

EXECUTIVE SUMMARY

FINAL REPORT
FOR
I-95 DUPONT PLAZA RAMPS
ALTERNATIVE FEASIBILITY STUDY

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For:

DDA 

DOWNTOWN DEVELOPMENT AUTHORITY

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INTRODUCTION

The I-95 Distributor Ramps located in the southern end of the Downtown Miami, also known as the Dupont Plaza area, were designed and constructed in the 1960's. These ramps provided access between the Dupont Plaza area and I-95. Approximately 20 years later, in the mid 1980's, modifications to these distributor ramps, also known as the Bifurcated Ramps project, were designed to provide access to and from I-95 further east at S.E. 3rd Avenue. There were also provisions for future ramps to and from anticipated parking garages located between S.E. 2nd Avenue and S.E. 3rd Avenue and S.E. 4th Street and S.E. 2nd Street if and when they were needed. To date no improvements have been made in these area of Downtown Miami and the bifurcated ramp project has not been constructed.

The objective of the I-95 Dupont Plaza Alternative Feasibility Study was to develop a preliminary Boulevard concept, similar to Biscayne Boulevard located on the eastern edge of the downtown area, and determine the feasibility of reconstructing the existing I-95 Distributor Ramps that currently access Downtown Miami via the Dupont Plaza area. This study represents an opportunity to evaluate the existing and proposed traffic patterns into and out of Downtown Miami in this area and to determine how these patterns can be improved. This study will not focus only on the local Dupont Plaza area but also on the Downtown Miami region as a whole, thereby improving traffic patterns throughout the downtown area.

Several construction projects, some of which have already begun, will change and improve traffic patterns as they exist today. The S.R. 836 exit at N.W. 8th Street will provide an additional point of access to Downtown Miami. The Brickell Avenue Bridge, and soon to follow the Second Avenue Bridge, will provide better access between the Dupont Plaza area and the Brickell area.

Considering the regional impacts to Downtown Miami, Carr Smith Associates(CSA) has recommended a concept alternative that will compliment Biscayne Boulevard and encircle the downtown area, leaving no destination more than a few blocks from a major arterial. This alternative will include S.W. 1 Avenue and S.W. 3rd Street into the downtown street grid system, creating an arterial loop surrounding Downtown Miami, making it possible for traffic to travel along N.W./S.W. 1st Avenue between I-395 and S.W. 3rd Street; to travel along S.W./S.E. 3rd Street between S.W. 1st Avenue and Biscayne Boulevard and to travel along Biscayne Boulevard from S.E. 3rd Street north. See Figure 1 for an illustration of this Regional Vision.

From a local perspective, this study has determined the feasibility of reconstructing the existing I-95 Distributor Ramps that are currently located between the J.L. Knight Convention Center and International Place and, instead, to construct S.W. 3rd Street as

a landscaped boulevard. The configuration of the ramps, as they exist today, visually blocks the views of the downtown area and Biscayne Bay; creates dark nooks and crannies; blocks future development in the Dupont Plaza area and impedes smooth traffic flow throughout the downtown area. For function and beautification, as many I-95 Distributor Ramps as possible will be realigned and reconstructed or removed.

To date, virtually no development has taken place south of these distributor ramps. Much of the current traffic to and from I-95 uses South Miami Avenue, which is a narrow street and not sufficient to handle the traffic volumes at an acceptable level of service. Additionally, two major assets in the Dupont Plaza area are not being utilized properly, they are the recently constructed Miami Avenue Bridge and widened N.W. 1st Avenue. A major benefit of this study will be to maximize these two assets and improve traffic flow in this area by eliminating funnels and routing traffic to larger arterials that can better handle the volumes. Several additional topics were also be addressed as part of this study. A critical consideration aside from construction costs was the feasibility of maintaining traffic while the existing ramps are being reconstructed or removed; traffic to and from I-95 must be maintained at all times. Consideration was also given to the impacts of the Boulevard within this area. Pedestrian facilities are a critical element in any downtown area and were addressed in this study.

Many alternatives were initially considered. While several alternatives were refined others were discarded as they were not as functional or had "fatal flaws". The two most viable alternatives as well as the No Build Alternative were presented to and evaluated with representatives of the Florida Department of Transportation (FDOT), the City of Miami, the Downtown Development Authority (DDA) and the DDA Study Steering Committee. These three alternatives were described in detail in the Milestone 1 Technical Memorandum previously submitted to DDA, and are include in Appendix A of this report. As a result of the coordination and evaluation by representatives of the above agencies, the Concept Alternative was finalized and refined.

BOULEVARD CROSS-SECTION

Several boulevard cross-sections were developed for this study. Due to the complexities and constraints of right-of-way, grade separation, I-95 ramps and Metromover piers, no one cross-section can be defined. This project has been subdivided into three segments to allow for some length of "typical" roadway as well as to provide DDA flexibility in choosing alternatives which provide improved traffic flow within these sections. These segments are defined as follows. **Segment 1** begins at Biscayne Boulevard and Chopin Plaza and ends at S.E. 2nd Avenue and S.E. 3rd Street. **Segment 2** begins at S.E. 2nd Avenue and continues along S.E. 3rd Street to S. Miami Avenue. **Segment 3** begins at S. Miami Avenue and continues west S.W. 2nd Avenue. **Segment 4** includes the I-95 Distributor Ramps west of S.W. 2nd Avenue to I-95.

The cross-section within this study area includes travel lanes measuring twelve feet in width with raised medians measuring twenty-six feet in width. This median width provides for required future dual left turn lanes with approximately four feet remaining as a traffic separator. Also included is two foot curb and gutter with approximately ten feet of sidewalk. Due to the constraints within this downtown area, no separate bicycle facilities have been included.

DESIGN GUIDELINES:

The following design guidelines were used for development of the alternatives for this study and are consistent with criteria used by FDOT and Dade County Public Works Department.

- *Boulevard Design Speed - 35 MPH*
- *Ramp Design Speed - 30 MPH to 35 MPH*
- *Travel Lanes Width - 12 feet*
- *Median Width - 26 feet*
- *Curb and Gutter - Type F; Type E (median)*
- *Sidewalks - 10 feet*
- *Corner Radii - 35 feet*
- *Clear Recovery Zone - 4 feet from face of curb (desirable); 1.5 feet (minimum)*
- *Maximum grade - 5.5 %*
- *Vertical Clearance - 16.5 feet (minimum)*
- *Vertical Curvature - $K_{CREST} = 50$ to 160 (desirable) (various speeds)*
- *Vertical Curvature - $K_{SAG} = 40$ to 70 (desirable) (various speeds)*

CONSTRAINTS:

As previously mentioned, this study was subdivided into three segments. The physical constraints identified within each segment are described below.

Segment 1

The physical constraints in this segment consist of Metromover piers located along the south and east sides of the First Union Financial Center. The straddle bent at Metromover pier #P191, which was not constructed according to design plans. This bent will have to be modified to provide for the Concept Alternative. There is also restricted right-of-way between the Interamerican Building and the First Union Financial Center; this right-of-way measures approximately 100' in width.

Segment 2

The physical constraints in this segment consist of Metromover piers and the restricted right-of-way between the J.L. Knight Center and the International Place. Both of these buildings have service roads and are currently connected with an at-grade access roadway and pedestrian crossing.

Segment 3

The physical restraints in this area consist of existing I-95 ramps to remain, Metromover piers, Metrorail maintenance building and line, and Florida Power and Light buildings.

Segment 4

The physical restraints in this area consist of existing I-95 ramps to remain.

CONCEPT ALTERNATIVE

The concept alternative includes ramp realignment/reconstruction while providing the boulevard theme envisioned by DDA. See Figure 2 for an overview of the Concept Alternative.

Beginning at Biscayne Boulevard on the east, this alternative includes a four-lane divided roadway to the south of the First Union Financial Center and Metromover piers. A signalized intersection will be developed at S.E. 3rd Street and Biscayne Boulevard where three northbound lanes from Biscayne Way join two eastbound lanes and four

lanes continue north on Biscayne Boulevard. From S.E. 2nd Avenue to S. Miami Avenue a six-lane divided at-grade roadway is proposed along S.E. 3rd Street. A signalized intersection will be developed at S.E. 1st Avenue where two northbound lanes from South Miami Avenue continue northbound and access Occidental Parc Hotel. Both the J.L. Knight Center and the International Place will have one-way service access. As part of this alternative, the existing pedestrian walkway between the J.L. Knight Center and International Place will be relocated to the third level of the J.L. Knight Center and one level below the Metromover line along S.W. 3rd Street. The staircase located on the north side of the J.L. Knight center will be redesigned to provide for access road and pedestrian walkway along S.W. 3rd Street. S.W. 1st Court will not have direct access to S.W. 3rd Street. The ramps will be partially realigned/reconstructed to provide I-95 southbound ramps from South Miami Avenue at both S.W. 2nd Street and S.W. 3rd Street, I-95 northbound ramps from S.W. 1st Avenue at both S.W. 2nd Street and S.W. 3rd Street. The northbound I-95 exit ramp will end at South Miami Avenue and S.W. 3rd Street and the I-95 southbound exit ramp will end at S.W. 1st Avenue and S.W. 3rd Street. In other words, I-95 Distributor ramps to and from the south are accessed at South Miami Avenue and the I-95 Distributor ramps to and from the north are accessed at S.W. 1st Avenue. This alternative also includes extending S.W. 1st Avenue south to S.W. 4th Street. S.W. 4th Street will be constructed from S.W. 2nd Avenue to South Miami Avenue. This alternative provides a feasible and desirable controlled access "boulevard" along S.W./S.E. 3rd Street from Biscayne Boulevard to S.W. 2nd Avenue. See Figures 3 through 6 for detailed illustrations of the Concept Alternative by segment.

TRAFFIC ANALYSIS

To establish the feasibility of this project with respect to its ability to accommodate anticipated traffic volumes, estimates of future traffic were developed and intersection capacity analyses were performed. This section briefly describes the elements of this task, and provides preliminary results. For a detailed description of this task see Appendix B of this report.

Existing traffic volume data is generally the seed for developing future traffic estimates. Although requests were made of several agencies, no existing traffic volume data for the facilities in question were found. CSA therefore arranged to have AM and PM peak period turning movement counts performed at five intersections to develop a basis for traffic estimates. Once the existing traffic volumes and patterns were established, traffic volumes were assigned to the proposed configuration, providing an estimate of traffic conditions if the proposed project was in place today.

Future traffic estimates were based on the existing traffic volumes and traffic assignments from the Dade County FSUTMS model. Traffic assignments for the years

1986 and 2010 were obtained from the Dade County Metropolitan Planning Organization (MPO). Based on these assignments, a growth rate was established and applied to the existing volume estimates for the proposed configuration to develop year 2010 AM and PM peak-hour turning movement projections at critical intersections. In general, existing I-95 ramp traffic volumes were increased by 50 percent to/from the north and 20 percent to/from the south.

Signalized intersection analyses were performed at several critical project intersections to establish the operational capabilities of the project under future traffic conditions. The operational analyses was performed per the 1985 Highway Capacity Manual procedures for signalized intersection analysis. The results indicate that all of the intersections analyzed operate at Level Of Service "C" or better, well within the acceptable level of service "D". The analysis of these intersections was performed with sensitivity to pedestrian considerations and operation within the context of the downtown signal system. See Figure 7 for the AM Peak Level Of Service and Figure 8 for the PM Peak Level of Service at these intersections.

It should be noted that the level of effort required to develop future traffic estimates on which to base the final design of such a project can be quite extensive. The effort for this project was less extensive and heavily reliant upon available data. However, the general conclusion that this project could accommodate substantially greater traffic volumes than exist today is indicative of the project's feasibility. Furthermore, a cursory evaluation of the surrounding roadway system tends to suggest that this facility's capacity to accept traffic would exceed the capacities of the surrounding roadway to feed traffic. This further solidifies the conclusion that the project is feasible.

CONCEPT ALTERNATIVE FEASIBILITY

The horizontal and vertical requirements for the Concept Alternative were evaluated to ensure the absence of any "fatal flaws". This alternative was developed and evaluated using the previously described physical constraints, plans for existing I-95 Distributor Ramps, plans for proposed Bifurcated Ramps, plans for J.L. Knight Center, plans for Metrorail and Metromover lines. FDOT and American Association of State Highway and Transportation Officials (AASHTO) desirable design criteria were also used to develop and evaluate the feasibility of this alternative. CSA has determined that horizontal and vertical geometry can be designed to provide this alternative and meet appropriate design criteria. See Appendix C for illustrations of horizontal and vertical alignments for the concept alternative.

Right-of-way will be required to construct the Concept Alternative. Proposed ramps B, C and D will require some acquisition of right-of-way while the removal of existing ramps 1, 2, 5 and 6 will provide additional right-of-way for development. Some swapping of this right-of-way may be possible with the FDOT and City of Miami. Right-of-way will also be required along S.E. 3rd Street from the J.L. Knight Center to Biscayne Boulevard. The J.L. Knight Center is owned by the City of Miami. The property east of S.E. 2nd Avenue is currently privately owned and development incentives may be constructive for developing the boulevard in this area. Acquisition of right-of-way is also needed for construction of S.W. 4th Street.

A major factor used to determine the feasibility of the Concept Alternative was constructability with regard to traffic control during construction. Once CSA began additional study concerning constructability it became clear that this was not a "fatal flaw" and was workable. See Figure 9 for the traffic control concept. The following is a description of the Traffic Control Concept for construction.

Phase I

*Construct Ramp D and majority of Ramps B and C.
Construct S.W. 4th Street and S.W. 1st Avenue extension south of existing Ramp 1.
Construct S.E. 3rd Street east of S.E. 2nd Avenue.*

Phase IA

*Maintain one-lane of traffic on existing Ramp 2 while completing one-lane of Ramp C.
Construct two-lanes of temporary pavement between South Miami Avenue and S.E. 2nd Avenue.*

Phase II

*Open Ramps D and one-lane Ramp C to traffic from I-95. Maintain westbound traffic to I-95 on existing Ramps 4 and 5.
Remove existing Ramps 1, 2, 6 and Dupont Plaza ramps.
Complete Ramps B and remaining lane of Ramp C.
Construct S.E. 3rd Street from South Miami Avenue to S.E. 2nd Avenue.*

Phase III

Construct Ramps A and E.

Remove Ramp 5.

Construct S.W. 1st Avenue between S.W. 2nd Street and ramps.

Remove temporary pavement and construct access roads.

The preliminary construction cost was estimated with information gathered from FDOT and Dade County for the Concept Alternative. The cost estimate included the following.

<i>Removal of existing ramps -</i>	<i>\$ 6,660,000</i>
<i>Construction of proposed ramps -</i>	<i>\$ 16,783,291</i>
<i>Construction of proposed roadway -</i>	<i>\$ 2,968,749</i>
<i>Signalization -</i>	<i>\$ 750,000</i>
<i>Modification to J.L. Knight Center exterior stairway -</i>	<i>\$ 400,000</i>
<i>Construction of pedestrian walkway -</i>	<i>\$ 500,000</i>
 <i>Subtotal -</i>	 <i>\$ 28,062,040</i>
<i>5 % Contingency -</i>	<i>\$ 1,403,102</i>
 <i>TOTAL -</i>	 <i>\$ 29,465,142</i>

Other impacts which were evaluated include developability of area properties, accessibility to area properties, accessibility to Downtown Miami, urban planning, pedestrian safety, and finally image and views.

After meeting with representatives of FDOT, City of Miami, J.L. Knight Center and DDA it became clear that the possibility of developing a controlled access "boulevard" in the Dupont Plaza received very positive and encouraging feedback. Most of these representatives stated that this type of improvement has been needed for a very long time. To date this area has not developed as the rest of Downtown Miami has, primarily due to accessibility and the fact that this area has been cutoff from the rest of the city by the "wall" of existing ramps. With the creation of the "boulevard" along S.W./S.E. 3rd Street this area will become part of Downtown Miami. Drivers and pedestrians will be encouraged to circulate in this area as well, increasing developability of several vacant and underutilized properties. See Summary Matrix in Table 1 for comparison of Concept Alternative to No Build Alternative and Bifurcated Ramp Alternative.

SUMMARY MATRIX






	NO BUILD ALTERNATIVE	CONCEPT ALTERNATIVE	BIFURCATED RAMP ALTERNATIVE
Provide Boulevard	<i>Low</i>	<i>High</i>	<i>Low</i>
Acceptable Horizontal Ramp Alignment	<i>Low</i>	<i>Medium</i>	<i>Medium</i>
Acceptable Vertical Ramp Alignment	<i>Low</i>	<i>Medium</i>	<i>High</i>
Acceptable Boulevard Capacity	<i>Low</i>	<i>High</i>	<i>Low</i>
Acceptable Ramp Capacity	<i>Medium</i>	<i>Medium</i>	<i>High</i>
Provide for I-95 Traffic	<i>Low</i>	<i>High</i>	<i>High</i>
Improve Downtown Circulation	<i>Low</i>	<i>High</i>	<i>Low</i>
Urban Compatibility	<i>Low</i>	<i>High</i>	<i>Low</i>
Pedestrian Compatibility	<i>Low</i>	<i>High</i>	<i>Low</i>
Transit Compatibility	<i>Low</i>	<i>High</i>	<i>Low</i>
Increased Developability	<i>Low</i>	<i>High</i>	<i>Low</i>
Area Support	<i>Low</i>	<i>High</i>	<i>Low</i>
Reconstruction Impacts	<i>Low</i>	<i>Medium</i>	<i>Medium</i>
R/W Acquisition	<i>Low</i>	<i>Medium</i>	<i>Medium</i>
Estimated Construction Cost	<i>Low</i>	<i>Medium</i>	<i>High</i>
Required Maintenance of Traffic	<i>Low</i>	<i>High</i>	<i>High</i>

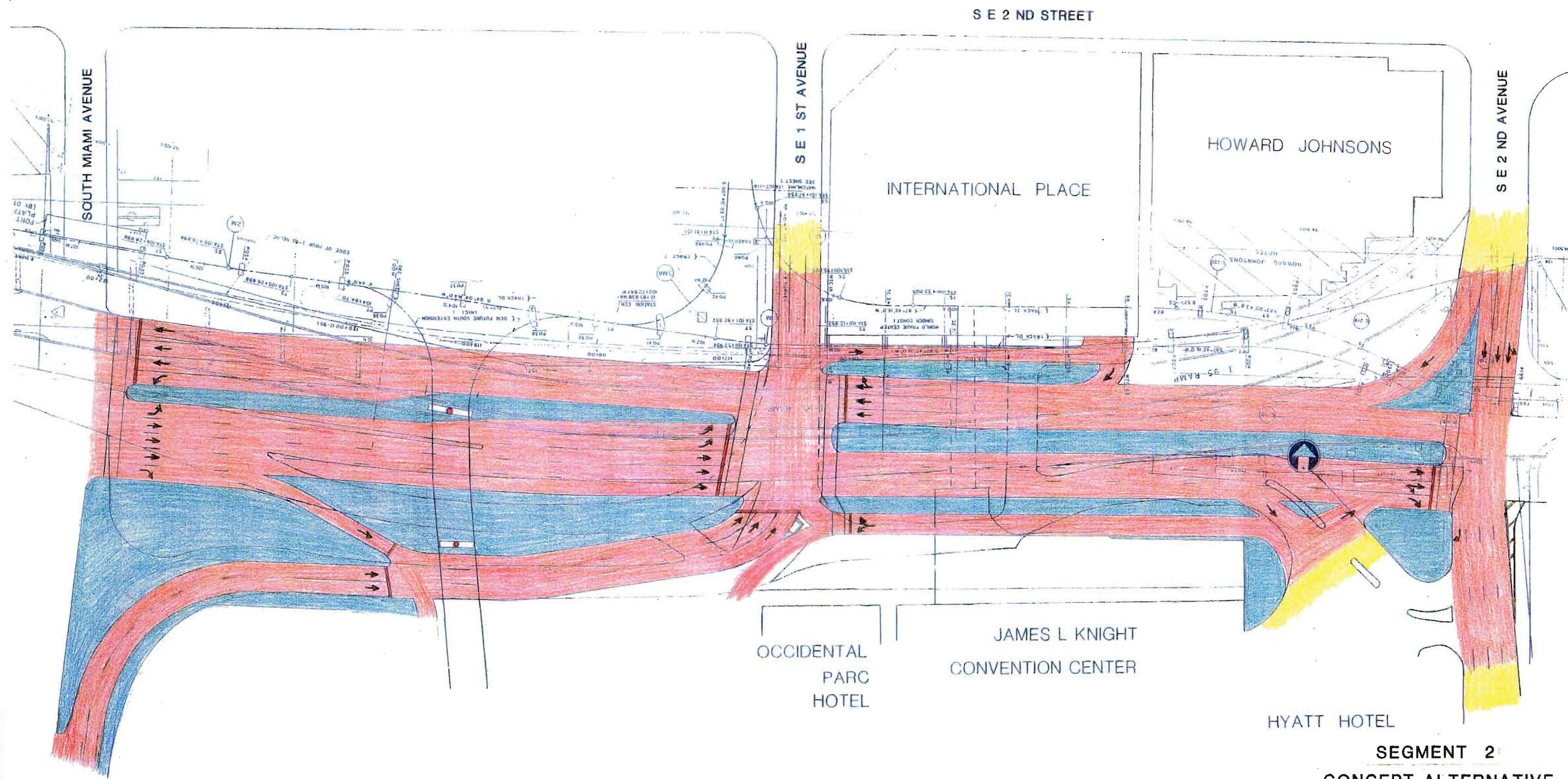
CONCLUSION

As a result of this study it has been illustrated that the controlled access Concept Alternative is feasible. It is Carr Smith's recommendation that a corridor analysis study be conducted in conjunction with the regional loop that was described earlier in this report. This study should include corridor analysis, detailed traffic analysis and urban design issues. The inclusion of the I-395 depressed roadway and the SW/SE 3rd Street boulevard in the corridor study will ensure all traffic in the downtown region is addressed and improved.

Both community and agency support should also be organized and development initiatives will also be important to the development of this concept. As stated earlier, all representatives involved in either the development or evaluation of this concept were strongly supportive. The FDOT and City of Miami will be very involved in the further development of this concept. Carr Smith would like to thank the Downtown Development Authority, the City of Miami and the Florida Department of Transportation for their involvement and assistance to make this study both beneficial and positive for the people of Dade County.

LEGEND

- | | |
|---|----------------------------|
|  | NEW ROADWAY |
|  | LANDSCAPING |
|  | EXISTING ROADWAY TO REMAIN |
|  | PIER FOR METROMOVER |
|  | DIRECTION OF TRAFFIC |



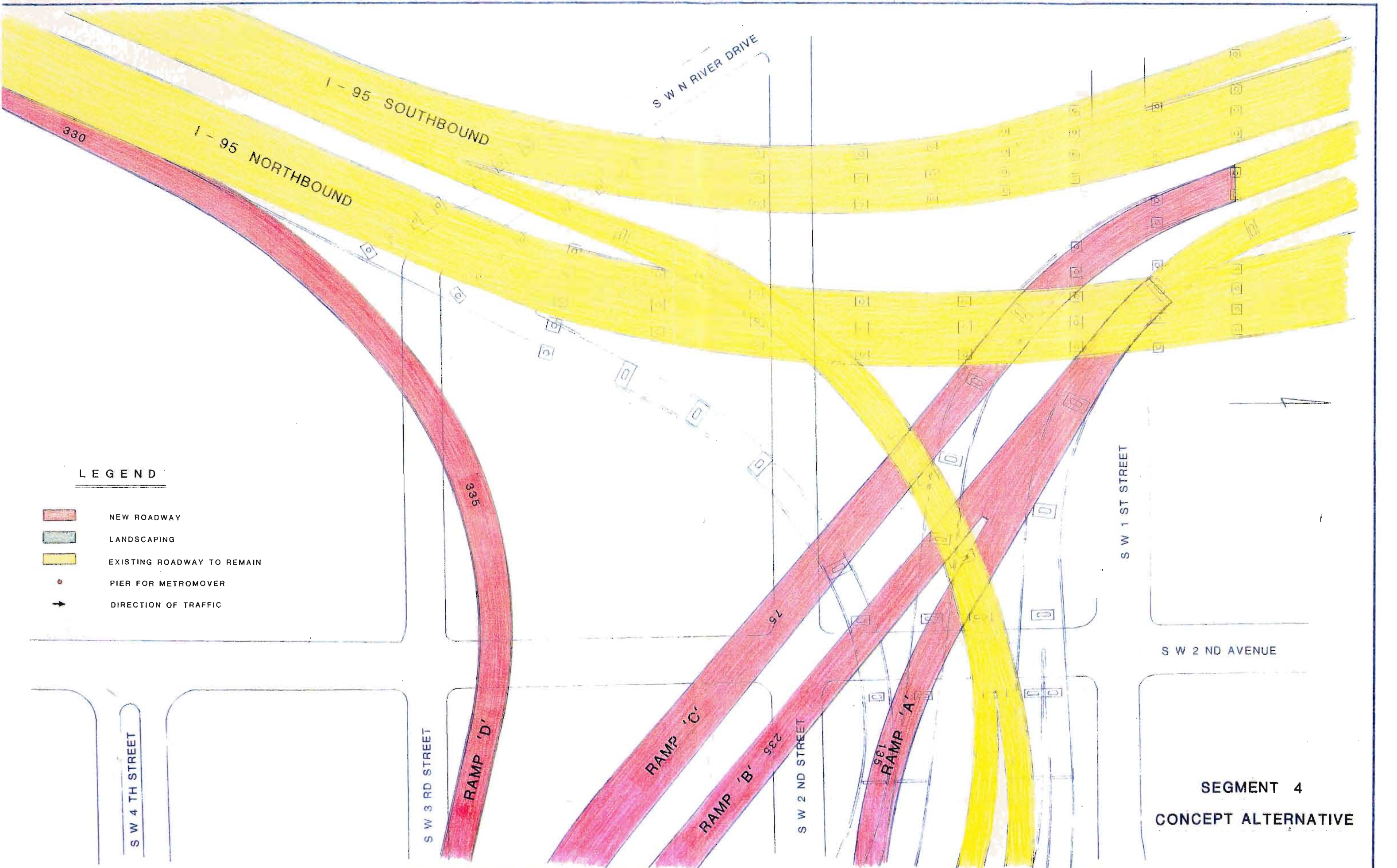
SEGMENT 2

CONCEPT ALTERNATIVE

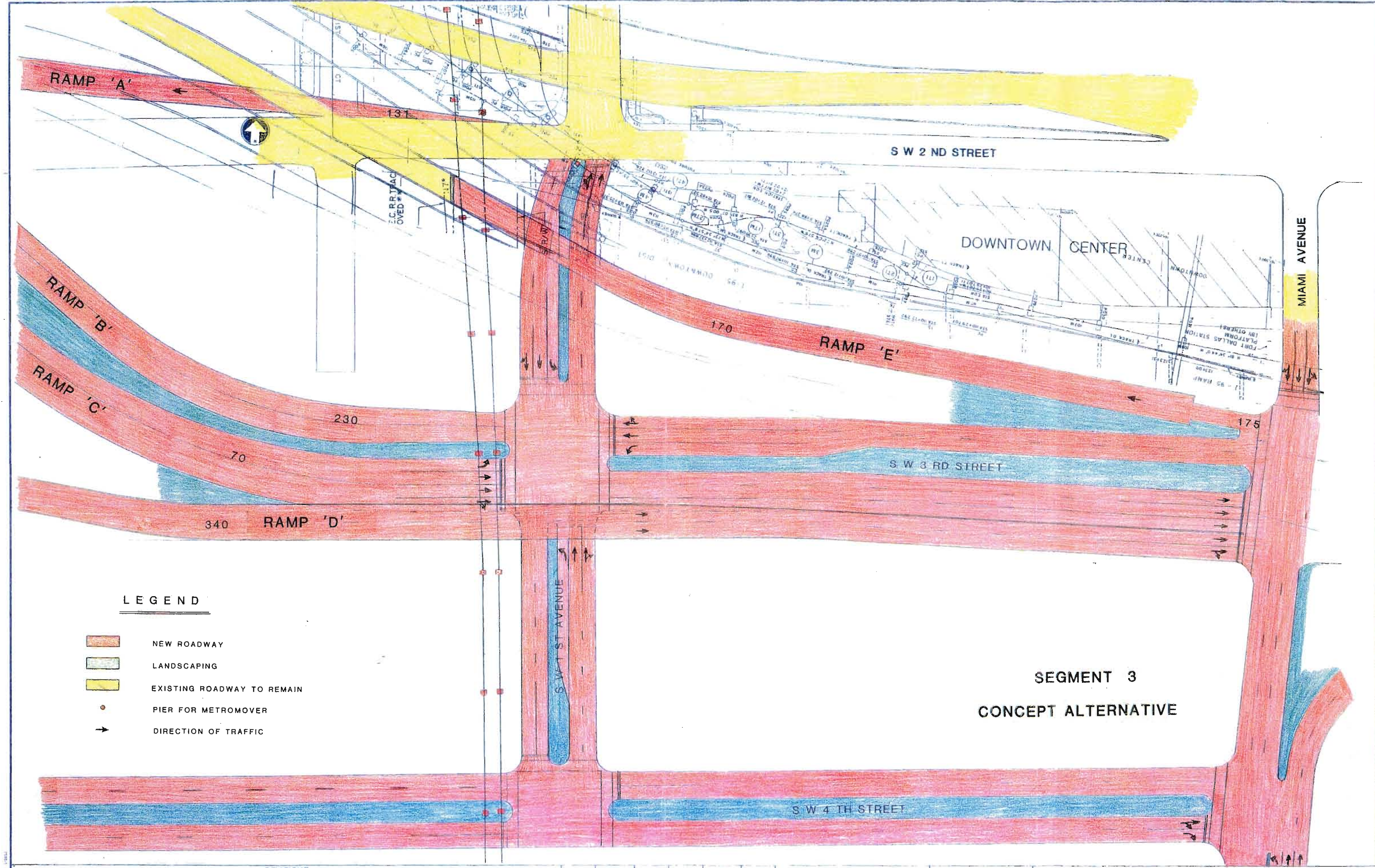
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CARR SMITH
ASSOCIATES






DDA Miami



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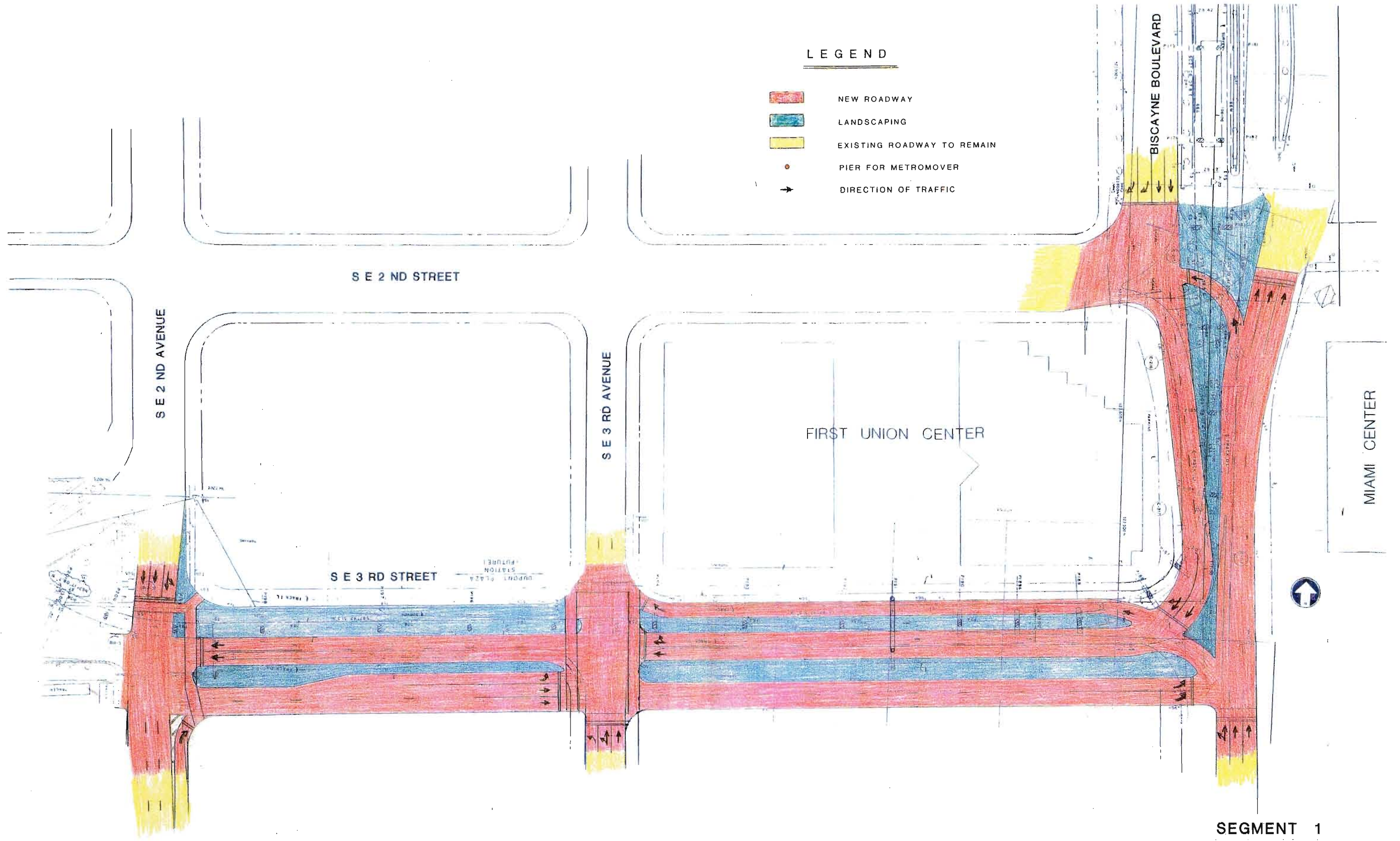
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-  NEW ROADWAY
-  LANDSCAPING
-  EXISTING ROADWAY TO REMAIN
-  PIER FOR METROMOVER
-  DIRECTION OF TRAFFIC

**SEGMENT 3
CONCEPT ALTERNATIVE**

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LEGEND

- NEW ROADWAY
- LANDSCAPING
- EXISTING ROADWAY TO REMAIN
- PIER FOR METROMOVER
- DIRECTION OF TRAFFIC

SEGMENT 1
CONCEPT ALTERNATIVE

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CARR SMITH ASSOCIATES

DDA Miami

Fig 6

