SUPERARTERIAL NETWORK STUDY

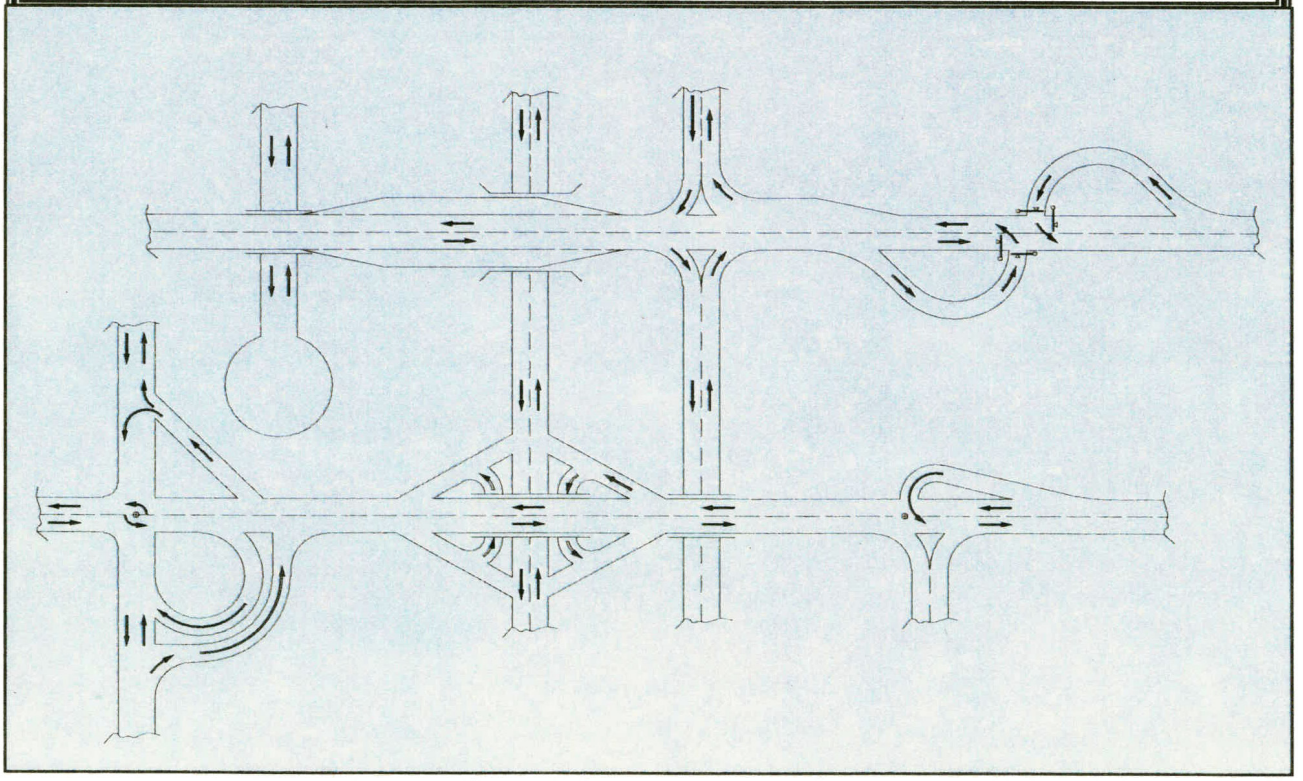
PROJECT NO. MPO-96-07

METRO-DADE

DADE COUNTY METROPOLITAN PLANNING ORGANIZATION

Technical Memorandum 7:

Preliminary Testing and Evaluation of Test Candidates



Prepared by :

PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC.

Superarterial Network Study

Dade County Metropolitan Planning Organization

Project Number: E96-MPO-07

FIRST DRAFT

Technical Memorandum 7: Preliminary Testing and Evaluation of Test Candidates

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Prepared by:

Parsons Brinckerhoff Quade & Douglas, Inc.

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1. INTRODUCTION

Technical Memorandum 7: Preliminary Quantitative Testing and Evaluation of Test Candidates, is the 7th report in a series of technical memoranda that describe the progress accomplished to date in the development of a Superarterial Network for Dade County. This technical memorandum is preceded by Technical Memorandum 6: Identification of Strategies and Techniques. Technical Memorandum 6 provided detailed information on strategies and techniques for potential application to the arterials within the Superarterial Network. These strategies and techniques were presented in a matrix format identifying potential locations where they are best suited for application, as well as their relative advantages and disadvantages. Each strategy/technique identified is suitable for a specific problem, and their application is dependent on that particular problem being addressed for the selected arterials within the Transportation Area.

The purpose of Technical Memorandum 7 is to test the Superarterial Network concept on the appropriate Superarterials within a proposed Transportation Area. This report also documents the results of applying previously identified (Technical Memorandum 6) mobility-enhancing and congestion-reducing strategies and techniques on the selected arterials. For this purpose, evaluation criteria were developed and approved by the Steering Committee. These criteria identify existing measures and parameters to appraise mobility improvements, LOS improvements, and congestion reduction approaches for the purpose of assessing how well contemplated strategies and techniques perform when applied to candidate test facilities within the selected Transportation Area. The criteria were adapted from new and existing methods to estimate and quantify traffic flow improvements resulting from the application of suitable strategies and techniques to major arterials with similar priority ranking.

Five major arterials were selected for preliminary testing. Field visits were performed along these arterials during peak hours to identify the transportation deficiencies on each candidate arterial. The observed conditions were used to develop strategies and techniques applicable for each identified transportation deficiency. Once applicable techniques were identified for each of the major arterials within the study limits, preliminary testing of the candidate arterials was performed using the MPO's Regional Travel Demand Model. A testing methodology was developed by the consultant, and reviewed by the Steering Committee, before it was applied to the selected arterials. This methodology takes into consideration the macroscopic and regional nature o the model and limits the testing to the five selected arterials. Two time periods, 1990 and 2010 were employed to better estimate the effects of applying the superarterial concept under existing and future conditions.

The next step in the course of this study is the preparation of Technical Memorandum 8: Estimation of Test Implementation Requirements. In this technical memorandum, a Plan of Action will be developed for implementing Superarterial concept applications to primary major arterials within the selected area. Technical Memorandum 8 will include: defining the corridor and area selected, defining the facilities to be tested, developing a list of improvements proposed for

implementation, defining the development of base case ("before") conditions and developing the data collection and monitoring system. The document will also include the traffic modeling methodology and results, development of an implementation schedule and definition of the test time span, defining criteria, standards, and measures to assess the results.

2. Evaluation Criteria

The various alternatives and techniques available to reduce or manage congestion were identified in Technical Memorandum 6: Identification of Strategies and Techniques. Application of these techniques is dependent upon the location and the nature of the specific problems for which solutions are sought. This section presents the evaluation criteria that were selected based on the desired impacts of each improvement.

The purpose of the criteria is to provide a measure to compare the benefits and disadvantages of applying one or a set of techniques to a particular location. These criteria can also be used as monitoring tools in "before and after" studies aimed at measuring how well the implemented improvements matched the desired results.

The following is a description of the extensive list of evaluation criteria that can be used to both evaluate existing problems and proposed solutions. In general, only a few criteria need to be applied to assess the effectiveness of proposed solutions. The criteria listed also include other factors that are influenced by transportation such as air quality, economic growth, and land use impacts. These are usually indirect factors that, nonetheless, represent considerations that are important and may influence the operation of the transportation system.

1. **Travel Time -** One of the impacts of increased mobility is a reduction in travel time. This criterion is therefore a good tool to measure the impacts of proposed improvements. This criteria is not, however, a direct result of implementing all of the selected strategies and techniques, but may be a secondary impact as in the case of transit improvements. In that case, travel time may decrease on selected arterial as a result of a decrease in the number of vehicles from a mode shift to transit. This criteria does not only apply to personal vehicular travel but also to public transit options and includes items such as door-to-door or journey times, point-to-point travel times, intersection delay times, and wait times.

2. **Travel Costs -** The proposed improvements should reduce total travel costs, including fuel costs and average cost of time.

3. **Travel Speed -** One of the first impacts of increased congestion is a reduction in travel speed. The proposed improvements should therefore be aimed at increasing the speed to a level reflective of the desired level of service, between 30 and 40 percent of the average travel speed, corresponding to level of service E and D in urban areas.

4. **Delay -** Delay is proportional to the amount of time experienced by drivers, passengers and pedestrians as a result of lack of capacity, control measures (signals), and interaction with other users of a facility. Improvements should therefore be aimed at directly or indirectly reducing the additional travel time experienced beyond what would reasonable be desired for a given trip.

5. **Traffic Volume -** This criteria should be carefully weighed against other measures. An increase in the number of cars traveling through a section of roadway may be a positive impact if other factors are also present, such as an increase in capacity, maintenance of safety standards, and reduction of conflicts between pedestrians and other traffic.

6. **Capacity Increase -** Mobility is greatly improved with increased capacity. This criteria is applicable to all modes of surface travel, personal automobile, transit, bicycle, and pedestrians.

7. **Congestion Level -** Since congestion is caused by many factors, it represents an excellent toll to measure the effectiveness of proposed improvements. This can be measured by the ratio of the volume to capacity and the resulting level of service. The level of service resulting from different alternatives can be compared to each other or to the desired level of service for specific facilities.

8. **Signal Progression -** Adequate traffic signal progression along an arterial can help reduce congestion levels, increase capacity on the facility, and reduce delay at intersections. Traffic signal improvements are an effective low cost tool for reducing congestion on arterials, regardless of whether the improvements are performed on isolated intersections or on signalized networks. Signalized intersections, together with other improvements on the arterial street system, provide significant opportunities for increasing capacity and making better use of the existing arterials, without major new construction.

9. **Automobile Occupancy -** Some of the proposed improvements are geared towards reducing the number of vehicles on certain facilities by encouraging trip sharing or public transit. An increase in the automobile occupancy rate is a good measure of how well proposed improvements are meeting the desired impacts.

10. **Safety -** This criteria applies to almost all travel modes including personal automobile, public transit, pedestrians and bicycle. Other improvements should be carefully examined to assess their potential impacts in reducing or increasing public safety along the selected facilities.

11. **Environmental Impacts -** The impacts of the proposed improvements on air quality, noise, energy, and aesthetics should be a factor in determining the appropriateness of such improvements.

12. **Implementation Costs -** The cost of implementing the proposed improvements should be accounted for in determining the appropriateness of such improvements. This criteria can also be used when various improvements may meet the desired goals and objectives.

13. **Operating and Maintenance Costs -** Operating and maintenance costs are an important factor to consider in the recommendation of proposed improvements.

14. **Capital Costs** Same as above.

15. Right-of-Way Costs - Same as above.

16. Construction Costs - Same as above.

17. Enforcement Costs - The cost of enforcing proposed improvements such as parking, turning movements and truck restrictions during peak hours should be a consideration in evaluating the different options available to reduce and/or manage congestion.

18. Land Use Impacts - Impacts on adjacent land uses should also be considered. Implementation of a one-way pair system may have very positive impacts on traffic flow, but have negative impacts on the property value and number of patrons frequenting commercial land uses along the arterials by restricting access to these properties. The type of proposed improvements should also be compatible with the surrounding land uses as to avoid undesirable secondary impacts such as neighborhood intrusion, and division of established communities.

19. Parking Space - The change in parking space occupancy rate, number of vehicles parking in center per day, and parking revenues, are effective tools to measure the impacts of proposed improvements.

20. Transit Revenue - The success of implementing new transit routes or expanding existing ones depends heavily on the revenue.

21. Ridership - A comparison of the existing and expected ridership, or actual ridership after implementation, is a good criteria to evaluate the applicability or the appropriateness of proposed transit improvements. Ridership may be measured not only within the immediate area of implementation but also on parallel and cross facilities.

Table 2.1 shows the evaluation criteria that are used to measure the impacts of each of the proposed strategies and techniques.

Table 2.1
Evaluation Criteria

Strategies and Techniques	Evaluation Criteria																					
	Travel											Costs										
	Time	Costs	Speed	Delay	Traffic Volume	Capacity Increase	Congestion Level	Signal Progression	Auto Occupancy	Safety	Environmental Impacts	Implementation	O&M	Capital	ROW	Construction	Enforcement	Land Use Impacts	Parking Space	Transit Revenue	Ridership
New Lane and/or Street Segment	■				■		■			■			■	■							
Turn Lane Addition and Phasing				■			■			■		■	■								
Frontage Roads			■			■	■			■											
Street and Intersection Geometry Improvements: Striping, Channelization, and Islands	■									■	■										
Reroute Turning Traffic	■			■			■			■		■			■						
Intersection Turn Lanes and Mid-Block Two-Way Continuous Left Turn Lanes	■		■			■	■														
Reversible Lanes	■		■	■		■	■			■	■	■	■								
Parallel or By-Pass Segment			■		■		■														
Grade Separation			■	■		■	■	■		■	■							■			
Walkways or Pedestrians/Cyclists Overpasses			■				■	■		■	■										
Exclusive Bicycle Lanes			■				■			■											
New Signal Installation			■	■			■			■		■									
Signal Phasing and Timing Changes			■	■			■				■										
New Pedestrian/Cyclists Signal			■							■	■										
Turbo Lanes			■	■		■	■			■											
Crossing Design, Striping and Marking				■		■				■											
Access Management/Driveway Consolidation	■		■			■				■								■			
Paired One-Way Streets to Improve Flow	■					■	■			■	■							■			
Auto Restricted Zones			■			■				■								■			■

Note: Land Use Impacts = Commercial Property Value
Number of Patrons

Table 2.1 (Continued)
Evaluation Criteria

Strategies and Techniques	Evaluation Criteria																					
	Travel											Costs										
	Time	Costs	Speed	Delay	Traffic Volume	Capacity Increase	Congestion Level	Signal Progression	Auto Occupancy	Safety	Environmental Impacts	Implementation	O&M	Capital	ROW	Construction	Enforcement	Land Use Impacts	Parking Space	Transit Revenue	Ridership
Truck Traffic Restrictions	■		■			■	■				■						■				
Bus Stop Spacing and Design	■		■							■											■
Bus Bays	■		■				■														
Signal Preemption for Buses	■		■	■			■														■
Expanded Bus Route							■						■	■						■	■
Limited Stops or Express Bus Routes	■						■						■							■	■
Increased Bus Frequency							■						■	■						■	■
Loop Shuttle Buses	■						■					■	■	■						■	
Increased Frequency in Shoulder Periods	■						■						■							■	■
Exclusive Bus and Carpool Lane	■				■				■		■	■	■			■	■			■	■
Park and Ride Lots Along Transit Routes	■	■	■		■		■				■		■							■	■
Expanded Off-Street Parking and Loading Areas			■				■						■			■		■	■	■	■
Parking Restriction and/or Removal			■			■	■											■			
Increased Parking Fee			■				■				■							■	■	■	■
Warning Devices			■	■						■		■	■				■				
Employer Pooling Program			■		■						■	■	■						■	■	■
Employer Subsidy of Transit Passes			■			■	■												■		■
Speed Reduction			■			■				■	■										
Crosswalk, Sidewalk and Bike Path Width			■			■				■											

Note: Land Use Impacts – Commercial Property Value
Number of Patrons

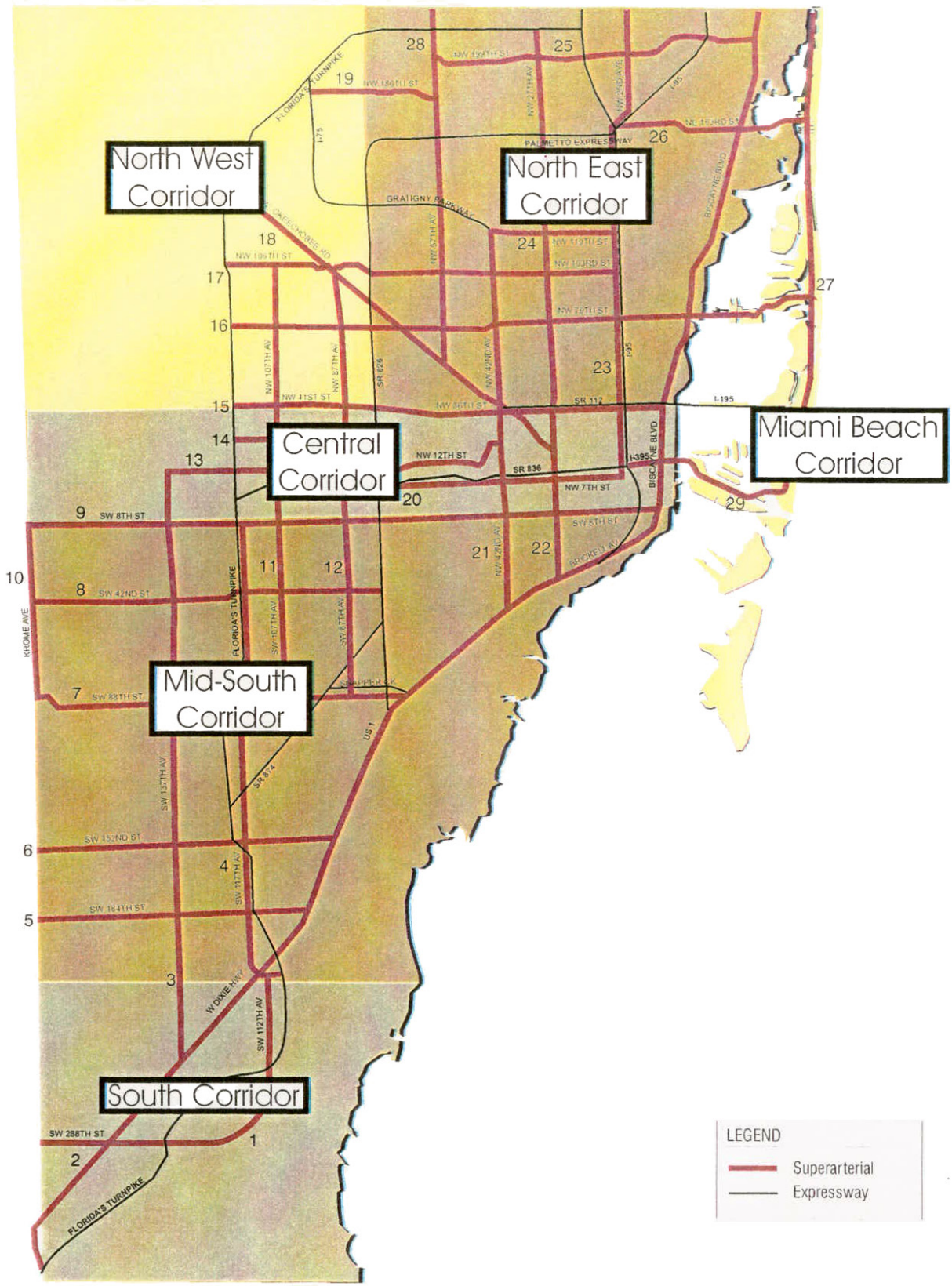
3. Candidate Transportation Area and Superarterials

Traffic patterns, community boundaries, and location of activity centers among others were used to define the Superarterial Network for Dade County. A three-step process was used, identifying first the major Transportation Corridors, then the transportation areas, and last the arterials forming the Superarterial Network. Detailed information, summarized below, on the development and definition of the Transportation Corridors, Areas, and Superarterials can be found in Technical Memoranda 4 & 5.

A Transportation Corridor provides temporal and geographical indication of traffic flow, such as peak period time and duration, direction of travel, trip purpose, origin and destination, mode share, and type of vehicle. Transportation Corridors are essential in assisting in the selection of candidate arterials to be included in the Superarterial Network. Transportation Corridors provide crucial information on travel patterns to and from major activity centers, level of congestion on arterials within the corridor, alternate routes to expressway facilities, and intensity of transit service. Based on existing data the following Transportation Corridors were identified and are illustrated in Figure 3.1: the South Corridor, the Mid-South Corridor, the Central Corridor, the Northwest Corridor, the Northeast Corridor, and the Miami Beach Corridor.

A Transportation Area is a section of Dade County, encompassing several intersecting Superarterials, and defined by existing travel patterns Within Transportation Corridors, as well as cohesive and divisive factors. Figure 3.2 shows the Transportation Areas established for the purpose of this study within Dade County. Testing a Transportation Area, as opposed to the County as a whole, represents a cost-effective alternative to observe the full impact of the proposed improvements on conflicting major arterials with similar priority ranking.

Transportation Area 4 was selected as the area to be studied based on land use, level of congestion, proposed developments, and potential room for improvement. This area is representative of the level of congestion in the rest of the county allowing to properly estimate the level of improvements necessary. Transportation Area 4 represents and ideal setting for testing the Superarterial Network Concept because it contains both developed mature areas as well as underdeveloped areas. Figure 3.2 shows the extent and location of Transportation Area 4. Transportation Area 4 is located in the central-west section of the county and delimited by SW 88th Street (Kendall Drive) to the south, NW 106th Street to the north, SW 177th Avenue (Krome Avenue) to the west, and SW/NW 107th Avenue to the east. Transportation Area 4 straddles three Transportation Corridors: the Mid-South Corridor, the Central Corridor, and the Northwest Corridor, as it captures both the north-south and east-west traffic patterns. Numerous arterials within Transportation Area 4 are also scheduled for improvements within the next five to fifteen years. This will allow the County to implement the Superarterial features into the proposed improvements.

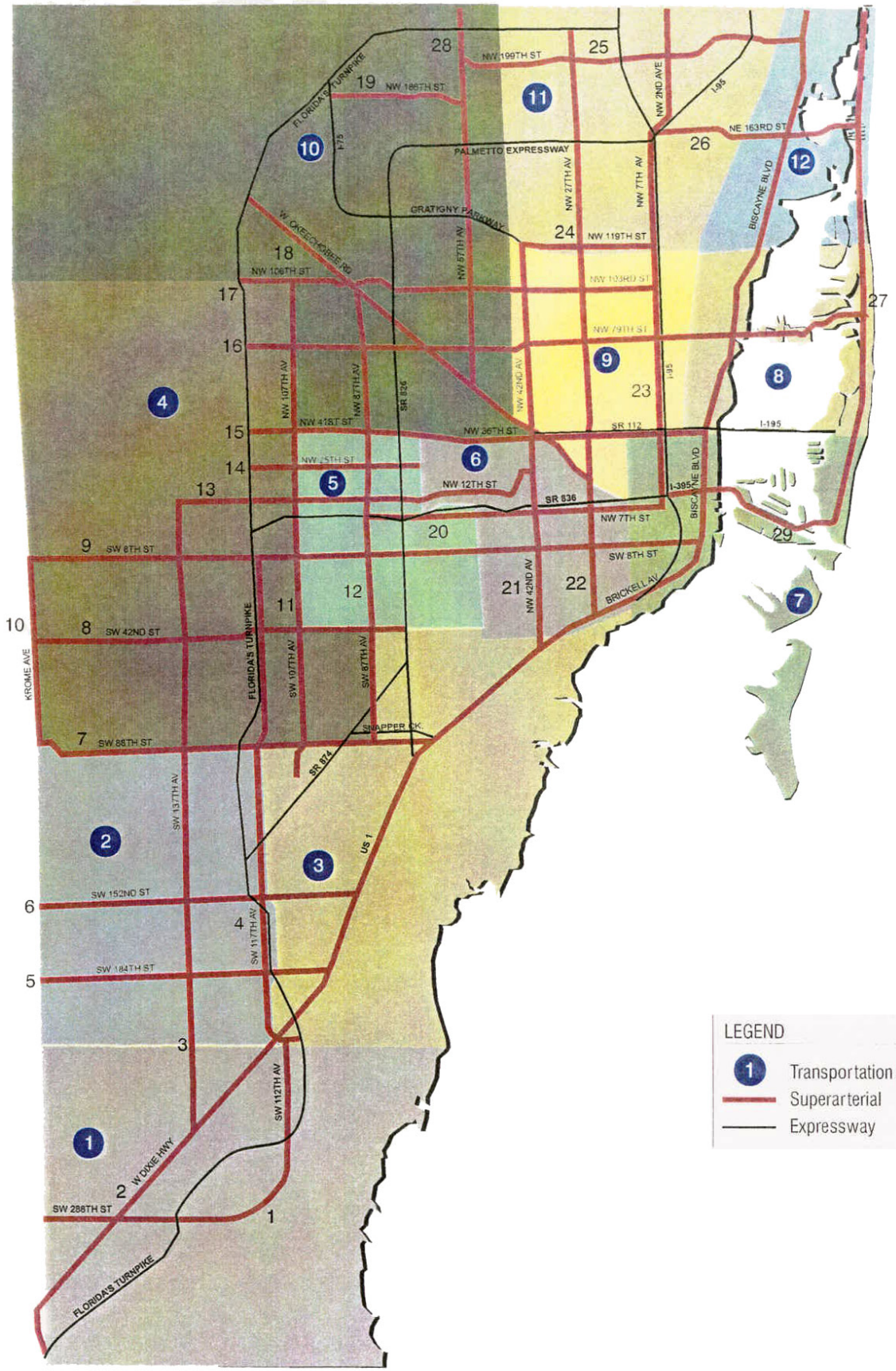


PREPARED FOR:
DADE COUNTY METROPOLITAN PLANNING ORGANIZATION

BY:
PARSONS BRINCKERHOFF QUADE & DOUGLAS

SUPERARTERIAL NETWORK STUDY
TRANSPORTATION CORRIDORS

Figure 3.1



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SUPERARTERIAL NETWORK STUDY
TRANSPORTATION AREAS

Figure 3.2

3.1 Selected Arterials for Testing

The following is a list of the arterials within Transportation Area 4 selected by the Steering Committee and the Consultant for preliminary testing. Refer to Figure 3.3 for a graphic display of their location within the context of the Superarterial Network.

- SW 137th Avenue from SW 88th Street (Kendall Drive) to NW 12th Street.
- SW 117th Avenue from SW 88th Street (Kendall Drive) to SW 8th Street (Tamiami Trail).
- SW 107th Avenue from SW 88th Street (Kendall Drive) to NW 41st Street.
- SW 40th Street (Bird Road) from SW 87th Avenue to SW 152nd Avenue.
- SW 8th Street (Tamiami Trail) from SW 107th Avenue to SW 177th Avenue (Krome Avenue).

All the Superarterials completely contained in Transportation Area 4 were selected for preliminary testing with the exception of SW 88th Street (Kendall Drive) and Krome Avenue (SW 177th Street). Kendall Drive was excluded since a Major Investment Study will shortly be underway to study multimodal applications to alleviate congestion on this roadway. Krome Avenue is considered the western edge of the Urban Boundary is seen as the last physical barrier between the developed area and the Everglades. The following sections briefly describe the conditions on these two roadways. Kendall Drive underwent extensive improvements (widening, improved access to freeways, and signal improvements) in recent past. Despite these improvements, the arterial still experiences tremendous delays due to a combination of factors such as:

- rapid growth in population resulting from increase in the number of housing units
- numerous major activity centers ranging from regional malls, office complexes, and regional hospital
- access to major north-south arterials and major freeways

The existing right-of-way along Kendall has been used to accommodate widening and intersection improvements. The DOT is now looking towards studying various multimodal approaches through an Arterial Investment Study. Due to the extensive commercial land use along Kendall Drive, the facility serves not only commuter trips, but is heavily traveled on weekends and during off-peak hours during the week.

Krome Avenue, a two lane undivided roadway, is located on the edge of the Urban Boundary and is not presently showing congestion problems within Transportation Area 4. Only two-major arterials cross Krome Avenue presently, Kendall Drive and SW 8th Street, within the study area. One more crossing is proposed in the future at SW 104th Street (Killian Parkway). As development continues to spread to the west toward Krome Avenue, a pro-active approach should be stressed to anticipate and prevent high level of congestion on this facility, make the necessary provisions for adequate right-of-way acquisitions, and apply Superarterial design criteria.

4. Preliminary Testing

Superarterial Network concept improvements are aimed at managing and if possible alleviating existing congestion. These improvements are also aimed at improving or at least maintain existing levels of congestion in the future. Therefore two different tools were used to develop sets of improvements that would be both useful today and in the future. The following sections describe the methodology and the results of the preliminary testing performed for Transportation Area 4.

4.1 Testing Methodology

Testing of existing conditions along the arterials within the study area was limited to available traffic counts and relied heavily on actual data observed during peak hours. Data such as geometry, location of bus stops, queue lengths, lane utilization, and other factors were compiled and analyzed to determine the most appropriate solution for specific locations within the study area. The extensive list presented in Technical Memorandum 6 was used, and the appropriate strategies for managing or alleviating congestion were identified based on the nature of the problems along the arterials. Right-of-way availability was the only constraint used in selecting the appropriate improvements. These improvements were therefore limited to locations where right-of-way acquisition did not seem to be too extensive and would have limited impacts on land uses and communities.

The resulting improvements were then fed into the regional model in order to measure the impacts of the improvements on future travel patterns within the study area. The study team and the Steering Committee recognized that a travel demand model is limited and macroscopic in nature and would not provide enough information to measure impacts of all of the improvements recommended. The testing was therefore limited to measuring the regional impacts of the proposed improvements and to provide the team with a tool that would help to evaluate the combined impacts of all of the major recommendations. The regional model developed by the Metropolitan Planning Organization is also a useful and readily available tool used in this study to look at the impacts of the proposed improvements on future travel patterns within the area under study.

4.2 Testing of Candidate Corridors

Due to the limited data readily available, the preliminary testing of the arterials relied heavily on field observations. The field visits were performed along the arterials selected during both morning and afternoon peak periods. The purpose of the field visits was to assess the level of congestion, traffic flow characteristics, location and nature of the problems, and to intensify the knowledge of the area in order to develop the recommended actions. Following is a detailed description of the conditions observed during the course of the visits.

4.2.1 SW 137th Avenue

Existing Geometry

SW 137th Avenue is a north-south arterial extending from SW 176th Street to NW 10th Street. It is a four-lane divided facility with left turn pockets from Kendall Drive (SW 88th Street) to Bird Road (SW 40th Street). East of Bird Road, the geometry changes to a six-lane divided facility to Coral Way (SW 26th Street), and to a four-lane divided facility from Coral Way to SW 8th Street (Tamiami Trail). From SW 8th Street to NW 10th Street, SW 137th Avenue is a two-lane undivided facility. Land use along this corridor is mixed residential and commercial. Residential constitutes the majority of the land uses along SW 137th Avenue. North of SW 8th Street, land uses along SW 137th Avenue are primarily industrial. SW 137th Avenue currently ends at the Rinker Company where sand is shipped to construction sites.

Observed Conditions

SW 137th Avenue carries heavy northbound traffic during the morning peak period and southbound during the afternoon peak period through the study area. Drainage problems were observed during the field visits between Kendall Drive and Coral Way in both directions along SW 137th Avenue, adding to the demand placed on this facility. On rainy days, the right lanes in both directions are completely flooded, causing the facility to operate as a two-lane divided facility.

Delays observed at the intersection of Kendall Drive and SW 137th Avenue were mainly due to heavy traffic on both arterials, with Kendall Drive carrying higher volumes. During the PM peak period, the southbound to westbound right turn forms a queue that extends to SW 79th Street. Cars were observed to turn right at SW 84th Street, enter the shopping center located at the northwest corner of the intersection and exit on Kendall Drive west of the intersection.

Delays observed at the intersection of SW 137th Avenue and Miller Drive (SW 56th Street) are mainly due to the crossing of two major arterials with heavy flow during the peak hours and insufficient capacity on Miller Drive. A similar situation was observed at the intersection of SW 137th Avenue and Bird Road. At that intersection, commuter traffic patterns for the morning peak period produce a heavy volume for the right turn movement northbound to eastbound at SW 137th Avenue and SW 8th Street. The queue for that movement was observed to back up to SW 11th Street. Although that movement is not controlled by a signal, the heavy eastbound movement on SW 8th Street prevents drivers from making the right turn from SW 137th Avenue. Drivers avoid this movement by making a left turn into the shopping center on the southwest corner of the intersection, cutting through the parking lot, and exiting the shopping center onto SW 8th Street westbound west of SW 137th Avenue. The queue reaches SW 142nd Avenue during the morning peak period. Queues, with minimum of ten vehicles, were observed at each of the multiple access points to the shopping center. The average waiting time before entering SW 8th Street from any of the shopping center access was observed to be four minutes.

A similar situation was observed during the afternoon peak period for the westbound to southbound left turn movement from SW 8th Street. Storage capacity for this left turn is

insufficient. Drivers trying to avoid the lengthy wait traveled westbound on SW 8th Street, then northbound, make a left turn into the shopping center, and finally exit the shopping center on SW 137th Avenue south of the intersection. This is illustrated on Figure 4.1.

Minimum northbound through traffic was observed on 137th Avenue at SW 8th Street. Signal phasing allowing northbound and southbound movements to occur simultaneously would allow sufficient time for the northbound to westbound movement. Additional capacity should be provided on SW 137th Avenue north of SW 8th Street for buses coming out of the maintenance yard, and trucks from the Rinker Company. On this two-lane road, trucks and buses are unable to make the westbound to northbound right turn from SW 8th Street without the use of both lanes, creating conflicts for the westbound SW 8th Street through movement as well as the southbound traffic on SW 137th Avenue.

Future proposed improvements for this area include the extension of SR 836 to SW 137th Avenue, widening of SW 137th Avenue to six lanes from SW 8th Street to the SR 836 extension and construction of NW 12th Street. The SR 836 Extension will greatly increase traffic volumes along SW 137th Avenue. Necessary provisions should be taken now at the intersection on SW 137th Avenue and SW 8th Street to provide adequate capacity, intersection improvements or grade separation, for the future.

Recommended Improvements

Table 4.1 shows the transportation deficiencies, applicable corrective strategies/techniques and recommended actions at each of the congested location on SW 137th Avenue. Based on the field observation, and additional lane is warranted along Miller Drive north and south of SW 137th Avenue. However, that area is built out and all of the available right-of-way seems to have used for roadway improvements. Right-of-way acquisition along Miller Drive may reveal to be infeasible due to costs and community impact. An alternate solution would be to provide exclusive eastbound and westbound right turns on Miller Drive at SW 137th Avenue. Some right-of-way would still be needed to accommodate the additional turn lanes.

FIGURE 4.1
Traffic Patterns at SW 137th Avenue and SW 8th Street

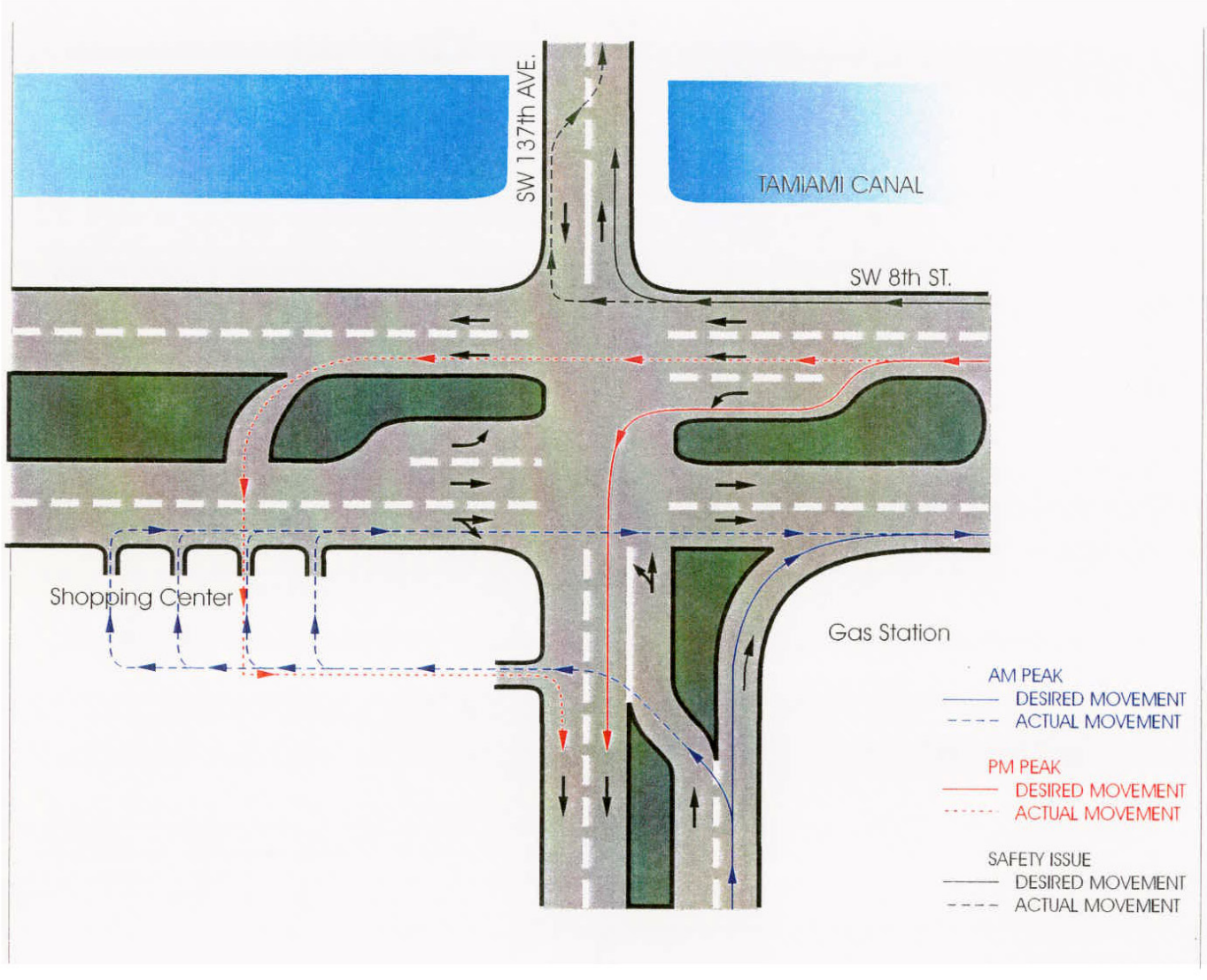


Table 4.1
SW 137th Avenue (From SW 88th Street to NW 10th Street)
Recommended Strategies for Traffic Flow Improvements

	Problem Location	Transportation Deficiency	Corrective Strategy/Technique	Potential Implementation Problem	Recommended Actions
1.	SW 137th Avenue @ Kendall Drive	• Insufficient capacity for southbound to westbound RT during the PM peak period	• Signs on SW 137th Ave. encouraging the use of SW 84th St. and SW 142nd Ave. as an alternate route, and access to the shopping center through SW 84th St. (1)		• Same as corrective strategy/technique
		• Crossing of two major arterials	• Grade Separation (2)	• Right-of-way	• Coordinate with Major Improvement Study
		• Insufficient capacity on SW 137th Avenue during the peak periods	• Provide new lanes on SW 137th Avenue from Kendall Drive to Bird Road (3)	• Right-of-way	• Same as corrective strategy/technique
		• Drainage problems on SW 137th Avenue north of Kendall Drive	• Provide adequate drainage (4)		
2.	SW 137th Avenue @ Miller Drive	• Insufficient capacity on Miller Drive causing delays on 137th Avenue during peak hours.	• Provide additional through lanes on Miller Drive (5)	• Right-of-way	• Detailed analysis based on actual traffic counts needs to be performed.
		• Drainage problems on SW 137th Avenue	• Provide adequate drainage (6)		• Same as corrective strategy/technique

Note: These recommendations were based on field observations only. Detailed analyses are required before final recommendations

Table 4.1 (Continued)
SW 137th Avenue (From SW 88th Street to NW 10th Street)
Recommended Strategies for Traffic Flow Improvements

	Problem Location	Transportation Deficiency	Corrective Strategy/Technique	Potential Implementation Problem	Recommended Actions
3.	SW 137th Avenue @ Miller Drive	• Insufficient capacity southbound to eastbound LT during the PM peak period	• Increase length of storage bay (7)		• Detailed geometry analysis needs to be performed.
4.	SW 137th Avenue @ Bird Road	• Delays due to crossing of two major arterials with heavy flow during the peak periods	• Increase number of through lanes on Bird Road (8)	• Right-of-way • Environmental problems due to the canal on the south side of Bird Road	• Detailed geometry, traffic counts, and signal timing and phasing analyses need to be performed.
		• Friction due to numerous access points north of Bird Road on southbound SW 137th Ave.	• Driveway consolidation (parking lots are already connected) (9)	• Opposition from business owners	• Same as corrective strategy/technique
4.	SW 137th Avenue between Coral and SW 8th Street	• Drainage problems	• Provide adequate drainage (10)		• Same as corrective strategy/technique
5.	SW 137th Avenue @ 8th Street	• Delays on SW 137th Ave. due to heavy volumes on SW 8th St. Heavy northbound to eastbound and westbound to southbound delays during the AM and PM peak periods, respectively	• Widen 8th Street west of SW 127th Avenue (11) • Increase length of storage bay for westbound to southbound left turn (12) • Connect SW 6th Street to SW 137th Avenue to provide alternate route to SW 8th Street (13)	• Community opposition	• Same as corrective strategy/technique

Note: These recommendations were based on field observations only. Detailed analyses are required before final recommendations

Table 4.1 (Continued)
SW 137th Avenue (From SW 88th Street to NW 10th Street)
Recommended Strategies for Traffic Flow Improvements

	Problem Location	Transportation Deficiency	Corrective Strategy/Technique	Potential Implementation Problem	Recommended Actions
	SW 137th Avenue @ 8th Street		• Grade separation (14) (Interim improvement : provide overlap phasing for the north-south movements)	• Right-of-way • Opposition from business owners	
		• High percentage of trucks and school buses. Bridge is not wide enough to accommodate heavy vehicles	• Widen bridge on SW 137th Avenue north of SW 8th Street (15)	• Environmental problems	• Detailed geometry analysis needs to be performed
		• Insufficient capacity on SW 137th Avenue during peak periods	• Provide additional lanes on SW 137th Avenue from Coral Way to SW 8th Street (16)	• Right-of-way	• Detailed analysis needs to be performed
		• Delays due to toll plaza on Turnpike's ramp	• Improve toll collection through the installation of AVI (Automatic Vehicle Identification) (17)		• Coordinate with the Tunpike authorities

Note: These recommendations were based on field observations only. Detailed analyses are required before final recommendations

4.2.2 SW 117th Avenue

Existing Geometry

SW 117th Avenue is north-south arterial extending from Quail Roost Drive to SW 8th Street, with the exception of the unbuilt section between SW 168th Street and SW 152nd Street (Coral Reef Drive). It is a five-lane facility from the Turnpike to Sunset Drive (SW 72nd Street), changing to a four-lane divided facility from Sunset Drive to Bird Road, and a two-lane undivided facility from Bird Road to SW 8th Street. SW 117th Avenue runs parallel to the Turnpike, providing an alternate route to this major freeway for commuters living and/or working in southwest Dade County.

Observed Conditions

Delays observed on SW 117th Avenue from Kendall Drive to the Turnpike northbound off ramp are mainly due to insufficient capacity on the cross streets (Sunset Drive, Miller Drive, and Bird Road), and conflicts between heavy traffic flow on both the cross-streets and SW 117th Avenue.

Toll plaza operation and access ramps to and from the Turnpike also contribute to congestion on SW 117th Avenue near Bird Road. The Turnpike northbound-off ramp is located on SW 117th Avenue within a short distance just south of Bird Road. A combination of short spacing between signals and heavy traffic flow prevents drivers exiting the Turnpike to make necessary lane changes to reach Turnpike's ramps, stay on SW 117th Avenue, and turn on Bird Road. Moreover, additional lane usage indicator signs are needed on northbound SW 117th Avenue south of SW 40th Street (Bird Road) to allow drivers on SW 117th Avenue ample time to make necessary lane changes. Some drivers find themselves trapped in the wrong lane, one of which leads to the Turnpike northbound on-ramp. The additional signs placed further ahead of the intersection would eliminate unnecessary conflict points at the intersection, increasing traffic flow.

From the Turnpike northbound off ramp to SW 8th Street, SW 117th Avenue does not have the capacity to meet the demand during peak periods. During morning peak hours, delays due to the toll plaza on the Turnpike northbound cause the northbound on-ramp to back up, forming a queue that spills over on SW 117th Avenue. SW 117th Avenue is also used by commuters to avoid the toll plaza located on the Turnpike just north of Bird Road. Drivers avoiding the toll plaza proceed on SW 117th Avenue to SW 8th Street, make a left turn onto SW 107th Avenue to the SR 836 eastbound on-ramp. Increasing capacity on SW 117th Avenue will encourage drivers to use this alternate route causing loss of revenue for the Turnpike. Although one of the recommendations is to widen SW 117th Street north of Bird Road, the impact of this widening on toll plaza revenues should also be taken into consideration.

SW 117th Avenue is also used by students entering the Florida International University (FIU) campus located on SW 117th Avenue at SW 17th Street. The heavy volume of FIU students and through traffic on SW 117th Avenue cause a queue to form on SW 117th Avenue northbound that moves at 5 MPH during the peak hours. The excessive demand placed on this facility is aggravated with numerous traffic lights in this section of the road, causing further delays for the commuter.

Proposed plans for the Turnpike toll plaza include relocating the mainline toll plaza further south (closer to Miller Drive), and new toll facilities at the Bird Road northbound on-ramp. Improvements to the Turnpike northbound on-ramp include a two-lane ramp, with an additional 1,000 feet of storage from the existing layout. This would increase the storage capacity for the northbound on ramp and may help alleviate the congestion on SW 117th Avenue. The northbound off-ramp will remain at its present location, south of Bird Road.

Recommended Improvements

Table 4.2 shows a summary of the transportation deficiencies, corrective strategies/techniques applicable, and recommended actions at each problem location for SW 117th Avenue.

Table 4.2
SW 117th Avenue (From SW 88th Street to SW 8th Street)
Recommended Strategies for Traffic Flow Improvements

	Problem Location	Transportation Deficiency	Corrective Strategy/Technique	Potential Implementation Problem	Recommended Actions
1.	SW 117th Ave. @ Kendall	• Delays due to crossings of two major arterials	• Improvements to Kendall Drive to be coordinated with the proposed Major Improvement Study (18)		• Same as corrective strategy/technique
2.	SW 117th Avenue @ 7700 Block	• Traffic signals spaced too close together.	• Signal timing coordination (19)		• Same as corrective strategy/technique
3.	SW 117th Avenue @ Sunset Drive	• Insufficient capacity on Sunset Drive causing delays on 117th Ave. during peak hours.	• Provide additional through lanes on Sunset Drive (20)	• Right-of-way	• Detailed analysis based on actual traffic counts and available right-of-way needs to be performed.
4.	SW 117th Avenue @ Miller Drive	• Insufficient capacity on Miller Drive	• Provide additional lanes on Miller Drive (21)	• Right-of-way	• Detailed analysis based on actual traffic counts and available right-of-way needs to be performed.

Note: These recommendations were based on field observations only. Detailed analyses are required before final recommendations

Table 4.2 (Continued)
SW 117th Avenue (From SW 88th Street to SW 8th Street)
Recommended Strategies for Traffic Flow Improvements

	Problem Location	Transportation Deficiency	Corrective Strategy/Technique	Potential Implementation Problem	Recommended Actions
5.	SW 117th Avenue from Turnpike northbound off-ramp to SW 8th Street	• Delays due to exiting traffic from Turnpike northbound-off ramp	• Relocate ramp further south (22)	• Cost • Environmental problems • Community opposition	• Detailed analysis to quantify number of vehicles bypassing Toll Plaza
		• Delays due to friction caused by improper lane usage indicator signs	• Improve signage on SW 117th Avenue south of SW 40th Street (23)		• Coordinate with proposed improvements at Toll Plaza
		• Delays due to crossing of two major arterials at Bird Road with heavy flow during the peak periods.	• Widen Bird Road west of SW 117th Avenue (24)	• Right-of-way • Environmental problems due to the canal on the south side of Bird Road	
		• Delays due to Turnpike northbound on-ramp and mainline Toll Plaza	• Incorporate Turnpike improvements • Provide Automatic Vehicle Identification on future ramps (26)		
		• Insufficient capacity on SW 117th Avenue	• Provide additional lanes on SW 117th Avenue (27)	• Community opposition • Turnpike opposition due to potential loss of revenue	

Note: These recommendations were based on field observations only. Detailed analyses are required before final recommendations

4.2.3 SW/NW 107th Avenue

Existing Geometry

SW 107th Avenue is a north-south major arterial extending from Quail Roost Drive to NW 41st Street to the north, with an unbuilt section between SW 160th Street to SW 104th Street. SW 107th Avenue is a five-lane (with a continuous left turn lane) facility from Kendall Drive to Bird Road, widening to a six-lane divided facility from Bird Road to SW 8th Street. SW 107th Avenue narrows down to a four-lane divided facility from SW 8th Street to NW 41st Street, and to a two-lane undivided facility to NW 58th Street.

Observed Conditions

Delays observed on SW 107th Avenue from Kendall Drive to SW 8th Street are mainly due to crossing of two major arterials with heavy volumes during the peak periods and insufficient capacity on the cross streets.

Very high levels of congestion were observed during the field visits on this facility between SW 8th Street and SR 836. SW/NW 107th Avenue is used in that segment as a bypass route to access and/or exit SR 836 by commuters avoiding the Turnpike Toll Plaza located at Bird Road, and by residents of the surrounding neighborhoods (Sweetwater, Fountainbleau Park). The congestion on SW 107th Avenue is also due to the current lack of north-south arterials crossing SR 836. In much of southwest Dade continuous arterials exist at the one-mile section lines. However, in the case of SW/NW 107th Avenue and SW/NW 87th Avenue between SW 8th Street and NW 36th Street, continuity is offered only at the two-mile section line, placing a demand on this facility that is much greater than the actual capacity. The proposed improvements by the County to improve SW/NW 97th Avenue, include widening and an overpass at SR 836. Other factors influencing the high levels of congestion observed are: slow speed zones for the two schools in the area of SW 107th Avenue and SW 4th Street, the opening of the new FIU campus on SW 107th Avenue and Flagler Street, the high number of businesses along the arterial, and the high population density resulting from numerous apartment buildings and condominiums. At present, FIU is not holding regular classes in this campus, however this fact will change in the near future, placing further demands on SW 107th Avenue.

SW 109th Avenue is used as an alternate route to SW 107th Avenue between SW 8th Street and NW 7th Street during the peak hours, creating very heavy eastbound to northbound left-turn volumes at the intersections of SW 107th Avenue and Flagler Street and SW 107th Avenue and NW 7th Street (Fontainbleau Boulevard).

Between SR 836 and NW 25th Street, the facility has insufficient capacity to meet the demand. Truck traffic accounts for approximately 15 percent of the total traffic volume in the area. As part of the Beacon TradePort development, NW 107th Avenue will be widened to six lanes from NW 12th Street to NW 27th Street. It is expected that the intersection of NW 107th Avenue and NW 41st Street will be one of the busiest intersections in Dade County in the next 10 years, due to an increase in residential, commercial, and industrial land use in that area.

Recommended Improvements

Table 4.3 shows a summary of the transportation deficiencies, corrective strategies/techniques applicable, and recommended actions at each problem location for SW 107th Avenue. Based on the field observation, and additional lane is warranted along Sunset Drive (SW 72nd Street) north and south of SW 107th Avenue. However, that area is built out and all of the available right-of-way seems to have used for roadway improvements. Right-of-way acquisition along Sunset Drive may reveal to be infeasible due to costs and community impact. An alternate solution would be to provide exclusive eastbound and westbound right turns on Sunset Drive at SW 107th Avenue. Some right-of-way would still be needed to accommodate the additional turn lanes.

Table 4.3
NW/SW 107th Avenue (From SW 88th Street to NW 41st Street)
Recommended Strategies for Traffic Flow Improvements

	Problem Location	Transportation Deficiency	Corrective Strategy/Technique	Potential Implementation Problem	Recommended Actions
1.	SW 107th Avenue @ Sunset Drive	• Insufficient capacity on Sunset Drive east and west of SW 107th Avenue	• Provide exclusive right turn lanes eastbound and westbound (28)	• Eastbound right turn lane maybe accommodated by moving existing bus stop further west • Westbound right turn would require right-of-way acquisition	• Detailed analysis based on actual traffic counts needs to be performed • Coordination with MDTA for bus stop relocation
2.	SW 107th Avenue @ Miller Drive	• Moderate delay on Miller Drive east and west of SW 107th Avenue	• Provide exclusive eastbound to southbound and westbound to northbound right turn lanes (29)	• Additional right-of-way may be required	• Detailed analysis based on actual traffic counts needs to be performed
3.	SW 107th Avenue @ Bird Road	• Delay due to crossing of two major arterials with heavy flow during peak periods	• Provide grade separation (30)	• Right-of-way • Opposition from business owners	• Detailed geometry analysis needs to be performed
4.	SW 107th Avenue @ Coral Way	• Heavy Eastbound to northbound left turn movement in the morning peak period	• Additional storage capacity for the left turn movement (31)		• Detailed analysis based on current counts and signal timings needs to be performed
5.	SW 107th Avenue between SW 8th Street and Flagler Street	• Conflicting Turning Movements	• Prohibit left turns except at Flagler, 8th St., and 4th Street during peak hours (32)		• Detailed traffic and geometry analysis needs to be performed.

Note: These recommendations were based on field observations only. Detailed analyses are required before final recommendations

Table 4.3 (Continued)
NW/SW 107th Avenue (From SW 88th Street to NW 41st Street)
Recommended Strategies for Traffic Flow Improvements

	Problem Location	Transportation Deficiency	Corrective Strategy/Technique	Potential Implementation Problem	Recommended Actions
	SW 107th Avenue between SW 8th Street and Flagler Street	• Numerous access points within short distance	• Consolidate driveways between shopping centers (33) • Provide access to shopping centers from side streets only (34)	• Community opposition	• Coordinate with the 107th Avenue Arterial Investment Study and proposed PD&E study
		• Insufficient capacity	• Add new lanes on SW 107th Avenue (35) • Widen bridge over Tamiami Canal (36)	• Right-of-way	
			• Provide dual left turn at Flagler (eastbound to northbound) **or** restripe to allow left turn from inside through lane (37)	• Right-of-way needs to be acquired to add left turn lane.	
			• Resurface SW109th Avenue. and encourage SW 109th Avenue as an alternate route between SW 8th Street and NW 7th Street (38) • Shuttle service between FIU campuses (39) • Bicycle path (40)	• Community opposition since 109th Avenue goes through residential area and dead ends at NW 7th Street.	
		• School Zone	• Provide additional access to school directly from SW 8th Street (41)	• Requires canal crossing and going through residential neighborhood.	

Note: These recommendations were based on field observations only. Detailed analyses are required before final recommendations

Table 4.3 (Continued)
NW/SW 107th Avenue (From SW 88th Street to NW 41st Street)
Recommended Strategies for Traffic Flow Improvements

	Problem Location	Transportation Deficiency	Corrective Strategy/Technique	Potential Implementation Problem	Recommended Actions
6.	NW 107th Avenue between Flagler Street and SR 836	• Insufficient capacity • Conflicting turning movements	• Add new lanes on SW 107th Avenue (42) • Improve intersection at NW 7th Street and NW 107th Avenue to accommodate rerouted traffic (increase se storage length, improve signal timing) (43) • Provide dual lefts from freeway eastbound off-ramp (44)	• Provision of dual LT should be coordinated with proposed PD&E study.	• Detailed traffic and right-of-way analyses need to be performed
7.	NW 107th Avenue between SR 836 and NW 25th Street	• Insufficient capacity • Truck percentage for the area is 15%	• Add new lanes on NW 107th Avenue (45) • Prohibit trucks during peak hours (46)	• Right-of-way • Opposition from business owners and truck operators.	• Coordinate with Beacon TradePost Center being developed in the area.
8.	NW 107th Avenue from NW 25th Street to NW 41st Street	• Insufficient capacity	• Increase number of lanes on NW 107th Avenue (47)	• Right-of-way would need to be acquired	• Coordinate with Public Works in order to obtain necessary right-of-way from future developments.
9.	NW 107th Avenue @ NW 41st Street	• Crossing of two major arterials	• Provide grade separation (48)	• Right-of-way	• Detailed geometry analysis needs to be performed
10.	NW 107th Avenue north of NW 41st Street	• Lack of continuity	• Provide connectivity to NW 103rd Street (49) • Use design criteria for Superarterial on new segments (50)	• Right of way would need to be acquired to add new segments	• Coordinate with Public Works in order to obtain necessary right-of-way from future developments. • Detailed study needs to be conducted to measure impacts to surrounding roadways

Note: These recommendations were based on field observations only. Detailed analyses are required before final recommendations.

4.2.4 SW 40th Street (Bird Road)

Existing Geometry

SW 40th Street (Bird Road) runs east-west and extends from SW 157th Avenue to SW 27th Avenue. SW 40th Street is a two-lane facility from SW 157th to SW 147th Avenue, a four-lane divided from SW 147th Avenue to SW 117th Avenue, and a six-lane divided with left turn pockets east of SW 117th Avenue. Land use patterns on Bird Road west of SW 147th Avenue are residential, from SW 147th Avenue to SW 117th Avenue are mixed residential and commercial, and east of SW 117th Avenue are mainly commercial.

Observed Conditions

Major improvements were just completed on Bird Road, increasing overall capacity on this facility. Traffic flows smoothly, except at the intersection of SW 117th Avenue and Bird Road, and east of SW 102nd Avenue. The heavy traffic volumes east of SW 102nd Avenue are due to commuters accessing SR 826. This congestion can be alleviated by providing alternate north-south routes to SR 826 between SW 107th Avenue and SR 826. Existing north-south routes include SW 117th Avenue, SW 107th Avenue and SW 87th Avenue. SW/NW 97th Avenue will be extended in the future over SR 836 and will provide an alternate route to SR 826, potentially diverting some traffic from Bird Road. To provide an alternate route to SR 826, SW 97th Avenue should be extended to NW 41st Street, at a minimum. Other arterials, such as SW 102nd Avenue, would not appear suitable for widening since they transverse residential areas and do not provide continuity north of SR 836. Other factors adding to the congestion on Bird Road include numerous driveways and school zones. The implementation of pedestrian friendly treatments would help reduce congestion in this corridor.

Recommended Improvements

Table 4.4 shows a summary of the transportation deficiencies observed in the field and the recommended corrective actions.

Table 4.4
SW 40th Street (Bird Road) (From SW 87th Avenue to SW 157th Avenue)
Recommended Strategies for Traffic Flow Improvements

	Problem Location	Transportation Deficiency	Corrective Strategy/Technique	Potential Implementation Problem	Recommended Actions
1.	SW 40th from SW 87th Avenue to SW 102nd Avenue	• Delays due to crossing of SW 87th Avenue and SW 40th Street	• Provide alternate route to SR 826 (51) • Provide continuity on crossing arterials every 1/2 mile (52) • Provide adequate capacity on crossing arterials to offer alternate routes to SR 826 (34)	• Community opposition	• Studies are needed to evaluate which arterials can be extended north of Bird Road
2.	SW 40th Street @ SW 107th Avenue	• Delay due to crossing of two major arterials with heavy flow during the peak periods	• Provide grade separation (30)	• Right of way • Opposition from business owners	• Detailed geometry analysis needs to be performed
3.	SW 40th from SW 117th Avenue to SW 147th Avenue	• Insufficient capacity	• Widen Bird Road from SW 147th Avenue to SW 117th Avenue (54)	• Right-of-way and environmental problems	• Same as corrective strategy/technique

Note: These recommendations were based on field observations only. Detailed analyses are required before final recommendations

4.2.5 SW 8th Street (Tamiami Trail)

Existing Geometry

SW 8th Street (Tamiami Trail) extends east-west throughout Dade County. Within Transportation Area 4, SW 8th Street is a four-lane divided facility from SW 177th Avenue (Krome Avenue) to SW 127th Avenue, and a six-lane divided facility from SW 127th Avenue to SW 107th Avenue. Land use along this facility is primarily commercial, and includes numerous shopping centers with multiple access points to the arterial. The Tamiami Canal in located on the north side of SW 8th Street, running along this major arterial for most of its length.

Observed Conditions

The section on SW 8th Street between Krome Avenue and SW 137th Avenue is expected to be one of the busiest corridors ten years from now. Sufficient ROW should be acquired now to accommodate future transportation needs, whether those needs will be an overpass, a continuous flow intersection, or a standard intersection with multiple turn and through lanes in all directions. The lack of right-of-way at many of the intersections from SW 137th Avenue to SW 107th Avenue prevents the implementation of many of the superarterial treatments which are needed.

High levels of congestion were observed on this arterial from SW 142nd Avenue to the ramps to and from the Turnpike during peak periods. During the AM peak period, queues of eastbound commuters start building on SW 8th Street from SW 142nd Avenue and continue for approximately 2 miles up to the Turnpike ramps. The main factor contributing to the congestion level is the heavy volume of commuters accessing the Turnpike ramps. These ramps are tolled and cause traffic to back-up onto SW 8th Street. Provision for electronic toll collection, which is planned for the near future, will help alleviate congestion on SW 8th Street as vehicles are processed faster at the toll plaza. Another factor contributing to the congestion in this area is the inadequate capacity of the cross streets causing high levels of frustration and unsafe driving maneuvers. At the intersection of SW 107th Avenue and SW 8th Street, delays are mainly caused to the crossing of two major arterials with heavy volume of cars during the peak periods. Travel patterns are reversed for this corridor for the PM peak period, however the same factors contribute to the congestion observed during the afternoon peak period.

Future proposed improvements that will have direct impact on this facility include the extension of SR 836 to SW 137th Avenue, widening of SW 137th Avenue to six lanes and construction of NW 12th Street. The SR 836 extension will greatly increase traffic volumes along SW 137th Avenue north of SW 8th Street. Necessary provisions should be taken now to provide adequate capacity (i.e., grade separation) for the future at the intersection on SW 137th Avenue and SW 8th Street. The County is also planning the widening of SW 8th Street west of SW 127th Avenue from a four-lane to a six-lane facility.

The unique geometry of SW 8th Street, due to the canal along the north side of the arterial and the travel patterns along this arterial, lends itself to the application of continuous green lanes or turbo lanes. Turbo lanes are signalized T-intersections where one or more through lanes are not

stopped when the side-street left turn signal phase is active. The implementation of turbo lanes is generally regarded as undesirable due to safety concerns. However, when certain conditions are present, the appropriate design criteria can be implemented in order to minimize safety problems and provide significant operational benefits. Several factors will determine the operational benefits of turbo lanes, such as heavy arterial volumes, heavy side-street volumes, and the volume of left turns from the side street. This is an important consideration, since a condition of moderate to heavy left turn volumes from the side-streets and heavy arterial volumes is usually not conducive to the successful implementation of turbo lanes. Conditions on SW 8th Street are favorable to the application of turbo lanes on several sections of this facility, due to travel flow characteristics and commuter travel patterns along this corridor. Detailed analyses need to be performed to assess the operational benefits of turbo lane implementations.

Recommended Improvements

Table 4.5 shows a summary of the transportation deficiencies observed in the field and the recommended corrective actions.

Table 4.5
SW 8th Street (From SW 107th Avenue to SW 177th Avenue)
Recommended Strategies for Traffic Flow Improvements

	Problem Location	Transportation Deficiency	Corrective Strategy/Technique	Potential Implementation Problems	Recommended Actions
1.	SW 8th Street @ SW 107th Avenue	• Delays due to crossing of two major arterials with heavy flow during peak periods	• Widen SW 107th Avenue north of SW 8th Street (35) • Widen bridge over Tamiami Canal (36)	• Right-of-way • Community opposition	
2.	SW 8th Street from Turnpike to SW 137th Avenue	• Access to shopping centers	• Consolidate access to shopping centers (55)	• Community and business opposition	• Detailed study is recommended to measure the impacts of access management. • Coordinate with business owners and show potential benefit to traffic circulation and safety
		• Insufficient storage for access to Florida Turnpike	• Reduce queue by increasing number of tollbooth and/or provide AVI at tollbooths (56)		• Coordinate with the Turnpike on AVI implementation
		• Inadequate capacity for westbound vehicles making a left turn at SW 122nd Avenue during the PM peak period	• Increase length of westbound to southbound left turn storage bay (57)		• Same as corrective action

Note: These recommendations were based on field observations only. Detailed analyses are required before final recommendations

Table 4.5 (Continued)
SW 8th Street (From SW 107th Avenue to SW 177th Avenue)
Recommended Strategies for Traffic Flow Improvements

	Problem Location	Transportation Deficiency	Corrective Strategy/Technique	Potential Implementation Problems	Recommended Actions
3.	SW 8th Street @ SW 127th Avenue	• Conflicts due to absence of drop warning signs	• Provide sign on SW 8th Street westbound indicating right lane drop at the intersection (58)		• Same as Corrective strategy/technique
4.	SW 8th Street @ SW 132nd Avenue	• Delays on cross streets due to heavy volume on SW 8th Street	• Provide enforcement to prevent traffic from blocking intersections along SW 8th Street (59)		
		• Inadequate capacity for traffic wanting to access two major schools on SW 6th Street between SW 129th and SW 127th Avenue during the AM peak period	• Widen bridge at SW 132nd Avenue north of SW 8th Street (60) • Connect SW 6th Street to SW 137th Avenue to provide additional access to schools and residences (13)	• Implementation Cost • Opposition from residential community	• Detailed studies are recommended to measure environmental and other impacts
		• Inadequate capacity for northbound to eastbound right turn lane during the AM peak period	• Relocate bus stop from near SW 8th Street to mid-block on SW 132nd Avenue (61) • Extend E/W LT bays (62)		• Same as corrective action

Note: These recommendations were based on field observations only. Detailed analyses are required before final recommendations

Table 4.5 (Continued)
SW 8th Street (From SW 107th Avenue to SW 177th Avenue)
Recommended Strategies for Traffic Flow Improvements

	Problem Location	Transportation Deficiency	Corrective Strategy/Technique	Potential Implementation Problems	Recommended Actions
4.	SW 8th Street at SW 137th Avenue	• Delays on cross street due to heavy volumes on SW 8th Street. Heavy northbound to eastbound and westbound to southbound delays during the AM and PM peak periods, respectively	• Widen 8th Street west of SW 127thAvenue (11) • Increase storage of westbound to southbound left turn (12) • Connect SW 6th Street to SW 137th Avenue (13) • Access management • Grade separation (14) (interim improvement: provide overlap phasing for the NB to westbound movement)	• Community opposition • Opposition from business owners	• Same as corrective action
		• High percentage of trucks and school buses. Bridge is not wide enough to accommodate heavy vehicles.	• Widen bridge on SW 137th Avenue (15)	• Environmental problems	• Detailed geometry analysis needs to be performed
		• Delays due to Toll Plaza	• Improve toll collection through the installation on AVI (Automatic Vehicle Location) (63)		

Note: These recommendations were based on field observations only. Detailed analyses are required before final recommendations

4.2.6 Area Wide Improvements

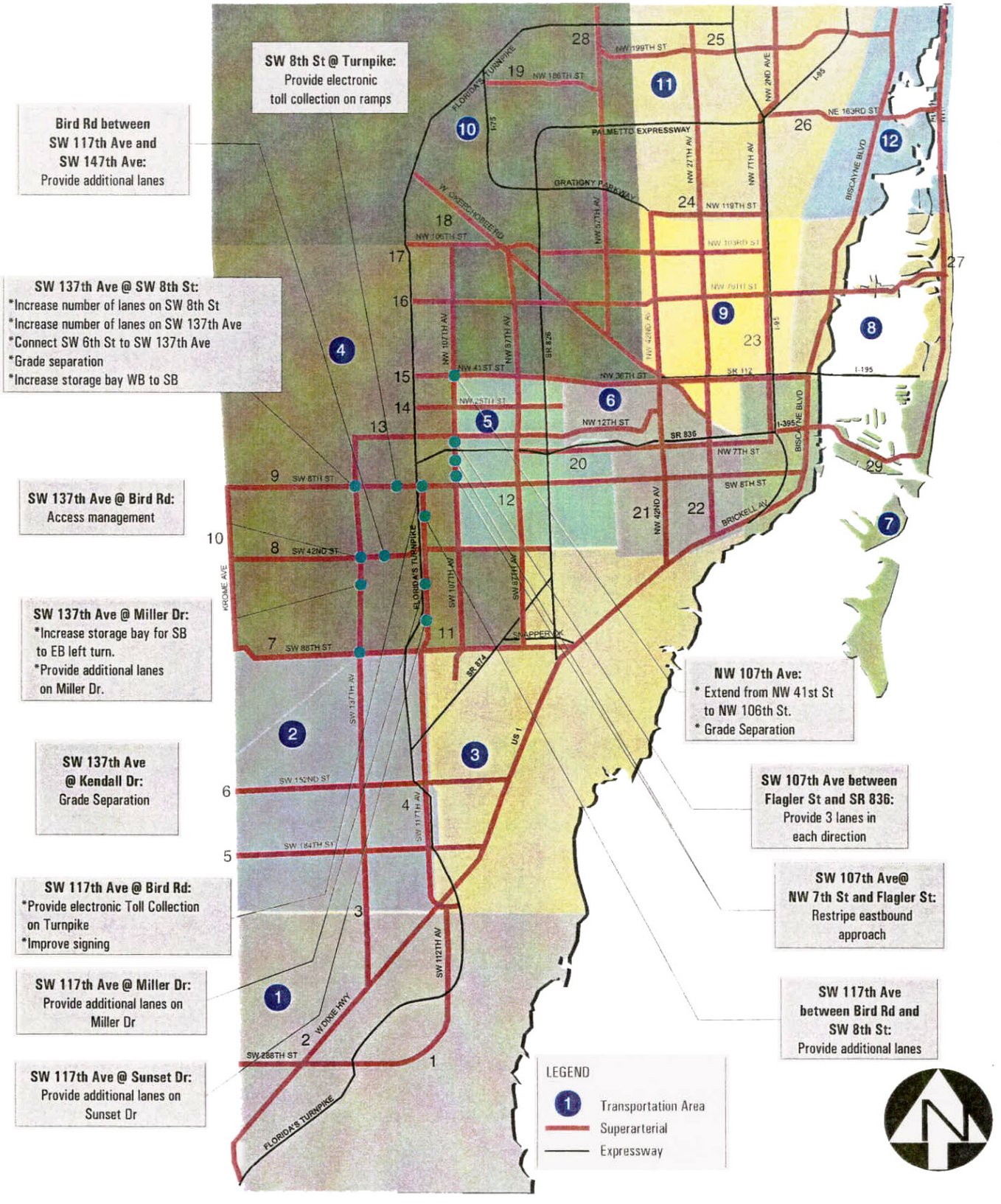
Table 4.6 shows some of the recommended improvements to alleviate and or manage congestion throughout Transportation Area 4. These improvements are of a multimodal nature and encourage other modes of travel such as bicycles and walking. Figure 4.2 shows some of the recommended improvements for Transportation Area 4.

Table 4-6
Strategies for Area Wide Traffic Flow Improvements

Corrective Strategy/Technique	Recommended Actions
• Encourage alternate modes of transportation (carpool and bicycles) • Provide continuous walkways for pedestrian and bicycle use • Pedestrian friendly amenities connecting contiguous shopping areas • Use shopping centers and employment centers for transit stops	• Coordinate with the Bicycle/Pedestrian Coordinator to promote use of these alternate modes within the area
• Provide shuttle between FIU campuses • Provide shelters and bicycle storage facilities at bus stops • Bus bays • Exclusive right-turn lanes • Right turn green arrows during the complimentary left turn movement to increase right turn capacity when U-turn form the left turn can be sacrificed	• Coordinate with MDTA and FIU to investigate the feasibility and development of such programs

4.3 Regional Impacts

The recommended improvements were tested using the validated regional model from the Metropolitan Planning Organization. The 1990 and 2010 base models were obtained from the MPO and used to provide information on traffic patterns and volumes without the recommended improvements. The model was then modified to incorporate some of the improvements. Table 4.7 shows the changes made to the networks in an effort to reflect the proposed improvements.



PREPARED FOR:
DADE COUNTY METROPOLITAN PLANNING ORGANIZATION

BY:
PARSONS BRINCKERHOFF QUADE & DOUGLAS

SUPERARTERIAL NETWORK STUDY
ARTERIAL IMPROVEMENTS

Figure 4.2

Table 4-7
Recommended Action for Testing of Proposed Improvements

	Type of Recommended Improvement	Recommended Model Adjustment
1.	Exclusive right turn lanes	• Only allow through movement at the intersections and provide separate link for right turns.
2.	Grade separation	• Provide exclusive link for separated movement
3.	Access Management	• Adjust default capacity based on reduce number of curb cuts and/or signals.
4.	Additional lanes	• Adjust number of lanes in network
5.	Additional link	• Provide additional link in network
6.	Implement AVI at Toll booths	• Reduce service time in TOLLLINK card • Increase the number of toll booths to represent processing rate with AVI • Update toll configuration in TOLLLINK card
7.	Bridge widening	• Increase number of lanes on bridge
8.	Increase storage length and/or Provide exclusive left turn lanes	• Add link where only left turns would be allowed and prohibit left turns from link representing through movements.
9.	Relocate or provide exclusive bus bays	• Increase capacity based on projected increase from previous studies.

The model results show that throughput would increase by as much as 17 percent based on 1990 conditions on the arterials north of NW 40th Street. This increase would however be as low as one percent in 2010 due to the projected land use density in the region. By 2010, throughput would increase by as much as 10 percent on the arterials north of SW 8th Street as can be seen in Table 4.8. Volumes would remain unchanged on the east-west arterials. This was expected since most of the capacity improvements were considered on the north-south roadways.

Table 4.9 shows no changes in overall vehicle miles and vehicle hours traveled. However, further analysis of the results show a small shift from freeways to arterials as a result of the increased capacity on the arterials. The 2010 analysis shows an expected reduction in total delay due to congestion of approximately 8,000 vehicle-hours.

Table 4-8
Comparison of Peak Season Weekday Average Daily Traffic

	1990 Conditions			2010 Conditions		
Link	**Base Model**	**Modified**	**% Change**	**Base Model**	**Modified**	**% Change**
North of NW 40th Street						
Turnpike	189	159	-16%	1,481	1,507	2%
NW 107th Avenue	-	164	100%	261	261	0%
NW 97th Avenue	78	52	-33%	173	175	1%
Average % Change			**17%**			**1%**
North of SR 836						
Turnpike	189	159	-16%	1,435	1,450	1%
NW 117th Avenue	-	-	0%	181	237	31%
NW 107th Avenue	406	466	15%	561	570	2%
NW 97th Avenue	261	271	4%	233	234	0%
Average % Change			**1%**			**9%**
North of Tamiami Trail						
NW 137th Avenue	32	32	0%	355	447	26%
Turnpike	769	770	0%	1,822	1,903	4%
NW 107th Avenue	289	291	1%	487	521	7%
NW 97th Avenue	267	269	1%	463	479	3%
Average % Change			**0%**			**10%**
North of Bird Road						
NW 137th Avenue	153	145	-5%	457	485	6%
SW 127th Avenue	122	119	-2%	297	283	-5%
Turnpike	472	471	0%	1,733	1,781	3%
NW 117th Avenue	140	132	-6%	242	221	-9%
NW 107th Avenue	138	138	0%	378	397	5%
NW 97th Avenue	137	140	2%	369	381	3%
Average % Change			**-2%**			**1%**
East of 137th Avenue						
Tamiami Trail	138	138	0%	538	450	-16%
Coral Way	121	118	-2%	293	298	2%
Bird Road	203	223	10%	349	332	-5%
Miller Drive	206	186	-10%	435	416	-4%
Sunset Drive	181	181	0%	382	396	4%
Average % Change			**0%**			**-4%**
East of Turnpike						
Tamiami Trail	180	180	0%	514	518	1%
Coral Way	252	263	4%	397	396	0%
Bird Road	280	285	2%	513	527	3%
Miller Drive	250	252	1%	336	327	-3%
Sunset Drive	212	212	0%	329	325	-1%
Average % Change			**1%**			**0%**
East of 107th Avenue						
Tamiami Trail	228	210	-8%	445	478	7%
Coral Way	252	259	3%	499	477	-4%
Bird Road	281	289	3%	496	527	6%
Miller Drive	288	285	-1%	360	354	-2%
Sunset Drive	264	265	0%	410	404	-1%
Average % Change			**-1%**			**1%**
Average % Change North-South			5%			6%
Average % Change East-West			0%			-1%

Table 4-9
Comparison of Regionwide Statistics

	1990 Conditions				2010 Conditions			
Link	Base Model	Modified	Difference	% Change	Base Model	Modified	Difference	% Change
Vehicle Miles Traveled								
Freeway	11,047,110	10,984,155	(62,955)	-1%	20,536,777	20,548,832	12,055	0%
Divided Arterials	12,856,497	12,802,051	(54,446)	0%	22,213,254	22,214,394	1,140	0%
Undivided Arterials	6,804,882	6,912,594	107,712	2%	10,041,856	10,091,498	49,642	0%
Collector Streets	3,243,226	3,234,706	(8,520)	0%	4,947,054	4,883,525	(63,529)	-1%
Total	33,951,715	33,933,506	(18,209)	**0%**	57,738,941	57,738,249	(692)	**0%**
Vehicle Hours Traveled								
Freeway	300,065	296,834	(3,231)	-1%	760,040	754,291	(5,749)	-1%
Divided Arterials	466,017	465,072	(945)	0%	1,022,779	1,026,233	3,454	0%
Undivided Arterials	262,993	264,636	1,643	1%	505,270	503,738	(1,532)	0%
Collector Streets	120,389	120,023	(366)	0%	238,475	233,605	(4,870)	-2%
Total	1,149,464	1,146,565	(2,899)	**0%**	2,526,564	2,517,867	(8,697)	**-1%**
Ratio of Volume Over Capacity								
Freeway	0.94	0.94		0%	1.44	1.44		0%
Divided Arterial	1.18	1.18		0%	1.59	1.60		1%
Undivided Arterials	1.04	1.03		-1%	1.51	1.50		-1%
Collector Streets	0.75	0.75		0%	1.29	1.28		-1%
HOV	n/a	n/a		n/a	2.06	2.03		-1%
Total	1.02	1.02		**0%**	1.54	1.51		**0%**
Congested Speeds								
Freeway	37.48	37.53	0	0%	30.54	30.70	0	1%
Divided Arterials	30.15	30.13	(0)	0%	23.97	23.95	(0)	0%
Undivided Arterials	30.32	30.47	0	0%	24.56	24.68	0	0%
Collector Streets	31.46	31.47	0	0%	25.62	25.79	0	1%
HOV	n/a	n/a	n/a	n/a	22.54	22.59	0	0%
Total	31.24	31.30	0	**0%**	25.10	25.18	0	**0%**
Total Delay Due to Congestion (veh-hrs)								
Freeway	65,840	63,865	(1,974)	-3%	266,866	262,452	(4,414)	-2%
Divided Arterials	119,081	119,668	587	0%	424,726	428,098	3,372	1%
Undivided Arterials	72,016	70,806	(1,209)	-2%	225,685	222,694	(2,991)	-1%
Collector Streets	25,786	25,675	(111)	0%	94,703	91,693	(3,010)	-3%
HOV	n/a	n/a	n/a	n/a	65,260	63,675	(1,585)	-2%
Total	282,723	280,015	(2,707)	**-1%**	1,077,240	1,068,613	(8,627)	**-1%**
Miscellaneous Statistics								
Total VHT V/C	1.02	1.02		0%	1.52	1.51		-1%
Total Congested Speed	31.24	31.30		0%	25.10	25.18		0%
Total Fuel Use	2,921,373	2,921,249	(124)	0%	4,890,382	4,889,598	(784)	0%
Total Delay due to Congestion	282,723	280,015	(2,707)	-1%	1,077,240	1,068,613	(8,627)	-1%

5. Conclusion

Implementation of the Superarterial Network concept will not solve the existing and projected congestion problems in Dade County. The concept however shows that a set of arterials specifically designed to enhance mobility would help alleviate some of the congestion in the area.

Testing of the concept showed that a variety of solutions can be applied to the array of problems on our roadways. These solutions often take the shape of "non-traffic" solutions depending of the problem at-hand. During the testing of the concept, field observation showed that some of the congestion problems had sources other than traffic, such as inadequate drainage along SW 137th Avenue.

Because of the diversity of the area chosen for the preliminary testing, a wide range of application can be seen from implementing the Superarterial Network concept. Solutions for both mature and undeveloped areas were identified in areas ranging from exclusively residential to industrial land uses. The testing also showed that the concept can be applied to alleviate existing congestion problems but also as a means to anticipate future problems. A pro-active approach is highly recommended to reserve the right-of-way necessary for future transportation needs. One example would be the intersection of NW 107th Avenue and NW 41st Street, which will undoubtedly be one of the busiest intersections in Dade County in the next 10 years. Sufficient right-of-way should be acquired now to accommodate future needs and avoid the constraints faced with several of the intersections challenged with congestion problems in the present.

Demand on some roads often needs to be reduced by increasing the capacity, and encouraging the use of parallel facilities. In much of SW Dade continuous arterials exist only on the one-mile section lines, and sometimes on the two-mile section line, as in the case of NW 107th Avenue and NW 87th Avenue between SW 8th Street and NW 36th Street. In northwest areas of Dade County however, through arterials exist on the half-mile section lines as well, alleviating some of the congestion in several of the corridors serving the area.

Preliminary testing of the Superarterial Network concept shows that this concept bridges the gap between the different improvement programs currently in place at the state and county level. By looking at arterials within a specific area, the Superarterial Network broadens the scope of the Resourceful Use of Streets and Highways (RUSH) program and the Project Development and Environmental Study (PD&E) which look at specific spots and single arterials respectively. The concept also compliments these programs while being more focused than the Long Range Transportation Plan (LRTP). Figure 5.1 shows the Superarterial Network, Transportation Areas, and a summary of the improvements for the selected arterials.