PEAK HOUR
COMMENT.....1-WAY PAIR ALT. - 74 & 75 AVE., GULF BLVD AND S.R. 699

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	0	311	32	0	LT	12.0	LT	12.0	L	12.0	TR	12.0	
TH	0	1080	204	97	T	12.0	T	12.0	T	12.0		12.0	
RT	0	54	0	15	TR	12.0	T	12.0		12.0		12.0	
RR	0	0	0	0		12.0	TR	12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	16.8	3
WB	0.00	4.00	N	0	0	0.90	50	N	16.8	3
NB	0.00	4.00	N	0	0	0.90	50	N	17.3	3
SB	0.00	4.00	N	0	0	0.90	50	N	17.3	3

SIGNAL SETTINGS — CYCLE LENGTH = 60.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT					NB	LT	X			
	TH						TH	X			
	RT						RT				
	PD						PD				
WB	LT	X				SB	LT				
	TH	X					TH	X			
	RT	X					RT	X			
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
WB	L	0.412	0.500	7.4	B	9.4	B
	TR	0.528	0.500	8.7	B		
NB	L	0.069	0.367	5.4	B	9.1	B
	T	0.350	0.367	9.0	B		
SB	TR	0.221	0.367	8.5	B	8.5	B

INTERSECTION: Delay = 9.3 (sec/veh) V/C = 0.453 LOS = B

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..75TH AVE./BOCA CIEGA AVE.
AREA TYPE.....OTHER
ANALYST.....GRK
DATE.....8-8-88
TIME.....2010 - PM PEAK HOUR
COMMENT.....1-WAY PAIR ALT. - 74 & 75 AVE., GULF BLVD AND S.R. 699

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	0	321	44	0	LT	12.0	LT	12.0	L	12.0	TR	12.0	
TH	0	1157	291	203	T	12.0	T	12.0	T	12.0		12.0	
RT	0	77	0	50	TR	12.0	T	12.0		12.0		12.0	
RR	0	0	0	0		12.0	TR	12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR.	TYPE
EB	0.00	4.00	N	0	0	0.90	50	N	16.6		3
WB	0.00	4.00	N	0	0	0.90	50	N	16.6		3
NB	0.00	4.00	N	0	0	0.90	50	N	17.3		3
SB	0.00	4.00	N	0	0	0.90	50	N	17.3		3

SIGNAL SETTINGS — CYCLE LENGTH = 60.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT					NB	LT	X			
	TH						TH	X			
	RT						RT				
	PD						PD				
WB	LT	X				SB	LT				
	TH	X					TH	X			
	RT	X					RT	X			
	PD						PD				

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
WB	L	0.426	0.500	7.5	B	9.4	B
	TR	0.575	0.500	7.0	B		
NB	L	0.125	0.367	9.6	B	9.9	B
	T	0.500	0.367	10.0	B		
SB	TR	0.500	0.367	10.0	B	10.0	B

INTERSECTION: Delay = 9.5 (sec/veh) V/C = 0.544 LOS = B