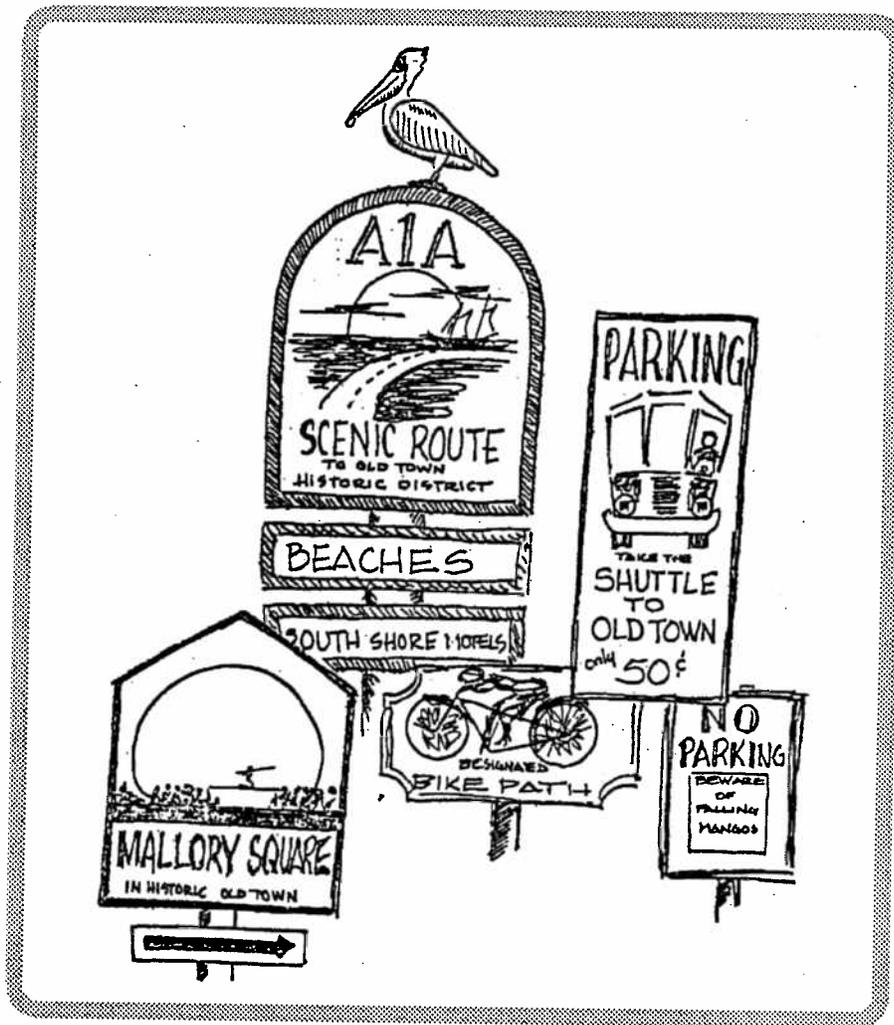


KEY WEST

TRAFFIC CIRCULATION STUDY

TECHNICAL MEMORANDUM NO. 4



Prepared For
CITY OF KEY WEST
By The
FLORIDA DEPARTMENT OF TRANSPORTATION

TECHNICAL MEMORANDUM NUMBER 4

Refinement of Alternatives

Key West Traffic Circulation Study

Prepared For
City of Key West

Prepared By
Florida Department of Transportation
August 1988

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INTRODUCTION

In Technical Memorandum Number 3, five alternative traffic circulation plans for Key West were developed. These alternative traffic circulation plans were developed from a number of system concepts recommended by the study's advisory committee. These concepts provide for improvements to major travel corridors which serve as access to the large attractions located within Key West. For the first iteration of alternatives, the study advisory committee was instructed to develop concepts without regard to projected costs, neighborhood/commercial disruption and physical constraints.

Traffic assignments of buildout travel demands were made for each of the five alternative traffic circulation plans. The capacity deficiencies were identified and presented to the study advisory committee for their review.

The study advisory committee's review led to the development of a number of new system concepts, as well as the elimination of previously developed concepts that were considered to be infeasible. The new concepts were developed to provide a solution to problem areas that were not addressed previously or were developed to help smooth the effects of the elimination of those projects considered to be infeasible. Concepts were considered to be infeasible if they caused neighborhood/commercial disruption or were physically constrained. Inadequate right-of-way and buildings constructed to the edge of existing right-of-way were primary considerations as to whether a concept was constrained.

For the most part, cost was not a consideration for elimination of a concept unless a cheaper alternative providing the same relief could be developed.

The study advisory committee's system concepts were again refined into alternative plans. Two alternative plans were developed and assignments of buildout travel demands were made to each of the alternative plans.

Each alternative was modeled twice. The first traffic assignment was made using the full triptable as it was developed by Quick Response. This triptable assumes that transit accounts for such a small amount of trips that for all practical purposes, transit's contribution to congestion reduction is zero.

The second traffic assignment was made assuming transit and other Transportation Systems Management (TSM) projects would be strengthened and thus make a positive contribution to congestion reduction. For the purposes of the second assignment, all link volumes from the first assignment were reduced by 10%, to show what possible effects an improved TSM program could have on the Key West street system.

To distinguish the Alternatives 1 and 2 as described in this Technical Memorandum from Alternatives 1 and 2 developed previously, the new alternatives will be designated as Alternative Plan B1 and B2.

The results of the analysis of the alternatives are reported herein.

ALTERNATIVE PLAN B1

Alternative Plan B1 is illustrated in Figure 1. The primary thrust of this plan is to provide an increase in capacity while staying, as much as possible, within the present right-of-way boundaries. Some taking of land may be necessary in some instances but such takings are considered minor and would not require the removal of buildings.

This alternative plan is designed to accommodate the existing travel desires of the citizens of Key West. In so doing, this alternative plan becomes a reactionary plan responding to primarily those areas which are experiencing problems now.

DESCRIPTION OF ALTERNATIVE PLAN

The major component of this alternative plan is the improvement of North Roosevelt Boulevard between Palm Avenue and the point where US1 splits to become North and South Roosevelt Boulevard. The improvement will bring North Roosevelt Boulevard from a four lane divided cross section to a five lane undivided section. Left turns onto and off of North Roosevelt Boulevard would be prohibited except at designated intersections. At all other points along North Roosevelt Boulevard, the right on and right off turning movement would be the only turn allowed.

North Roosevelt Boulevard is one of the worse problem areas in Key West when considering traffic congestion and accidents. Improvements to North Roosevelt Boulevard is warranted, however,

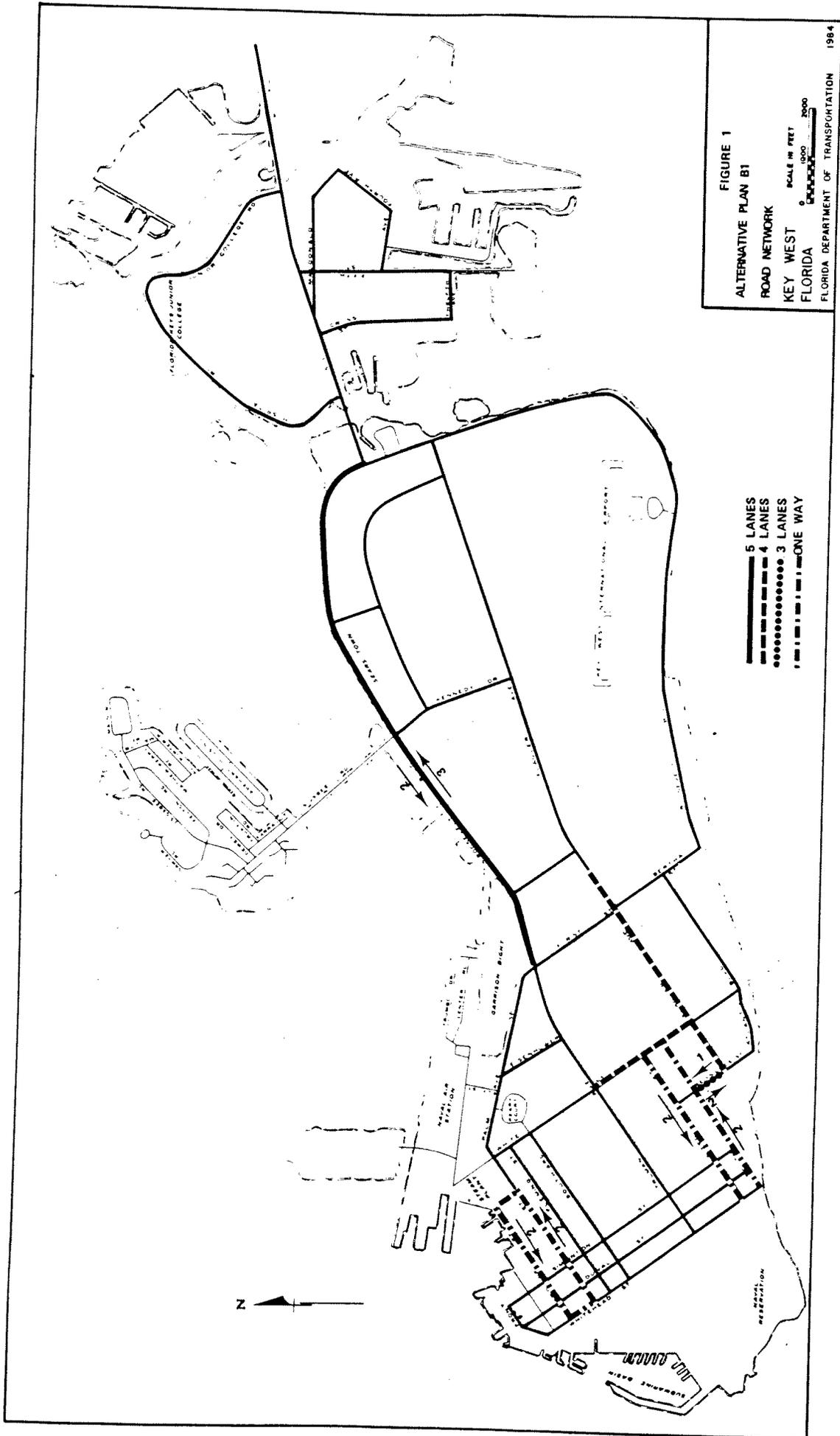


FIGURE 1

ALTERNATIVE PLAN B1

ROAD NETWORK

KEY WEST

FLORIDA

FLORIDA DEPARTMENT OF TRANSPORTATION 1984

- 5 LANES
- 4 LANES
- 3 LANES
- ONE WAY

SCALE IN FEET
0 1000 2000

the opportunities to make improvements are very limited. Widening the street would require the creation, through dredging, of additional right-of-way on the gulf side. The advisory committee felt, due to environmental concerns and cost, that such an endeavor was not practical at this time.

The advisory committee did feel that some additional capacity could be provided for by using the center turn lane as an additional through lane, thus making North Roosevelt Boulevard the five lane cross section as proposed in the preceeding paragraph. The advisory committee's suggested improvement to North Roosevelt Boulevard is based on using the existing pavement and restripping to five lanes. This would eliminate the need to aquire any new right-of-way as well as eliminate the impact of construction on the commercial district while providing the improvement at a minimum cost.

The five lane cross section proposed will provide for three lanes outbound and two lanes inbound.

Another component of this plan is the widening of Flagler Avenue and White Street from two lanes to four lanes undivided. The Flagler Avenue improvement would run from Reynolds Street east to the existing four lane section. White Street would be improved between Truman Avenue and Flagler Avenue. Building setbacks are great enough to allow a four lane undivided section to be constructed for both White Street and Flagler Avenue. Existing right-of-way for both facilities is fifty feet, adequate enough for the construction of a standard four lane undivided section. However, some additional right-of-way may need to be aquired to

provide a buffer between the private property and the street. Parking along the street in effect would be eliminated.

The third and final component of this alternative plan is the creation of two new one-way street pairs. The first new pair is created by making South Street one-way eastbound and United Street one-way westbound. The limits of this project is from Whitehead Street to White Street. United Street and South Street east of White Street would remain as existing. The second of the two new one-way pairings is created by making Eaton Street one-way eastbound and Caroline Street one-way westbound. The limits of the second one-way pair is from Whitehead Street to Grinnell Street.

As part of the final component of this plan, Reynolds Street would be improved to a three lane cross section between South Street and Flagler Avenue with two lanes southbound and one lane northbound. Also a part of the final component of this alternative plan, Grinnell Street would be one-way northbound between Eaton Street and Caroline Street in an attempt to smooth the transition from a two-way Eaton Street to the one-way pair. Existing right-of-way for the one-way component of this alternative plan is generally fifty feet with the exception of a short section of United Street which is sixty feet. This is more than adequate to implement the one-way pairings.

TRAFFIC ASSIGNMENT RESULTS

A traffic assignment projecting buildout traffic onto the Alternative Plan B1 network was created and the results are shown

in Figure 2. The traffic volumes reflect an assignment of the full triptable as created by Quick Response. The effects of a strengthened TSM program will be discussed later within this technical memorandum.

The design capacities associated with Alternative Plan B1 are shown in Figure 3. Comparing the projected traffic volumes with the design capacities establishes those areas which are deficient in capacity. Figure 4 outlines those roadways which have greater volume than available capacity.

The primary purpose of this alternative plan is to provide as much congestion relief as possible system wide, without purchasing additional right-of-way. To determine the extent of the improvement provided by Alternative Plan B1, the capacity deficiencies from Alternative Plan B1 were compared with the capacity deficient areas of the Do-Nothing system. The Do-Nothing system assignment reflects what the future system problems would be if no improvements to the street system are made. Capacity deficiencies of the Do-Nothing system are discussed in Technical Memorandum No. 2 and the capacity deficiency map from that technical memorandum is reprinted here as Figure 5.

The assignment results show a general lessening of congestion along North Roosevelt Boulevard between First Street and Kennedy Drive. Volume to capacity ratios have been reduced from a high of 1.38 to a high of 1.07. The segment between Kennedy Drive and Fifth Street has had its volume to capacity ratio reduced to below 1.00, indicating acceptable levels of congestion. North Roosevelt Boulevard between Kennedy Drive and where US1 splits to become

North and South Roosevelt Boulevard, actually experienced little or no improvement.

The prohibition of left turns along North Roosevelt Boulevard has caused traffic to deviate to the residential areas causing unacceptable levels of congestion on the residential street. For example, Twentieth Street has increased its volume to capacity ratio from under 1.00 to a high of 1.29, indicating that the volume is 29% higher than the desired capacity.

The prohibition of left turns has made it more difficult to make a return trip on North Roosevelt Boulevard. Motorists have been forced into using the residential streets to maneuver in order to put themselves in a position to make their return movement.

The four laning of Flagler Avenue has eliminated the traffic problem at the bottleneck between First/Bertha Street and the existing four lane. Also, congestion has been eliminated on the portion of White Street that has been four laned.

Alternative Plan B1 has not made a significant difference in traffic congestion in the Old Town area of Key West. Nor has this alternative reduced congestion on US1 on Stock Island. Congestion levels in these two sections of the study area remain at high levels.

COST ESTIMATES

The cost estimates are for construction only and are provided to give the committee another basis for determining the preferred plan. More detailed costs will be prepared once a preferred plan

has been determined. Table 1 shows the construction costs split out by project.

ADVANTAGES

The primary advantage to Alternative Plan B1 is its low cost. For the most part all roadway expansion can be handled within the existing right-of-way. Some right-of-way may need to be taken to assure that the improved facilities are to approved state standards, but such taking is considered minor.

Alternative Plan B1 provides for improved access to the businesses in the Historic District of town. The creation of the Caroline and Eaton Street one-way pair provides for access to the Historic District without commercial vehicles having to pass through the narrow streets of the Historic District.

Also, Alternative Plan B1 will not cause any physical impact to the neighborhoods because of construction of the improvements. Although some neighborhoods will receive additional traffic under this plan, the construction of improvements will be confined, for the most part, to the existing right-of-way.

DISADVANTAGES

The primary disadvantage to Alternative Plan B1 is that it does not address the problems with traffic accessing Key West via the US1 bridge over Cow Key Channel. US1 is the only land based link to Key West and as such carries all the traffic destin for

Table 1
Alternative Plan B1 Constructions Cost Estimates

Five Lane North Roosevelt Blvd.

Suspended Left Turn Signs	\$	30,000
Suspended Information Signs		180,000
Restriping		20,000
Subtotal	\$	<u>230,000</u>

Old Town One-Way Signing

One-Way Street Signing	\$	240,000
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Four Lane Flagler Avenue

Third Street to First Street	\$	386,172
First Street to White Street		1,119,400
White Street to Reynolds Street		463,200
Subtotal		<u>\$1,968,772</u>

Four Lane White Street

Truman Avenue to Flagler Avenue	\$	965,000
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Add Lane to Reynolds Street

South Street to Flagler Avenue	\$	60,750
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Alternative Plan B1 Total Cost

\$2,596,022

Key West. Combine this with traffic generated by residents of Stock Island and Raccoon Key and the problem becomes severe.

Another disadvantage is the prohibition of left turns reduces the access to the businesses along North Roosevelt Boulevard. This encourages the use of local streets by forcing the drivers to use alternative routes to make their desired movements.

The five laning of North Roosevelt Boulevard eliminates the center turn lane which acted as a buffer between opposing traffic flows. This will increase the likelihood of head on collisions.

Without a barrier to prevent left turns, traffic violations will increase causing a greater burden on the local law enforcement agencies in controlling violaters.

Violations of the left turn prohibition will cause a situation where the risk of rear end collisions is increased. In general, five laning North Roosevelt Boulevard, as proposed, may make this section of the roadway less safe.

Also, this alternative does not provide relief to the Old Town area of Key West. In some cases congestion is worse.

Table 2 shows a complete listing of the advantages and disadvantages for Alternative Plan B1.

Table 2 Advantages and Disadvantages of Alternative
Plan B1

ADVANTAGES

- (1) Low cost, most improvements can be handled within the existing Right-of-Way.
- (2) Reduces congestion for portions of North Roosevelt Boulevard.
- (3) Relieves bottleneck at the two lane portion of Flagler Avenue.
- (4) Relieves congestion along White Drive.
- (5) Creates a minimum amount of physical disruption to the neighborhoods due to construction.
- (6) Provides improved access to the Old Town area.

DISADVANTAGES

- (1) Does not relieve the congestion on US1 on Stock Island.
- (2) Creates additional traffic in the neighborhoods adjacent to North Roosevelt Boulevard. Traffic uses these roads to make the maneuvers that can no longer make using North Roosevelt Boulevard.
- (3) There is no appreciable relief of congestion in the Old Town area.
- (4) Reduces access to the businesses adjacent to North Roosevelt Boulevard.
- (5) Reduces the safety along North Roosevelt Boulevard by increasing the likelihood of head-on and rear end collisions.

ALTERNATIVE PLAN B2

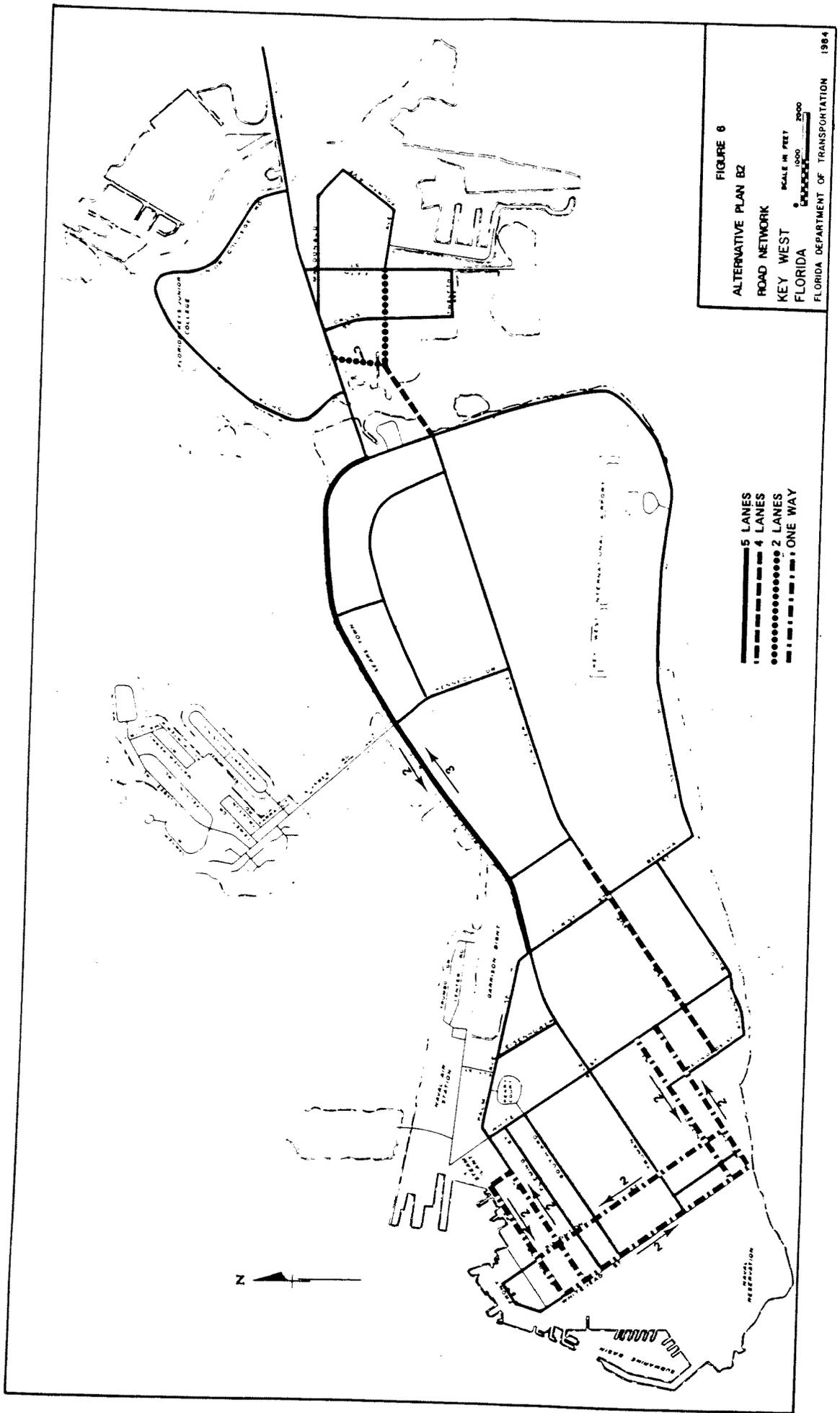
Alternative Plan B2 is illustrated in Figure 6. Alternative Plan B2, like Alternative Plan B1, provides for an increase in capacity without the necessity of acquiring additional right-of-way. However, Alternative Plan B2 differs in that it also provides another route into the Old Town area from the newer sections of Key West and Stock Island via a new link with US1.

Through the improvement of another route linked to the Old Town area, the alternative plan seeks to alter the travel patterns away from the overburdened North Roosevelt Boulevard. The objective is to encourage motorists to use underutilized facilities to make most of their daily commute trips.

DESCRIPTION OF ALTERNATIVE PLAN

The major component of this alternative plan is a bridge connecting Flagler Avenue with Fifth Avenue on Stock Island. The bridge would intersect Fifth Avenue in the vicinity of the abandoned outdoor theater. An additional connector would branch off at this point and connect to US1 west of Cross Street. The bridge connecting Flagler Avenue to Stock Island would all be two lane arterial quality roadways.

Alternative Plan B2 also features an additional one-way pair that Alternative Plan B1 does not have. A north/south system pairing Whitehead Street and Simonton Street was created to be



included in Alternative Plan B2. As part of this one-way pair, Duval Street will be closed to accommodate a pedestrian mall. Whitehead Street will carry traffic southbound away from Mallory Square and the Historic District and Simonton Street will carry traffic in the reverse direction. Each street will have a two lane cross section. Existing right-of-way is fifty feet or more and can easily accommodate the proposed improvements.

The new bridge, as well as improvements to Whitehead and Simonton Streets, were added to Alternative Plan B2 to promote Flagler Avenue as a bypass to the problems on North Roosevelt Boulevard. The bridge with its connecting roadways will provide direct access to Flagler Avenue from US1 and Stock Island. This increases the convenience to using Flagler Avenue, thus making it a more desirable route for motorists.

White Street and Reynolds Street will remain as existing under Alternative Plan B2. This is different from Alternative Plan B1 where White Street was four laned from Truman to Flagler Avenues and Reynolds Street was three laned from South Street to Flagler Avenue.

Improvements to North Roosevelt Boulevard and the creation of one-way pairs out of Caroline and Eaton Streets and United and South Streets will remain the same as that described in Alternative Plan B1.

TRAFFIC ASSIGNMENT RESULTS

A traffic assignment projecting buildout traffic desires onto

the Alternative Plan B2 network was created and the results are shown in Figure 7. As with Alternative Plan B1, the traffic volumes reflect an assignment of the full triptable as created by Quick Response. Again, the effects of a strengthened TSM program will be discussed later within this Technical Memorandum.

The design capacity associated with Alternative Plan B2 are shown in Figure 8. Comparing the projected traffic volumes with the design capacities establishes those areas which are deficient in capacity. Figure 9 outlines those roadways which have greater volumes than available capacity.

The primary purpose of this alternative plan is to provide an alternate to using North Roosevelt Boulevard as a travel corridor to and from the Old Town area of Key West. A secondary purpose is to evaluate the effect on traffic circulation that closing a portion of Duval Street would have in the Historic District.

Where possible, the goal is to provide relief to congestion without the purchase of additional right-of-way.

As before, the do-nothing system capacity deficiencies will be used as the basis of comparison. The do-nothing system deficiencies are found in Figure 5.

The assignment results indicate a dramatic improvement for US1 traffic on Stock Island. The bridge connecting Stock Island to Key West achieved a 28% reduction in traffic. Even though the bridge is still operating over capacity, the volume to capacity ratio has been reduced from 1.75 in the do-nothing system to 1.25 for this alternative plan. The reduction shows a significant lessening of congestion. Congestion between Hospital Road and

Cross Street on Stock Island has been all but eliminated. Only a small section between Cross Street and the new bridge connector has any indication of a congestion problem.

The new bridge has redirected over 13,000 vehicles per day away from the existing US1 bridge. This accounts for the improvement to travel as depicted on the map showing the anticipated deficiencies (see Figure 9).

The assignment for Alternative Plan B2 indicated basically the same results along North Roosevelt Boulevard as did Alternative Plan B1. The section between First Street and Kennedy Drive experienced a general lessening of congestion and the portion between Kennedy Drive and where US1 splits to become North and South Roosevelt Boulevard, experienced little or no improvement.

As with Alternative Plan B1, the prohibition of left turns along North Roosevelt Boulevard has caused traffic to deviate to the residential areas causing unacceptable levels of congestion. However, in Alternative Plan B2, this problem has worsened due to a shift in travel patterns brought on by the new bridge. For example, the volume to capacity ratio on Twentieth Street has increased to 1.38, which is nine percent higher than in Alternative Plan B1 and compares with under 1.00 for the do-nothing system. Also, in Alternative Plan B1, Northside Drive was operating smoothly but in Alternative Plan B2 is beginning to experience congestion problems. Its volume to capacity ratio has increased from under 1.00 in the do-nothing system to 1.07 in Alternative Plan B2, indicating that this section could begin to

feel traffic problems.

The four laning of Flagler Avenue has eliminated the traffic problem at the bottleneck between First/Bertha Street and the existing four lane in the same manner as Alternative Plan B1.

The closing of Duval Street has caused a general worsening of congestion in the Historic District and older sections of Key West. By closing Duval Street a reduction in the capacity of the Whitehead and Simonton Street corridor of about 10,000 vehicles occurs. The surrounding streets have had to pick up additional traffic that was once carried by Duval Street, thus causing them to worsen. This is particularly true for Simonton Street and Whitehead Street. Being located on either side of Duval Street, Whitehead and Simonton Streets picked up the bulk of the additional traffic. However, to a lesser degree, other streets in the Old Town area experienced some increases in traffic.

Simonton Street went from a volume to capacity ratio of as high as 1.61 to as high as 2.53. Whitehead Street went from a high of 1.69 near Mallory Square to a high of 2.64 for the same location.

White Street and Palm Avenue were also recipients to additional traffic but to a lesser degree.

The general worsening of congestion in the Old Town area can be attributed to two factors; the closure of Duval Street and the change in travel patterns in the Old Town area brought on by the one-way pairing of Simonton and Whitehead Streets.

Some improvements to congestion were noticed in the Old Town area but they were scattered and did not significantly improve

traffic flow.

The new connector to Stock Island and US1 has caused a shift of traffic patterns in the newer section of the Island. This shift of traffic has brought more traffic to Flagler Avenue. In the Do-Nothing system, Flagler Avenue is a underutilized facility. However, in Alternative Plan B2, traffic patterns have shifted to where Flagler Avenue is utilized at much closer to capacity.

COST ESTIMATES

Again cost estimates are for construction only. Table 3 shows the construction costs split out by project for Alternative Plan B2.

ADVANTAGES

The primary advantage is that Alternative Plan B2 provides relief for traffic accessing Key West via the US1 bridge over the Cow Key Channel. The new bridge routes traffic from Stock Island over the new bridge thus bypassing the US1 approach.

Another advantage is that the new bridge alters traffic patterns so that additional traffic uses the underutilized Flagler Avenue.

As with Alternative Plan B1, Alternative Plan B2 provides a more direct access to the businesses in the Historic District. The improvements to Caroline and Eaton Streets provide an alternate route into the Historic District for commercial vehicles.

Table 3
Alternative Plan B2 Constructions Cost Estimates

Flagler Avenue Bridge

Bridge Structure	\$9,600,010
Connecting Roads	360,000
Subtotal	<u>\$9,960,010</u>

Five Lane North Roosevelt Blvd.

Suspended Left Turn Signs	\$ 30,000
Suspended Information Signs	180,000
Restriping	20,000
Subtotal	<u>\$ 230,000</u>

Old Town One-Way Signing

One-Way Street Signing	\$ 300,000
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Four Lane Flagler Avenue

Third Street to First Street	\$ 386,172
First Street to White Street	1,119,400
White Street to Reynolds Street	463,200
Subtotal	<u>\$1,968,772</u>

Alternative Plan B2 Total Cost

\$12,458,782

Finally, like Alternative Plan B1, Alternative Plan B2 will not cause any physical impact to the neighborhoods because of the construction of the improvements. Some neighborhoods may receive more traffic under this plan but the improvements will, for the most part, be confined to the existing right-of-way.

DISADVANTAGES

The primary disadvantage to Alternative Plan B2 is its high costs. Due to the construction of the new bridge and connector roads to US1 on Stock Island, the cost will be much higher than Alternative Plan B1.

The closure of Duval Street reduces capacity of the corridor by about 10,000 vehicles. This coupled with the Whitehead and Simonton Street one-way pairing reduces the access to the area.

The closure of Duval Street has changed the traffic pattern in a negative manner. Traffic is forced to be accommodated on already overcapacity streets thus increasing congestion levels in the Historic District.

The prohibition of left turns reduces the access to the businesses along North Roosevelt Boulevard. This will encourage the use of local streets by forcing drivers to use alternate routes to make their desired movements.

Like Alternative Plan B1, the five laning of North Roosevelt Boulevard will increase the likelihood of head-on collisions as well as rear end collisions.

Also, as with Alternative Plan B1, there will be an increased

burden placed on law enforcement agencies in controlling violators.

Table 4 shows a complete listing of the advantages and disadvantages for Alternative Plan B2.

Table 4 Advantages and Disadvantages of Alternative
Plan B2

ADVANTAGES

- (1) Provides Relief for traffic congestion problems on US1 on Stock Island.
- (2) Reduces congestion for portions of North Roosevelt Boulevard.
- (3) Relieves bottleneck at the two lane portion of Flagler Avenue.
- (4) Creates a minimum amount of physical disruption to the neighborhoods due to construction.
- (5) Reduces congestion to some degree along Truman Avenue.

DISADVANTAGES

- (1) High cost due to the construction of new bridge and approach roads on Stock Island.
- (2) Creates additional traffic in the neighborhoods adjacent to North Roosevelt Boulevard. Traffic uses these roads to make the maneuvers that can no longer make using North Roosevelt Boulevard.
- (3) Reduces access to the businesses adjacent to North Roosevelt Boulevard.
- (4) Reduces capacity in the Whitehead/Simonton Street corridor.
- (5) Increases traffic on White Street. No improvement to White Street was programmed in this alternative.
- (6) Generally worsens the conditions in the Old Town are due to the closure of Duval Street.
- (7) Reduces access to the commercial and governmental offices in the Old Town area.

TRANSPORTATION SYSTEMS MANAGEMENT IMPROVEMENTS

The major goal of Transportation Systems Management (TSM) improvements are to implement projects which improve vehicular flow by increasing the effectiveness of the existing transportation system. Generally speaking, TSM improvements are considered low cost improvements because TSM improvements are geared to working within the existing system and not towards expanding that system.

Transportation System Management improvements work to improve systems traffic in two ways. The first way is by implementing improvements which help the existing roadway operate more efficiently thereby increasing capacity. The other way is to implement improvements which get people out of their cars thereby reducing the demand on the roadway system.

Due to the limited space with which to implement major capacity increasing improvements, Key West must seek options which can be implemented that will reduce the demand on the roadway system.

The final roadway plan, what ever it may be, must be accompanied by a comprehensive TSM plan geared to reducing the demand on the roadway system. In Key West, roadway improvements alone can not reduce the congestion to acceptable levels. There are too many constraints to allow the construction of all the capacity improving projects necessary.

A specific TSM plan will not be developed as part of the alternatives analysis. However, a detailed TSM plan will be a part of the preferred plan, when it is development.

ASSIGNMENT METHODOLOGY

A second assignment was made to each of the two alternative plans. These additional assignments were made to give the advisory committee an idea of the contribution that a comprehensive TSM plan might make. To simulate the comprehensive TSM plan, all link volumes from Alternative Plan B1 and B2 were reduced.

Because of the small size of Key West (4.2 square miles) and population of over 26,000 permanent residents, Key West maintains a permanent density of over 6,000 people per square mile. Add to this the transient and tourist populations on the island at any time (in particular during the tourist season), the actual density is very high. This high density, plus Key West being a closed area, makes for a conducive setting for a successful TSM plan.

One element of a Transportation Systems Management plan would be an improved transit system. The City of Miami has a transit system where 5 to 10 percent of their daily trips are by some form of transit. This is the highest ridership figures in the state. Based on Key West's density and the fact that the island, for the most part, is a closed transportation system, it is not unreasonable to expect that similar results can be achieved in Key West.

By improving transit and implementing other demand reducing projects, a ten percent (10%) reduction in trips from the highway network would not be an unreasonable goal for the City of Key West

to achieve. In reality, all roadways in the network would not be receiving the same benefit. However, without any means of determining the exact affects on the highway network TSM projects would have, it will be assumed that all roads in the network will be reduced the same amount. A 10% reduction is a goal, given the situation in Key West, that a comprehensive TSM plan could reasonably be expected to obtain.

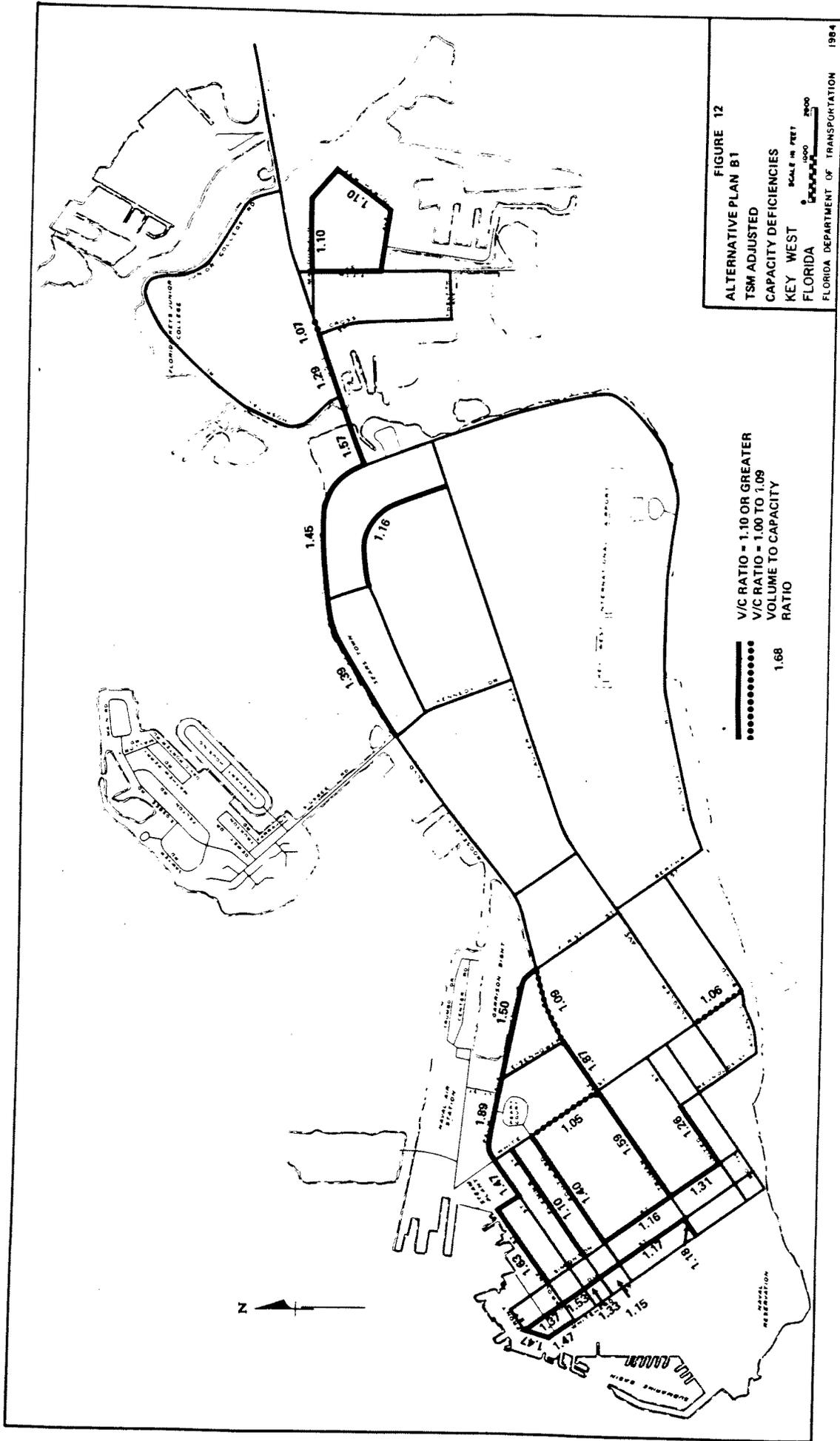
REDUCED ASSIGNMENT RESULTS

A traffic assignment reducing both the Alternative Plan B1 and B2 traffic volumes by 10% was created and the adjusted traffic volumes are shown in Figures 10 and 11. The design capacity associated with both Alternative Plan B1 and B2 were discussed previously and are shown in Figures 3 and 8. Comparing the traffic volumes from the new assignments reflecting a comprehensive TSM plan with the design capacities, will give an indication of the improvement a comprehensive TSM plan will provide. Figures 12 and 13 outline the roadways which still have greater volume than available capacity.

The primary effect that a comprehensive TSM plan would have on system traffic would be to decrease automobile usage to some degree. This would mean that roads operating at over or near capacity might operate at acceptable levels of service.

If a 10% reduction in automobile travel could be realized, then a general lessening of congestion would be felt systemwide. Figures 12 and 13 show less problem areas than the very same

alternatives without a comprehensive TSM plan in place.



REVIEW OF NORTH ROOSEVELT BOULEVARD CORRIDOR

The North Roosevelt Boulevard corridor as described in Alternative Plan B1 and B2 is approximately 2.3 miles in length and extends from Palm Avenue northwestward to the junction where US1 splits to become North and South Roosevelt Boulevard.

This corridor was improved to its existing cross section sometime after 1972. Previously, North Roosevelt Boulevard was a four lane undivided facility with two 13 foot lanes and two 12 foot lanes accounting for the total width of 50 feet. The improvement to a four lane divided facility with a continuous center turn lane was based on recommendations from a TOPICS study completed by the firm of Barr, Dunlop and Associates, Inc. TOPICS is the acronym for "Traffic Operations Program to Increase Capacity and Safety."

The TOPICS report recommended wider lane widths in conjunction with the change in cross section but the decision was made to leave the pavement width as existing and restripe to the four lane divided cross section.

This section will look at what it will take to convert North Roosevelt Boulevard to the five lane cross section as described in both Alternative Plan B1 and B2.

CORRIDOR DESCRIPTION

The existing cross section of the North Roosevelt Boulevard corridor from Palm Avenue to where US1 splits to become North and

South Roosevelt Boulevard is shown in Figure 14. North Roosevelt Boulevard consists of 50 feet of pavement on 70 feet of right-of-way. The roadway is configured to form generally four 10 foot travel lanes with a 10 foot center turn lane. The remaining 20 feet of right-of-way is a beautification strip which accommodates a row of palm trees and a sidewalk that doubles as a bike path. The trees and sidewalks are located entirely on the gulf side of the corridor.

The subject corridor carries the highest traffic volumes in the area. 1980 peak season traffic volumes ranged from 24,500 vehicles per day to 33,700 vehicles per day. Traffic is expected to increase to between 34,000 and 44,700 vehicles per day at buildout for the Do-Nothing system. Design capacity for the existing facility is 26,400 vehicles per day.

LAND USE ADJACENT TO SOUTH RIGHT-OF-WAY BOUNDARY

The property adjacent to the southern right-of-way boundary of North Roosevelt Boulevard, for the most part, is developed and in commercial use. For that part of the corridor between Palm Avenue and Seventh Street and between Fifteenth Street and where US1 splits to become North and South Roosevelt Boulevard, the commercial development is close and encroaches upon the existing right-of-way. For the remaining portion of the corridor, between Seventh Street and Fifteenth Street, the commercial development is set back from the road and consists primarily of two large shopping centers and the Budweiser Distributer.

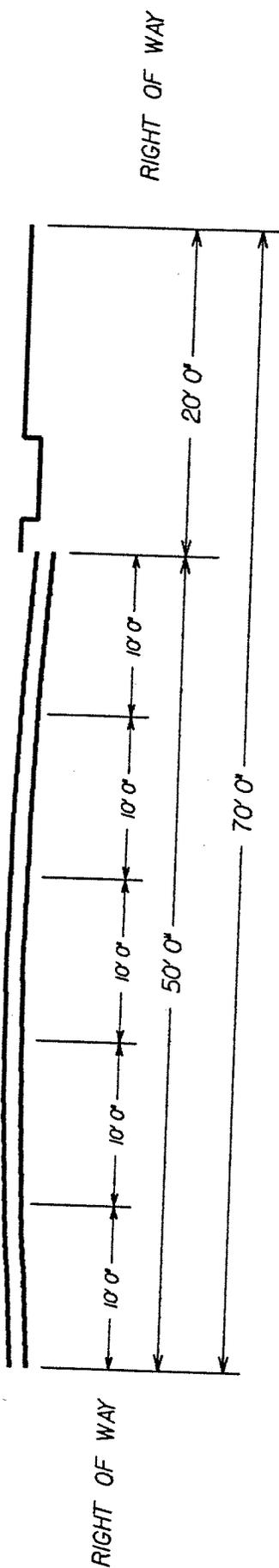


FIGURE 14
 NORTH ROOSEVELT BLVD
 EXISTING
 CROSS SECTION

One tract of land between the Budweiser Distributor and the Key Plaza shopping center is vacant but is slated to become another shopping center. The portion of vacant land that is not covered with vegetation appears to be used as remote parking. However, this remote parking does not appear to be part of any organized parking plan.

In most situations, driveway entrances are ill defined and in some instances the entire business frontage is open to the road.

Parking is provided by the businesses and usually abutts the North Roosevelt Boulevard right-of-way. In some cases, parking is separated from the right-of-way by a narrow strip of shrubbery which has grown to a height which blocks motorists vision.

Some property owners have constructed a physical barrier separating their property from adjacent development. In most cases these walls were erected to keep traffic from accessing other business from their parking lot.

LAND USE ADJACENT TO NORTH RIGHT-OF-WAY BOUNDARY

Except for three tracts of land, the northern right-of-way is bounded by the Gulf of Mexico.

The first of the three tracts of land is being developed and now has the Hampton Inn and Scotty's hardware, as well as several other older establishments. The new development, Hampton Inn and Scotty's, were constructed with generous setbacks. However the previous development is adjacent to the right-of-way.

The second tract of land, at this moment, is totally vacant.

The third and final tract of land is Hilton Haven. Hilton Haven is a small strip of land jutting into the water which helps form the northern enclosure of Garrison Bight. That portion which is adjacent to the right-of-way is either parking or serves as access to the homes and businesses located there.

ACCIDENT PROBLEM AREAS

Over the period from January 1984 through November 1986 a total of 550 accidents have been reported. These accidents occurred over the stretch of roadway between First Street and where US1 splits to become North and South Roosevelt Boulevard. Accidents associated with the First Street intersection were included in the total, but accidents that happened at the intersection of where US1 becomes North and South Roosevelt Boulevard were not.

From the total of 550 accidents, 183 resulted in injury and six resulted in death.

The majority of accidents involve, in some form or another, motorists pulling into or out of the many businesses located along the southside of the corridor. Although these motorists may not be directly involved in an accident, their actions often trigger one.

Visibility for motorists pulling out of the many businesses along the corridor is poor due to the abundance of obstructions at road side. In order for motorists to see when pulling out of these businesses, the driver must pull into the street. This action frequently results in a collision of some form with the main line

traffic.

Motorists pulling out of the businesses also cause the main line traffic to come to frequent and sudden stops. This action increases the frequency of rear end collisions within the main line traffic.

To a lesser degree, accidents occur when motorists turn left across two oncoming lanes of traffic to access the businesses. Since this movement is accomplished from a separate turn lane and the drivers visibility of oncoming traffic is not limited, accidents are generally caused by driver error. A driver may not pull completely into the turn lane or a driver may misjudge the speed of oncoming traffic and may not have time to make their turn. Accidents in this situation have the possibility of being more severe due to the greater probability of head-on collisions.

CORRIDOR IMPROVEMENT DESCRIPTION

The project was described earlier within this Technical Memorandum and is incorporated in both Alternative Plan B1 and B2. In short, this project provides for improvements to North Roosevelt Boulevard between Palm Avenue and where US1 splits to become North and South Roosevelt Boulevard. The improvement changes the corridor from a four lane divided facility to a five lane undivided facility. Left turns onto and off of North Roosevelt Boulevard would be prohibited except at designated intersections. At all points along the corridor, the right in and right out maneuver would be allowed only. The five lane cross

section would provide for three through lanes outbound and two through lanes inbound. The proposed section will look like the existing cross section as shown in Figure 14. The only difference will be that the middle lane will be designated a through lane instead of a continuous turn lane.

ANALYSIS OF CORRIDOR IMPROVEMENT

Improvements to North Roosevelt Boulevard should not be implemented at the sacrifice of safety. The increase in capacity without the provision to physically separate traffic flows, increases the friction between these flows, raising the likelihood of head-on collisions. The incidence of rear end collisions would also increase because of motorists violating the left turn prohibition. Without the physical separation of traffic, motorists who violate the turn prohibition would create a hazard to following vehicles. The left turn would be made from the through lane, exposing the motorists to the other vehicles in the traffic stream. A raised median would have to be constructed between opposing traffic flows to mitigate the effects on safety.

At intersections where left turns are permitted, a turn lane would have to be included to provide a safe refuge for turning vehicles. The length of the turn lane would have to be long enough to accommodate the increase in turning vehicles. The elimination of the continuous turn lane would require all motorists wishing to turn left to make that left turn at only the few allowed locations. This will cause an increase in turning desires at those

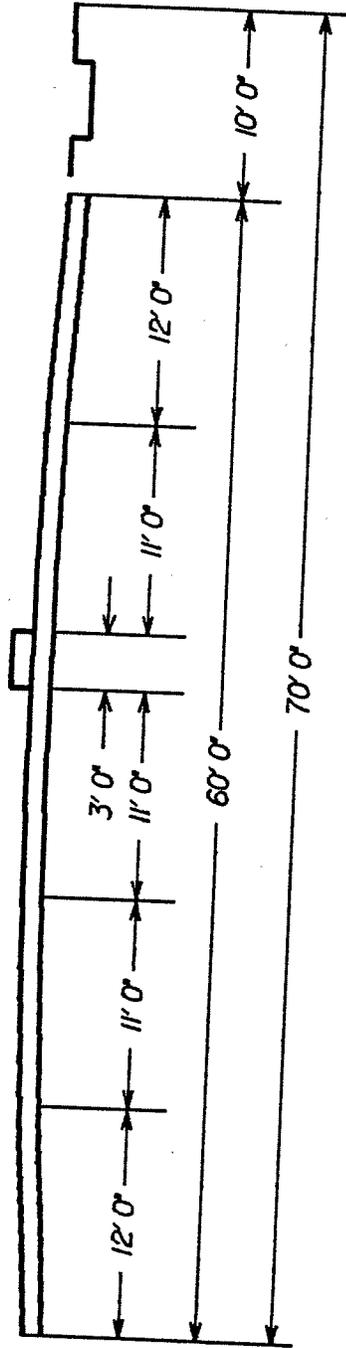
locations.

The existing lane widths for North Roosevelt Boulevard are less than the acceptable standards. This in part, contributes to the very high accident rate found along North Roosevelt Boulevard. To improve safety, lane widths would have to be increased from the 10 feet they are now to a minimum of 11 feet. Preferable lane widths would be 12 feet but an acceptable compromise would be to improve only the curb lanes to 12 feet and leave the center lanes at 11 feet.

The top cross section in Figure 15 shows what the typical mid-block profile should be. No median crossings are allowed, therefore it is not necessary to provide a left turn lane. The existing pavement width of 50 feet would need to be expanded to provide for 11 foot inside lanes and minimum of 12 foot curb lanes. The remaining three feet would be devoted to a 3 foot raised median. This would bring the total pavement width to 60 feet. The additional width would have to be constructed on the gulf side of the corridor where 20 feet is available.

At intersections where left turns are permitted, a turn lane would have to be included. The bottom cross section in Figure 15 shows such a profile. By adding a 11 foot left turn lane the total pavement width needed becomes 71 feet. Since only 70 feet of right-of-way exists, the additional foot would have to be taken from the business side, requiring the possible purchase of right-of-way. The pavement width necessary to accommodate left turn lanes on a five lane facility would effect the complete removal of trees and sidewalk for the sections where left turns are

TYPICAL MID-BLOCK SECTION



TYPICAL TURN LANE SECTION

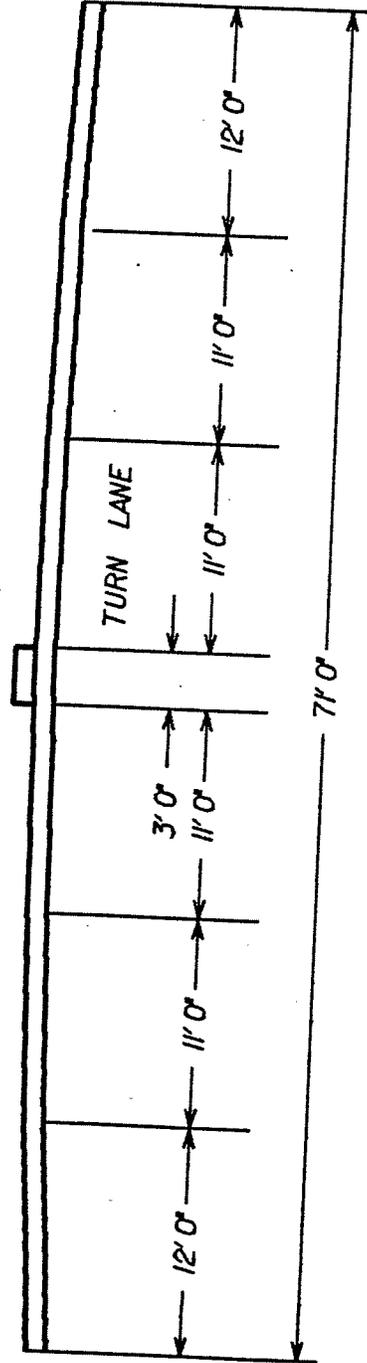


FIGURE 15
NORTH ROOSEVELT BLVD
IMPROVED
CROSS SECTION

permitted. To provide for a continuous sidewalk along the gulf side, one would either have to be cantilevered over the water or the sea wall moved and the sidewalk constructed on new fill.

Other than access to businesses from signalized intersections, traffic would be left to its own devices in finding access to the commercial property along the south side of the corridor.

PROVISION FOR ADDITIONAL ACCESS

Access to the businesses from North Roosevelt Boulevard, by left turning vehicles, would be all but eliminated under the five lane concept. As originally proposed, the cross over movement could be made at only four intersections, three of which are signalized. Motorists wishing to access businesses could access only those businesses that are in the immediate vicinity of the intersections. Motorists would not be able to reach a mid-block destination without making a u-turn. However, the cross section of a five lane facility would not be wide enough for motorists to safely make a u-turn.

The lack of access to mid-block destinations could severely impact some businesses along the corridor. Additional access must be provided. Additional access can be created by establishing other left turn areas and by providing u-turn points that would allow the motorists to reverse his direction of travel to reach those mid-block locations.

Additional Left Turn Locations

Additional left turn locations should be allowed to access the major trip attractors along the corridor. Two existing shopping centers and the proposed new shopping center would be the only justifiable locations at this time.

The Key Plaza shopping center has adequate access via Kennedy Drive and another left turn here may impact the operation of the intersection with Kennedy Drive. It would not be recommended to place an additional left turn here.

It would be possible to provide left turns into the Searstown shopping center and the new shopping center because these centers depend heavily on access from North Roosevelt Boulevard. Their locations will not impact existing intersection operation. Access will be necessary in order to not impact the intersection with Kennedy Drive. Without the direct turns into these two shopping centers, the traffic would have to pass through the Kennedy Drive intersection to turn around.

The allowance of these left turns would require the construction of left turn lanes along North Roosevelt Boulevard. This means a widening of the road as shown in Figure 15, bottom cross section. The consequence would be the utilization of the entire right-of-way for pavement.

Establish U-Turn Locations

Depending on the number of left turn points that can be established some u-turn locations may be needed to give additional

access to the businesses. One ideal location for a u-turn arrangement is between the Lopez Budweiser distributor and the Key Plaza shopping center. This strip of land is either vacant or the businesses are built far enough back from the road to allow the u-turn area to be constructed.

Another area which may be acceptable for limited u-turns is the area on the curve between the Travel Lodge and Wags. In this situation, some additional land may have to be created by moving the sea wall out and filling.

Figure 16 shows the two potential points with the greatest chance for implementation.

Minimum pavement width necessary for implementing a u-turn point is 85 feet. This is based on the turning radius of a standard passenger car. Figures 17A and 17B show a typical u-turn layout and corresponding cross section for passenger cars. If this design is used to provide u-turns then an additional 15 feet of right-of-way has to be acquired to accommodate the design. This will increase to approximately 35 feet of additional right-of-way if the design is to include the beautification strip and sidewalk.

The layout and cross section in Figure 17A and 17B would not accommodate u-turning trucks. Figure 18 shows the u-turn layout for trucks. The right-of-way required to accommodate turning trucks would have to be expanded to approximately 170 feet if the beautification strip and sidewalk is to be included in the design.

The area between the Lopez Budweiser distributor and the Key Plaza shopping plaza would be an ideal place to construct a u-turn point which could accommodate trucks. There is adequate vacant land

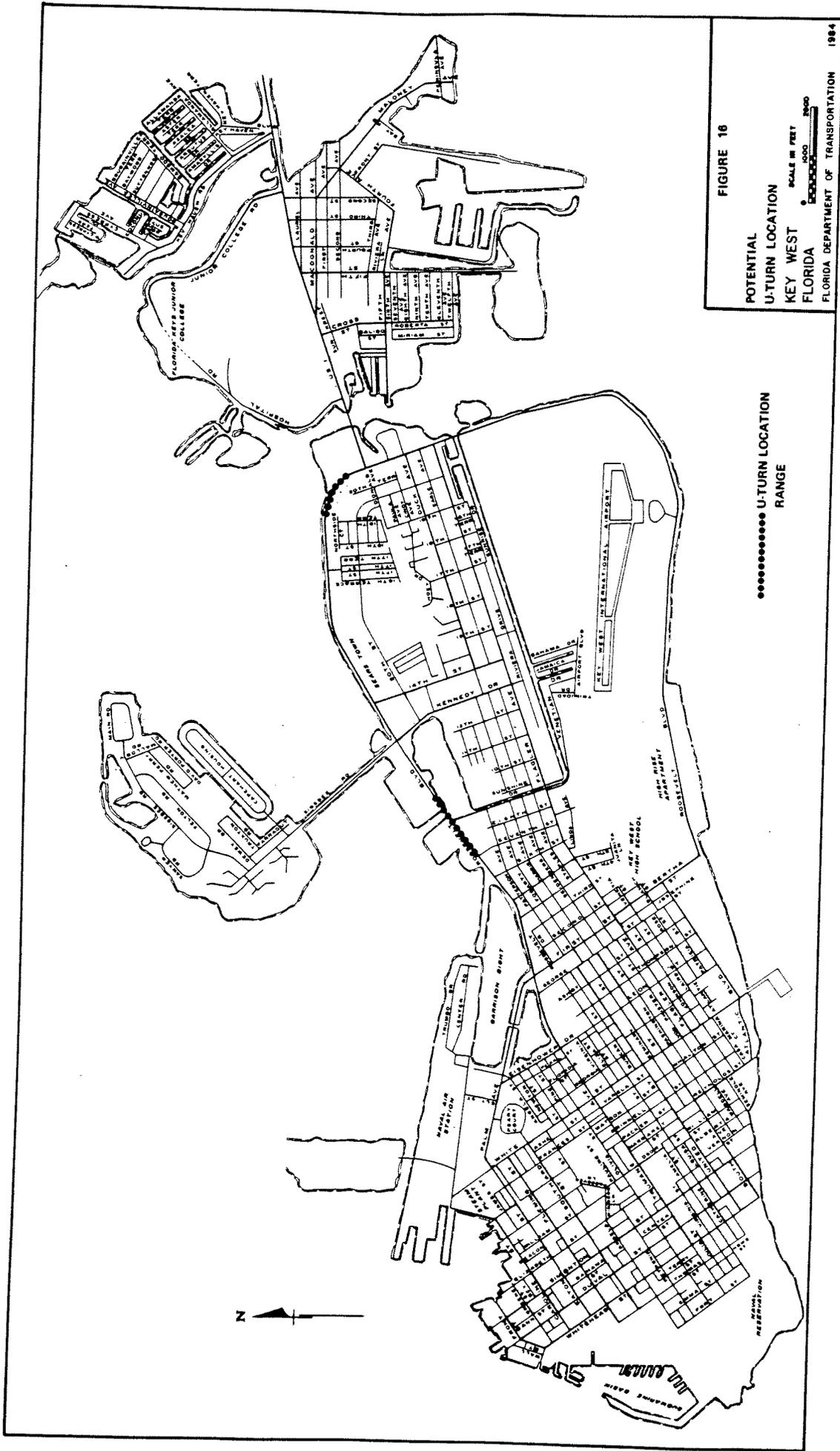


FIGURE 16

POTENTIAL
U-TURN LOCATION
KEY WEST
FLORIDA
FLORIDA DEPARTMENT OF TRANSPORTATION 1984

..... U-TURN LOCATION
RANGE

SCALE IN FEET
0 1000 2000

TYPICAL U-TURN SECTION

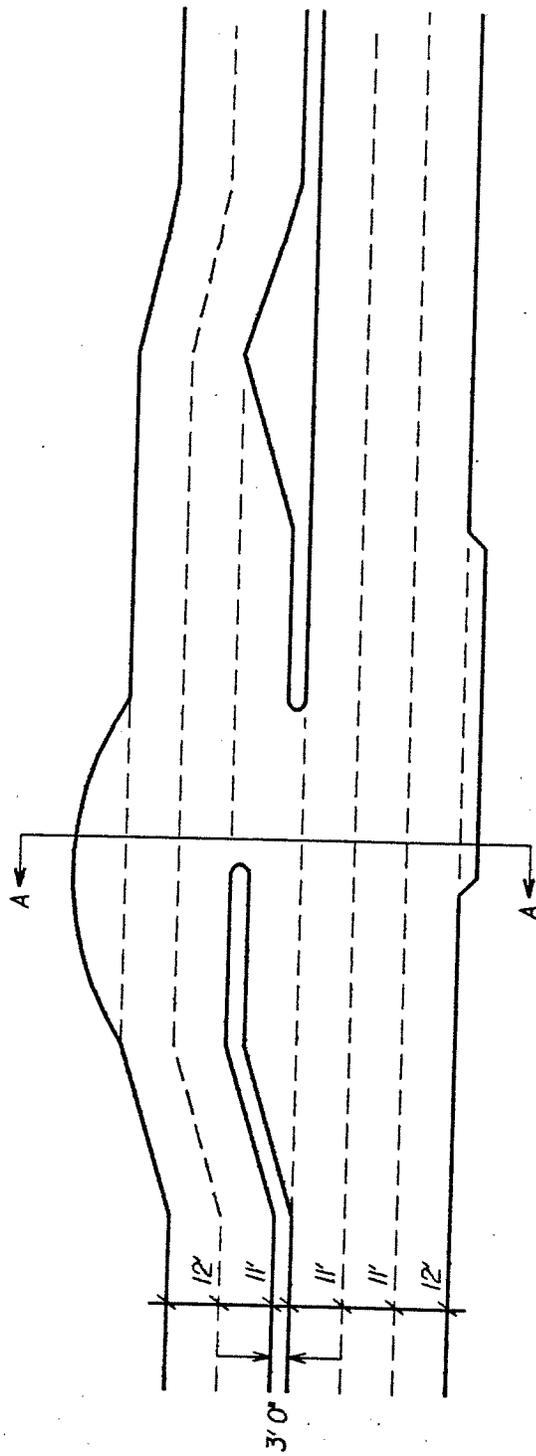


FIGURE 17A
PASSENGER CAR
U-TURN
LAYOUT

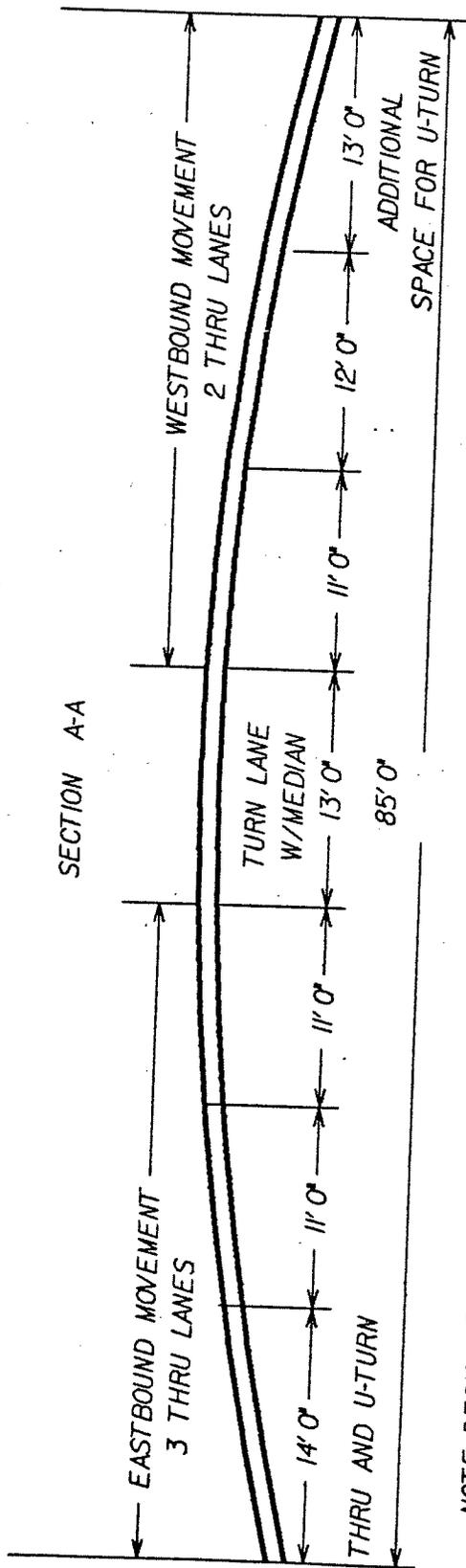


FIGURE 17B
PASSENGER CAR
U-TURN
CROSS SECTION

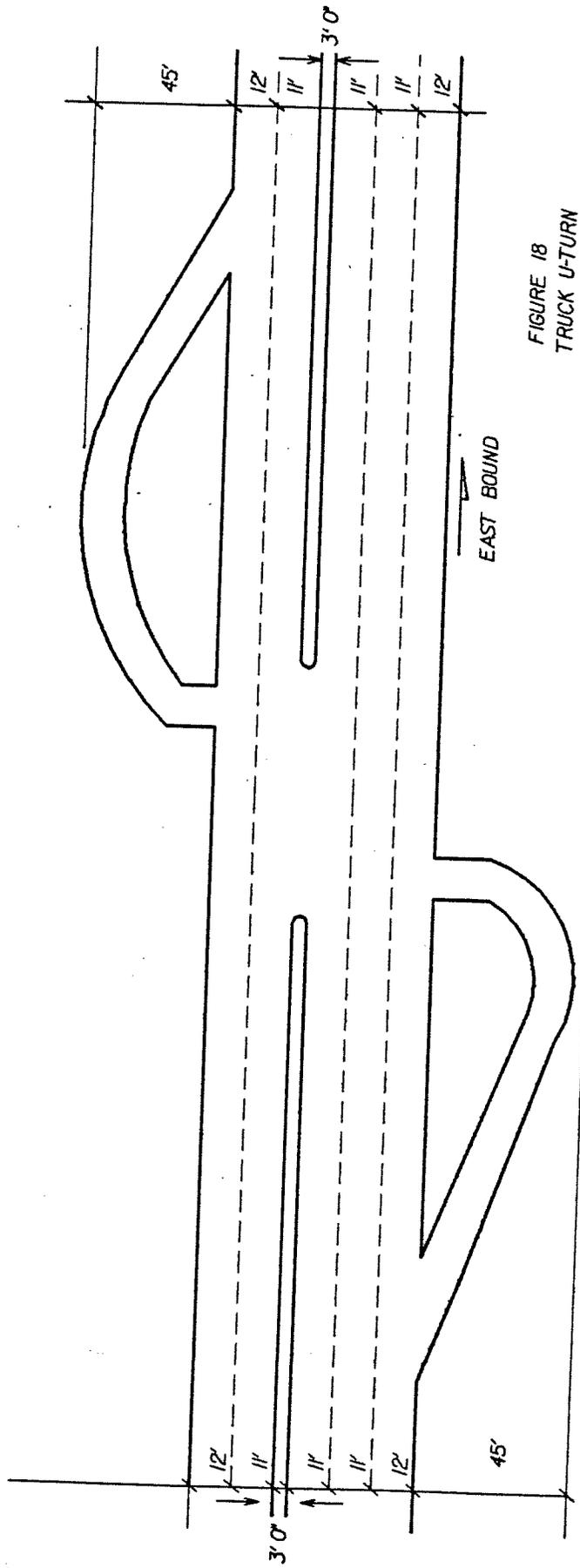


FIGURE 18
TRUCK U-TURN
LAYOUT

along both sides of the roadway in which to construct the u-turn without having to create new land.

The area between the Travel Lodge and Wags might be a good place to construct a limited (passenger cars only) u-turn. Some right-of-way could be acquired from the business side of the road which would reduce the amount of additional land that would have to be created.

In either situation, the area required to implement the improvement would require the purchase of additional right-of-way and/or the creation of additional land.

ADDITIONAL CORRIDOR IMPROVEMENTS

In addition to providing for turn around points and u-turns, the width of the curb lane on the business side should be widened to 14 feet whenever possible. This would expand the total pavement width as depicted in the top cross section of Figure 15, to 62 feet. The additional width would come from the gulf side of the roadway. This additional 2 feet would reduce the number of conflicts with traffic turning into and out of the establishments that line the south side of the roadway. The increase in safety would be well worth the decrease in buffer between the right-of-way and the gulf.

PROJECT SUMMARY

Based on problems with safety and on problems with property access requirements, the recommendation to improve capacity by

creating a five lane facility is not as simple as originally thought. There is going to be more work to five laning than simply restriping the center turn lane for through movements.

Additional pavement will have to be placed to accommodate the median divider, the exclusive turn lanes and to increase the width of the travel lanes. The Federal Highway Administration and the Florida Department of Transportation would not likely support improvements to North Roosevelt Boulevard which do not bring the lane widths up to acceptable standards.

Pressure for adequate access to the businesses may make it necessary to provide additional left turn lanes as well as provide for u-turns in the final corridor design. These will, in some locations, expand the area needed for construction past the available right-of-way.

Capacity Analysis

Providing a five lane cross section for North Roosevelt Boulevard will increase capacity for the corridor to 33,600 vehicles per day for level-of-service "C" operation. However, due to the unbalanced number of through lanes, capacity is not evenly split by direction. The eastbound direction with three lanes has an directional capacity of 20,400 vehicles per day and the westbound direction has a directional capacity of only 13,200 vehicles per day.

The unbalanced number of lanes works most efficiently when the distribution of traffic favors a particular direction. That is

if the eastbound direction carried more traffic than the westbound direction, then it would be logical to give the eastbound direction the additional capacity. However, traffic counts indicate that the directional distribution of traffic along North Roosevelt Boulevard is basically equal. Because of the equal split of traffic by direction, the actual benefit of adding an additional lane in the eastbound direction will not be as great as initially thought.

Even though the total traffic may be less than the capacity, the corridor may continue to suffer congestion problems. The breakdown will occur in the westbound direction, which only has about 70% of the capacity the eastbound direction has.

Construction Analysis

Bringing the five lane cross section, as described in Alternative Plan B1 and B2, up to acceptable standards will require an increase in the total pavement width from 50 feet to 60 feet for a typical mid-block section. This, in essence, would require an additional lane to be constructed over the entire length of the corridor.

This additional lane would reduce the buffer between the edge of the pavement and the sea wall from 20 feet to 10 feet. The palm trees would have to be relocated and the sidewalk either reduced in size or eliminated.

The typical turn lane section would require a 71 foot pavement width. This would require the use of the entire right-of-

way plus an additional foot, for the road surface.

Construction of the turn lane section would eliminate the sidewalk and line of trees completely from that part of the corridor. In order to preserve the sidewalk and trees, more right-of-way would need to be acquired over and above that needed for the pavement. It may be out of the question to acquire that additional right-of-way from the south side of the corridor due to the close proximity of the businesses. The additional right-of-way would have to be created by dredging and filling. A costly process that may require extensive environmental reviews.

If u-turn points have to be established, the pavement width required for u-turns involving passenger cars, is 15 feet more than the right-of-way available. To accommodate trucks, the right-of-way needed is considerably more. In at least one u-turn location additional right-of-way will need to be created. Again, requiring the creation by dredging and filling.

Costs

As originally visualized, the project would fit within the existing right-of-way, and on the existing pavement. Restripping and the construction and erection of signs were anticipated as being the only expense.

The existing lane widths are a substandard 10 feet. To provide for a standard and safe cross section, the pavement width for mid-block would need to become 60 feet. This now means the construction of what amounts to an additional 10 foot lane.

For turn lane and u-turn sections, the additional pavement necessary would range from 21 feet to 80 feet, if a truck u-turn is provided. In some cases the additional right-of-way would have to be created by dredging and filling.

The cost of a project that was once considered small, in reality, may become quite costly. The cost will vary depending on the number and location of the left turn and u-turn sections needed.

PATTERSON STREET EXTENSION

The study's traffic circulation advisory committee requested that before highway project recommendations were finalized, the Department of Transportation analyze what affect an extension of Patterson Street would have on North Roosevelt Boulevard traffic.

Patterson Street, if improved, could provide an alternative access route to the shopping centers and businesses that are adjacent to North Roosevelt Boulevard. Particularly, the two existing shopping centers and the proposed new shopping center.

These shopping centers are the major trip attractors that are adjacent to North Roosevelt Boulevard. If a majority of trips destined to these attractors could be routed to Patterson Street, then a significant reduction in traffic on North Roosevelt Boulevard could be attained.

DESCRIPTION OF IMPROVEMENT

Patterson Street was designed and constructed as a residential street and is characterised by low speeds and low volumes. Parking is allowed on both sides of the street and the road is in disrepair. Because the parking is located on both sides of the street, capacity is reduced to below normal levels for a residential street. However, this does not create an adverse impact, demand to utilize the street is low and is generally generated by only the residents who own adjacent property.

Patterson Street is a two lane facility which is not

continuous throughout its length. A salt pond in the vicinity of the Key Plaza shopping center causes the break in continuity.

Patterson Street is not linked directly to North Roosevelt Boulevard. Its western terminus is First Street and its eastern terminus is the rear parking lots of the businesses adjacent to Kennedy Drive.

Under this proposal by the Traffic Circulation Committee, Patterson Street would be improved so that it is a continuous facility. Patterson street would also be extended so that it connected directly to Kennedy Drive, opposite the intersection where Northside Drive connects with Kennedy Drive. Patterson Street would remain a two lane facility but it would be widened so that on street parking does not interfere with traffic flow.

Patterson Street would not be made to connect directly to North Roosevelt Boulevard but could still be accessed via First Street, Fifth Street and/or Kennedy Drive. The extension of Patterson Street would have to be weaved around the businesses located in the vicinity of the Key Plaza shopping center in order to connect it to Kennedy Drive.

The project would provide an improved facility that would generally parallel North Roosevelt Boulevard. The project would also provide additional access to major trip attractors adjacent to North Roosevelt Boulevard. See Figure 19 for project location.

TRAFFIC ASSIGNMENT RESULTS

The improvement of Patterson Street did not create the

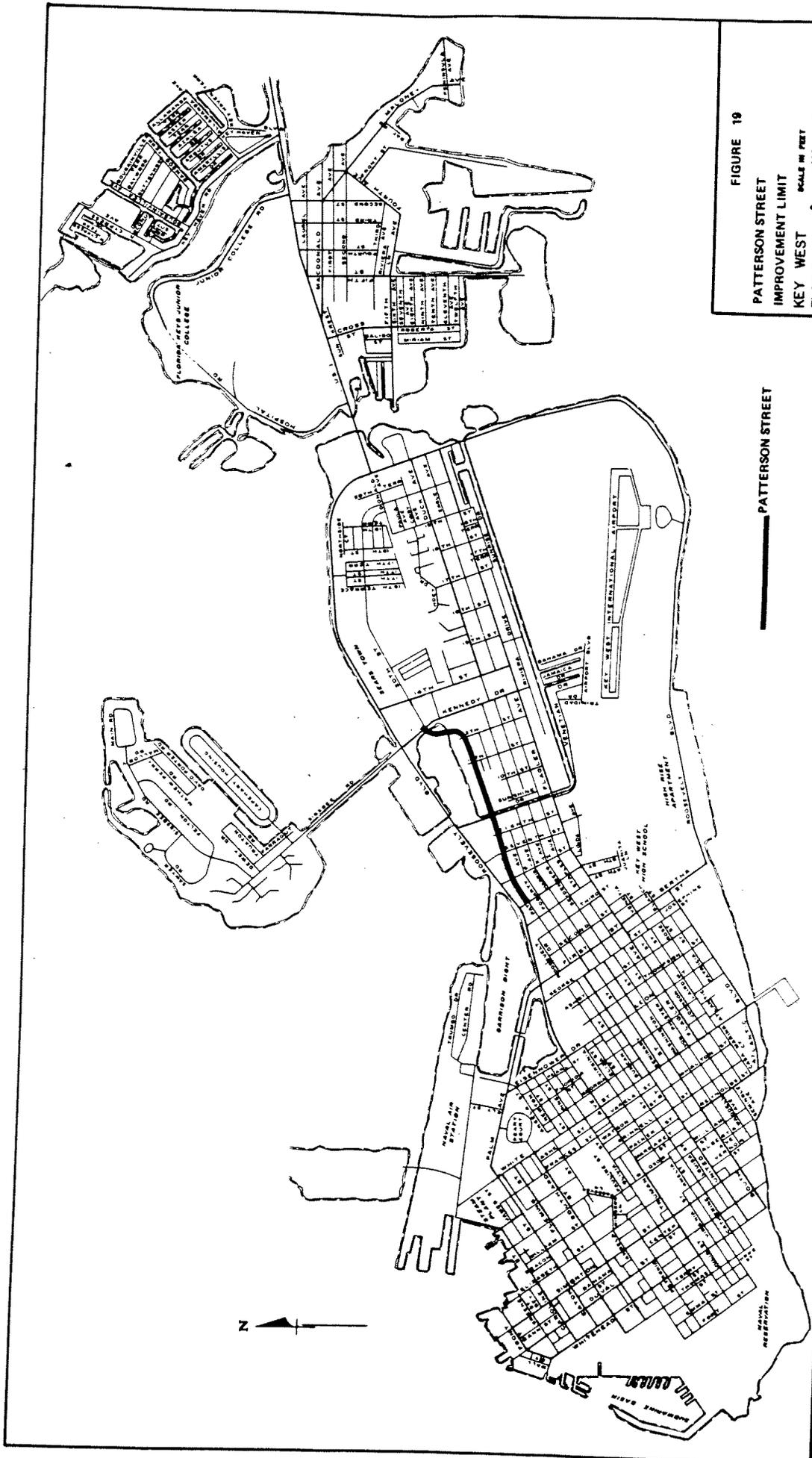


FIGURE 19

PATTERSON STREET
IMPROVEMENT LIMIT

KEY WEST
FLORIDA

SCALE IN FEET
0 1000 2000

FLORIDA DEPARTMENT OF TRANSPORTATION 1984

— PATTERSON STREET

diversion of traffic as had been expected. Traffic on Patterson Street remained, for the most part, local traffic needing to access adjacent property.

Some trips destin to the shopping centers were pulled off of North Roosevelt Boulevard but the amount remained insignificant. Trips that did access the shopping centers via Patterson Street were primarily from the neighborhoods in the vicinity of Patterson Street. These trips found Patterson Street to be more convenient but for the majority of the trips attracted by the businesses along North Roosevelt Boulevard, North Roosevelt Boulevard is still the most convenient route.

The primary reason that Patterson Street does not draw the traffic as was predicted when the Patterson Street improvement was proposed, is that North Roosevelt Boulevard is still the most direct and quickest route. For the majority of the citizens and visitors, a congested North Roosevelt Boulevard is still shorter than taking Patterson Street. The street iprovement benefits primarily the residents of the neighborhood(s) adjacent to Patterson Street.

Both terminuses of Patterson Street make it difficult to be accessed from North Roosevelt Boulevard. Since Patterson Street is not directly connected to North Roosevelt Boulevard, a motorist would have to make a series of turns before reaching Patterson Street. The turns do not pose a significant impedance to traffic on Patterson Street but are enough to keep North Roosevelt Boulevard the preferred route of travel.

CONCLUSION

After developing highway alternatives, it became quickly apparent that the opportunities for capacity improvements to alleviate traffic congestion problems were few. Due to the historic nature of the majority of Key West and the closeness of the structures in the Old Town, major widening projects can not be employed without seriously damaging the area's uniqueness. It is this uniqueness, the narrow streets, old structures and high density that helps make Key West the attraction that it is today.

The projects as proposed in Alternatives B1 and B2 will not completely solve the congestion problems experienced today. The problem will continue to worsen as the island nears buildout.

A Transportation Systems Management (TSM) plan needs to be a major part of the Preferred Plan. Systems management, by itself, will not solve traffic congestion problems. However, TSM options when used in conjunction with other improvements can make a positive contribution toward reducing traffic congestion problems. The greatest contribution will be found in reducing congestion on facilities which are on the borderline of being congested. TSM alternatives will remove enough trips to bring congestion on these facilities down to tolerable levels. On extremely congested facilities, TSM alternatives by themselves, will not make much of a difference.

In Alternative Plan B2, the closing of Duval Street from Truman Avenue to Front Street has had a negative effect on the street system within the Historic District. Closing Duval Street

reduces the capacity of the corridor by approximately 10,000 vehicles per day. The Historic District can not afford to lose that much capacity. If creating a pedestrian mall out of Duval Street is the intended purpose of closing Duval Street, then the closure should be considered for only that portion from Caroline Street to Front Street. A closure of this nature would not create an adverse effect on the capacity of the corridor.

In general, Alternative Plan B1 is superior to Alternative Plan B2. However, neither plan came close to alleviating the congestion problems found in Key West. Alternative Plan B1's superiority comes from the fact that the closing Duval Street in Alternative Plan B2 creates additional capacity problems for the whole Old Town area.

Alternative Plan B2 does have one superior point over Alternative Plan B1 and that is Alternative Plan B2 relieves congestion on US1 leading into Key West. This stretch of US1 is one of the heaviest traveled roads in the study area. The proposed bridge in Alternative Plan B2 would have a positive effect on traffic and merits consideration for inclusion in the preferred Plan.

There are two problem areas that showed up in the modeling effort which were not addressed in any one of the alternatives. The first of which is Truman Avenue between Whitehead Street and Palm Avenue. This stretch of roadway is physically constrained and can not be improved by increasing capacity. The second problem area is Palm Avenue. Palm Avenue attracts a significant amount of traffic, as it is a major approach to the Historic District. Palm

Avenue is not physically constrained, however, the construction and right-of-way costs may be quite high. Nevertheless, traffic suggests that improvements to this facility need to be considered in the Preferred Plan. Improvements to Palm Avenue plus proper signing may have a positive effect on Truman Avenue.

The five laning of North Roosevelt Boulevard as described in both alternative plans would not appear to be cost effective. Considerable more resources would have to be expended than was first thought to create a safe five lane facility. The Preferred Plan would be better off to leave North Roosevelt Boulevard as a four lane divided facility and bring the lane widths to acceptable standards to improve safety. As Key West grows and all measures to reduce demand on the system have been exhausted, thought then should swing to improving North Roosevelt Boulevard to a six lane facility.

The Patterson Street improvement does not appear to have a significant effect on North Roosevelt Boulevard traffic. The amount of work required to improve Patterson Street as compared to the amount of traffic that could be expected to utilize Patterson Street does not make the project cost effective at this time. Until driver's travel patterns change to favor a route paralleling North Roosevelt Boulevard, Patterson Street should remain as existing.

The next steps in the process in developing a traffic circulation plan for Key West is to combine the best projects of the two alternatives into a single plan. Additional projects should be considered as well as the alteration of some of

the existing projects as portrayed in the two alternatives. In the end, the final plan may be different from either one of the alternatives. The Preferred Plan should be a plan that incorporates the various highway projects proposed with projects or ideas which will reduce demand on the system. Capacity increasing projects used in conjunction with demand reducing projects will be the only way that Key West can address some of its more pressing transportation problems. The Preferred Plan should be made up of elements which address the range of projects, both capacity increasing and demand reducing, that will help reduce traffic congestion in Key West.