MIAMI DOWNTOWN TRANSPORTATION MASTER PLAN




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Miami Downtown Transportation Master Plan

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EXECUTIVE SUMMARY

The City of Miami–an internationally recognized hemispheric financial and commercial hub–is situated for evolving into a truly world class city. Now City leadership is seeking to advance this evolution by transforming a predominantly daytime business-oriented downtown into a vibrant, 24-hour urban center.

The City has an excellent opportunity to pursue an aggressive urban development program for the downtown area. City leaders can pursue a program of policies and projects that help establish that 24-hour urban environment. They can promote plans and projects that include entertainment components as well as a varied, strong residential base, while continuing to support well-established commercial, business, and retail functions.

But making urban development projects successful presents challenges to the transportation system. The ability to redevelop in Downtown Miami depends on how effectively people and goods can travel within the area and adjacent neighborhoods and how Downtown Miami can be connected to other regional centers of commerce. This Miami Downtown Transportation Master Plan (MDTMP) examines recent development trends in Downtown Miami, considers the development vision as stated by area workers, residents, and leaders, and establishes a framework of multimodal transportation system improvements necessary to achieve that vision.

The Need and the Opportunity

Downtown Miami's current traffic congestion problems are caused in large part by its development successes. Therefore, before the City of Miami and the private development sector could pursue a high-density development program which would bring even greater traffic congestion, community and city leaders determined that a multifaceted, multimodal transportation master plan would be essential to sensibly guide the downtown area's future transportation improvements.

Downtown Miami's current traffic congestion problems are caused by its development success.

Downtown Miami is the focus of global commerce and business for the state of Florida and the economic epicenter of international trade for Miami-Dade County. It has become the gateway to South America, Central America, and the Caribbean Basin for the United States and is a critical component for the continued pursuit of international markets and business opportunities for this country, this state, and the City of Miami. Further, this urban center is not just a gateway, but also a major destination for thousands of domestic and international visitors. The continued growth and development of Downtown Miami is, therefore, vital to the expansion of Florida's international trade and commerce.

Growth and development of Downtown Miami are increasingly constrained by its transportation system–a system at a critical juncture for efficiently bringing people, goods, and services to the marketplace. If Downtown Miami is to continue to grow and mature into the global center of commerce envisioned by its community and city leaders, then it is crucial that proper investment in the transportation infrastructure be planned for the long-term, as well as the short-term. Without such investment, traffic congestion will worsen and not only discourage new business and residential investments but also push existing businesses to relocate to other parts of the region, the state, or the country.

To become a 24-hour, vibrant, sustainable urban center like New York City, Chicago, or London, the downtown area must attract people to live there. Across the country over the past half-century, people have largely abandoned urban centers for suburban living because of benefits such as good schools and affordable houses with back yards. This migration has been enabled, of course, by reliance on the automobile. In contrast, Downtown Miami is experiencing a recent resurgence of residential development both north and south of the Miami River, but continued work-trip commuting from the suburbs to Downtown Miami naturally brings major traffic congestion.

"To become a 24-hour, vibrant, sustainable urban center like New York City, Chicago, or London, the downtown area must attract people to live there."

The resurgence of residential development in Downtown Miami can be attributed partly to people's desire to live close to their work, escaping traffic congestion during the peak commuting periods. For residential development to not only continue but increase, people must find in Downtown the amenities common in suburban areas: good schools, entertainment centers, cultural activities, restaurants, and grocery/drug stores.

Further, truly successful, vibrant downtowns with strong residential components demand reliable, safe, non-auto means of transportation and streets that are designed with the pedestrian in mind. Yet streets in the majority of "modern" US downtown centers have historically been designed for

the automobile. The same holds true for Miami–a young and truly 20th century city. The Interstate construction era in the 1960s saw elevated roadways built through many well-established neighborhoods along the edges of Downtown. These expressways were constructed to deposit heavy volumes of traffic into the downtown area during the peak hours without much regard for the pedestrian. To contribute to new live-work environments in Downtown Miami, streets must accommodate the pedestrian better and public transit must move citizens far more effectively.

Transportation and development are inextricably linked to one another. Planning and investment in the downtown transportation infrastructure can work with land use development to spur office, retail, and residential growth. At the same time, growth and/or redevelopment cannot occur at the visionary levels contemplated by community and city leaders without major improvements to the transportation system in Downtown Miami.

"…improving the transportation system of Downtown Miami amounts to good investment of public monies because of…job creation, residential development in the urban center, and increased tax base."

The City of Miami estimates that 15,000 to 34,000 additional dwelling units can be constructed in the downtown area over the next 20 years and more importantly, that they could generate between $15M and $34M in additional annual tax revenues for the city. Thus, improving the transportation system of Downtown Miami amounts to good investment of public monies because of the multiplier effect: job creation, residential development in the urban center, and increased tax base.

The Miami Downtown Transportation Master Plan

The MDTMP is being developed to set the general framework for future transportation system improvements in the Downtown Miami and to generate a series of more specific transportation project recommendations for the area through 2020. The goal of the MDTMP is "to create a unique, progressive, and vibrant Downtown Miami through a balanced transportation system, preservation of neighborhoods, protection of the environment, and improvement of the community's quality of life."

The MDTMP is a result of extended literature research, extensive examinations of stakeholder views, and intensive technical transportation planning analyses. Most of the elements and components of the MDTMPs recommendations resulted from multiple analyses of the downtown transportation system at different levels of development projected for the year 2020, using a state-of-the-art micro-simulation transportation model called Paramics.

The study area for the MDTMP extends from I-95 east to Biscayne Bay and from I-195 south to SE 26 Road. Three development scenarios were examined: (1) the 2020 Baseline projection of "expected" growth anticipated by Miami-Dade County demographers, (2) the 2020 Enhanced projection which is a more aggressive growth scenario based on development trends in the downtown area of the past five to 10 years, and (3) the 2020 Visionary projection which is the most aggressive growth scenario. This 2020 Visionary scenario of development contemplated includes approximately 48,000 more employees and 34,000 more dwelling units in the primary study area compared to 1999.

More emphasis is placed on transit use.

To reach the levels of development envisioned by community and city leaders, more emphasis is placed on transit use (Metrorail, Metromover, shuttles, etc.) and improving the pedestrian environment. As reflected in the recommended transportation improvements for the MDTMP, employees, residents, and visitors to Downtown Miami will need to significantly reduce their reliance on automobiles to maintain manageable levels of mobility. The MDTMP not only looks at the "big picture" of Downtown growth and transportation system improvements, but also addresses traditional traffic congestion issues like the bottlenecks caused by the opening of the Brickell Bridge during weekdays.

In developing the Miami Downtown Transportation Master Plan, input from community leaders, stakeholders, residents, and employees of the downtown area regarding their transportation needs and desires was consistently sought after and supplied early and often throughout the process. The resulting MDTMP focuses on multiple modes of transportation to help resolve mobility issues for Downtown Miami and better connect neighborhoods to this area. Further, the MDTMP recommends transportation system improvements needed to turn the vision of a Downtown Miami–a unique, progressive, and vibrant place in which to work, live, and play–into reality

Master Plans from Other Cities

Extensive research was undertaken to develop the MDTMP. First, one part of this research was directed at reviewing the experiences of other cities that had developed either transportation

master plans per se, or those general master plans exhibiting a significant transportation component. Second, technical research into planning software was directed at investigating which traffic micro-simulation model could best analyze the transportation problems of Downtown Miami, the residents, workers, employers, and leaders was undertaken virtually throughout the entire study.

The starting point for the review included examining reports and other documents of some 30 cities that had gone through some type of downtown master plan development process. From this list it was determined that six urban areas had documented either an overall downtown master plan with an extensive transportation component or a transportation master plan: Denver, CO; Dallas, TX; Tampa and Jacksonville, FL; Charlotte, NC; and Madison, WI, were the six cities selected for more intensive review. The six studies were obtained and reviewed to extract (1) the goals, objectives, and policies and the overall vision of each plan; (2) the methods and tools used for technical analyses; and (3) the types of solutions developed to address the area-specific transportation problems.

The Micro-Simulation Model: Paramics

Other cities analyzed their transportation system using a wide range of techniques. The MDTMP, however, chose to combine long-range travel forecasting with the precision and sophistication of downtown-specific micro-level traffic simulation.

"…the Downtown Miami Paramics micro-simulation network is one of the largest in the world…"

In essence, the amount of daily travel to/from Downtown Miami expected in the year 2020 was determined using the Miami-Dade County Florida Standard Urban Transportation Modeling Structure (FSUTMS). However, this regional model lacks the level of detail needed for a full understanding of specific travel patterns within the Downtown Miami area. Therefore, a micro-simulation model was required to replicate traffic conditions down to the individual vehicle level on each roadway in the study area. Further, this micro-simulation model incorporates a transit component to model Metrorail and Metromover and had to simulate unique traffic characteristics in Downtown Miami like the traffic congestion caused by the opening of the Brickell Bridge. The micro-simulation model software Paramics, with its superior graphics and ability to model large networks, was selected after an intense international search. In fact, the Downtown Miami Paramics micro-simulation network is one of the largest in the world, with over 360 intersections and seven modes of travel.

Public Participation

Understanding the transportation needs of the stakeholders, residents, and employees of Downtown Miami was essential for developing the MDTMP. An extensive public involvement plan was developed that included large-scale public meetings, small group presentations, and various committees that helped to shape different components of the MDTMP.

The Downtown Task Force (DTF), with over 40 members from the transportation and business community including elected officials from the City of Miami and Miami-Dade County, acted as the steering committee for the MDTMP and provided feedback on specialized topics throughout the process. From the members of the DTF, specialized committees were developed, including the Technical Committee, the Land Use Committee, and the Evaluation Criteria Committee.

The public in general participated with input at three public forums coordinated by the Florida Department of Transportation. Moreover, the public forums were supplemented with approximately 10 small-group presentations hosted by organizations like the Downtown Miami Partnership and the Brickell Homeowners Association. Together, over 20 meetings helped to shape every aspect of the MDTMP, from setting the vision statement to determining the recommended transportation improvements.

Development Scenario

The starting point for determining future transportation needs was the myriad of transportation problems (1) identified by the analysis of the existing transportation system and (2) recognized by the area stakeholders. However, future transportation improvements were also defined based on three future development scenarios carefully varied for the Downtown Miami area. These future development scenarios – 2020 Baseline, 2020 Enhanced, and 2020 Visionary – have increasing levels of development, and therefore increasing levels of travel demand. Increased development further burdens the transportation system and requires different types of improvements.

Each of the 2020 development scenarios (developed by the DTFs Land Use Committee and the City of Miami) is described in detail below:

- **2020 Baseline**, the most conservative of the development scenarios, is based on the officially adopted countywide population forecasts. Compared to 1999, this scenario increases employment by 18,000 employees and residential uses by 15,000 dwelling units in the core of the study area.
- **2020 Enhanced**, a more aggressive growth forecast, is based on the development trends seen in the Downtown Miami area in the last five to ten years. Compared to 1999, this

scenario increases employment by 30,000 employees and residential uses by 23,000 dwelling units in the core of the study area.

- **2020 Visionary**, the most optimistic and aggressive development scenario, is based on the successful growth trends seen in the Downtown Miami area in the past three to five years. Compared to 1999, this scenario increases employment by 48,000 employees and residential uses by 34,000 dwelling units in the core of the study area by 2020.

34,000 additional dwelling units can generate $34M in additional annual taxes for the city.

Transportation System Needs

The Paramics model quickly indicated that even the most conservative growth scenario, the 2020 Baseline, would require significant improvements to the highway system and/or a significant shift to transit as a means to accessing Downtown Miami. Fortunately, a fixed guideway system is already in place for Downtown Miami. Metrorail, Miami-Dade County's underutilized mass transit system, runs right through this area. Further, Metrorail's supporting people-mover system, Metromover, can assist with intracity travel far more than it does now.

Roadways versus Pedestrian-Friendly Environment

Improvements to the roadway system in the study area are challenging. Widening roads in downtown areas is very disruptive to businesses, very expensive due to limited rights-of-way, and generally unfeasible because buildings abut the existing rights-of-way. Further, both widening streets and improving vehicular mobility and speeds conflict with creating a pedestrian-friendly environment for Downtown Miami. Residents, employees, and

Residents, employees, and transit riders in Downtown Miami need a safe, pedestrian-oriented environment.

transit riders in Downtown Miami need a safe, pedestrian-oriented environment to travel between destinations. The public constantly voiced this need throughout the MDTMP process.

Multimodal Improvements

Consequently, the main focus on future transportation system improvements shifted from the roadway network to improvements in transit, the pedestrian environment, and other modes of transportation. Ways to affect travel demand like telecommuting, staggered work hours, and more residents in Downtown Miami were also discussed. Critically needed are extensive improvements to the transit system to absorb a large portion of the increased 2020 travel demand. These types of improvements could include shorter headways and more capacity for Metrorail and Metromover, more shuttle systems like the Brickell shuttle, and Metromover lines extended into other areas. Also needed are enhancements of other modes of transportation like bicycles, pedestrians, and water-borne transportation. The MDTMP also addresses vehicular needs like the traffic congestion caused by the Brickell Bridge openings, the confusion of the one-way street system, and the need to create more appropriate vehicle entryways than the current I-95 Distributor Ramps.

Three-Tiered Process

The specific transportation system improvements to be evaluated consisted of three tiers. Tier 1 included improvements based on suggestions made or problems identified by the public. For example, a public comment that "the streets are confusing and I always get lost" supported converting one-way streets to two-way streets. Tier 2 incorporated improvements proposed in previous studies for Downtown Miami like the removal of the I-95 Distributor Ramps and the creation of a grand boulevard entrance for the downtown area. Tier 3 included a series of improvements determined by the Technical Advisory Committee like ITS to warn motorists of Brickell Bridge openings. In all, over 40 improvement strategies, covering many modes of transportation and many specific projects, were developed for each subarea of Downtown Miami.

The transportation improvements were input with the travel demand from various future development scenarios (2020 Baseline, 2020 Enhanced, and 2020 Visionary) into the Paramics model to test their level of effectiveness. The Technical Evaluation Committee considered the results from the traffic simulation and other measures of impact.

Each transportation system improvement was evaluated against the study goals and objectives and its expected benefits. The Evaluation Criteria Committee determined weighted scores for each transportation system improvement based on six goals/benefits, which included transportation, social, economic, environmental, growth and development, as well as transportation investment.

Recommendations and Implementation

Evaluated according to the goals and objectives of the MDTMP, the transportation system improvements were ranked as recommendations. Several recommendations were repeated throughout the entire study area, like improving transit service (frequency, reliability, and state-of-the-art user-information systems), developing a network of pedestrian-oriented corridors, and converting one-way streets to two-way. Other recommendations, like removing a portion of I-395, were more sub-area. The recommendations were further stratified by sub-area.

Examples

Some specific improvements include:

- creating a Metromover loop in the Brickell Financial District
- implementing a water taxi between Brickell Key and the mainland
- constructing a tunnel under the Miami River at SW 1 Avenue
- extending Metromover to the Wynwood area
- extending the M-Path for bicycles
- modifying North 14 Street from I-95 to Biscayne Boulevard
- completing Baywalk from Pace Park to Bayside.

See Exhibits 1 through 6, shown at the end of the document, for complete graphic and tabular displays of the recommended transportation system improvements by subarea.

Schedule

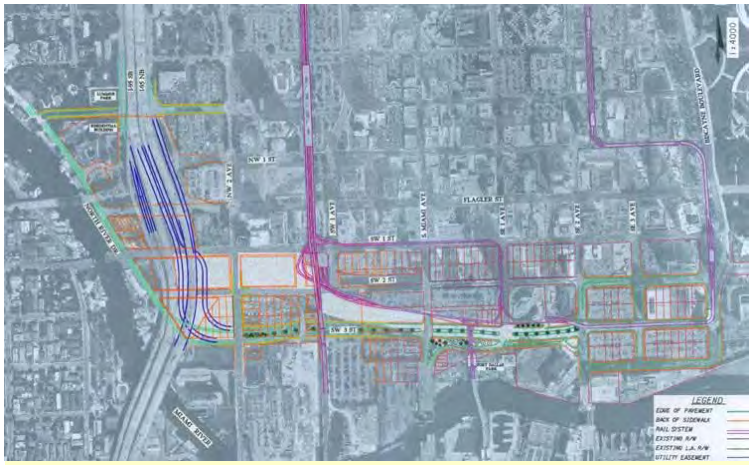
The MDTMPs Technical Evaluation Committee determined an implementation schedule for each improvement: Phase 1 – through 2010, Phase 2 – 2011 through 2015, and Phase 3 – 2016 through 2020. The schedule recognizes that more detailed studies, conceptual and final designs, and construction timeframes must be accommodated. See Exhibits 1 through 6, shown at the end of this document, for the expected implementation phase for each improvement.

The Half-Cent Transit Sales Tax

The philosophy of the Downtown Task Force was that this MDTMP should focus on visionary solutions to its transportation system. Securing the funding for the transportation improvements would follow with political and community leadership. In November 2002, the voters in Miami-Dade County overwhelmingly passed the People's Transportation Plan. This plan levies a half-

cent transit sales surtax to provide (1) more and higher quality transit and (2) funding to municipalities for roadway and transportation projects.

Twenty percent of the sales surtax proceeds will be distributed to municipalities based on their population. Each municipality shall apply 20% of its share of the sales surtax proceeds towards transit improvements, with the balance to be used for other transportation/roadway projects. It is estimated that the City of Miami, being the largest municipality in Miami-Dade County, will receive annual surtax proceeds of over $10M. This new, dedicated funding source will enable the implementation of many of the MDTMPs recommendations by the year 2020.



The ½ percent Sales Tax will enable the implementation of projects like the removal of the I-95 Distributor Ramps.

Conclusion

The MDTMP involved hundreds of individuals collaborating on a vision of a future transportation system that supports continued growth and development of Downtown Miami's business community, fostering a pedestrian-friendly environment that attracts people to live in the downtown area, while promoting multimodal mixes of projects to create a world-class transportation system. The transportation system improvements developed for the MDTMP set the framework for turning that vision into reality. The cornerstone of the MDTMP is a series of transit improvements, supplemented by roadway congestion treatments and the creation of a pedestrian-oriented environment for the Downtown Miami area. Moreover, improvements to facilities for other modes of travel like bicycles, mopeds, and water-borne transportation, are introduced in the MDTMP to achieve a truly multimodal transportation system.

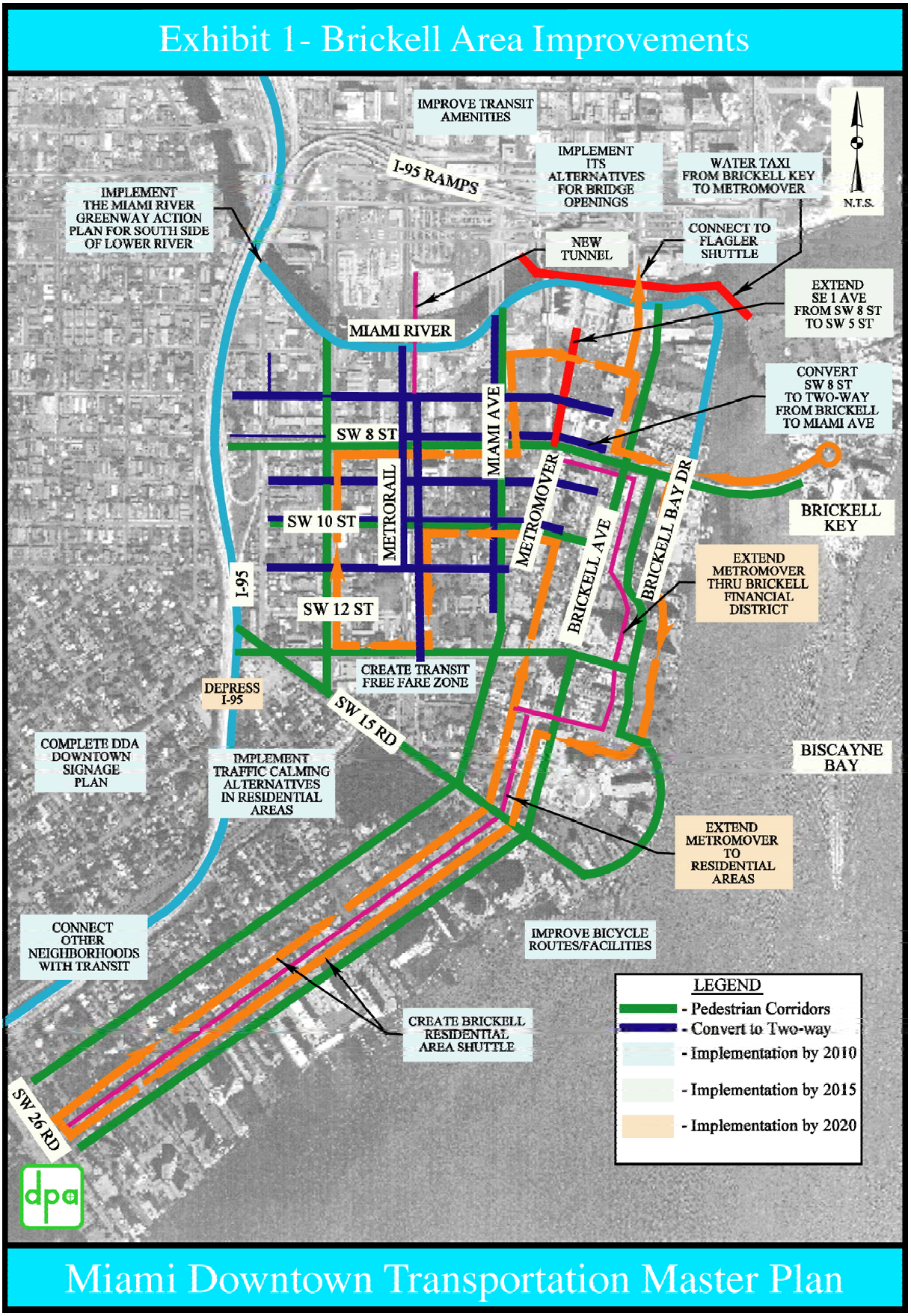


Exhibit 1- Brickell Area Improvements
IMPROVE TRANSIT AMENITIES
I-95 RAMPS
IMPLEMENT ITS ALTERNATIVES FOR BRIDGE OPENINGS
WATER TAXI FROM BRICKELL KEY TO METROMOVER
N.T.S.
IMPLEMENT THE MIAMI RIVER GREENWAY ACTION PLAN FOR SOUTH SIDE OF LOWER RIVER
NEW TUNNEL
CONNECT TO FLAGLER SHUTTLE
EXTEND SE 1 AVE FROM SW 8 ST TO SW 5 ST
MIAMI RIVER
CONVERT SW 8 ST TO TWO-WAY FROM BRICKELL TO MIAMI AVE
SW 8 ST
MIAMI AVE
METRORAIL
METROMOVER
BRICKELL AVE
BRICKELL BAY DR
BRICKELL KEY
SW 10 ST
I-95
EXTEND METROMOVER THRU BRICKELL FINANCIAL DISTRICT
SW 12 ST
CREATE TRANSIT FREE FARE ZONE
DEPRESS I-95
SW 15 RD
COMPLETE DDA DOWNTOWN SIGNAGE PLAN
IMPLEMENT TRAFFIC CALMING ALTERNATIVES IN RESIDENTIAL AREAS
BISCAYNE BAY
EXTEND METROMOVER TO RESIDENTIAL AREAS
CONNECT OTHER NEIGHBORHOODS WITH TRANSIT
IMPROVE BICYCLE ROUTES/FACILITIES
CREATE BRICKELL RESIDENTIAL AREA SHUTTLE
SW 26 RD
LEGEND
- Pedestrian Corridors
- Convert to Two-way
- Implementation by 2010
- Implementation by 2015
- Implementation by 2020
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Exhibit 2- Brickell Area Improvements

Recommended Improvement	Phase
Create a Transit Free-Fare Zone	1
Implement Intelligent Transportation Systems (ITS) alternatives to help for bridge openings	1
Improve transit amenities	1
Connect Brickell to other neighborhoods with transit	1
Develop pedestrian corridors	1
Implement Miami River Greenway Action Plan for the south side of the Miami River	1
Convert one-way streets to two-way streets	1
Connect Brickell Shuttle to Flagler Shuttle	1
Construct a new tunnel under the Miami River at SW 1 Avenue	2
Extend SE 1 Avenue from SE 8 Street to SE 5 Street	2
Complete Downtown DDA Downtown signage plan	1
Loop Metromover through the Brickell Financial District	3
Improve bicycle routes/facilities	1
Provide shuttle system for the Brickell residential areas	1
Implement traffic calming alternatives through Brickell residential areas	1
Extend the Metromover to SE 26 Road	3
Provide a water taxi from Brickell Key to the Riverwalk Metromover station	1
Depress I-95 and create a Grand Boulevard	3

Note: Phase 1: Implementation by 2010, Phase 2: Implementation by 2015, Phase 3: Implementation by 2020

Exhibit 3- CBD Area Improvements

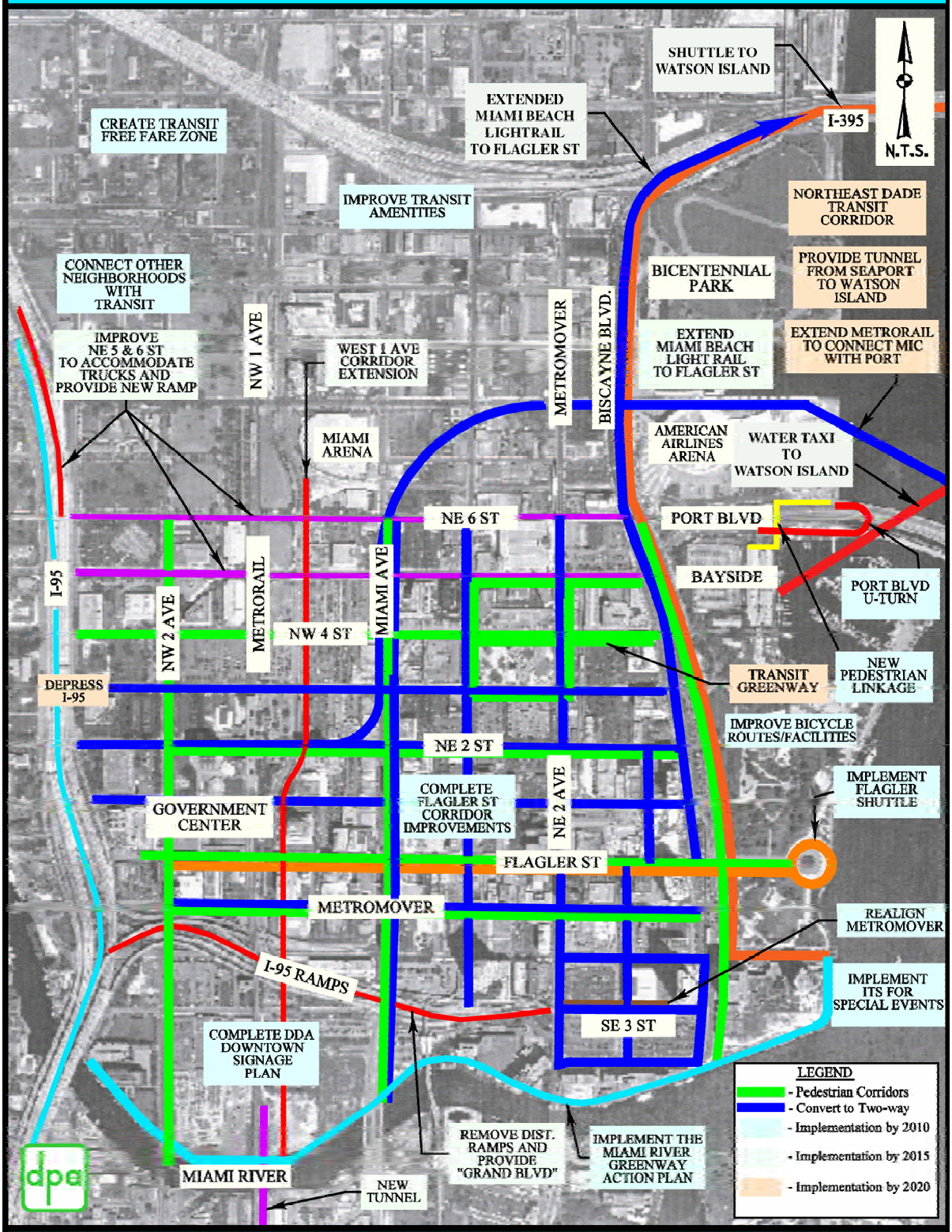

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Exhibit 4- CBD Area Improvements

Recommended Improvement	Phase
Create a Transit Free-Fare Zone	1
Provide pedestrian connections from Bayside to AA Arena	1
Extend Miami Beach light rail (Baylink) into downtown	2
Convert one-way streets to two-way streets	1
Improve transit amenities	1
Connect CBD to other neighborhoods with transit	1
Complete the Flagler Street Corridor improvements	1
Develop pedestrian corridors	1
Implement Miami River Greenway Action Plan for the north side of the Miami River	1
Re-align Metromover and add new station at DuPont Plaza area	1
Implement Intelligent Transportation System (ITS) for special events	1
Complete Biscayne Boulevard improvements	1
Construct a new tunnel under the Miami River at SW 1 Avenue	2
Complete DDA Downtown signage plan	1
Extend W 1 Avenue Corridor (Arena Boulevard)	2
Improve bicycle routes/facilities	1
Extend fixed guideway to AA Arena and Seaport	3
Remove Distributor Ramps and provide a Grand Boulevard on S 3 St	2
Implement Flagler Shuttle	1
Provide Port Boulevard U-turn	1
Implement shuttle system from Watson Island	1
Provide a Transit Greenway	3
Provide a I-95 NB on-ramp at NW 6 St to provide access to WB SR 836 & Improve N 5 & 6 Streets for truck traffic	2
Provide Commuter Rail to Broward County	3
Provide a water taxi from Watson Island	1
Depress I-95 and create a Grand Boulevard	3

Note: Phase 1: Implementation by 2010, Phase 2: Implementation by 2015, Phase 3: Implementation by 2020

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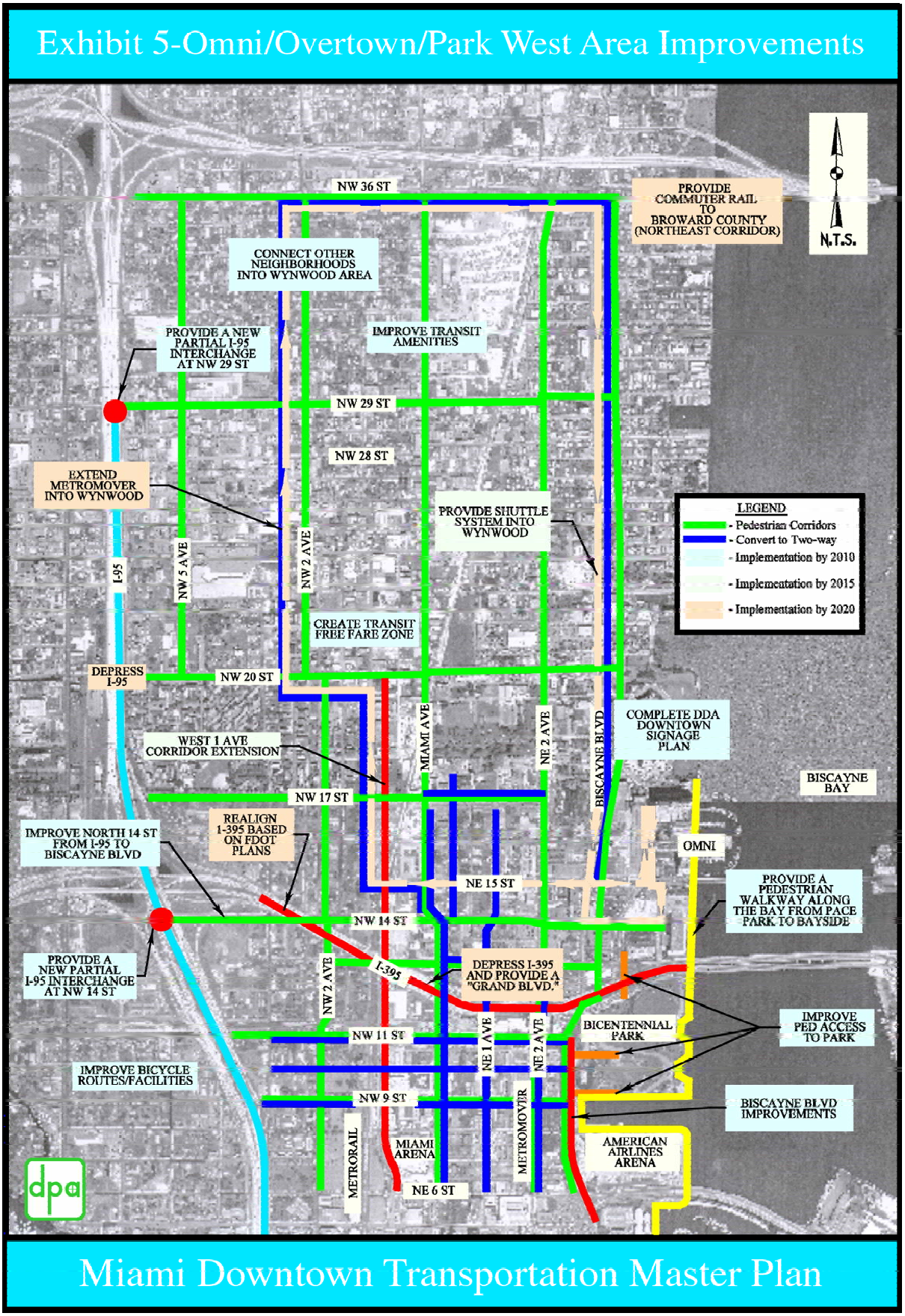
Exhibit 5-Omni/Overtown/Park West Area Improvements
N.T.S.
NW 36 ST
PROVIDE COMMUTER RAIL TO BROWARD COUNTY (NORTHEAST CORRIDOR)
CONNECT OTHER NEIGHBORHOODS INTO WYNWOOD AREA
PROVIDE A NEW PARTIAL I-95 INTERCHANGE AT NW 29 ST
IMPROVE TRANSIT AMENITIES
NW 29 ST
NW 28 ST
EXTEND METROMOVER INTO WYNWOOD
PROVIDE SHUTTLE SYSTEM INTO WYNWOOD
LEGEND
- Pedestrian Corridors
- Convert to Two-way
- Implementation by 2010
- Implementation by 2015
- Implementation by 2020
I-95
NW 5 AVE
NW 2 AVE
CREATE TRANSIT FREE FARE ZONE
DEPRESS I-95
NW 20 ST
MIAMI AVE
NE 2 AVE
BISCAYNE BLVD
COMPLETE DDA DOWNTOWN SIGNAGE PLAN
WEST 1 AVE CORRIDOR EXTENSION
BISCAYNE BAY
NW 17 ST
IMPROVE NORTH 14 ST FROM I-95 TO BISCAYNE BLVD
REALIGN I-395 BASED ON FDOT PLANS
OMNI
NE 15 ST
PROVIDE A PEDESTRIAN WALKWAY ALONG THE BAY FROM PACE PARK TO BAYSIDE
NW 14 ST
PROVIDE A NEW PARTIAL I-95 INTERCHANGE AT NW 14 ST
I-395
DEPRESS I-395 AND PROVIDE A "GRAND BLVD."
NW 2 AVE
BICENTENNIAL PARK
IMPROVE PED ACCESS TO PARK
NW 11 ST
NE 1 AVE
NE 2 AVE
IMPROVE BICYCLE ROUTES/FACILITIES
NW 9 ST
BISCAYNE BLVD IMPROVEMENTS
METRORAIL
MIAMI ARENA
METROMOVER
AMERICAN AIRLINES ARENA
NE 6 ST
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Exhibit 6- Omni/Overtown/Park West Area Improvements

Recommended Improvement	Phase
Create a Transit Free-Fare Zone	1
Extend Miami Beach light rail (Baylink)	2
Connect O/OT/PW with other neighborhoods with transit	1
Develop pedestrian corridors	1
Convert one-way streets to two-way streets	1
Implement Intelligent Transportation System (ITS) for special events	1
Provide a pedestrian walkway along the Bay from Pace Park to Bayside	1
Complete Biscayne Boulevard improvements	1
Improve pedestrian connections to Bicentennial Park	1
Provide tunnel from Seaport to Watson Island	3
Extend W 1 Avenue Corridor Extension	2
Implement DDA Downtown signage plan	1
Improve bicycle routes/ facilities	1
Provide a shuttle system into Wynwood	1
Depress I-395 to provide Grand Boulevard	3
Extend Metromover into Wynwood	3
Improve N 14 St from I-95 to Biscayne Blvd	1
Provide Commuter Rail to Broward County	3
Provide a new partial I-95 Interchange at NW 29 St	1
Provide a new I-95/NW 14 St Interchange	2
Depress I-95 and create a Grand Boulevard	3

Note: Phase 1: Implementation by 2010, Phase 2: Implementation by 2015, Phase 3: Implementation by 2020

Miami Downtown Transportation Master Plan

1.0 INTRODUCTION

The City of Miami–an internationally recognized hemispheric financial and commercial hub–is situated for evolving into a truly world class city. Now City leadership is seeking to advance this evolution by transforming a predominantly daytime business-oriented downtown into a vibrant, 24-hour urban center.

The City has an excellent opportunity to pursue an aggressive urban development program for the downtown area. City leaders can pursue a program of policies and projects that help establish that 24-hour urban environment. They can promote plans and projects that include entertainment components as well as a varied, strong residential base, while continuing to support well-established commercial, business, and retail functions.

But making urban development projects successful presents challenges to the transportation system. The ability to redevelop in Downtown Miami depends on how effectively people and goods can travel within the area and adjacent neighborhoods and how Downtown Miami can be connected to other regional centers of commerce. This Miami Downtown Transportation Master Plan (MDTMP) examines recent development trends in Downtown Miami, considers the development vision as stated by area workers, residents, and leaders, and establishes a framework of multimodal transportation system improvements necessary to achieve that vision.

1.1 The Need and the Opportunity

Downtown Miami's current traffic congestion problems are caused in large part by its development successes. Therefore, before the City of Miami and the private development sector could pursue a high-density development program which would bring even greater traffic congestion, community and city leaders determined that a multifaceted, multimodal transportation master plan would be essential to sensibly guide the downtown area's future transportation improvements.

Downtown Miami is the gateway to South America, Central America and the Caribbean Basin.

Downtown Miami is the focus of global commerce and business for the state of Florida and the economic epicenter of international trade for Miami-Dade County. It has become the gateway to South America, Central America, and the Caribbean Basin for the United States and is a critical component for the continued pursuit of international markets and business opportunities for this country, this state, and the City of Miami. Further, this urban center is not just a gateway, but also a major destination for thousands of domestic and international visitors. The continued growth and development of Downtown Miami is, therefore, vital to the expansion of Florida's international trade and commerce.

Growth and development is vital for expanding international trade and commerce.

Growth and development of Downtown Miami are increasingly constrained by its transportation system–a system at a critical juncture for efficiently bringing people, goods, and services to the marketplace. If Downtown Miami is to continue to grow and mature into the global center of commerce envisioned by its community and city leaders, then it is crucial that proper investment in the transportation infrastructure be planned for the long-term, as well as the short-term. Without such investment, traffic congestion will worsen and not only discourage new business and residential investments but also push existing businesses to relocate to other parts of the region, the state, or the country.

To become a 24-hour, vibrant, sustainable urban center like New York City, Chicago, or London, the downtown area must attract people to live there. Across the country over the past half-century, people have largely abandoned urban centers for suburban living because of benefits such as good schools and affordable houses with back yards. This migration has been enabled, of course, by reliance on the automobile. In contrast, Downtown Miami is experiencing a recent resurgence of residential development both north and south of the Miami River, but continued work-trip commuting from the suburbs to Downtown Miami naturally brings major traffic congestion.

The resurgence of residential development in Downtown Miami can be attributed partly to people's desire to live close to their work, escaping traffic congestion during the peak commuting periods. For residential development to not only continue but increase, people must find in Downtown the amenities common in suburban areas: good schools, entertainment centers, cultural activities, restaurants, and grocery/drug stores.

Further, truly successful, vibrant downtowns with strong residential components demand reliable, safe, non-auto means of transportation and streets that are designed with the pedestrian in mind. Yet streets in the majority of "modern" US downtown centers have historically been designed for the automobile. The same holds true for Miami–a young and truly 20th century city. The Interstate construction era in the 1960s saw elevated roadways built through many well-established neighborhoods along the edges of Downtown. These expressways were constructed to deposit heavy volumes of traffic into the downtown area during the peak hours without much regard for the pedestrian. To contribute to new live-work environments in Downtown Miami, streets must accommodate the pedestrian better and public transit must move citizens far more effectively.

Investment in transportation infrastructure can spur office, retail and residential development.

Transportation and development are inextricably linked to one another. Planning and investment in the downtown transportation infrastructure can work with land use development to spur office, retail, and residential growth. At the same time, growth and/or redevelopment cannot occur at the visionary levels contemplated by community and city leaders without major improvements to the transportation system in Downtown Miami.

The City of Miami estimates that 15,000 to 34,000 additional dwelling units can be constructed in the downtown area over the next 20 years and more importantly, that they could generate between $15M and $34M in additional annual tax revenues for the city. Thus, improving the transportation system of Downtown Miami amounts to good investment of public monies because of the multiplier effect: job creation, residential development in the urban center, and increased tax base.

1.2 The Miami Downtown Transportation Master Plan

The MDTMP is being developed to set the general framework for future transportation system improvements in the Downtown Miami and to generate a series of more specific transportation project recommendations for the area through 2020. The goal of the MDTMP is "to create a unique, progressive, and vibrant Downtown Miami through a balanced transportation system, preservation of neighborhoods, protection of the environment, and improvement of the community's quality of life."

The MDTMP is a result of extended literature research, extensive examinations of stakeholder views, and intensive technical transportation planning analyses. Most of the elements and components of the MDTMPs recommendations resulted from multiple analyses of the downtown transportation system at different levels of development projected for the year 2020, using a state-of-the-art micro-simulation transportation model called Paramics.

The study area for the MDTMP extends from I-95 east to Biscayne Bay and from I-195 south to SE 26 Road. Three development scenarios were examined: (1) the 2020 Baseline projection of "expected" growth anticipated by Miami-Dade County demographers, (2) the 2020 Enhanced projection which is a more aggressive growth scenario based on development trends in the downtown area of the past five to 10 years, and (3) the 2020 Visionary projection which is the most aggressive growth scenario based on development trends within the past several years. This 2020 Visionary scenario of development contemplated includes approximately 48,000 more employees and 34,000 more dwelling units in the primary study area compared to 1999.

To reach the levels of development envisioned by community and city leaders, more emphasis is placed on transit use (Metrorail, Metromover, shuttles, etc.) and improving the pedestrian environment. As reflected in the recommended transportation improvements for the MDTMP, employees, residents, and visitors to Downtown Miami will need to significantly reduce their reliance on automobiles to maintain manageable levels of mobility. The MDTMP not only looks at the "big picture" of Downtown growth and transportation system improvements, but also addresses traditional traffic congestion issues like the bottlenecks caused by the opening of the Brickell Bridge during weekdays.

More emphasis needs to be place on transit.

In developing the Miami Downtown Transportation Master Plan, input from community leaders, stakeholders,

residents, and employees of the downtown area regarding their transportation needs and desires was consistently sought after and supplied early and often throughout the process. The resulting MDTMP focuses on multiple modes of transportation to help resolve mobility issues for Downtown Miami and better connect neighborhoods to this area. Further, the MDTMP recommends transportation system improvements needed to turn the vision of Downtown Miami–a unique, progressive, and vibrant place in which to work, live, and play–into reality.

2.0 BACKGROUND

Extensive research was undertaken to develop the MDTMP. First, one part of this research was directed at reviewing the experiences of other cities that had developed either transportation master plans per se, or those general master plans exhibiting a significant transportation component. Second, technical research into planning software was directed at investigating which traffic micro-simulation model could best analyze the transportation problems of Downtown Miami, the residents, workers, employers, and leaders was undertaken virtually throughout the entire study.

2.1 Master Plans from Other Cities

The starting point for the review included examining reports and other documents of some 30 cities that had gone through some type of downtown master plan development process. From this list it was determined that six urban areas had documented either an overall downtown master plan with an extensive transportation component or a transportation master plan: Denver, CO; Dallas, TX; Tampa and Jacksonville, FL; Charlotte, NC; and Madison, WI, were the six cities selected for more intensive review. The six studies were obtained and reviewed to extract (1) the goals, objectives, and policies and the overall vision of each plan; (2) the methods and tools used for technical analyses; and (3) the types of solutions developed to address the area-specific transportation problems.

2.1.1 Madison, Wisconsin

The transportation plan for Madison emphasizes flexibility in mode choice. The plan suggests increasing the efficiency of the transportation system by implementing strategies that increase auto occupancy, reduce conflicts between modes of travel like automobile and pedestrians, and maximize capacity with low-cost improvements.

Greater reliance will be placed on mass transit by adopting a Transit Priority Corridor Concept, which is expected to increase transit ridership by 50% by 2020. Higher levels of congestion will be accepted before considering new or expanded roadways. A Traffic Direction Concept, however, will be implemented to draw auto travel onto major corridors and away from residential areas. A Balanced Transportation Concept was adopted to promote transit, carpooling, and other travel options, including travel reduction strategies such as telecommuting.

The Madison plan also recognizes the importance of providing for the area's parking needs in a manner that complements the adopted land use and transportation plans, including alternatives to shift all-day commuter parking away from the city center. Finally, the Activity Center Linkage Plan is aimed at maintaining mobility and accessibility throughout the region.

2.1.2 Charlotte, North Carolina

The Charlotte Plan was driven by the desire to support the economic vitality of the area as well as following strategic directives from the U.S. Department of Transportation via its 1998 Transportation Equity Act for the 21st Century (TEA-21). The plan strives to balance both local and regional transportation needs by looking at both transportation and land use comprehensively.

Charlotte wants "to provide better connections between neighborhoods."

The plan components include increasing not only the area's accessibility and mobility by maximizing the use of many modes of travel such as biking, walking, and transit. Recommendations include a mass transit system from Uptown Charlotte to locations within each district; enhancements and improved maintenance of the various modes of travel; traffic calming; an interconnected system of sidewalks; a Greenway System; and provisions for bicyclists to ride safely and efficiently between districts.

Increased system efficiency is promoted through ridesharing and alternative work schedule strategies. The plan fosters the integration and connectivity of all transportation systems including freight. There is a specific element dealing with "City Within the City" Transit Strategies to provide better connections between neighborhoods.

Land use strategies are also part of the plan. Integrated centers of intense development were identified in an effort to curb urban sprawl. The Charlotte plan also addresses the appropriateness of residential development in proximity to employment areas, commercial centers, parks, and other land uses. Last, the plan encourages higher densities along designated transit corridors, and the preservation of rail corridors for existing and future transportation needs.

2.1.3 Dallas, Texas

The Dallas plan is, essentially, a (highway emphasis) Thoroughfare Plan. Nevertheless, it has four major components, one of which is transit-specific. The four elements are: Freeways/Toll and Major Roads; the Dallas Area Rapid Transit (DART) system; Bottleneck Removal; and Facility Management. The freeway element provides for the reconstruction and improvements of major roads. The DART component develops a major rapid transit corridor that will substantially improve transit service. The Bottleneck Removal plan consists of special studies and low-cost improvements such as turn lanes and grade separation at critical intersections. The Facility Management component aims to maximize the efficiency of the transportation system through a series of Transportation System Management (TSM) and Transportation Demand Management (TDM) strategies.

2.1.4 Denver, Colorado

Denver developed a transportation plan very responsive to the needs of the area residents through intense public involvement. The plan sets the basis for the creation of a permanent, citizen-based Transportation Advisory Committee and the hiring of additional staff to address day-to-day neighborhood-level traffic management and calming issues.

The plan aims to balance the access needs of neighborhoods, local businesses, and downtown businesses, while directing traffic toward specific major routes and away from residential areas. The Denver plan relies heavily on travel behavior modification through physical traffic rerouting, police enforcement of traffic violations, and severe penalties for traffic violations. It also provides for designated lanes and signal priority for transit and carpool vehicles to make these modes more competitive with the private automobile. Additionally, the Denver plan also promotes a network of on- and off-street bicycle facilities and recommends specific roadway improvements consistent with strategies for each corridor. Basically, corridors were designated for either: increased vehicular capacity; reduced vehicular capacity (to encourage other modes); or unchanged capacity (that will naturally result in more congestion and voluntary mode change to transit, carpooling, etc. over time).

Denver's plan "aims to balance access needs… while directing traffic… away from residential areas."

2.1.5 Jacksonville, Florida

The plan for Downtown Jacksonville considered the unique character of the area and developed a multi-modal plan comprehensively addressing specific issues. The plan recognized the challenge of promoting modes of travel–other than private autos–to produce an area that is essentially free of major congestion and has abundant low-cost parking.

The downtown is divided into 10 districts, with land uses clearly defined, along with a Transportation Support System that considers vehicular access, parking, pedestrian-friendly settings, transit, etc. The bases of the Jacksonville plan are (1) the classification of corridors based on their desirable multi-modal use and (2) design standards for such classifications. Roadway signage supports this concept of corridor classifications.

Provisions encourage the development of parking garage facilities and discourage surface parking lots. Development of peripheral commuter parking is introduced, while visitor parking in the core of downtown is encouraged to make the area more accessible to visitors. On-street parking is also promoted in commercial and residential areas as a traffic calming tool.

The plan's transit component promotes the expansion of the downtown Skywalk (people mover system), the integration of transit into the planning of downtown development projects, and the creation of regional transit centers with park-and-ride facilities. Pedestrian facilities are also

improved with the creation of deigns standards, including minimum sidewalk widths of 12 ft. These standards will be applied throughout the area.

2.1.6 Tampa, Florida

Among several goals, the Tampa plan supports the economic vitality of the area. One component aimed at such a goal is to reduce traffic congestion by improving existing roads and constructing new ones, as well as managing travel demand through TDM techniques including telecommuting. Additionally, waterborne transportation is also promoted, increasing travel capacity across the Bay, thus relieving the traffic strain on the bay bridges.

Level-of-service standards are useful for promoting infill development and reducing urban sprawl. Truck traffic routes channel trucks away from residential areas. Transit will continue to play a vital role for downtown. The plan recommends completing rail transit stations, integrating transit into major activity centers and implementing a bikes-on-buses program. Circulation systems are recommended for major activity centers, and airport/seaport connections are also addressed.

High-density development is recommended for transit-oriented corridors. Improvement of transit performance will be encouraged through the adoption of minimum standards. High-speed rail urged to enhance regional and inter-city transportation.

The Tampa plan creates urban design criteria to improve the aesthetics of transportation facilities as well as to make the facilities more user-friendly with treatments such as landscaping, noise abatement, and preservation of scenic views. Fiscally, the plan intends to maximize benefits by using low-cost improvements as much as possible and encouraging private participation in transportation improvements such as transit stations.

2.2 Previous Downtown Miami Transportation Studies

More than 25 transportation, planning, and roadway reports previously prepared for the Downtown Miami area were reviewed and summarized to help develop the MDTMP. A complete listing of these studies with a brief description is shown in Appendix A. A few of the major reports used in the MDTMP are described below.

- **Miami Surface Shuttle Services: Feasibility Study for Transit Circulator Services in Downtown Miami, Brickell, Overtown, and Airport West (2000)** - This report analyzed the potential of Flagler Street and Brickell to support shuttle services and to develop alternative routes, representing their levels of service along with the approximate capital and operating services associated with each. This study identified potential sources of funds for paying for these services.

- **I-95 Dupont Plaza Ramps, Alternative Feasibility Study (1993)** - This study developed a preliminary Grand Boulevard concept as a Downtown Miami entryway, similar to that developed for Biscayne Boulevard located on the eastern edge of the downtown area, and determines the feasibility of reconstructing the existing I-95 distributor ramps that currently access Downtown Miami via the Dupont Plaza area.

- **Downtown Miami Circulation Study (2000)** - This study analyzed the existing Downtown Miami roadway network to identify critical traffic demand locations and the potential solutions, and areas with available capacity. The study recommends a series of operational improvements throughout the area.

- **Miami River Greenway Action Plan** - This is a comprehensive study of both sides of the entire Miami River Corridor. Existing and potential land uses are reviewed. The corridor is then divided into different sections with similar characteristics. Optimal improvements for both banks of the river are recommended by section. The objective is to make the river more accessible and user-friendly while improving aesthetics in order to maximize use of the river corridor by the public in general.

The objective of this plan is to make the Miami River more accessible and user-friendly.

- **DDA Downtown Signage Plan** - The DDA proposed a system of signs for the Downtown Miami area. The plan has three components: a sectors signage plan, a trailblazer signs component, and an information kiosk element. The system aims to facilitate access and circulation to/from and within Downtown Miami. The area covered by the system is subdivided into several sectors with easily identifiable names and color logos for each sector. The initial stage of the system–sector signs–is already in place.

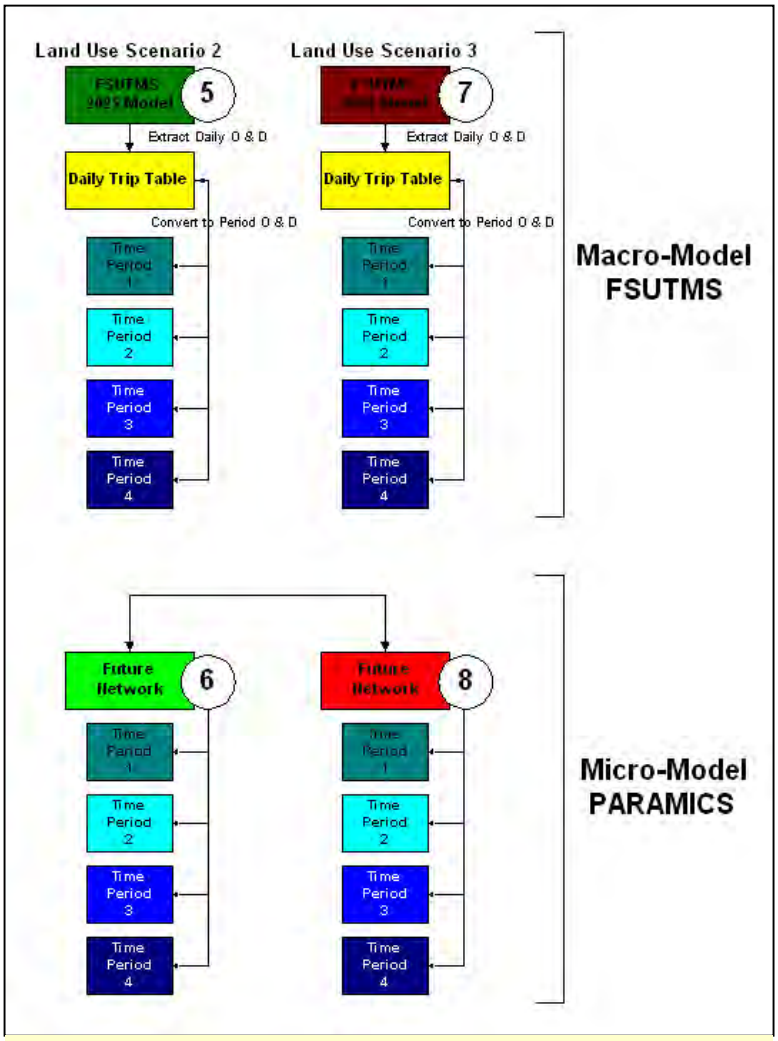
- **Bicentennial Park: Becoming Miami's Premier Park** - This is an extensive study of the features of the park and well as its potential. Several development options are evaluated through a process that involved the public extensively. The evaluation is followed by recommendations for making the park safe, more accessible, and user-friendly as well as improving aesthetics. The new plan maximizes use of the park by the general public.

Three alternatives were developed for the park.

2.3 Technical Evaluation Models and Methods

The Future Year (FY) travel demand trend for urbanized areas (UAs) is usually forecast by using urban area or regional "transportation planning models." These models divide the total area studied, in this case, Miami-Dade County, into small segments called traffic analysis zones or TAZs. A network of major streets and expressways, and of transit lines – bus routes, urban rail lines, people mover guideways, and commuter rail lines–is developed to symbolize the major transportation system elements of the study area.

To forecast future year travel, Miami-Dade County demographers and economists predict growth in various categories of residences and employment for each TAZ. Travel is generated out of, and into, each zone through models that link the amount of activity in each zone (housing units, jobs, school size, retail stores, etc.) with associated travel. Trips from TAZs are usually generated by people leaving their homes to perform some activity; conversely, trips to TAZs are usually generated by people arriving to perform some activity, such as going to their workplace, or shopping, getting health care, or enjoying recreational activities. Trips entering and exiting each zone are calculated.



Modeling flowchart for a Macro and Micro model.

Trips are then distributed between zones to simulate travel by a trip distribution model, based on the way that people make travel choices. Large matrices are developed that record travel from each zone to every other zone and vice versa. Large activity centers tend to attract travel from many TAZs, some far away, while other TAZs with less activity attract fewer trips usually from more areas in closer proximity. Small zones also tend to produce fewer trips because there are fewer housing units, and

large zones–those with numerous high-rise apartment buildings, for example–tend to produce large numbers of trips.

The modes of travel that may take between zones are then forecast in the mode choice step. For those TAZs with transit service, people might walk, drive alone, or carpool to a transit/bus stop. Mode choice, a relatively complex function of the characteristics of the traveler and those of the mode, usually results in relatively low "mode splits" (proportions or travelers taking transit) because prime determinants of the mode selected are travel time and costs. Cars almost always travel more quickly between places and start closer to origins, and arrive closer to destinations, than do transit modes.

At this stage in the evaluation, some key factors are known: the volume of trips coming out of and going into each zone, the number of trips between zones, and the modes taken by travelers to make those trips. The final step is to assign travelers in their vehicles the routes they follow to go from origins to destinations. The auto trips are assigned to the highway network in a highway assignment model, and transit trips are assigned to the transit system of bus, rail, and people-mover vehicles and routes in a transit assignment model. Roadways congest and travel times increase as roadways experience increasingly heavy traffic loads.

These transportation planning models are at present sufficient to develop reasonable forecasts of travel demand and projections of travelers by mode in urbanized areas such as Miami-Dade County or the South Florida region. They are routinely applied to estimate needs that can be addressed by building major capital, capacity-increasing projects like expressways or Metrorail, widening roads such as Biscayne Boulevard or 27th Avenue, or adding buses to routes.

Traffic simulation models examine the movement of cars, trucks, buses, rail vehicles, and people movers at the local street level.

However, they are insufficient to examine small subareas, and they are truly inadequate to address many options for improving the operation of transportation systems – many, if not most of which are of intense interest and vital concern to areas like the Miami Downtown.

These travel model characteristics and constraints are understood by the transportation planning community, and specialized, *small-area traffic simulation* models have been developed to meet the need. Traffic simulation models do not forecast the demand for travel, nor do they forecast mode choice, nor perform trip distribution. They do, however, examine at the local street-by-street, block-by-block, driveway-by-driveway levels the ebb and flow of traffic over specified periods, and the movement of cars, trucks, buses, rail vehicles, and people-movers on the street system. Traffic simulation models take into account stop signs, bus stops, and traffic signals and signalization

schemes as well as roadway size (number of lanes, lane widths, etc.) and also account for typical driver behaviors in the area(s) to be modeled.

These "micro-simulation models," as they are also known, address the highly detailed, multimodal, capital, and most importantly, operational transportation system projects and improvement strategies being considered to meet the needs of Downtown Miami.

The transportation planning model is used to develop travel demand across the urbanized area, and to estimate the flows of vehicles on major roadways and transit systems for a given future year, based upon projections of the amount and location of residential and commercial growth and development expected to occur between the present and the target year. Transportation system improvements funded or at least solidly programmed for implementation are incorporated into the highway and transit networks. Travel to, from, and between the TAZs used to define the Downtown from the transportation planning model are input into the traffic simulation model, where they can be appropriately analyzed.

Here, unlike in the larger, coarser planning models, effects of improvements such as changing streets from one-way to two-way, changing traffic signal cycles, adding rail or people-mover lines, adding bus circulators, and adding or deleting lanes from roads and building new roads can all be appropriately tested and analyzed.

The Downtown Task Force also understood this difference between transportation planning models and traffic simulation models, and the need to incorporate a state-of-the-practice traffic simulation model in development of the MDTMP was included from the beginning. City, county, and state transportation planners associated with the project, along with the Task Force, planned from the beginning for the acquisition and use of a traffic simulation model. It will be an excellent tool to gauge how changes in development will affect the transportation system on the level experienced by daily users of that system–how traffic will congest, bunch at places where vehicles turn, queue up at traffic signals, slow for trucks, wait for bridges to open and close, etc.

The MDTMP Task Force envisioned building a simulation model so that tracking changes in development and changes in the transportation system, and their combined impacts on the Miami Downtown Transportation Master Plan could be regularly evaluated into the future. That way, the methods and models used in the development of the initial MDTMP could be continually applied to update and maintain the currency of the plan as development and transportation system changes occur.

2.4 The Micro-simulation Model for Downtown Miami: Paramics

Other cities analyzed their transportation system using a wide range of techniques. The MDTMP, however, chose to combine long-range travel forecasting with the precision and sophistication of downtown-specific micro-level traffic simulation.

Paramics Model Network for Downtown Miami.

A micro-simulation model was required to replicate traffic conditions down to the individual vehicle level on each roadway in the study area. Further, this micro-simulation model incorporates a transit component to model Metrorail and Metromover and had to simulate unique traffic characteristics in Downtown Miami like the traffic congestion caused by the opening of the Brickell Bridge. The micro-simulation model software Paramics, with its superior graphics and ability to model large networks, was selected after an intense international search. In fact, the Downtown Miami Paramics micro-simulation network is one of the largest in the world, with over 360 intersections and seven modes of travel.

The micro-simulation model network was developed with information from a multitude of sources. The effort also required great detail to describe the transportation system. This detail allowed very precise replication of minute-by-minute travel conditions throughout the entire study area.

Before the model was put into use, however, it was validated to replicate existing conditions using a very large amount of traffic count information and extensive observation of the system. The validation results, both visually and statistically, were found to be acceptable.

Additionally, use of the Paramics model for future conditions simulation required development of travel-patterns information to and from a large number of small zones throughout Downtown Miami. This information was extracted from the regional model travel forecast for each of the three land use scenarios. The data was then converted to hourly trips for the three times of the day analyzed.

"The Downtown Miami Paramics micro-simulation network is one of the largest in the world, with over 360 intersections and seven modes of travel."

Finally, the Paramics model generated a mammoth amount of system-wide and location-specific performance measurements that were used for the evaluation of the recommended improvements. The simulation outputs confirmed that the study recommendations would result in a good balance of level of service for all travel modes while achieving the study goals and objectives.

3.0 PUBLIC PARTICIPATION

Understanding the transportation needs and concerns of the Downtown Miami stakeholders – the residents, workers, employers was essential for developing the MDTMP. Identification of these needs and concerns ensures they will be properly addressed as part of the process. An extensive public involvement program was developed that included a steering committee, community leader or local professional based technical advisory committees, large-scale public meetings, and small group presentations in ongoing (Community Outreach) efforts that helped to shape different components of the MDTMP.

3.1 Downtown Task Force

The Downtown Task Force (DTF) is a standing committee of Downtown Miami business owners and leaders, representatives of Downtown Miami service and business organizations, City and County professionals, and City and County elected officials whose Districts encompass all or parts of Downtown Miami. The DTF acted as steering committee for the MDTMP and provided feedback on virtually all discussion points throughout the MDTMP development process. The DTF has over 40 members (see Appendix B) from the transportation and business community. The Co-Chairmen are City of Miami Commissioner Johnny Winton and Miami-Dade County Commissioner Bruno Barreiro. Specialized technical committees were developed based on members from the DTF, and included the Technical Committee, the Land Use Committee, and the Evaluation Criteria Committee.

The Co-Chairmen of the Downtown Task Force are City of Miami Commissioner Johnny Winton and Miami-Dade County Commissioner Bruno Barreiro.

3.2 Technical Committee

The Technical Committee was comprised of 10 members representing a variety of transportation planning and operating-related agencies with interests, projects, or studies in or affecting the Downtown Miami area. The Technical Committee provided transportation planning and engineering guidance throughout the entire process as well as specific input on specialized technical topics such as selection and validation of the microsimulation model, and the technical evaluation proposed transportation improvement projects and alternatives.

3.3 Land Use Committee

Proposing, calculating, and evaluating the future land use scenarios which were used to develop the projections of future year travel and system needs, was a critical component of the MDTMP. The Land Use Committee developed of the land use projections representing the 2020 Baseline, 2020 Enhanced, and 2020 Visionary Downtown Miami growth and development scenarios. This group was comprised of planning professionals from the City of Miami, the Miami–Dade MPO, Miami-Dade County Planning Department, FIU, and several landowner representatives including Downtown Miami real estate professionals.

3.4 Evaluation Criteria Committee

The Evaluation Criteria Committee was comprised of more than 25 members representing a cross section of interests in Downtown Miami. The Evaluation Criteria Committee validated the study's vision, goals, and objectives and established the relative importance of the weighted factors to be used in the evaluation of alternatives.

3.5 Community Outreach and Public Involvement Meetings

The general public with interest in the greater Downtown Miami area was invited to and participated in three public forums coordinated by the Florida Department of Transportation. One meeting was held in each of the three study sub-areas (Brickell, CBD, and Omni/Overtown/Park West) to help ensure representation and participation by residents, workers and business and civic interest of the entire study area:

Public Forum #1

- Location: Miami-Dade Community College, Wolfson Campus (CBD)
- Date: April 9, 2001
- General Purpose: Explain study and seek preliminary public input

Public Forum #2

- Location: MD Public School System Administrative Building (Omni)
- Date: October 4, 2001
- General Purpose: Present area problems and possible solutions, seek input

Public Forum #3

- Location: First Presbyterian Church (Brickell)
- Date: October 22, 2002
- General Purpose: Present study recommendations, seek input and feedback

These forums were advertised in newspapers and promoted through fliers, phone calls, word-of-mouth, and e-mail involving contacting many leaders in the business, development, and neighborhood and homeowner communities within and near Downtown Miami. At each public forum the study was described to the interested parties. Participants' active involvement, ideas, thoughts and responses were not only welcomed but requested. While the level of community participation at these events varied, valuable, meaningful input was obtained in both oral statements and commentary by responses to written questionnaires and e-mail (see Appendix C). The input sought from the public included: opinions related to the goals and objectives of the study; what they perceived as transportation problems; their views about both general and specific areas that needed to be improved; as well as their suggestions for possible solutions.

The project team made it a priority to obtain public input by going into the community with the details of the study.

The public forums were supplemented with 10 small-group presentations hosted by organizations like the Downtown Miami Partnership and the Brickell Homeowners Association. A list of the meetings and groups that provided input is included in Appendix D.

Together, over 20 meetings were held to help gather public input to shape every aspect of the MDTMP, from setting the vision statement, through providing project suggestions, to determining the recommended transportation improvements. These public forums and meetings involved more than 250 individuals. The MDTMP is thus truly responsive to the needs of area stakeholders.

4.0 DEVELOPMENT SCENARIOS

The starting points for determining future transportation needs were the myriad of transportation problems identified by the analyses of the existing transportation system and recognized by the area stakeholders. However, future transportation improvements are also broadly based upon (1) projections of growth and development to a future year and (2) an assumed or desired transportation system in that future year. Increases in travel resulting from increases in projected growth and development are then put on the transportation system. Problems are then identified when the transportation system cannot handle the increases in vehicular traffic, transit ridership, etc.

It follows that the fundamental starting point for developing a Miami Downtown Transportation Master Plan is to estimate future year growth and development. In standard practice, a single scenario is proposed based on best estimates and present day assumptions for the most likely outcome of future growth. The Downtown Task Force, however, wished to examine a range of growth scenarios in which the City of Miami and its leaders were working towards implementing. Therefore, in addition to a "conservative," de facto development projection, there is two other future development scenarios carefully varied for the Downtown Miami area.

These future development scenarios–the 2020 Baseline, the 2020 Enhanced, and the 2020 Visionary–have respectively denser levels of development, and therefore increasing levels of travel demand. As noted above, denser development further burdens the transportation system and requires increasing levels and different types of improvements.

4.1 Methodology

Before developing the land use information for future year scenarios, the Land Use Committee and planning professionals from the City of Miami did a detailed inventory of existing and recently approved projects in the downtown area as well as extensive analysis of trends and potential for new development in specific sub-areas within the study area. The general approach and specific methodology for developing the three land use scenarios for the MDTMP is described below.

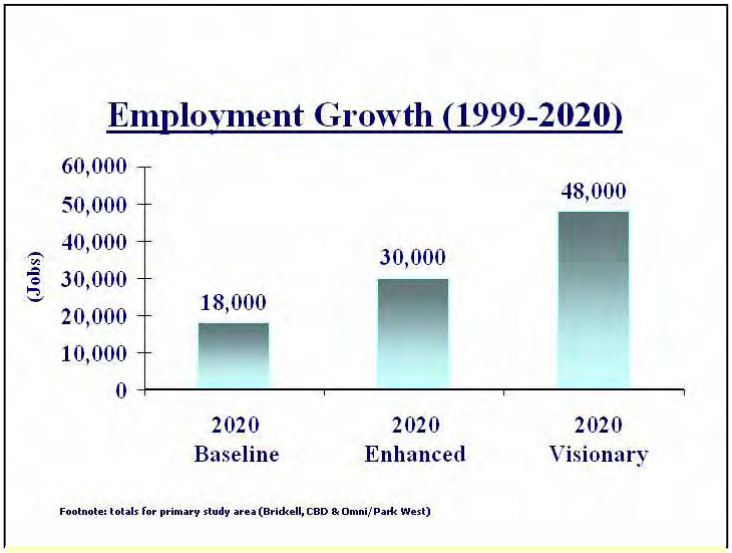
Existing Miami-Dade County and downtown development patterns and recent trends were the base for the future land use forecasts, with the heaviest emphases placed on local study area trends and potentials. This information was further combined with city regulations, policies, and recent studies dealing with desirable future land uses in each sub-sector of the Downtown Miami study area. The documents considered included:

- Miami Comprehensive Neighborhood Plan
- Miami Downtown Master Plan

- FEC Corridor Plan
- Watson Island developments
- Media and Entertainment Districts overlays
- Other Special Districts zoning overlays
- Miami River Infill Plan
- Miami River Greenway Plan
- Revitalization impacts of the Miami Design District and the Fashion District on the Edgewater and Wynwood neighborhoods
- Empowerment Zone
- Community Redevelopment areas for Overtown and the Omni.

The initial land use projection for the Baseline Scenario was based on projected future year values extracted from transportation model used in developing the Miami-Dade Long Range Transportation Plan and interpolating between them to obtain year 2020 values. Comparing estimated development levels to existing and recent development approvals throughout the area, however, validated this projection. Significant adjustments were made in particular in the Brickell area due to the recent surge in growth in that sector of Downtown Miami.

Once the baseline future year projections were established, the Land Use Committee examined additional development potential at the parcel level for each of the three subareas. This detailed review, guided by the documents and trends mentioned above, led to the land use forecasts for the Enhanced and the Visionary development scenarios.

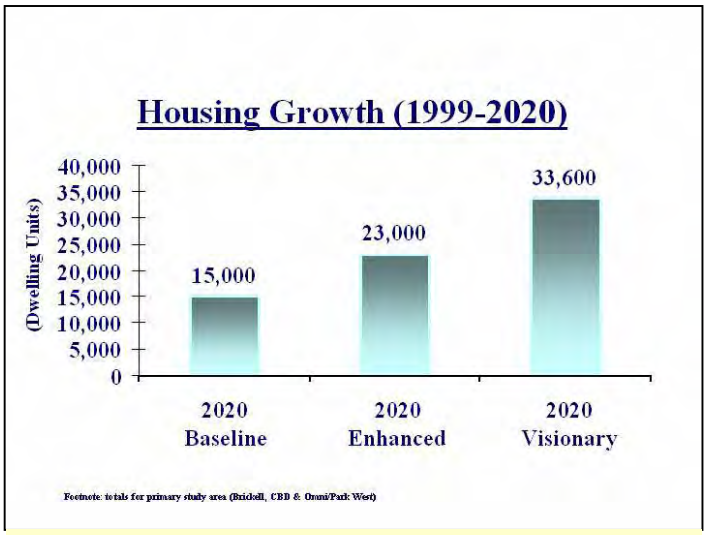


Forecasted employment growth for the three scenarios

For forecasting the 2020 Enhanced and 2020 Visionary growth projects for housing, the Land Use Committee first compared the City's property database for existing housing units to the housing stock in the 2020 Baseline scenario for a particular traffic analysis zone (TAZ). If, for example, the projected increase in housing stock was 30% for the 2020 Baseline scenario for that TAZ, the Land Use Committee examined the potential for additional development and revitalization opportunities. If additional housing stock could be forecasted, then the Land Use Committee would double the projection (an additional 30% in this example) in housing stock for the 2020 Visionary scenario for that TAZ. Finally, the 2020 Enhanced scenario would "split the difference" in forecasted housing stock between the 2020 Baseline projection and the 2020 Visionary projection. A similar iterative

process was used for developing the employment growth projections for the 2020 Enhanced and 2020 Visionary scenarios.

Finalization and fine-tuning of the forecasts included reasonableness checks, applied to the distribution of type and size of dwelling units, socio-economic characteristics of residents, employment forecasts, and school enrollment figures. Additionally, the future forecasts were checked against the level of development approved as part of the Downtown Miami DRI.



Forecasted housing growth for the three scenarios.

4.2 Summary of Scenarios

The result of this analysis for each of the 2020 development scenarios (developed by the Land Use Committee and the City of Miami) is described in detail below:

- **2020 Baseline**, the most conservative of the development scenarios, is based on the officially adopted countywide population forecasts. Compared to 1999, this scenario increases employment by 18,000 employees and residential uses by 15,000 dwelling units in the core of the study area by 2020. A large portion of this growth has already requested and received development approvals and is located in the Brickell area.

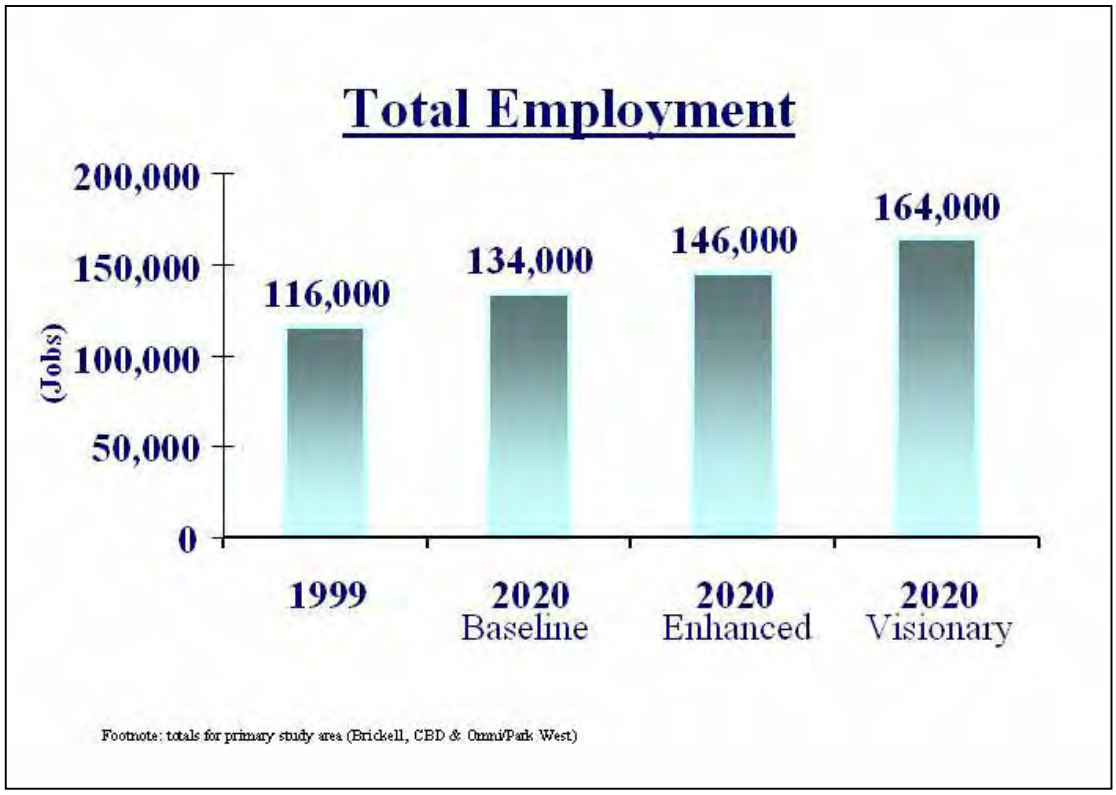
- **2020 Enhanced**, a more aggressive growth forecast, is based on the development trends seen in the Downtown Miami area in the last five to 10 years. Compared to 1999, this scenario increases employment by 30,000 employees and residential uses by 23,000 dwelling units in the core of the study area by 2020.

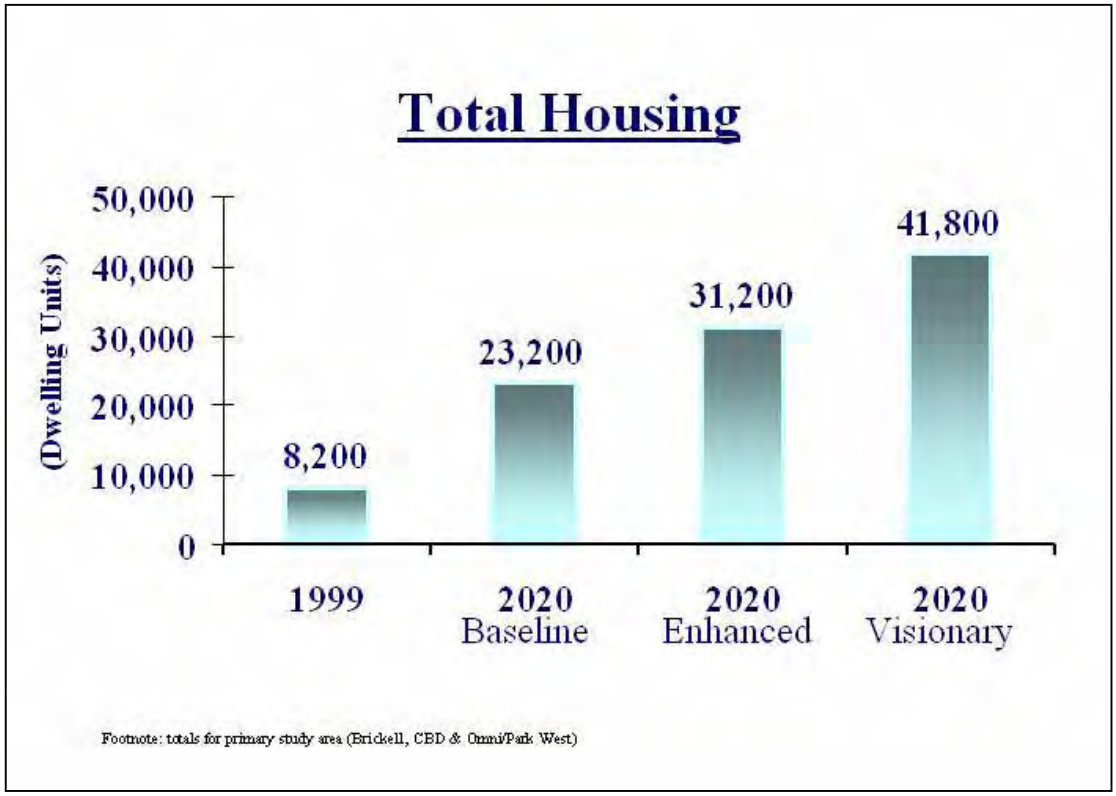
- **2020 Visionary**, the most optimistic and aggressive development scenario, is based on the successful growth trends seen in the Downtown Miami area in the past three to five years. Compared to 1999, this scenario increases employment by 48,000 employees and residential uses by 34,000 dwelling units in the core of the study area by 2020.

See Exhibit 4-1 for the 2020 forecasts for total employment and total housing.

Exhibit 4-1

2020 Forecast for Total Employment and Housing





5.0 TRANSPORTATION SYSTEM NEEDS

The future travel demand, the actual volumes of travelers, their vehicles, and transit patrons to, from, and within the study area were established using the Miami Urban Area Transportation Study (MUATS) 2025 urban area transportation planning model. The model reflected the future land use scenarios and the roadway system improvements developed from suggestions generated during all phases of the public involvement program.

Subsequently, forecasts from the urban area model were appropriately revised and input into the Paramics microsimulation model. The Paramics model, in turn, models street-by-street, intersection-by-intersection vehicular-based flows throughout smaller areas in far greater detail than urban area planning models are capable of. It include details such as traffic signal cycles, turns in and out of parking lots and garages, acceleration and braking characteristics of cars vs. truck or buses, and even incorporates user-based observations about ranges of typical driver behaviors in the study area. It thus presents an extraordinarily realistic picture of the transportation system for an area such as Downtown Miami. More importantly, Paramics and similar traffic models can not only evaluate major capital improvements like new expressway and roads, or new rail transit as planning models can, but they can far better evaluate them than planning models, and further, they can analyze a variety of improvements, scenarios, and procedures that planning models cannot even recognize.

Paramics was then utilized to assess on the Downtown-appropriate street-by-street micro network and it's micro level of detail the various transportation improvements suggested.

5.1 Roadway Network Development

The Miami Urban Area Transportation Study (MUATS) 2025 model, as adopted by the Miami-Dade Metropolitan Planning Organization (MPO) in December of 2001, was used as the base highway network for the 2020 Baseline Scenario. The transportation network was edited to reflect the expected configuration in the year 2020. Network changes were based on coordinated efforts with the Miami-Dade MPO and the City of Miami, first to remove the projects anticipated to be implemented in the 2020-2025 span, and then to reflect the transportation options that were suggested by the general public and the other study participants during the public involvement process for the project.

Exhibit 5-1 summarizes all of the updates and the transportation improvement options for the 2020 Baseline Scenario highway network. Exhibits 5-2 and 5-3 show the additional network changes reflected in the 2020 Enhanced and the 2020 Visionary Scenarios models.

Exhibit 5-1
Baseline Scenario Transportation Network Adjustments

Baseline Alternatives Description	FSUTMS Coding Completed
Implement ITS alternatives to help w/ bridge openings	N/A
Extend Miami Beach light rail (Baylink) into downtown	✓
Port Blvd U-turn	N/A
Convert S. 8 Street to two-way from Brickell to Miami Ave	✓
Convert S. 8 Street to two-way from Miami Avenue to I-95	✓
Implement Flagler Shuttle	✓
Provide a I-95 NB on-ramp at N 8 Street to provide access to WB SR 836	✓
Complete the Flagler Street Corridor improvements	✓
Provide tunnel from Seaport to Watson Island	✓
Realign I-395 and improve on/off ramps (FDOT plans)	✓
Biscayne Boulevard Improvements (FDOT plan)	✓
Two-Way Conversions	
a. E 2 Ave, Biscayne Blvd Way to NE 6 St	✓
b. Biscayne Blvd Way, SE 2 Ave to Biscayne Blvd	✓
c. S. 3 St, SE 2 Ave to Biscayne Blvd	✓
d. S 2 St, SE 2 Ave to Biscayne Blvd	✓
e. S. 1 St, W 2 Ave to Biscayne Blvd	✓
f. N 1 St, W 3 Ave to Biscayne Blvd	✓
g. N 2 St, W 1 Ave to Biscayne Blvd	✓
h. N 3 St, W 3 Ave to Biscayne Blvd	✓
i. E 3 Ave, Biscayne Blvd Way to NE 2 St	✓
j. Biscayne Blvd, SE 2 St to Biscayne Blvd Way	✓
k. S Miami Ave, Miami River to NE 6 St	✓
l. E 1 Ave, S 3 St to NE 6 St	✓
m. E 2 Ave, N 6 St to NE 13 St	✓
n. Miami Ave, N 6 St to NE 14 St	✓
o. E 1 Ave, N 6 St to NE 17 St	✓
p. S 11 St, I-95 to S 1 Ave	*
q. S 11 St, S 1 Ave to Brickell Place	*
r. S 10 St, I-95 to SW 1 Ave	*
s. S 3 Ave, SW 7 St to SW 6 St	*
t. SW 1 Ave (west of Metrorail), SW 11 St to Miami River	*
u. SW 1 Ave (east of Metrorail), SW 13 St to SW 7 St	✓
v. Miami Ave. SW 12 St to Miami River	✓
w. N 9 St, NE 2 Ave to Biscayne Blvd	*
x. N 10 St, NW 3 Ave to Biscayne Blvd	✓
y. N 11 St, NW 3 Ave to Biscayne Blvd	✓
z. N 13 St, Miami Ave to NE 2 Ave	✓
aa. N 17 St, Miami Ave to NE 2 Ave	✓
ab. S 9 St, Miami Ave to SW 1 Ave	✓
ac. Miami Ave, N 6 St to NE 17 St	✓
ad. NE Miami Ct, NE 14 St to NE 18 St	✓

* - Roadway not included in the 2025 FSUTMS model

Exhibit 5-2
Enhanced Scenario Transportation Network Adjustments

Enhanced Alternatives Description	FSUTMS Coding Completed
Convert S. 7 Street to two-way from Brickell to I-95	✓
Extend SE 1 Avenue from S. 8 Street to S. 5 Street	✓
Water Taxi from Brickell Key to Metromover Station @ Hyatt	N/A
Implement Traffic calming alternatives through Brickell residential areas	✓
Connect other neighborhoods with Transit	N/A
Create a Shuttle System for the Brickell residential area (from 13 Road to 26 Road)	✓
Connect Brickell Shuttle to Flagler Shuttle	✓
W. 1 Avenue Corridor Extension	✓
Re-align Metromover and add new station at DuPont Plaza	✓
Provide a shuttle system into Wynwood (NW 2 Avenue/36 Street/Biscayne/Omni)	✓
Create a Transit Free Fare Zone	✓
Biscayne Boulevard Improvements (City of Miami)	✓

Exhibit 5-3
Visionary Scenario Transportation Network Adjustments

Visionary Alternatives Description	FSUTMS Coding Completed
Create Loop of Metromover through the Brickell Financial District	✓
Extend the Metromover to 26 Road	✓
New tunnel under the Miami River @ W 1 Avenue	✓
Extend Metrorail to AA Arena and Seaport (based on East/West alignment)	✓
Remove Distributor Ramps and provide a "Grand Boulevard" on S. 3 Street	✓
Depress I-395 from west of R/R to provide "Grand Boulevard"	✓
Extend Metromover into Wynwood (N 2 Avenue/29 Street/Biscayne/Omni)	✓
Provide a new interchange at I-95 and N 29 Street	✓
I-95/NW 14 St Interchange	✓
Depress I-95	✓
Provide Commuter Rail to Broward County	✓

5.2 Travel Forecast

After the 2020 Baseline network was updated and the socio-economic (ZDATA1A and ZDATA2) datasets were adjusted, the FSUTMS software package was used to forecast future conditions. The resulting Downtown Miami cordon entry-exit peak season weekday average daily traffic (PSWADT) volumes were compared to the 1999 MUATS model volumes taken at the corresponding locations. Fifty-seven (57) entry/exit points were examined within the downtown Miami project study area. Of the entry/exit points analyzed, most showed growth in traffic volumes. Exhibit 5-4 lists the study area entry/exit PSWADT.

This process was repeated for the 2020 Enhanced and 2020 Visionary Scenarios. The corresponding PSWADT results are shown in Exhibits 5-5 and 5-6. In each case, as expected, significant increases in travel demands were forecast with each subsequently increased land use scenario. These comparisons were used to verify that travel growth was distributed throughout the entire network and also to ascertain the order of magnitude in travel demand growth under each development scenario when compared to known (existing) traffic conditions.

5.3 Traffic Loadings

Exhibit 5-7 portrays the major roadways in the study area and their traffic loading relative to their capacity. The color-coding differentiates roadway segments with daily traffic loadings (from the FSUTMS model) well within the segment capacity (volume to capacity or v/c ratio less than 0.8), segments near capacity (v/c ratio between 0.8 and 1.2, where capacity is a v/c ratio of 1.0 – equal numbers of vehicles using a facility as that facility can accommodate), and overloaded segments (those exhibiting a forecast v/c greater than 1.2). An estimated 25 percent of the segments fall in the overloaded category under the 2020 Baseline Scenario traffic demand conditions. The percent of overloaded segments was 50% for the 2020 Enhanced Scenario (Exhibit 5-8) and 80% for the 2020 Visionary Scenario (Exhibit 5-9).

The FSUTMS network for the 2020 Baseline Scenario reflects the main capacity improvements and operational changes that are part of the subject Scenario. The traffic volumes obtained from the FSUTMS model, however, indicate only gross, overall travel demand to, from, and within the study area, on only the area's main roadways beyond the core of the CBD. Travel volume estimates were converted to trip matrices of hourly volumes for input into the PARAMICS simulation model. Detailed operational analysis, as outlined above, of the transportation network was then performed using PARAMICS for each critical time period (AM peak, Midday, and PM peak).

The Paramics model quickly indicated that even the most conservative growth scenario, the 2020 Baseline, would require virtually impossible improvements to the highway system, or a

Exhibit 5–4
Comparison of Entry/Exit Volumes (PSWADT)
FSUTMS Runs

Entry Station	1999	Baseline
Brickell Ave (South)	25,152	33,405
Miami Ave (South)	14,059	16,288
SW 1 Ave	-	-
SW 2 Ave	-	-
SW 2 Ct	-	-
SW 3 Ave	32,693	30,488
SW 15 Rd	-	-
I-95 off ramp/8 Street	952	3,474
I-95 on ramp/8 Street	11,849	11,311
SW 8 St	25,707	30,778
SW 7 St	13,768	11,116
SW 6 St	-	-
SW 5 St	-	-
SW 3 St	6,442	9,145
SW 2 St	3,446	1,953
SW 1 St	15,019	18,175
Flagler St	17,822	16,296
NW 1 St	12,443	18,165
NW 3 Ave (NB)	5,897	5,204
I-95 off ramp	8,508	10,907
NW 2 St	6,787	9,755
NW 3 St	11,258	13,031
NW 5 St	10,008	9,595
NW 6 St	10,118	10,714
NW 7 St	7,509	6,981
NW 8 St	11,888	13,967
I-95 on ramp	19,246	12,878
NW 9 St	-	-
NW 10 St	3,494	9,285
NW 11 St	1,753	9,632

Entry Station	1999	Baseline
NW 11 Terr	-	-
NW 12 St	-	-
NW 14 St	5,992	2,812
NW 17 St	2,400	1,625
NW 20 St	19,615	24,047
NW 5 Pl	-	-
NW 4 Ct	-	-
NW 3 Ave	-	-
NW 2 Ave	28,077	35,895
NW 1 Pl	-	-
NW 1 Ct	-	-
NW 1 Ave	-	-
NW Miami Ct	-	-
N Miami Ave	11,643	20,650
NE 2 Ave	29,991	36,800
Biscayne Blvd (north)	29,279	37,065
NE 19 Terr	-	-
NE 15 St/ Venetian Way	5,009	8,151
I-395 WB off ramp	11,022	5,495
I-395 EB on ramp	10,660	2,353
I-395 WB on ramp	23,928	32,689
I-395 EB off ramp	25,081	33,454
CBD WB on - Miami Ave	15,856	17,659
CBD EB off - Miami Ave	4,630	12,808
CBD EB off - NE 1 Ave	5,046	2,405
CBD WB on - SE 2 Ave	8,010	8,234
CBD EB off - SE 2 Ave	16,637	19,222
Totals	**528,694**	**613,907**
Percent Increase		**16%**

Notes: PSWADT = Peak Season Weekday Average Daily Traffic

Exhibit 5-5
Comparison of Entry/Exit Volumes (PSWADT)
FSUTMS Runs

Entry Station	1999	Enhanced
Brickell Ave (South)	25,152	33,132
Miami Ave (South)	14,059	16,068
SW 1 Ave	-	-
SW 2 Ave	-	-
SW 2 Ct	-	-
SW 3 Ave	32,693	32,292
SW 15 Rd	-	-
I-95 off ramp/8th Street	952	2,629
I-95 on ramp/8th Street	11,849	10,884
SW 8 St	25,707	27,341
SW 7 St	13,768	20,124
SW 6 St	-	-
SW 5 St	-	-
SW 3 St	6,442	9,208
SW 2 St	3,446	3,355
SW 1 St	15,019	15,614
Flagler St	17,822	17,777
NW 1 St	12,443	23,480
NW 3 Ave (NB)	5,897	8,591
I-95 off ramp	8,508	9,383
NW 2 St	6,787	11,373
NW 3 St	11,258	12,608
NW 5 St	10,008	10,687
NW 6 St	10,118	12,231
NW 7 St	7,509	6,663
NW 8 St	11,888	16,686
I-95 on ramp	19,246	14,268
NW 9 St	-	-
NW 10 St	3,494	9,108
NW 11 St	1,753	10,114

Entry Station	1999	Enhanced
NW 11 Terr	-	-
NW 12 St	-	-
NW 14 St	5,992	10,572
NW 17 St	2,400	2,052
NW 20 St	19,615	25,796
NW 5 Pl	-	-
NW 4 Ct	-	-
NW 3 Ave	-	-
NW 2 Ave	28,077	41,772
NW 1 Pl	-	-
NW 1 Ct	-	-
NW 1 Ave	-	-
NW Miami Ct	-	-
N Miami Ave	11,643	18,151
NE 2 Ave	29,991	39,307
Biscayne Blvd (north)	29,279	37,657
NE 19 Terr	-	-
NE 15 St/ Venetian Way	5,009	8,673
I-395 WB off ramp	11,022	5,723
I-395 EB on ramp	10,660	2,809
I-395 WB on ramp	23,928	34,945
I-395 EB off ramp	25,081	32,421
CBD WB on - Miami Ave	15,856	17,266
CBD EB off - Miami Ave	4,630	13,032
CBD EB off - NE 1 Ave	5,046	1,742
CBD WB on - SE 2 Ave	8,010	8,441
CBD EB off - SE 2 Ave	16,637	18,631
Totals	**528,694**	**652,606**
Percent Increase		**23%**

Notes: PSWADT = Peak Season Weekday Average Daily Traffic

Exhibit 5-6
Comparison of Entry/Exit Volumes (PSWADT)
FSUTMS Runs

Entry Station	1999	Visionary
Brickell Ave (South)	25,152	33,615
Miami Ave (South)	14,059	17,295
SW 1 Ave	-	-
SW 2 Ave	-	-
SW 2 Ct	-	-
SW 3 Ave	32,693	39,271
SW 15 Rd	-	-
I-95 off ramp/8 Street	952	13,366
I-95 on ramp/8 Street	11,849	32,885
SW 8 St	25,707	23,212
SW 7 St	13,768	17,141
SW 6 St	-	-
SW 5 St	-	-
SW 3 St	6,442	21,958
SW 2 St	3,446	19,722
SW 1 St	15,019	18,614
Flagler St	17,822	32,362
NW 1 St	12,443	23,270
NW 3 Ave (NB)	5,897	20,954
I-95 off ramp	8,508	7,767
NW 2 St	6,787	13,890
NW 3 St	11,258	11,761
NW 5 St	10,008	14,775
NW 6 St	10,118	9,681
NW 7 St	7,509	12,752
NW 8 St	11,888	16,337
I-95 on ramp	19,246	16,674
NW 9 St	-	-
NW 10 St	3,494	12,536
NW 11 St	1,753	13,396

Entry Station	1999	Visionary
NW 11 Terr	-	-
NW 12 St	-	-
NW 14 St	5,992	12,099
NW 17 St	2,400	1,100
NW 20 St	19,615	22,406
NW 5 Pl	-	-
NW 4 Ct	-	-
NW 3 Ave	-	-
NW 2 Ave	28,077	55,539
NW 1 Pl	-	-
NW 1 Ct	-	-
NW 1 Ave	-	-
NW Miami Ct	-	-
N Miami Ave	11,643	25,831
NE 2 Ave	29,991	46,859
Biscayne Blvd (north)	29,279	46,525
NE 19 Terr	-	-
NE 15 St/ Venetian Way	5,009	10,487
I-395 WB off ramp	11,022	66,426
I-395 EB on ramp	10,660	163
I-395 WB on ramp	23,928	48,367
I-395 EB off ramp	25,081	-
CBD WB on - Miami Ave	15,856	-
CBD EB off - Miami Ave	4,630	-
CBD EB off - NE 1 Ave	5,046	-
CBD WB on - SE 2 Ave	8,010	-
CBD EB off - SE 2 Ave	16,637	-
Totals	**528,694**	**779,036**
Percent Increase		**47%**

Notes: PSWADT = Peak Season Weekday Average Daily Traffic

Exhibit 5-7


Year 2020 MUATS Model - Baseline Scenario
Network by Volume to Capacity Ratio (V/C)
VC<.8
VC=.8-1.2
VC>1.2
Miami Downtown Transportation Master Plan
MPO

Exhibit 5-8

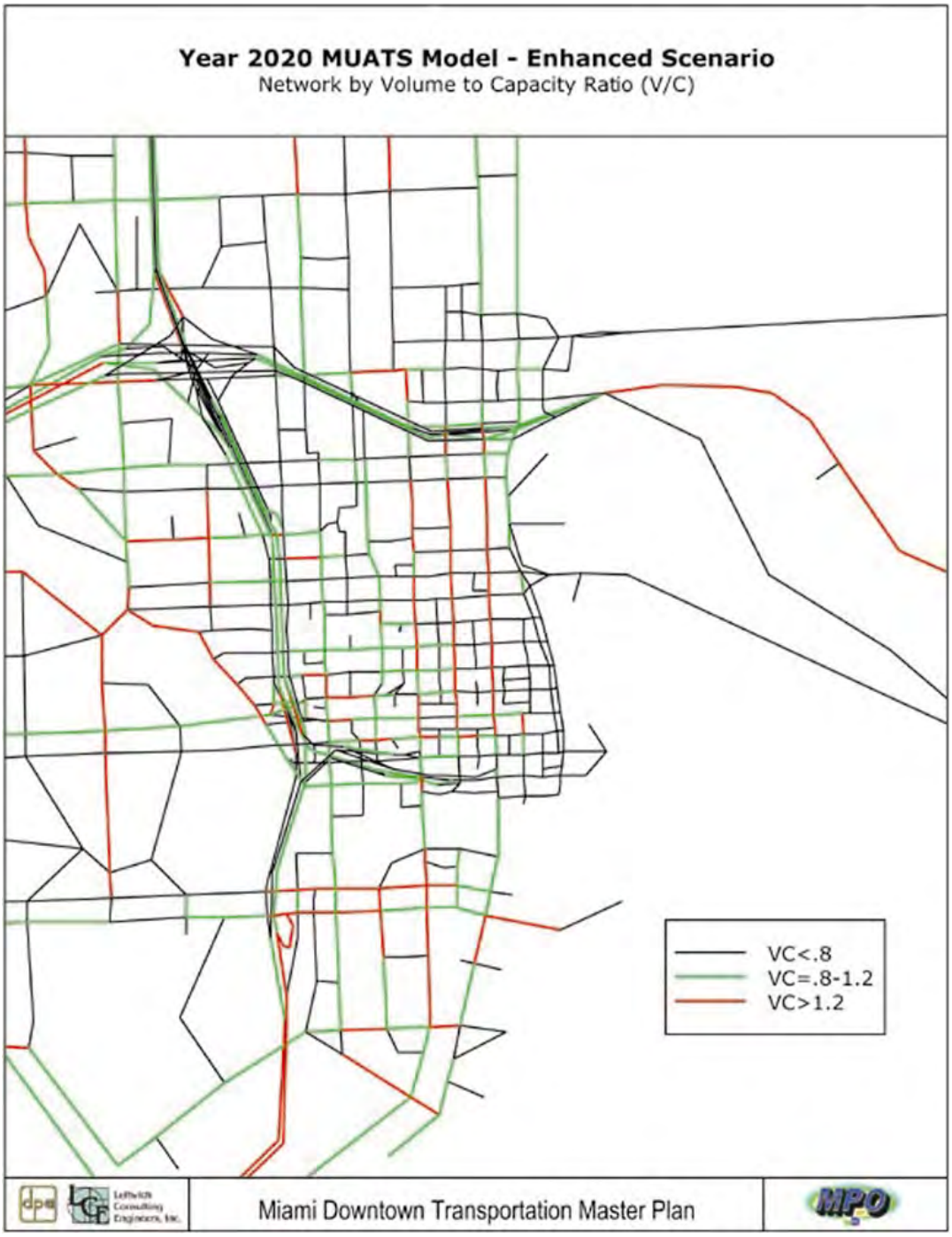
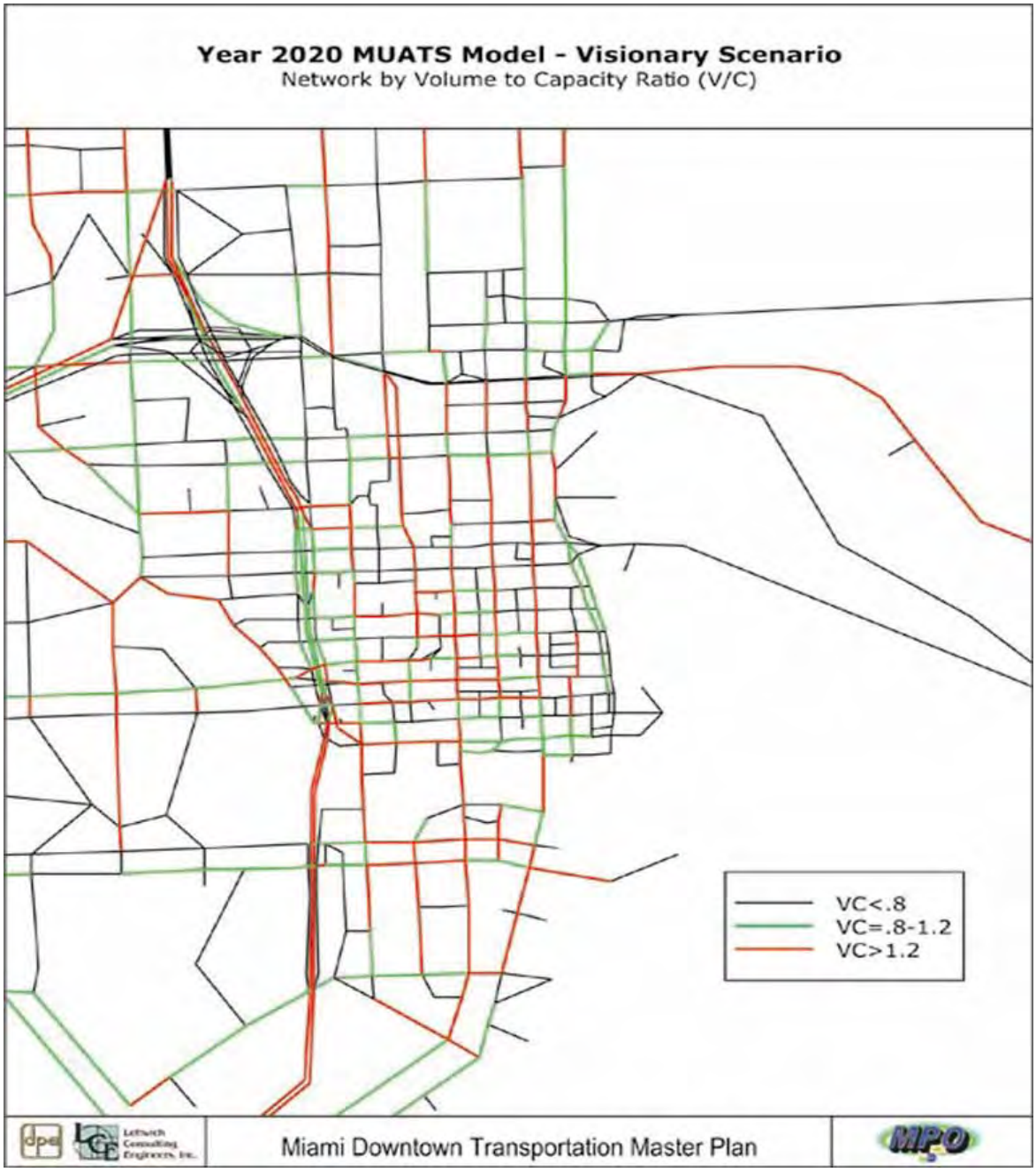

Year 2020 MUATS Model - Enhanced Scenario
Network by Volume to Capacity Ratio (V/C)
VC<.8
VC=.8-1.2
VC>1.2
Miami Downtown Transportation Master Plan
MPO

Exhibit 5-9


Year 2020 MUATS Model - Visionary Scenario
Network by Volume to Capacity Ratio (V/C)
VC<.8
VC=.8-1.2
VC>1.2
Miami Downtown Transportation Master Plan
MPO

combination of selective highway improvements coupled with a significant shift to transit as a means of accessing and traveling within Downtown Miami. Considering the findings, it is fortunate that a grade-separated, fixed guideway system is already in place for Downtown Miami. Metrorail, Miami-Dade County's underutilized mass transit system, runs right through this area. Further, Metrorail's supporting people-mover system, Metromover, can assist with intracity travel far more than it does now.

5.4 The Roadways versus a Pedestrian-Friendly Environment

Improvements to the roadway system in the study area are challenging. Widening roads in downtown areas is virtually impossible. It can be very disruptive to businesses, very expensive due to limited rights-of-way, and generally unfeasible because buildings abut the existing rights-of-way. Further, both widening streets and improving vehicular mobility and speeds conflict with creating a pedestrian-friendly environment for Downtown Miami. Residents, transit riders, and workers in Downtown Miami need a safe, pedestrian-oriented environment to travel the relatively short distances between downtown destinations. The public constantly voiced this need throughout the public involvement process.

A safe, pedestrian-oriented environment will attract more residents and shoppers to Downtown Miami.

And it is precisely the safe, pedestrian-oriented environment which promotes more residents to choose to live in an urban center, and it's what attracts others there for shopping and entertainment. And increased residential components, and diversified shopping and entertainment offerings are what helps keep present residents satisfied, interests new residents, and brings in outsiders to create the living city of round-the-clock activities, the 24-hour city that transcends the office-dominated 8-to-5 and then shut down activity cycle most of the Downtown now experiences. And it is the reinvigoration of Downtown Miami that will help generate significant new revenues to support improving services and making Miami a great city.

5.5 Multimodal Improvements

Consequently, the main focus on future transportation system improvements shifted from the roadway network to improvements in transit, the pedestrian environment, and other modes of transportation. Ways to better manage travel demand like telecommuting, staggered work hours, and more residents in Downtown Miami were also discussed. Critically needed are extensive improvements to the transit system to absorb a large portion of the increased 2020 travel demand. Transit improvements include shorter headways and more capacity for Metrorail and Metromover, more shuttle systems like the Brickell shuttle, Metromover lines extended into other areas, and free-fare zones for the downtown area to increase transit ridership.

In 2020, transit will need to carry 25% to 50% of the trips in Downtown Miami.

Increasing the capacity and the attractiveness of the transit system will require major improvements. The transit mode split goal (based on the percent of trips that travel to, from and within the study area) is 25% for the 2020 Baseline Scenario, 30% for the 2020 Enhanced Scenario, and 50% for the 2020 Visionary Scenario. Realizing these transit mode splits will result in adequate capacities and flows on the roadway system, as well as reduced surface street conflicts, supporting a more pedestrian-friendly environment in Downtown Miami.

Future Downtown Miami transportation needs also encompass enhancements to other modes of transportation including bicycles and water-borne transportation.

The MDTMP has not eliminated roadway improvements from its multimodal approaches to managing congestion, enhancing accessibility, and improving mobility. It also addresses vehicular needs like the traffic congestion caused by the Brickell Bridge openings, the confusion of the one-way street system, and the need to create more appropriate vehicle entryways than the current I-95 Distributor Ramps.

The MDTMP promotes a forward-looking, more sustainable, more people-friendly and traveler-responsive transportation system. It recommends meeting needs across a broad spectrum of multimodal project and management offerings. And it seeks to meet the transportation needs with the input from its users, residents, workers, and the business and community leaders of Downtown Miami.

6.0 DEVELOPMENT AND EVALUATION OF TRANSPORTATION SYSTEM IMPROVEMENTS

6.1 Three-Tiered Process

The specific transportation system improvements to be evaluated consisted of three tiers. Tier 1 included improvements based on suggestions made or problems identified by the public. For example, a public comment that "the streets are confusing and I always get lost" supported converting one-way streets to two-way streets. Tier 2 incorporated improvements proposed in previous studies for Downtown Miami such as the removal of the I-95 Distributor Ramps and the creation of a grand boulevard entrance for the downtown area. Tier 3 included a series of improvements determined by the Technical Advisory Committee including projects like ITS to warn motorists of Brickell Bridge openings and reviewing those included in the FDOT's Work Program, the MPO's TIP, and the MPO's Long Range Transportation Plan.

In all, more than 40 improvement strategies, covering many modes of transportation and numerous specific projects, were developed for each subarea of Downtown Miami. Every effort was made to explore improvement options in each of the major transportation mode categories: roadway, transit, pedestrian, and bicycle/other modes.

6.2 Improvements Evaluation

Each transportation system improvement was evaluated against the study goals and objectives and its expected benefits. The Evaluation Criteria Committee (ECC) determined weighted scores for each transportation system improvement based on six goals. The following is the list of the goals and its objectives.

1. Improve **transportation** benefits of systems and projects
    a. Improves downtown mobility
    b. Decreases downtown traffic congestion
    c. Completes Downtown transportation networks (road, transit, pedestrian, bicycle)
    d. Implements multimodal solutions
    e. Improves travel safety and security
    f. Increases transportation effectiveness and efficiency
    g. Improves systems management and operations
    h. Emphasizes maintenance and upkeep
    i. Employs technology in lieu of construction

2. Increase **social benefits** of Downtown transportation investments
    a. Supports environmental justice/equitable assignment of positive and negative impacts
    b. Preserves community cohesion/stabilizes or improves urban neighborhoods
    c. Addresses elderly and handicapped concerns
    d. Integrates community oriented aesthetics in planning
    e. Increases residents' and employees' access to major activity centers
    f. Incorporates sustainability of transportation facilities

3. Enhance and strengthen Downtown **economic** activities
    a. Increases multimodal accessibility of employment centers
    b. Increases freight access to port
    c. Increases freight accessibility to businesses
    d. Facilitates tourism and tourists movement(s)
    e. Increases multimodal access to retail and shopping areas
    f. Increases access to recreational sites
    g. Increases Downtown employment

4. Preserve the **environment** and promote **energy conservation**
    a. Improves air quality
    b. Improves water quality
    c. Does not disturb sensitive land uses
    d. Reduces consumption of fossil fuels
    e. Promotes non-motorized travel

5. Reinforce sound Downtown growth and **development** principles
    a. Supports and augments the City's Comprehensive Development Master Plan
    b. Promotes infill for vacant land
    c. Encourages adaptive reuse of existing infrastructure where appropriate

6. Employ sound improvement **investment** strategies
    a. Minimize capital costs
    b. Minimize operation and maintenance costs
    c. Implement externally funded projects where feasible

The ECC assessed the six categories of goals/benefits and assigned numerical weights to each:

- Transportation Benefits (31%)
- Social Benefits (20%)
- Economic Activity (14%)
- Environmental Benefits (14%)
- Growth and Development Benefits (11%)
- Transportation Investment (10%)

The transportation improvements were input along with the travel demand from various future development scenarios (2020 Baseline, 2020 Enhanced, and 2020 Visionary) into the Paramics model to test their level(s) of effectiveness. The Technical Evaluation Committee (TEC) considered the results from the traffic simulation and the goals and objectives of the study. The TEC assigned a performance score to each transportation improvement option/alternative. The low range of the score was -10 points for options that are counterproductive relative to a specific study objective. The maximum score was +10 points for the maximum positive impact relative evaluation criteria. Zero points represented no impact.

The weighting of the evaluation criteria is very important because it takes into account community preferences, as reflected in the following example. Consider two options: Improvement A and Improvement B. The sum of the scores for the six evaluation criteria is identical for both Improvements (see below). In this example, Improvement A scored higher than Improvement B under Transportation Benefits. Without weights, each evaluation criteria (goal/benefit) would be equally important and both improvements would get the same performance ranking.

Improvement A		**Improvement B**	
Goal/Benefit	**Score**	**Goal/Benefit**	**Score**
Transportation	+8	Transportation	+1
Social	+4	Social	+2
Economic	+2	Economic	+6
Environmental	-2	Environmental	-2
Growth/Development	+6	Growth/Development	+6
Trans. Invest.	0	Trans. Invest.	+5
TOTAL	**+18**	**TOTAL**	**+18**

However, with the weights used in this study, Improvement A is clearly superior to Improvement B because the community decided that Transportation Benefits were the most important benefits of any improvement option (see below).

Improvement A		**Improvement B**	
Goal/Benefit	**Weighted Score**	**Goal/Benefit**	**Weighted Score**
Transportation	+2.5	Transportation	+0.3
Social	+0.8	Social	+0.4
Economic	+0.3	Economic	+0.8
Environmental	-0.3	Environmental	-0.3
Growth/Develop.	+0.7	Growth/Develop.	+0.7
Trans. Invest.	0	Trans. Invest.	+0.5
TOTAL	**+4.0**	**TOTAL**	**+2.4**

The evaluation of transportation improvement alternatives was based on a weighted scoring method described above. The weighted scores were then used by the Technical Committee to recommend the improvements and the priorities to be included in the MDTMP (see Appendix E for un-weighted and weighted scores of each transportation improvement considered in the MDTMP). This method is similar to the method used in the Long Range Transportation Plan. Involvement of the Evaluation Criteria Committee ensured that each study objective was considered explicitly and that the appropriate degree of importance was reflected in the final evaluation of improvement options.

7.0 RECOMMENDATIONS

The Miami Downtown Transportation Master Plan (MDTMP) is intended to be a guide for implementing improvements to Downtown Miami's transportation system that will develop an economically stronger, more sustainable, and much more livable city. As a guide, the MDTMP offers conceptual approaches and broad strategies, but it also provides recommendations for specific projects where appropriate. This section addresses the approaches and lists the specific projects considered and evaluated during the course of Plan development.

Evaluated according to the goals and objectives of the MDTMP, the downtown transportation system improvements were ranked as recommendations. Several recommendations were repeated throughout the entire study area, like improving transit service (frequency, reliability, and state-of-the-art, user-information systems), developing a network of pedestrian-oriented corridors, and converting one-way streets to two-way. Other recommendations, like removing a portion of I-395, were more sub-area specific. The recommendations were further stratified by sub-area.

Some specific improvements include:

- Creating a Metromover loop in the Brickell Financial District
- Implementing a water taxi between Brickell Key and the mainland
- Constructing a tunnel under the Miami River at SW 1 Avenue
- Extending Metromover to the Wynwood area
- Extending the M-Path for bicycles through all of Downtown
- Modifying North 14 Street from I-95 to Biscayne Boulevard
- Completing Baywalk from Pace Park to Bayside.

7.1 Improvement Categories

The recommendations in the plan are categorized into four mode-specific groups and are presented below. Pursuing the goals of creating a true, multimodal, transportation system–with an emphasis on the pedestrian environment and enhanced transit service–to support downtown residential growth and continuing economic vitality have resulted in the proposals listed.

7.1.1 Roadway Improvements

Roadway improvements include physical changes to all types of roads in the study area; these include conventional approaches like road realignments, road widenings, intersection improvements, and the like. This group of improvements also includes operational changes such as conversion from one-way to two-way flow and technological improvements such as using

Intelligent Transportation System (ITS) devices to increase operational efficiency and utilizing the existing roadway system better.

7.1.2 Transit Improvements

Transit improvement recommendations include providing circulator services, extending Metromover, and implementing a free-fare transit zone in the downtown area. In some cases, it is recommended that new shuttle service and Metromover extensions be provided along the same corridors. These recommendations are not intended to be redundant or duplicative; instead, when both technologies are recommended, the shuttle service should be considered an interim improvement that can be phased out once the Metromover extension is operational.

The effectiveness of any transit service depends on the quality of service, including many factors– chief among them, high frequency. Metromover extensions will increase service, reliability, and effectiveness because of the exclusive guideway that eliminates the delays when buses share the roadways with cars, especially in areas that are congested during much of the day. Metromover extensions will certainly reduce transit travel times throughout Downtown Miami.

7.1.3 Pedestrian Improvements

A pleasant, safe environment for pedestrians will promote additional walking in Downtown Miami. Unfortunately, pedestrians compete with automobiles for space along a corridor when crossing streets, and conflicts are unavoidable. These conflicts can be mitigated and significantly reduced.

7.1.4 Travel Demand Management

The number of vehicles in Downtown Miami is significantly related to the amount of parking available. Jurisdictional policies that encourage an overabundance of parking in Downtown Miami are counter-productive to promoting walking and increasing mass transit use. The City of Miami and Miami-Dade County should reconsider parking requirements and policies for Downtown Miami. Limiting the growth of the parking supply in the city will benefit pedestrians by (1) physically restricting the number of vehicles entering the downtown, and (2) encouraging the use of transit as a simpler and ultimately more effective way to reach the area.

Additionally, TDM policies should be implemented by the city with the help of the Downtown Transportation Management Initiative (a transportation management association) and South Florida Commuter Services. TDMs are collections of strategies aimed at reducing usage and volumes of single-occupancy vehicles during peak travel hours. The strategies may be as varied as carpooling, staggered work hours, parking management, and telecommuting. These strategies, when supported by local jurisdictions and aggressively implemented by area businesses, can result in noticeable reductions in peak-hour travel demand with the corresponding benefit in the area's roadway system.

7.1.5 Other Modes

This category of improvements includes bicycles, personal transporters, and waterborne transportation. Both general and specific improvement recommendations were formulated for the plan and are discussed in more detail in this section. Another existing mode, taxicabs, will need further study. Taxicabs can effectively complement the existing and proposed modes of travel in Downtown Miami by facilitating short trips and serving as a mode of access to supplement other modes such as Metromover and Metrorail. The taxicab industry, however, is highly regulated and significant legal and administrative changes would likely be needed to make this mode more responsive to travel needs in Downtown Miami.

7.2 Specific Recommendations

Individual improvement recommendations are presented below in more detail. The recommendations have been listed in order of priority as established by the study's Technical Committee. This priority system was established based on both a technical evaluation of benefits and the weights given to each evaluation criterion by the study's Evaluation Criteria Committee.

7.2.1 Implement a Free-Fare Transit Zone.

The vision of a vibrant Downtown Miami can be realized only if pedestrians and automobiles can co-exist. Transit is a large component of the formula for achieving this goal. One of the most effective ways to encourage transit ridership (other than excellent service) is providing the service free of charge. An area like Downtown Miami is ideal for implementing this concept. The area already has a core transit distribution system (Metromover) that is being supplemented with local, high frequency circulators.

A Free-fare zone will increase transit ridership.

Free-Fare Transit Zones have been successfully implemented elsewhere. It is also well documented that the patronage of local high-frequency transit service is high when the service is provided free. Indeed, since Metromover became a free service in January 2003, Miami-Dade Transit has reported that ridership has increased over 40%.

The zero out-of-pocket cost is certainly an incentive for users to ride such systems. However, there are also intangible benefits. For example, riders need not worry about having enough (or exact) change, and user convenience is, therefore, increased. Additionally, removal of the farebox

eliminates the delays from the extra step of paying a fare upon boarding the vehicle. A number of transit analysts also agree that a substantial portion of the cost of running these systems is eliminated when cash collection equipment costs and maintenance, as well as revenue control and administrative support costs, are avoided. Furthermore, fewer delays means both that the service frequency is more reliable and the run times are shorter, thereby reducing rolling stock costs, as fewer vehicles are needed to provide the same service frequency.

Implementing a Free-Fare Transit Zone is recommended for the entire study area. The system should allow riders to use any, or transfer between any, of the local systems (shuttles and/or Metromover) for free.

7.2.2 Construct pedestrian connection from Bayside to AA Arena.

Bayside Marketplace is one of the most active (and attractive) retail centers in Downtown Miami. The AmericanAirlines Arena, with its frequent sporting and entertainment events, is also another popular destination in the immediate area. These two attractions complement each other in that numerous arena patrons visit Bayside before and/or after games and concerts. Another popular destination that interacts with Bayside is the restaurant/club on the arena property. There is a definite synergy between these uses on opposite sides of Port Boulevard.

There has long been mutual interest between managers of both properties to construct a pedestrian bridge over Port Boulevard. Discussions continue regarding siting, placement, and access for the facility, a pedestrian bridge linking Bayside and the AmericanAirlines Arena is expected to become a reality in the relatively near future. This pedestrian bridge is not included in the TIP or the LRTP, as it will be built with private funds.

"…a pedestrian bridge linking Bayside and AA Arena is expected to become a reality in the near future."

7.2.3 Extend Baylink light rail down Biscayne to Flagler.

Downtown Miami and Miami Beach are major economic engines in South Florida. Yet, there are no enhanced transit options for trips between these two high-density activity centers. The general purpose of the Baylink project is to:

- Connect Downtown Miami hotels and tourist attractions to the Miami Beach Convention Center and beaches
- Tie Miami Beach to the rest of Miami-Dade County's transit system
- Provide an enhanced transit connection from Miami Beach to the Miami International Airport

MacArthur Causeway was recently improved with more lanes and higher bridges generally increasing the capacity of this important connection between Downtown Miami and Miami Beach. A light rail system will further increase the capacity of this corridor to ensure adequate speeds for everyone traveling on the causeway.

Typical light rail vehicle.

The proposed alignment brings the light rail system (Baylink) from South Beach on the Causeway, down Biscayne Boulevard and west to connect with the Government Center Station. The most desirable alignment for this final leg would be on (or near) Flagler Street. Such an alignment would be most compatible with the short-range objectives of the proposed Flagler Street shuttle and is a high priority for the MDTMP.

7.2.4 Implement a two-way road system.

In the 1950s and 1960s, one-way streets were implemented in many downtown areas across the country with the purpose of relieving traffic congestion. As traffic congestion was decreased with the one-way system, automobiles speeds increased in these areas with high pedestrian activity. Further, one-way streets are confusing to the unfamiliar driver because of the lack direct routes to destinations.

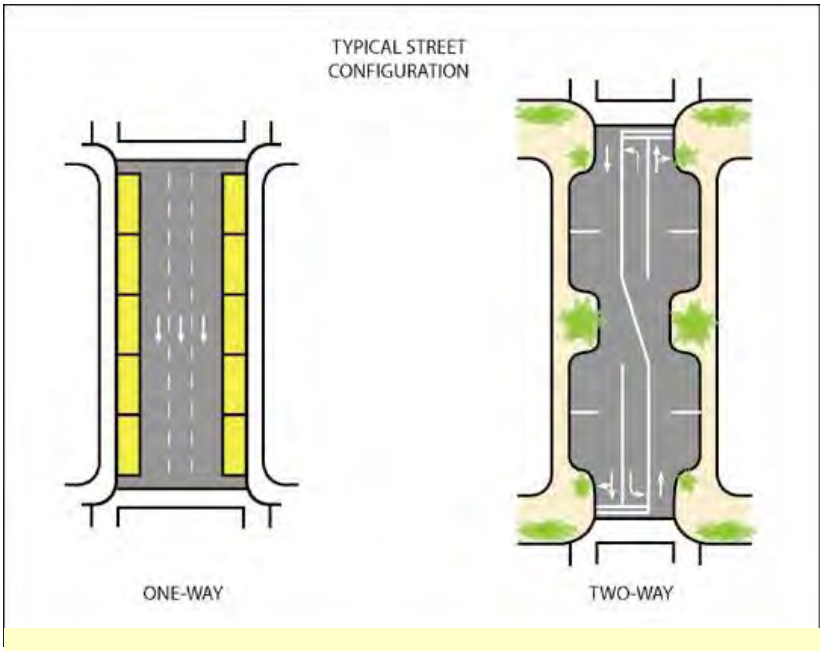
Now, the trend for downtown areas is an environment that reduces automobile speeds and volumes to a more compatible level with the pedestrian. This can be achieved by converting from one-way streets to two-way streets.

Convert the following streets from one-way to two-way operation:

- SE 8 Street from Brickell Avenue to South Miami Avenue
- SW 8 Street from South Miami Avenue to I-95
- South 7 Street from Brickell Avenue to I-95
- Biscayne Boulevard Way from SE 2 Avenue to Biscayne Boulevard
- SE 3 Street from SE 2 Avenue to Biscayne Boulevard
- SE 2 Street from SE 2 Avenue to Biscayne Boulevard
- South 1 Street from SW 2 Avenue to Biscayne Boulevard
- Flagler Street from Biscayne Boulevard to West 3 Avenue
- North 1 Street from NW 3 Avenue to Biscayne Boulevard
- North 2 Street from NW 1 Avenue to Biscayne Boulevard

- North 3 Street from NW 3 Avenue to Biscayne Boulevard
- Miami Avenue from Miami River to NE 14 Street
- East 1 Avenue from South 3 Street to NE 15 Street
- East 2 Avenue from Biscayne Boulevard Way to NE 13 Street
- SE 3 Avenue from Biscayne Boulevard Way to Flagler Street
- Biscayne Boulevard from SE 2 Street to Biscayne Boulevard Way

In some cases, the change is intended to address specific problems in the area. For example, the conversion of South 8 and 7 Streets will help with the congestion caused by the Brickell Bridge openings and will provide an alternate route to access I-95. The City of Miami and the FDOT have conducted feasibility studies of these changes and are already moving forward with the early stages of implementation.



Typical one-way and two-way street configurations.

The conversion of Flagler Street to two-way traffic is another project in the early implementation stages. In fact, this project includes several components that will improve transit and pedestrian services.

Regarding other corridors, many downtown residents, workers, and visitors agree that the present circulation system, dominated by one-way streets, is confusing and not particularly user-friendly, something to avoid in a city frequented by visitors and tourists. The consensus is that such a system is also inefficient because it usually requires driving longer distances to travel to/from downtown destinations. Further, one-way streets generally have higher vehicular speeds, which endanger pedestrians. Creating a two-way traffic circulation system in the area will make Downtown Miami less confusing for motorists and safer for pedestrians. The higher capacity provided by one-way streets must thus be subordinated to other user considerations.

Certain critical arteries such as NE/NW 5 and 6 Streets, providing access to major traffic generators like the Port of Miami, AmericanAirlines Arena, and Bayside, should remain one-way in order to preserve their high capacity and minimize disruption of access patterns.

Converting streets to two-way flow is relatively inexpensive. The principal changes involve modification of pavement markings, signs and repositioning and reprogramming traffic signals. In general, the number of lanes and the amount of on-street parking will not be affected. On narrow streets, however, loading zones must be carefully re-evaluated to ensure there is sufficient capacity thereby precluding double parking and blockage of through lanes. Alternatively, loading hours can be regulated to minimize conflicts between delivery vehicles and commuter traffic. In any case, enforcement will be needed.

The specific changes required on each street must be established case-by-case. Re-striping the lanes and removal of one-way signs will suffice at many locations. However, there will be opportunities to introduce other desirable features to enhance the overall environment and aesthetics of the area. Examples of such enhancements are:

- Landscaped medians
- Wider sidewalks
- Additional on-street parking
- Pedestrian amenities

7.2.5 Improve transit amenities and attributes in the area.

Amenities for transit patrons are a key element of an effective transit system. The elements contributing to a high quality environment are well documented, but for the most part include:

- Comfortable shelters providing protection from the elements
- Adequate lighting and safety at the shelters
- Clean and safe vehicles

Transit level of service (TLOS) attributes are, perhaps, even more important to a successful transit system than transit amenities. TLOS attributes include:

- High frequency
- Long operating hours
- Reliable schedules
- Reasonable walking distances
- Available seats on the vehicles
- Courteous drivers
- Ease of use for riders
- Economical fare

A comprehensive and systematic program should be implemented to transform transit service in and out of Downtown Miami. Users outside the downtown must find transit a convenient means of reaching the area if a significant increase in transit ridership is to be achieved.

Many of these improvements are relatively uncomplicated and inexpensive. Others represent a substantial capital investment in vehicles and support facilities. Training, quality control, and a commitment to user satisfaction must receive the attention they deserve from the transit operators. All this will take time to implement but must start immediately as a phased program of system-wide improvements. Longer-range solutions must also be continually explored as discussed below.

Comfortable shelters that provide protection from the elements are essential.

To be an effective alternative to the automobile, transit travel must offer a reasonable schedule. From the users' standpoint, driving and/or walking to the initial transit point of access (and from the final transit stop to their ultimate destination), time spent waiting for transit, and transfer times (generally in a warm, humid, and frequently rainy environment) all add up and can drastically reduce convenience. An excessive number of stops along the way, indirect routes, and multiple transfers further detract from users' convenience. Finally, transit vehicles in mixed traffic flow, captive to traffic congestion, are the final deterrent to using transit. This is why an extensive transit system is essential.

Extending the system must enable more exclusive right-of-way systems such as Metrorail, Metromover, busways, and Tri-Rail. Semi-exclusive rights-of-way such as the South Dade Busway (buses must stop at signals), and light rail systems with signal pre-emption would represent a slight improvement over mixed-traffic flow and should be considered interim solutions that can later be converted to exclusive right-of-way systems. Every opportunity to secure transit rights-of-way should be explored. This includes roads, railroads, grade separations, waterways, utility corridors, public lands, partially filling water bodies, and grade separations (above and underground), etc.

Finally, technological advances have revolutionized our daily lives. A lot of the same technology that is used for highways can be used for improving the efficiency of transit service. In fact, the term Intelligent Transportation Systems (ITS) also applies to other modes of travel besides

roadways. The part of that technology that can be used for transit is known as Advanced Public Transportation Systems (APTS).

This group of technologies has several components. However, vehicle location technology and extensive advanced communication systems are the substructure. The ultimate goal is to use those resources to monitor the system performance, make adjustments as needed, and, last but not least, share real-time information with the transit user. The technology would allow riders to check the schedule of their transit service from a computer at home or at work.

The most convenient application would be to have that same information, via on-line (perhaps interactive) monitors, available at most (if not all) stops (called "Next Stop" technology). Such a system would both keep users informed minute-by-minute in real time as changes take place and provide them with information and choices to reach their ultimate destination. Cities like Chattanooga, TN and Ann Arbor, MI have already begun implementing this technology.

Another convenient element of APTS is Smart Cards. When used extensively throughout the entire transportation system, Smart Cards provide the user with ultimate convenience when transferring from mode to mode without having to worry about exact change or mode-specific passes. Many of these and other APTS features are ready for application. As usual, though, a substantial investment in the infrastructure and operation is required. But it is indispensable to make transit service so convenient that it will be an effective means of traveling to and from Downtown Miami.

7.2.6 Connect other neighborhoods with transit.

A vibrant Downtown Miami will depend greatly on the ability of residents, workers, and visitors to reach the area by an effective and convenient transit system. Short trips can use the proposed shuttles and Metromover system. Long trips can get riders to and from Downtown Miami on the regional commuter rail, Metrorail, and Metrobus (once these components are extended and improved). Intermediate or medium length trips, however, are as yet not properly served. More extensive, high frequency and good quality transit service is needed for these trips.

Neighborhoods near downtown could be linked with small buses/trolleys that operate with high frequencies.

Neighborhoods near Downtown Miami must be linked with transit. The neighborhood system should include service to/from Downtown Miami and neighborhoods such as Model City, Little Haiti, Wynwood, Allapattah, Overtown, Little Havana, Flagami, The Roads, Coconut Grove, and connections between these neighborhoods as appropriate. These services would typically be provided with small buses that operate with high frequencies and provide reasonably good capacity.

7.2.7 Implement Intelligent Transportation System (ITS) technology alternatives to help with bridge openings.

Bridge openings are disruptive to city center traffic flows. They interrupt sections of the network from handling traffic, they overburden the network by distributing delayed traffic after the bridge closes, and they interrupt cross street operations because of illegal queuing across intersections.

ITS cameras assist with real-time adjustments to the traffic signal system.

The concept of this recommendation is to provide an integrated communication system that would warn motorists well in advance (both in distance and time) of the impending opening of each bridge.

Effective communication between the vessels, the bridge tenders and the system control center is essential. Integration with the Miami-Dade Traffic Control Center is also vital to ensure that signal timing adjustments are also incorporated into the alternative traffic flow patterns implemented during bridge openings. Additional monitoring via Closed Circuit TV cameras would further ensure that real-time adjustments can easily be made when needed.

Three potential bridge-specific ITS traffic handling approaches are recommended, and include variable message signs advising when bridge will open and the expected period of impassable traffic, signs promoting–and possibly indicating–alternate routes, and adaptive "smart" signal retiming (and reintegration with system synchronization) after bridge opening.

This recommendation affects most directly the Brickell area. It is intended to alleviate the mid-day traffic flow disruptions caused by opening drawbridges to allow large ships to navigate the Miami River. The Brickell Bridge is presently locked in the down position during the morning and the afternoon peak hours on weekdays. But when it is raised, disrupting vehicular traffic flows, motorists suffer frustrating delays trying to leave or reach Downtown Miami via Brickell Avenue. Additionally, the often long backups caused by the bridge cause indirect gridlock in the DuPont Plaza area, preventing access to/from the I-95 Distributor Ramps. A similar situation is found south of the Brickell Bridge for motorists using SE 7 and 8 Streets as well as those traveling to/from Brickell Key. Congestion caused by the Brickell Bridge openings was the most frequent complaint at the public meetings.

Such a system should be implemented within the study area (Brickell Avenue, South Miami Avenue, and SW 2 Avenue. Additionally, other bridges feeding the Downtown Miami area should be considered in future extensions of the system.

7.2.8 Develop an extensive network of pedestrian corridors.

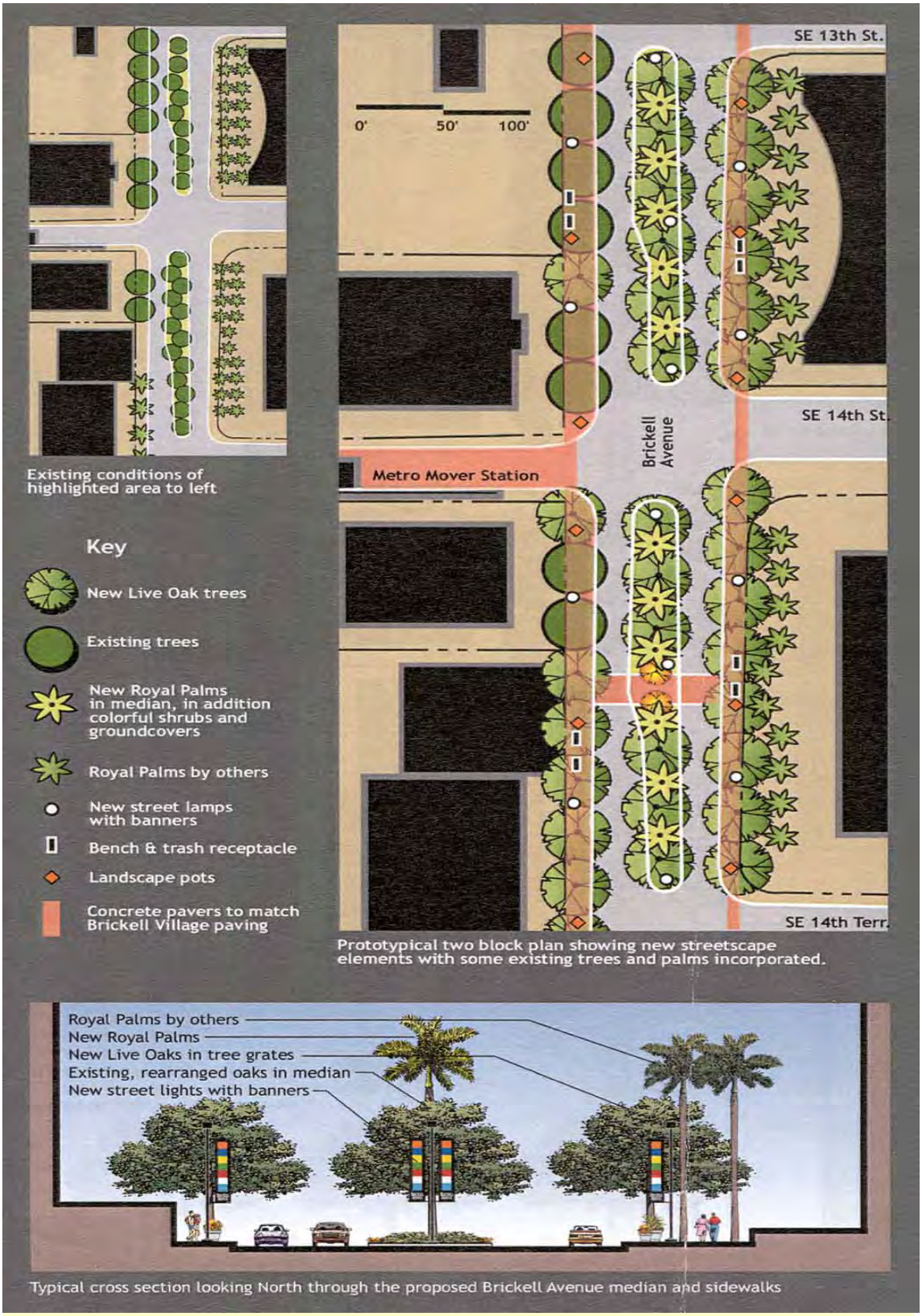
Successful, vibrant areas of Downtown Miami–and most other cities across the US and around the world–are often easy to identify because of high levels of pedestrian activity. While walking to/from nearby destinations may be a necessity, it can be discouraged by the lack of adequate pedestrian facilities. A systematic effort must be mounted to not only "accommodate" but actively enhance pedestrian safety and promote a pleasant environment. As a direct benefit, the street system the street system will be relieved of vehicular trips that could otherwise be made on foot. A high level of the pedestrian activity will become an integral factor in the vitality of Downtown Miami.

A safe and pleasant pedestrian environment does not happen by accident. Careful planning, design, and implementation are essential. Some of the elements required to achieve this environment include:

- Wider sidewalks, free of obstructions
- Sidewalk connectivity
- Street furniture
- ADA compliant design
- Landscaping and shade
- Distinctive sidewalk and crosswalk paving
- Marked crosswalks for safety
- Curb extensions to minimize street crossing distances
- Sidewalk lighting
- Upgrade/modify pedestrian signal timing
- Median refuges where appropriate
- Pedestrian detectors
- Recessed stop lines

Pedestrian facilities are an important component of the Downtown Miami transportation system.

While some may disagree that pedestrian corridors can coexist adjacent to busy roads, the reality of Downtown Miami includes several inescapable facts: (1) there are busy streets everywhere, (2) often the origin and destination of walk trips are along these busy roads, and (3) there are few alternatives to walking along busy streets because there are no public rights-of-way for exclusive pedestrian corridors. In other words, a balance is needed between servicing traffic and serving pedestrians on the street system of Downtown Miami.



Proposed streetscape concept for Brickell Avenue.

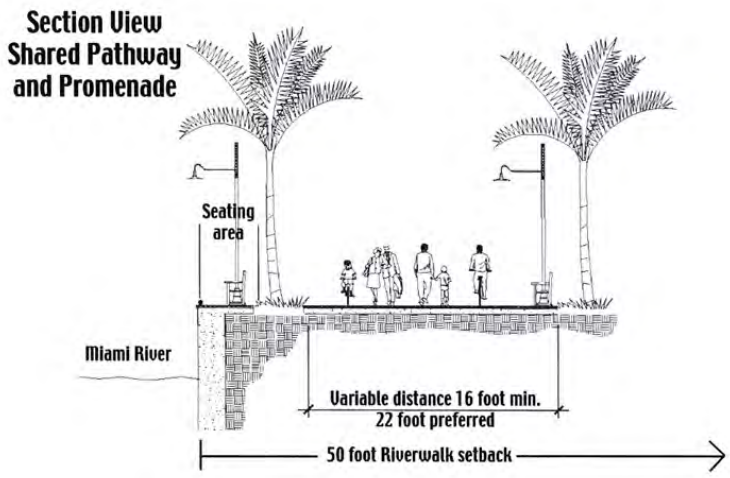
Pedestrian facilities must not be relegated to second-tier status in the transportation system in Downtown Miami. In some cases, traffic capacity may have to be compromised in order to achieve a better balance. After all, not every building has its own parking facility, so the connection between many parking lots or garages and the ultimate destination will often be by walking. Additionally, as noted above, transit must become a more common way to reach Downtown Miami destinations, and transit relies heavily on walking as the final segment of the trip (few buildings have their own transit stop within or in front of the building).

The following list indicates streets recommended for improvement into pedestrian corridors with amenities designed to better accommodate walking:

- Brickell Avenue from Miami River to 26 Road (Rickenbacker Cswy)
- Brickell Bay Drive from South 8 Street to 15 Road
- Miami Avenue from South 12 Street to North 36 Street
- Miami Avenue/SE 1 Avenue from South 12 Street to 26 Road (Rickenbacker Causeway)
- Biscayne Boulevard from Biscayne Blvd. Way to NE 36 Street
- South 13 Street from I-95 to Brickell Avenue
- South 10 Street from I-95 to Brickell Avenue
- South 8 Street from I-95 to Brickell Key
- South 15 Road from I-95 to Bayshore Drive
- Flagler Street from I-95 to Bayfront Park
- North 5 Street from East1Avenue to Biscayne Blvd.
- North 3 Street from East 1 Avenue to East 2 Avenue
- North 2 Street from West 2 Avenue to Biscayne Blvd.
- North 4 Street from I-95 to Biscayne Blvd.
- NW 5 Avenue from NW 21 Street to NW 36 Street
- West 2 Avenue from SW 15 Road to NW 36 Street
- East 2 Avenue from North 3 Street to North 5 Street
- East 1 Avenue from North 3 Street to North 5 Street
- North 9 Street from I-95 to Biscayne Blvd.
- North 11 Street from I-95 to Biscayne Blvd.
- North 14 Street from I-95/I-395 Interchange to Biscayne Blvd.
- North 17 Street from I-95 to NE 2 Avenue
- North 20 Street from I-95 to Biscayne Blvd.
- North 29 Street from I-95 to Biscayne Blvd.
- North 36 Street from I-95 to Biscayne Blvd.

7.2.9 Implement the recommendations from the Miami River Greenway Action Plan.

A detailed, comprehensive study outlining the development of the Miami River Greenway establishes precisely how to create a pedestrian corridor along the banks of the river. Within the study area, the proposed greenway extends along both sides of the river from I-95 to Biscayne Bay. In fact, portions of the greenway have been created as new projects have been constructed along the river in recent years. The city of Miami has enacted ordinances requiring the reservation of 50-feet along the banks of the river for the greenway. City staff has been diligently in enforcing this requirement, promoting the actual creation of the greenway as new projects are developed and/or redeveloped. Many gaps still exist, but they are quickly being completed due to the recent surge in development activity in Downtown Miami.



Proposed cross-section for the Miami River Greenway.

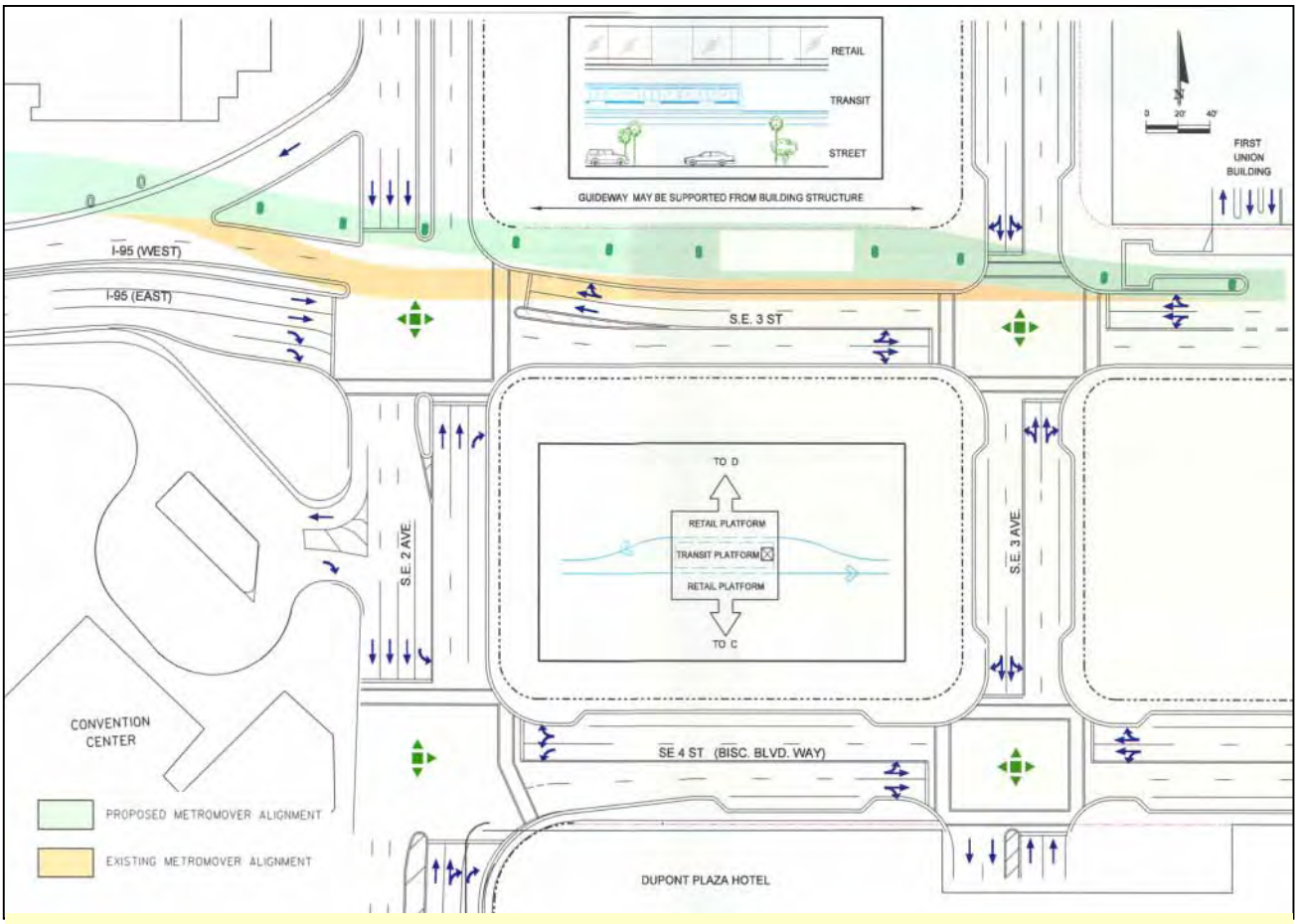
7.2.10 Connect Brickell Shuttle to Flagler Shuttle.

Seamless travel throughout the entire Downtown Miami area depends on transit use. But transit is an effective choice only when it is easy to use and takes travelers to their ultimate destinations. All shuttles through the area should be integrated without losing quality of service, especially frequency. Such connections will tie the eastern part of the Brickell area to the heart of Flagler Street in the most straightforward and efficient manner, providing bi-directional service on the same roads, with loops on both ends.

7.2.11 Reconfigure Metromover in the Dupont Plaza Area.

Metromover has an awkwardly aligned segment in the heart of Downtown Miami, on SE 3 Street between SE 2 Avenue and Biscayne Boulevard. The elevated guideway is in a concrete island splitting the lanes of this one-way street. SE 3 Street is the continuation of the high volume I-95 Distributor Ramps, yet the lanes at this important junction do not align well due to the Metromover guideway. Moreover, many Downtown Miami workers and visitors consider this guideway alignment unsightly in an area that should be a beautiful gateway into the downtown core.

This Metromover guideway is undergoing studies to determine the most appropriate alignment. The MDTMP study considers the proposed flow pattern change to one-way circulation in the DuPont Plaza area. Such circulation adjustments will also be integrated with the complete revamping and conversion of most Downtown Miami one-way streets to two-way.



The proposed Metromover realignment and the two-way conversion of roadways in the DuPont Plaza area.

Additionally, there are redevelopment plans for three of the four blocks comprising the DuPont Plaza area. It is anticipated that construction of a new Metromover station will be coordinated with the guideway realignment. A station was planned and approved at this location during the original alignment studies for Metromover. The station, however, was to be integrated into buildings that were never constructed. Redevelopment now seems imminent, and the proposed DuPont Plaza station will complete the system as originally proposed and greatly facilitate movement of workers and visitors to the proposed One Miami development (a mix of office, retail, hotel, and residential uses).

7.2.12 Implement ITS for Special Events.

Special event strategies and hardware suitable for the Downtown Miami area include:

- Variable Message Signs (Roadways and Parking)
- Closed Circuit Television (CCTV)
- Highway Advisory Radio (HAR)
- Downtown Miami Traffic Signal Control System

AmericanAirlines Arena – home of the Miami Heat.

The nature, number, and magnitude of the special events that it holds, as well as its special attractions often define the character of a city–not to mention the resulting positive economic impact. Special events can be fixed, seasonal, or occasional venues. Downtown Miami is fortunate to have many such events and venues. These include:

Fixed Seasonal Venues

- AmericanAirlines Arena (professional basketball and concerts)
- Miami Arena (concerts and gatherings)
- Performing Arts Center (symphony hall and opera house, under construction)
- Bayside Marketplace (specialty "carnival" retail)
- Gusman Theater (concerts and plays)
- Lyric Theater (concerts and other performances)

Special Events

- Bayfront Park, Bayfront Amphitheater, Bicentennial Park and Miami-Dade Community College (MDCC) (concerts, performances, fairs and festivals)
- Grand Prix (car race)
- Corporate Run (foot race, walk)
- Film-making

Given the frequency, the severity, and the wide range of impacts from these events, a flexible method of redirecting traffic flows is essential. Intelligent Transportation Systems (ITS) is the ideal technology to effect these changes. The appropriate combination of devices, supported and supplemented by technical and enforcement personnel, can greatly simplify this labor-intensive, recurring task. The purpose of such as system would be to:

- Simplify the implementation of special event traffic control plans though interactive devices programmed in advance with pre-established patterns that can be reused for recurring events
- Facilitate the traffic flow to/from events while providing adequate access to other vital areas of Downtown Miami (e.g. Port of Miami, MDCC)
- Allow immediate adjustment of traffic patterns based on real-time feedback from a variety of sources to maximize the flexibility and optimize flow under traffic conditions that can change quickly in both predictable or unpredictable ways
- Maximize traffic and pedestrian flows as well as the utilization of fixed capacity resources such as roadways, ramps, transit vehicles, and parking facilities.

Two freeways, I-95 and I-395, border Downtown Miami. An ITS-based traffic control system for special events can be considered an extension of the freeway monitoring system being deployed by FDOT in many of its major facilities. Full integration of such systems would be vital to maximize the benefit of the systems, optimizing traffic flow and ensuring a pleasant experience for road users destined to Downtown Miami, as well as those passing near it, during these special events. Similar system components and ITS programs have been successfully implemented in other cities like San Jose, CA.

Bayfront Park holds several concerts, fairs and festivals throughout the year.

7.2.13 Provide a pedestrian walkway along Biscayne Bay from Pace Park to Bayside.

Pace Park overlooks Biscayne Bay at the north end of the Omni area. As public land, the park presents a unique opportunity to create a baywalk that can be connected to its counterpart to the south. The rationale for a baywalk here is the same as the reasons outlined for walkways in other areas to the south. When all are built, there will be continuous baywalk along Biscayne Bay from Pace Park to the Miami River, where the riverwalk would then continue west terminating near I-95. The baywalk will provide many recreational opportunities, increased connectivity between different sub-areas of the extended Downtown Miami area, and a viable alternative for walking trips.

7.2.14 Implement Biscayne Boulevard Improvements from NE 6 Street to NE 14 Street.

The proposed improvements to Biscayne Boulevard will complement the redevelopment of Bicentennial Park.

This segment of Biscayne Boulevard connects the core of Downtown Miami with an important freeway, I-395. It is part of the route used by thousands of workers, residents and visitors to Downtown Miami each weekday. This particular section of Biscayne Boulevard, unlike the segment immediately south, does not have a raised median or much landscaping, and the sidewalks are barely adequate. This portion of Downtown Miami is changing rapidly after the completion of the AmericanAirlines Arena. The city is also pursuing major improvements to Bicentennial Park adjacent to the arena. The safe crossing of Biscayne Boulevard by pedestrians is crucial for the park to be successful when renovated. There is a great need to improve this roadway both from an operational and an aesthetic standpoint.

The city of Miami has been working closely with FDOT to develop a set of improvements addressing the concerns above. Wider sidewalks, a wide median, safe pedestrian crossing, and landscaping are essential. The number of traffic lanes and provisions for on-street parking are being decided. With the final studies already underway, construction plans will follow. When complete, this segment of Biscayne Boulevard will become a compatible extension of the landmark entranceway into the core of Downtown Miami.

7.2.15 Build a new tunnel under the Miami River at SW 1 Avenue.

This recommendation provides a tunnel under the Miami River from SW 7/8 Street to SW 3 Street. The tunnel will provide an alternate route to cross the Miami River.

Natural barriers usually cause transportation challenges. The Miami River is no exception. Crossing a body of water requires bridges, which are more expensive than construction of at-grade roadways.

Large vessels are accommodated on the Miami River with drawbridges which adversely impact traffic.

In the case of the Miami River, this cost factor is further compounded because the river is navigable and very active. In fact, numerous marine-oriented businesses are located along the river as far west as Douglas Road (over three miles inland). The constant flow of vessels requires certain vertical clearances even for the smaller boats. Large ships are accommodated by either drawbridges or high-level bridges, the latter of which allows vehicular traffic to remain unaffected by the passage of ships. Both types of bridges are expensive to build and maintain.

Construction of high-level bridges is extremely expensive. Right-of way impacts can be devastating to a community in as much as these bridges require 65-feet of vertical clearance over the river, and such requirement means a very long structure. Drawbridges, while less expensive and intrusive, carry significant operational costs, and impede large traffic flows. Brickell Bridge openings are notorious for causing traffic gridlock both in Downtown Miami and the Brickell area.

The traffic tie-ups, in fact, could be worse in the peak hours. However, the bridge remains in the down position during the morning and the afternoon peak hours, when traffic volumes across the bridge are the highest. Further control of the bridge openings, however, is unfeasible. River traffic has right-of way entitlements because it preceded the roadways in the area. Furthermore, additional restriction of river traffic could adversely impact the operations of businesses located along the river.

Preliminary feasibility studies have been conducted by a multi-agency task force. The consensus of the group, as well as the Evaluation Committee for this study, is a tunnel under the Miami River would be of great benefit to the area and should be pursued. The preliminary alignment would be in the vicinity of SW 1 Avenue.

The tunnel will increase vehicular capacity across the river (supplementing the Brickell Avenue, Miami Avenue, and SW 2 Avenue drawbridges as well as the I-95 fixed high-level bridge). More important, such a tunnel would be an effective alternate route across the river when ships are traversing the area. The tunnel will help alleviate gridlock caused by bridge openings and ensure continuous traffic flow to/from Downtown Miami and the Brickell area. River traffic would also benefit from uninterrupted flow or delays that another drawbridge would cause if one were built instead of the tunnel.

7.2.16 Improve pedestrian connections in Bicentennial Park.

Access to the water for pedestrians is a unique characteristic of waterfront cities. When done well, pedestrian corridors serve as memorable meeting places for area residents, workers, and visitors. These corridors also provide an area for exercising or relaxing and breaking away from the daily routine. Last, but not least, a pedestrian corridor can make an excellent route for walk trips that can bypass roads and vehicular traffic altogether. Such connections can also provide an important linkage between areas that would otherwise seem completely disconnected.

"When done well, pedestrian corridors serve as memorable meeting places for area residents, workers, and visitors."

From a pedestrian standpoint, the Omni area north of I-395 might as well be miles away from Downtown Miami. There are no viable pedestrian linkages between the two. Plans for the improvement of Bicentennial Park (based on the approved park master plan) include a baywalk that serves as the continuation of the Miami River Riverwalk and the baywalk along Bayfront Park and Bayside. Extending this baywalk north to the Omni area is critical in order to establish this much-needed pedestrian linkage. Such extension should be done in a manner compatible with the improvement within the park.

Likewise, areas west of the park have never been properly connected to Bicentennial Park. The greatest obstacle is Biscayne Boulevard with its many lanes of high-speed traffic. Better ways to connect the park to areas west of the boulevard are also most necessary. The city has already begun the process of reconstructing Biscayne Boulevard in a way that facilitates pedestrian access to and from the park. The corresponding improvement of Biscayne Boulevard is reflected under the roadway section of these recommendations.

7.2.17 Improve NE 1 and 2 Avenues for truck traffic.

This is an interim traffic operations improvement to enhance the efficient and safe movement of trucks through the Downtown Miami area. Heavy trucks traversing the Downtown Miami area are, in general, undesirable. However, the location of the Port of Miami entrance is in the downtown

core. The port lacks direct connections to the freeway system. Truck traffic on Downtown Miami surface streets is unavoidable until the proposed tunnel to the port is completed.

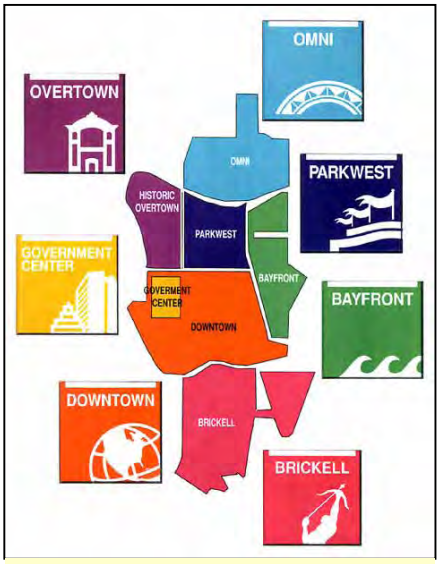
This project is an interim step before an I-95 northbound on-ramp at NW 6 Street to provide access to westbound SR 836 is constructed and, eventually, the Port of Miami Tunnel is built. Once the I-95 northbound on-ramp at NW 6 Street is constructed, truck traffic will be diverted away from the Performing Arts Center making it a much more pedestrian friendly environment.

The project consists of turning radius and curb return improvements on NE 2 and 1 Avenues. These streets provide the most direct surface routes connecting the Port of Miami and I-395. The latter provides access to I-95 (north and south) and SR 836 (west).

7.2.18 Complete Downtown Miami DDA signage plan.

Miami's Downtown Development Authority (DDA) planned, designed, and partially implemented a signage plan for the downtown area. The plan essentially divides Downtown Miami into several sectors and identifies each area with district graphic symbols (color "logos"). The plan will be particularly helpful to persons unfamiliar with the area, including visitors and tourists.

The plan has several phases. Phase I (sector signs) has been completed. Phases II and III (expressway signs, directional signs, kiosks, and parking signs) have yet to be implemented.



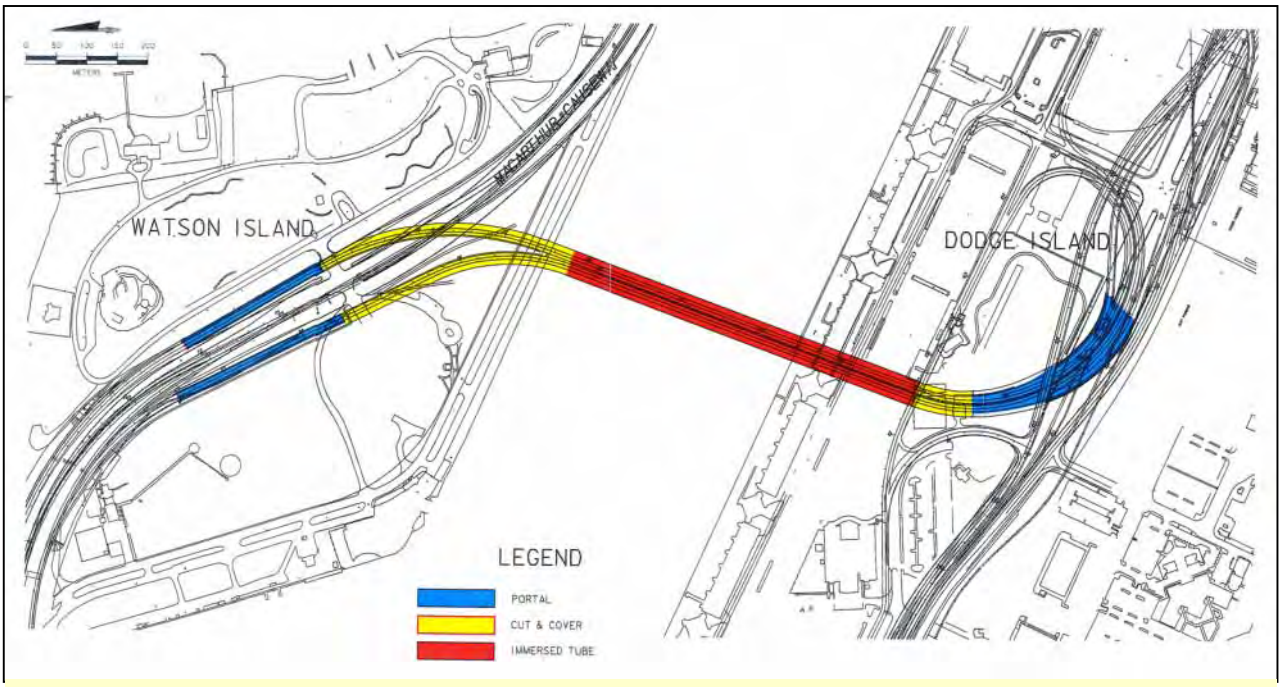
DDA Downtown Miami Sector Signs.

7.2.19 Provide a truck-only tunnel from the Seaport to Watson Island.

The construction of such a tunnel will have many benefits including:

- Facilitating truck access to/from the Port of Miami
- Increasing the vehicular access capacity to/from the Port
- Removing port-related truck traffic from Downtown Miami streets

The tunnel will provide a direct connection to the freeway system. It would start at the MacArthur Causeway on Watson Island, near the end of I-395, proceed under Government Cut, and surface at Dodge Island.



The proposed truck-only tunnel will provide easy access to I-95 and SR 836.

Use of the tunnel by truckers would provide easy and convenient access to I-95 and SR 836 (the Dolphin Expressway). This route will completely bypass the surface street system and preclude delays involved in traversing Downtown Miami. The tunnel will add more lanes of traffic capacity to/from the port. Additionally, both the main Port entrance and other surface streets will benefit from additional reserve capacity. The added reserve capacity, in fact, will be greater than the number of trucks diverted to the tunnel. The reason for such increase in capacity is that (1) trucks occupy more space than automobiles, and (2) the slow acceleration and deceleration of trucks represent a large capacity penalty when compared to autos.

Other benefits of removing trucks from Downtown Miami are making the area streets friendlier with a more homogeneous traffic composition (fewer trucks), as well as reducing the noise and emissions generated by trucks. Consequently, the area will also be more pleasant for pedestrians and building occupants (workers, visitors, and residents).

This project has undergone numerous studies to establish its impacts and design. Part of the LRTP but presently unfunded, it is the focus of recently renewed interest in finding alternate funding sources.

7.2.20 Widen and extend West 1 Avenue.

Biscayne Boulevard and Miami Avenue handle most of the north/south traffic destined for western areas of Downtown Miami. These two roadways are currently operating near capacity. West 1 Avenue provides circulation within the Downtown Miami street network and direct access for surrounding land uses but does not effectively move north-south traffic into or out of the Downtown Miami area. West 1 Avenue is under utilized because it does not offer the necessary connectivity to the north or south of the CBD, nor is the existing cross section compatible with an arterial designation.

Proposed West 1 Avenue improvement

The proposed improvements to West 1 Avenue include widening it to a four-lane divided arterial from NW 10 Street to NW 14 Street, and extending the roadway south from SW 1 Street to the proposed tunnel under the Miami River. The alignment should be "straightened" between NW 10 Street and NW 14 Street, encouraging the use of the corridor. Also, extending the corridor south to the proposed tunnel requires that the I-95 Distributor ramps be removed and converted into a grand boulevard.

7.2.21 Extend SE 1 Avenue from SE 8 Street to SE 5 Street.

There are four city blocks in the Brickell area bounded by the Miami River and by the major arteries Brickell Avenue, SE 8 Street, and Miami Avenue. Two of these arteries are one-way streets. Circulation between and within these blocks is cumbersome.

The proposed extension of SE 1 Avenue will improve the continuity of this street north of SE 8 Street, serving as an alternate route for several buildings to the south. The improvement will thus

relieve the traffic loadings on Brickell Avenue and simplify circulation in the area for buildings both south and north of SE 8 Street.

The improvement can be built largely within the Metromover rights-of-way, under the guideway, between SE 5 Street and SE 8 Street. Additional right of way, however, will be needed at the south end of the extension where it connects to SE 8 Street.

Preliminary feasibility studies for this improvement have been conducted by DDA.

7.2.22 Improve bicycle facilities.

Bicycle riders have the legal right to use the roadways for their travel, whether it is for commuting or recreation. Therefore, while bicycles may cause disruptions in traffic flow in some cases, it is, in general, wise to accommodate them within the transportation system. In doing so, bicycle travel becomes another choice that improves the mobility to, from, and within the Downtown Miami area.

The M path is bike path located mostly within the Metrorail right-of-way.

Improving bicycle facilities in the area can take many forms– providing bicycle racks/lockers, encouraging businesses to provide showers and changing rooms, designating bicycle routes with the appropriate signing and markings, creating exclusive bicycle lanes, etc. Bicycling can be promoted through educational programs. A comprehensive bicycle improvement program should be developed and implemented. A few areas of Downtown Miami are especially good candidates for improved facilities such as bike lanes.

- North 4 Street from I-95 to Biscayne Blvd
- Flagler Street from I-95 to Biscayne Blvd
- North 20 Street from I-95 to Biscayne Blvd.
- Biscayne Blvd. designated bike route from Pace Park to North 36 Street

The M path is a bike path located mostly under the Metrorail guideway within the system's right-of-way, is one of few bicycle facilities outside of parks that is physically separated from traffic lanes. The facility was built when Metrorail was constructed using rights-of-way purchased from the Florida East Coast Railroad. It extends most of the length of the Metrorail's south line beginning at

the Miami River. The path was later extended south from the Dadeland South Metrorail terminus station to Cutler Ridge as part of the South Dade Busway Project. Plans to extend the Busway to Florida City will further extend the M Path, making it the longest continuous bike path in south Florida. Such a facility has an obvious potential for bicycle commuting trips.

The path can be extended along the proposed SE 1 Avenue extension to South 5 Street, then east to Brickell Avenue and south to 26 Road (Rickenbacker Causeway). Rickenbacker is a very popular route for bikers going to parks and other locations in Key Biscayne. That area has designated bike lanes that are heavily used by recreational bikers.

In the Downtown Miami area, the M path should be extended as follows: continue on Brickell Avenue from South 5 Street to Biscayne Boulevard Way, go east on Biscayne Boulevard Way, then north on Biscayne Boulevard to Bicentennial Park. This extension will connect the facility to the heart of Downtown Miami.

The extension of the M Path into the Omni area should be as follows: continue on Biscayne Boulevard from Bicentennial Park on proposed Baywalk to the Venetian Causeway (under I-395 and behind Herald Building), then north to Pace Park.

7.2.23 Extend Metrorail to AA Arena and Seaport.

For Downtown Miami to achieve its potential, substantially higher use of mass transit is essential. Metrorail already serves Downtown Miami and has an outstanding distribution system–Metromover. However, without a line serving the East-West corridor, the western portions of Miami-Dade lack direct access to Metrorail.

Metrorail East-West line

This critical extension of Metrorail is the key to increasing mass transit use to/from Downtown Miami. Such a line will connect the western suburbs as well as other major generators such as the Miami International Airport and Florida International University. Additionally, there are many office complexes and hotels along this corridor. Businesses and residents of Downtown Miami will greatly benefit from connectivity to areas west of Downtown Miami.

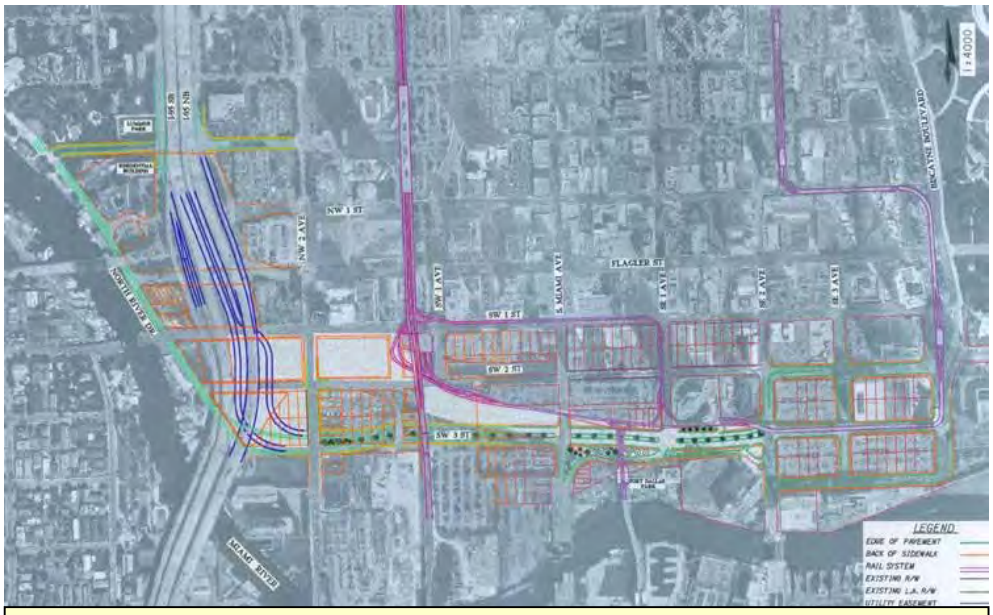
The alignment and elevation of this line has been debated extensively. In any case, the need is crucial for Downtown Miami, and regardless of the alignment, important connections should be established at:

- Government Center Station (to properly connect the line to the rest of the system)
- AmericanAirlines Arena (to provide high capacity service during events)
- Port of Miami (to service thousands of employees and visitors entering the port every day, provide a more effective connection to Downtown Miami, and relieve the single entrance port bridge and roadway).

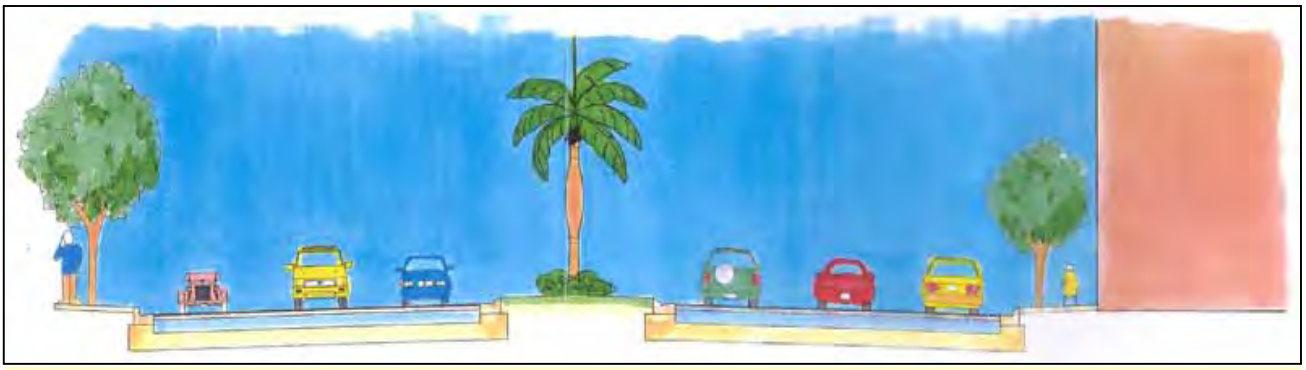
7.2.24 Remove I-95 Distributor Ramps and provide a "Grand Boulevard" on South 3 Street.

I-95 has a set of distributor ramps that provide a direct connection between the Interstate facility and the core of Downtown Miami. The elevated ramps are generally aligned between South 1 and 3 Streets and terminate at SE 2 Avenue in the area generally known as the DuPont Plaza. The "Grand Boulevard" project was conceived years ago, with the goals of:

- Removing this man-made barrier and promoting more cohesive development of the area near the Miami River
- Improving aesthetics
- Providing a "grand boulevard" entranceway into the Downtown Miami core
- Restoring the area to a more typical and pedestrian-oriented Downtown Miami environment.



The removal of the I-95 Distributor Ramps will allow a grand entryway into downtown Miami.



Proposed cross section for the South 3 Street Grand Boulevard.

While the project was found feasible in previous studies, it never advanced to the LRTP, nor secured funding. Updating the study should be closely coordinated with ongoing studies of circulation improvements and Metromover reconfiguration in the DuPont Plaza area that was discussed previously. These projects are not necessarily independent from one another or mutually exclusive. However, they should be approached together because of the combined benefits and the potential to reduce costs.

7.2.25 Provide a shuttle system into Wynwood.

Wynwood is a mostly residential neighborhood north of the Omni/Overtown/Park West area as it extends to the area near North 36 Street. Here it begins to blend with the Design District, which is characterized by many businesses catering to homeowners and the interior decoration trade. Though located near Downtown Miami, these areas have been detached from downtown for a variety of reasons. Certainly, more interaction is desirable and possible. Facilitating transit access between Downtown Miami and Wynwood will encourage that type of interaction.

Improved transit, in the form of shuttle service, will not only increase convenient accessibility, it will help residents avoid many of the inconveniences of traveling to Downtown Miami (parking, congestion, one-ways streets, etc.).

The proposed shuttle service–including all of the requirements typically needed for success–could be aligned along NW 2 Avenue to 36 Street and back on Biscayne Boulevard to Omni/Overtown/Park West.

7.2.26 Provide a Shuttle to Watson Island.

Watson Island, immediately east of Downtown Miami and north of the Port of Miami, has changed in character and is developing into a unique destination complementing the downtown area and other tourist destinations.

The long-established marina on the north side of the island will remain along with the well-known Parrot Jungle attraction (recently relocated to Watson Island from south Miami-Dade). Proposed uses for the south side, most of them already approved, include a Children's Museum, a Visitors' Center, and a mixed-use development that will include hotels, restaurants, and a Mega-Yacht Marina. The old Chalk's Charter Airline terminal will also remain on the island.

In general, the demand for travel to/from Watson Island will increase substantially, and an effective transit connection will be needed soon. Construction of the proposed Baylink will eventually replace the shuttle.

7.2.27 Extend the Metromover through the Brickell Financial District.

A Metromover loop through the Brickell Financial District will increase transit coverage of this area.

Metromover already services the Brickell Financial District. Unfortunately, its alignment is a block west of Brickell Avenue, while the greatest concentration of workers is found along Brickell. In fact, most of the larger buildings are on the east side of Brickell. This alignment requires Metromover users to walk a block and then cross Brickell Avenue, a very busy arterial. Extending the Metromover in a loop configuration, through the east side of Brickell, will solve the existing limitations of the system.

The improvement, as proposed, will complete a Metromover two-way loop through the Brickell Financial District. This extension will greatly increase coverage of the area, thereby reducing walking distances, eliminating the need to cross Brickell Avenue and, in general, making the system much easier to use.

7.2.28 Depress I-395.

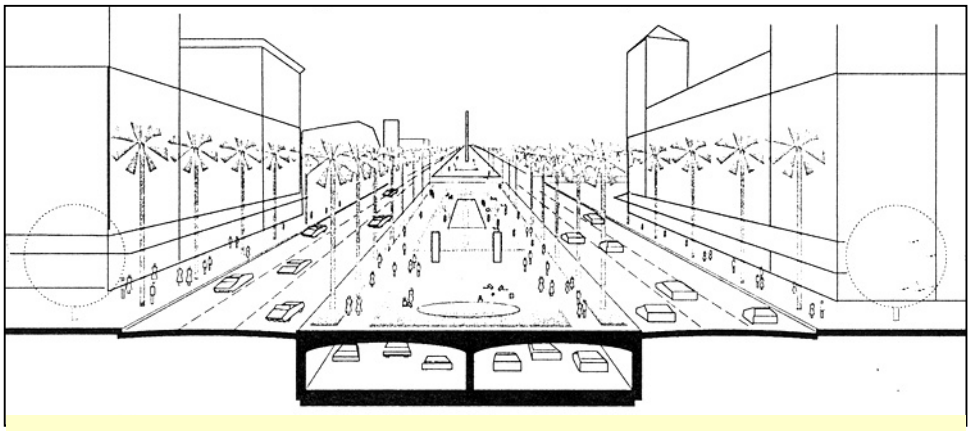
Omni/Overtown/Park West, because it is located on the other side of I-395, seems detached from the Downtown Miami core. The idea of depressing I-395 emerged from the need to integrate this area and the CBD. Urban design issues, aesthetics, pedestrian circulation, and the like drive this need. Moreover, the construction of the Performing Arts Center has made this need more urgent. Only by removing the elevated roadway will these areas be able to function as one, taking advantage of the amenities of each other and increasing the synergy that each area would offer the others.

"The idea of depressing I-395 emerged from the need to integrate this area and the CBD. Urban design issues, aesthetics, pedestrian circulation, and the like drive this need."

There have been at least two principal concepts proposed for this project. One, developed by FDOT, consists of operational improvements to the elevated freeway section. The second concept, developed by a group of individuals with interest in the area, proposes depressing I-395 and constructing an at-grade grand boulevard parallel to the depressed freeway.

The second alternative seems to accomplish all the stated goals and fit with the concerns of area residents, workers, businesses, and visitors. The typical section for the second concept is shown below. The concept proposes depressing I-395 and creating at-grade frontage roads connecting with the existing street network.

Detailed analysis of both concepts has been conducted over many months. Extensive public involvement has also been undertaken. This process, which includes a detailed review of benefits and costs, is nearing completion. Obviously, the concepts are mutually exclusive. At the conclusion of the process the option to be implemented will be the one that best fulfills the area needs while balancing benefits and cost considerations.



Longitudinal cross section of the proposed I-395 underpass

7.2.29 Implement Flagler Shuttle.

The Flagler Street improvement project has several components. The traffic flow changes discussed in the previous section would provide for a circulation system easier to use for the motorist than the existing one-way configuration. The vehicular flow changes, however, will also support a high frequency shuttle service on Flagler Street between Biscayne Boulevard (Bayfront Park) and the Miami-Dade Cultural Center (museum/library complex). Such a system is intended to service this important corridor and make it more appealing for Downtown Miami workers and visitors alike.

The Downtown Miami shuttle system is envisioned as a short-headway (time separation between vehicles) service using electric buses. The proposal for electric shuttle buses aims to replicate the great success of electric buses in South Miami Beach. These small buses are air-conditioned, use a distinctive modern exterior, have amenities such as music, and are clean and well maintained. The vehicles are also quiet and free of air emissions. Therefore, these vehicles are also very acceptable to those walking in the area.

The system is already in the TIP, has secured funding, and will start operation soon. Terminal facilities for the shuttle will be provided at the west end of the route near the Miami-Dade County Courthouse.

7.2.30 Provide a Port Boulevard U-Turn.

The AmericanAirlines Arena and Bayside share a common challenge: access to and from Port Boulevard. A direct vehicular connection between the two sites is also desirable because of the interaction of both land uses.

A new connecting roadway has been proposed under the Port Boulevard Bridge. The roadway would provide continuity between the frontage road on the south side of Port Boulevard (adjacent to Bayside) and the frontage road on the north side (adjacent to the AmericanAirlines Arena). This roadway under the Port Boulevard Bridge would be immediately adjacent to Biscayne Bay. At this point the Port Boulevard Bridge has already risen and provided enough vertical clearance for the road to be built under it. The space between the bridge abutment and the bay, however, is narrow, so a partial widening toward the Bay may be needed.

7.2.31 Create a Shuttle System for the Brickell residential area (from 13 Road to 26 Road).

A transit shuttle has recently been implemented in the Brickell area. But the system services the commercial areas only. Residents of areas to the south do not benefit from it. An important connection, therefore, is missing. Many area residents work in the Brickell business district and/or Downtown Miami. An effective shuttle system would enable these residents, as well as others conducting business in Brickell, to ride the shuttle, thereby avoiding traffic congestion as well as the cost and the challenge of finding a parking space. The proposed residential Brickell transit shuttle would generally service the Brickell Avenue corridor between 14 Street and 26 Road.

An effective shuttle system would enable Brickell residents to ride the shuttle and help reduce traffic congestion.

An effective shuttle service provides frequent service for long hours. At a minimum, weekday service should be implemented. Weekend service should be explored after the success of the weekday shuttle has been tested. The other important feature of a shuttle service involves destinations and/or connectivity. Ideally, the proposed shuttle should be connected to the existing commercial area shuttle route and become an extension it. This extension, however, must be accomplished without compromising the frequency of service or convenience to the user.

7.2.32 Provide a transit greenway.

Transit greenways, relatively new technology used on a limited basis at select locations, covers a wide range of vehicles, but in general, it is a low-speed conveyance system to supplement and/or facilitate walking. Users can get on or off at their convenience because the vehicle moves so slowly, it does not have to stop for the passenger to embark/disembark. The system circulates at high frequencies and does not stop along the specific corridor where it is located.

The Miami-Dade Community College Wolfson Campus is an ideal location for such technology. The system would be located along NE 4 Street from NE 1 Avenue to Biscayne Blvd. This street is already closed to traffic within the campus core. The portion of the street that is open aligns with

Bayside Market Place–an alignment that will both service internal walking needs within the campus and provide a connection to Bayside for shopping, dining, and/or entertainment.

This proposal needs to be included in the LRTP. As a new technology, perhaps a demonstration project grant can be obtained.

7.2.33 Implement traffic calming alternatives through Brickell residential areas.

These improvements are aimed at making the Brickell area more livable and user-friendly for residents. The area has an interesting mix of high-rise/high-density housing as well as low density, and even single-family homes. The improvements will involve not only Brickell Avenue but also Coral Way and Miami Avenue.

There is an overwhelming concern with the volume and speed of what is, for most the part, cut-through commuter traffic in the residential areas. Unfortunately, the area does have a large amount of existing non-residential (primarily office) development. Given the few routes available to access both the residential and the commercial areas, both land uses must co-exist as harmoniously as possible.

Over time, the focus of future growth is expected to be in the CBD and the Omni/Overtown/Park West areas. In the meantime, traffic calming will help alleviate some of the residents concerns. Traffic calming alternatives may include roundabouts, chokers, curb extensions, gateways, texture crossings, landscaping, etc.

Specific treatments and locations, however, must be developed and implemented in close coordination with the affected community. The overall objective is balancing the desire to minimize the impact of cut-through traffic for area residents while at the same time preserving needed access routes and capacities to service both the commercial and the residential components of this community.

7.2.34 Extend Metromover into Wynwood.

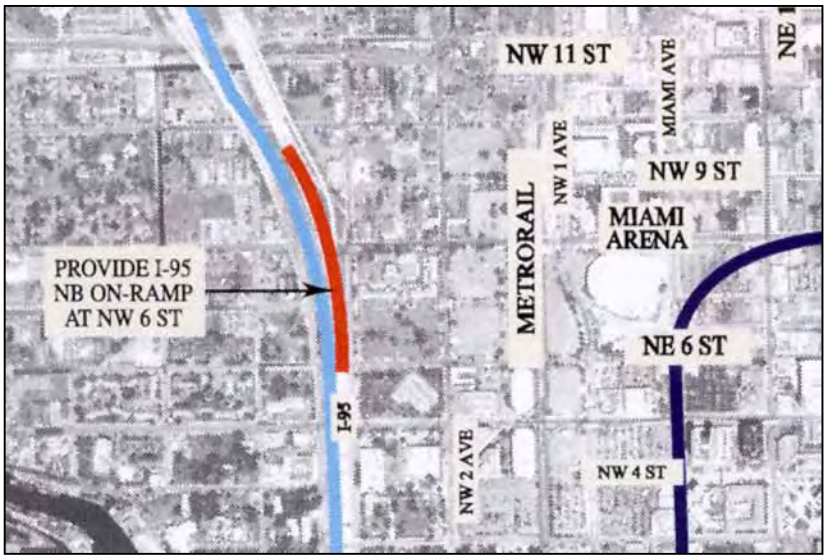
The rationale for additional transit service in this area is outlined in the description of the proposed shuttle system for Wynwood. The proposed alignment should take the form of a loop in order to maximize coverage, reduce walking distances, and improve convenience. The alignment should follow the NW 2 Avenue and the Biscayne Boulevard corridors.

7.2.35 Extend the Metromover to 26 Road.

The need for this system extension is the same as that for a shuttle system in the Brickell residential area south of 14 Street. The service that Metromover can provide, however, is vastly superior in capacity and reliability.

7.2.36 Build an I-95 northbound on-ramp at North 6 Street to provide access to westbound SR 836.

The western portions of Miami-Dade County, already heavily populated, will continue to develop even further. Yet traveling west from the core of Downtown Miami can be challenging, especially for those not familiar with the Downtown Miami street system and travel patterns. The main artery providing freeway access to most of west Miami-Dade County is SR 836 (Dolphin Expressway). Today, access to SR 836 from the Downtown Miami core can be directly accomplished from the I-95 Distributor Ramps at the south end of the core.



The proposed ramp will provide access to westbound SR 836.

But the I-95 on-ramp at NW 8 Street allows access only to I-95 north. The northbound entrance ramp puts motorists on the extreme right lane of northbound I-95. From this lane, access to westbound SR 836 is physically impossible. The only other access to westbound SR 836 is through the Park West/Overtown area just south of Omni. Entrance ramps from NE 1 Avenue provide a connection to I-395, which interchanges with SR 836 west of the entrance ramps.

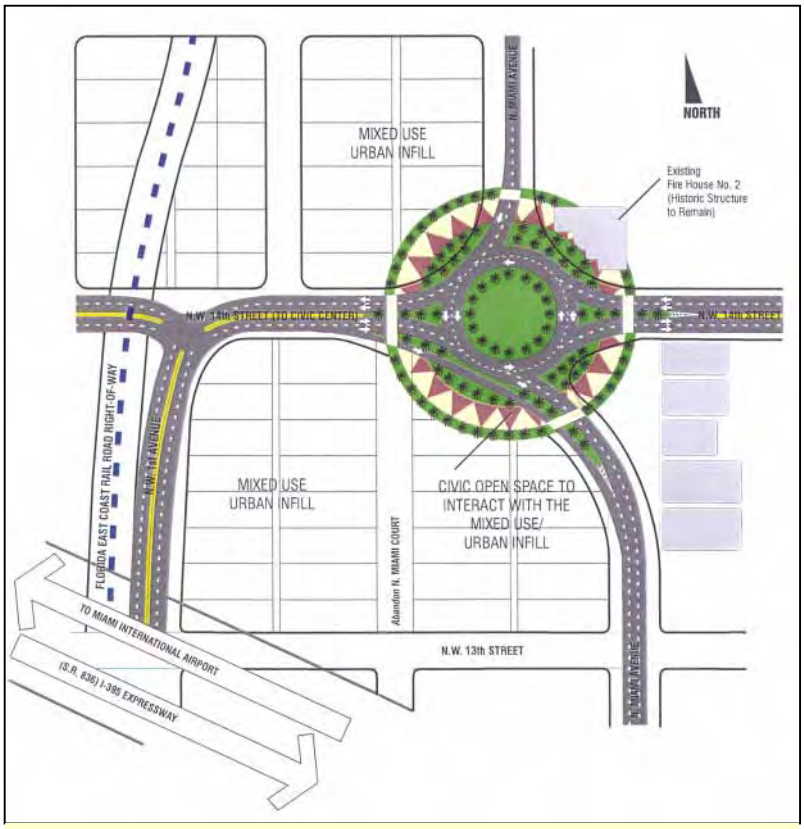
The proposed improvement would construct a new left entrance on-ramp to westbound SR 836. The ramp would be built between the existing northbound and the southbound mainline lanes and would start at NW 6 Street. The new ramp would allow easy, convenient access to westbound SR 836.

This project already has design and construction funding allocated in the current TIP.

7.2.37 Improve North 14 Street from I-95 to Biscayne Boulevard

NW/NE 14 Street provides limited circulation within the adjacent street network and does not facilitate efficient east-west travel. This is a result of an inconsistent cross-section and lack of continuity within the roadway network

This project proposes improving NW/NE 14 Street to a four-lane undivided facility from east of I-95 to Biscayne Boulevard. Major intersections will be signalized on a coordinated system, with priority given to east-west traffic, where practical. This improvement will provide quick access to the proposed NW 1 Avenue corridor from Biscayne Boulevard and the Venetian Causeway.



Proposed Improvements to North 14 Street.

7.2.38 Provide Commuter Rail to Broward County.

The Tri-Rail system does not provide a direct, convenient connection to Downtown Miami. Tri-Rail ends near Miami International Airport. The only rail connection to Downtown Miami is via an awkward transfer from Tri-Rail to Metrorail at the Tri-Rail Metrorail station on NW 79 Street. Better service for commuters is definitely needed to improve transit access to Downtown Miami.

Many alternative alignment options exist, including the reuse of an existing railroad corridor coming into Downtown Miami. The most appropriate use for the corridor is presently under study. Regardless of the findings of that study, though, a major commuter connection should be developed.

7.2.39 Provide a Brickell Key Water Taxi.

The study area is bounded by water to the east, yet several island destinations exist to the east as well. Another body of water, the Miami River, splits the study area near the center. Water-borne transportation, therefore, offers an unusual means of overcoming those natural barriers while taking

advantage of yet another mode of travel. Fisher Island (further east, near south Beach), for example, does not have any bridges and provides 24-hour ferry service for residents and visitors to take their vehicles across Government Cut and onto the island.

Water taxis provide another non-vehicular mode of travel.

Water taxi service as a for-profit operation is presently working well in Ft. Lauderdale and other cities. The same service was available in Miami for a few years. The potential is certainly there for this type of operation to return to Miami, especially given the intensity of development in recent years.

One connection that is particularly attractive for some type of Water Taxi/Ferry service is between Brickell Key and the Central Business District. The location of Brickell Key, an island south of the mouth of the Miami River, often results in difficulties leaving the island by car when the Brickell Bridge opens for marine traffic. A water-based connection between the island and the Hyatt Hotel would allow many trips to cross the river unimpeded, and travelers could walk to their final destination in the CBD. Longer trips could take advantage of the Metromover station at the Knight Center. In fact, the Metromover connects to Metrorail and many bus routes. Access to the rest of the Miami-Dade County would thus be greatly facilitated.

The ideal funding of this operation is through self-supporting fares, with management by a private company. Another option is through a subsidized cooperative effort among businesses interested in supporting such a service as a convenience to their customers, residents, workers, and visitors.

7.2.40 Provide a Water Taxi/Ferry to Watson Island

Watson Island is becoming a more recreation-oriented destination. Parrot Jungle has recently relocated here. Soon a children's museum, visitors' center, and a mega-yacht marina/hotel/restaurant /retail complex will be built. The island's main mode of access is via automobile across the MacArthur Causeway. Many Metrobus routes presently use the causeway on their way to/from Miami Beach. A light-rail system connecting Downtown Miami and South Miami Beach has been recommended in the MDTMP. This study also suggests a conventional transit shuttle service as an interim high-frequency transit connection to the island. The potential for a water-borne connection also seems a viable necessary means of making this destination both more accessible and interesting while further strengthening the relationship between Watson Island and Downtown Miami.

The proposed service could very well be undertaken by the private sector either as a fare-driven, self-sufficient, for-profit operation, or as a collective effort subsidized by the developments serviced by the water taxi. The most logical connection to Downtown Miami would be to the Bayside Market Place Marina. Other connections may include the Port of Miami (for customers working there or cruise-ship passengers). With added redevelopment and improvements in the area, other stops may be considered in the future in Omni/Overtown/Park West, Bicentennial Park, Bayfront Park, Brickell Key and perhaps other destinations along the Miami River.

7.2.41 Provide a partial I-95 Interchange at NW 29 Street.

The Wynwood area and the south end of the Design District have long endured awkward access from I-195 via partial interchanges at Miami Avenue and Biscayne Boulevard. This is very frustrating to area residents and businesses because the area is immediately adjacent to I-95. Direct access to/from I-95 has never been provided due to the proximity of the SR 112/I-195 interchange to the north and the SR 836/I-395 to the south.

This interchange spacing, in fact, prevents a full I-95 interchange for the Wynwood/Design District area. However, a more direct connection can be achieved via a frontage road or a Collector-Distributor (CD) road system built parallel to and adjacent to the I-95 lanes. These are similar concepts. Frontage roads are at-grade without access control. CD roads have full control of access and can have ramps connecting to the surface road system.

The proposed interchange would be built in the vicinity of NW 29 Street.

7.2.42 Construct an interchange on I-95 at NW 14 Street.

Residents and businesses just north of I-395 and east of I-95 have requested a direct connection to I-95. Presently, to access I-95 from this area vehicles have to travel east to Biscayne Boulevard to I-395 or south into the CBD to I-95.

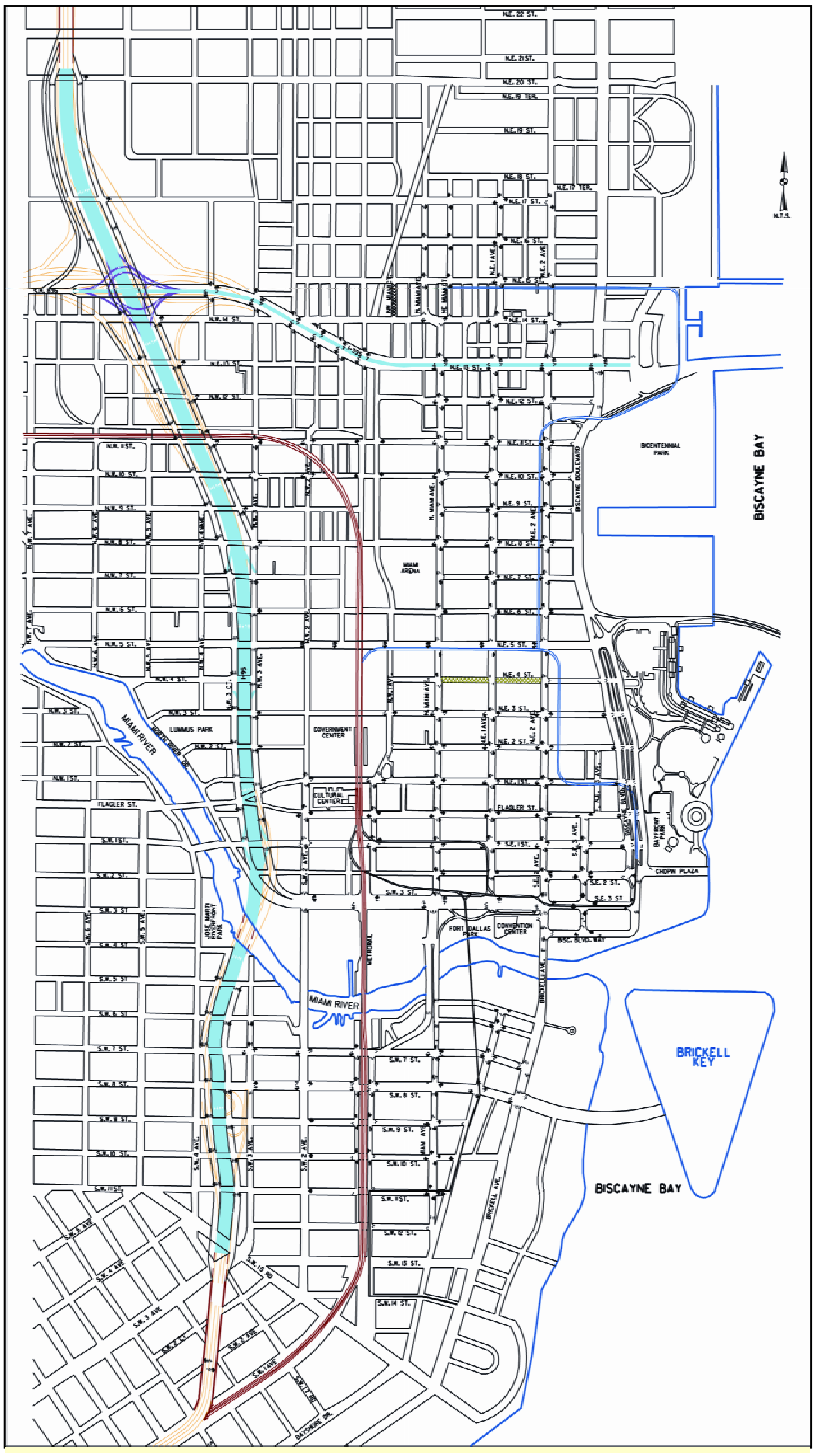
This project proposes a new I-95 interchange at NW 14 Street. This interchange will provide direct connection to/from I-95 to the Omni/Overtown/Park West area, an improvement compatible with the proposed improvements to NW 14 Street and the extension of West 1 Avenue.

7.2.43 Depress I-95.

The concept of depressing I-95 (below grade) responds to the issue of the incompatibility of freeways with vital Downtown Miami environments. Freeways do not make good neighbors, nor do they encourage pedestrian activity. For the most part, lands immediately adjacent to freeways are

poorly utilized. In many cases, the freeway itself becomes a physical and psychological barrier preventing redevelopment. Depressing freeways is being considered in many areas in the vicinity of Downtown Miami cores as a way to revitalize the area, make it more aesthetically pleasing, attract pedestrian activity, and abate freeway noise.

This proposed improvement through Downtown Miami would be an ambitious and very costly project, with its share of construction-related problems. Yet it would forever change the aspect of Downtown Miami and bring many direct and indirect benefits. Special funding will likely be needed to achieve an improvement of this magnitude.



Depressing I-95 would forever change the aspect of Downtown Miami and bring many direct and indirect benefits.

As proposed, I-95 would be depressed north of the SR 836/I-395 interchange. At that point mainline I-95 would go into an open-cut section proceeding south, below ground level, and frontage roads would be constructed at-grade to fully connect with the existing Downtown Miami street grid. The frontage roads would terminate north of the River by tying into the proposed "Grand Boulevard" that will replace the distributor ramps in the vicinity of South 2 and 3 Street. The exact configuration would need to be carefully studied to minimize and/or, preferably, avoid right-of-way acquisition. In concept, however, it might look like the exhibit below in those areas where sufficient right of way is

available to provide an adequate number of lanes on both the freeway (I-95) section and the frontage roads. Cantilever (overhang) design variations and/or fully enclosed tunnel sections could be used to minimize the right-of-way impacts. Ideally, some of the existing I-95 right-of-way could be recovered for other community uses, both public and private. Any private uses would generate property taxes for the city.

Preserving the grade separation of the freeway interchange movements to/from SR 836 and I-395 would require some of the ramps to be in tunnel sections. The high-level bridge over the Miami River would be replaced with a tunnel for the I-95 mainline lanes. The I-95 mainline lanes would surface south of SW 15 Road. At that point I-95 would become an at-grade freeway/controlled access road. A frontage road system would also be created south of the river between SW 15 Road and SW 6 Street.

Ramps between the frontage road system and the I-95 mainline lanes will also be needed. At a minimum, one such of set of ramps will be needed south of the river and two sets north of the river. Existing interchanges north of its terminus (US-1) would need to be reconstructed as well. Additionally, the at-grade crossing of Metrorail should be replaced with a grade-separated crossing by elevating this section of the Metrorail guideway.

If Downtown Miami is to continue to grow and mature into the global center of commerce envisioned by its community and city leaders, then it is crucial that proper investment in the transportation infrastructure be planned for the long-term, as well as the short-term. Without such investment, traffic congestion will worsen and not only discourage new business and residential investments but also push existing businesses to relocate.

To reach the levels of development envisioned by community and city leaders, more emphasis is placed on transit use (Metrorail, Metromover, shuttles, etc.) and improving the pedestrian environment. As reflected in the recommended transportation improvements discussed above, employees, residents, and visitors to Downtown Miami will need to significantly reduce their reliance on automobiles to maintain manageable levels of mobility.

See Exhibits 7-1 through 7-3 for maps of the recommended transportation system improvements by subarea.

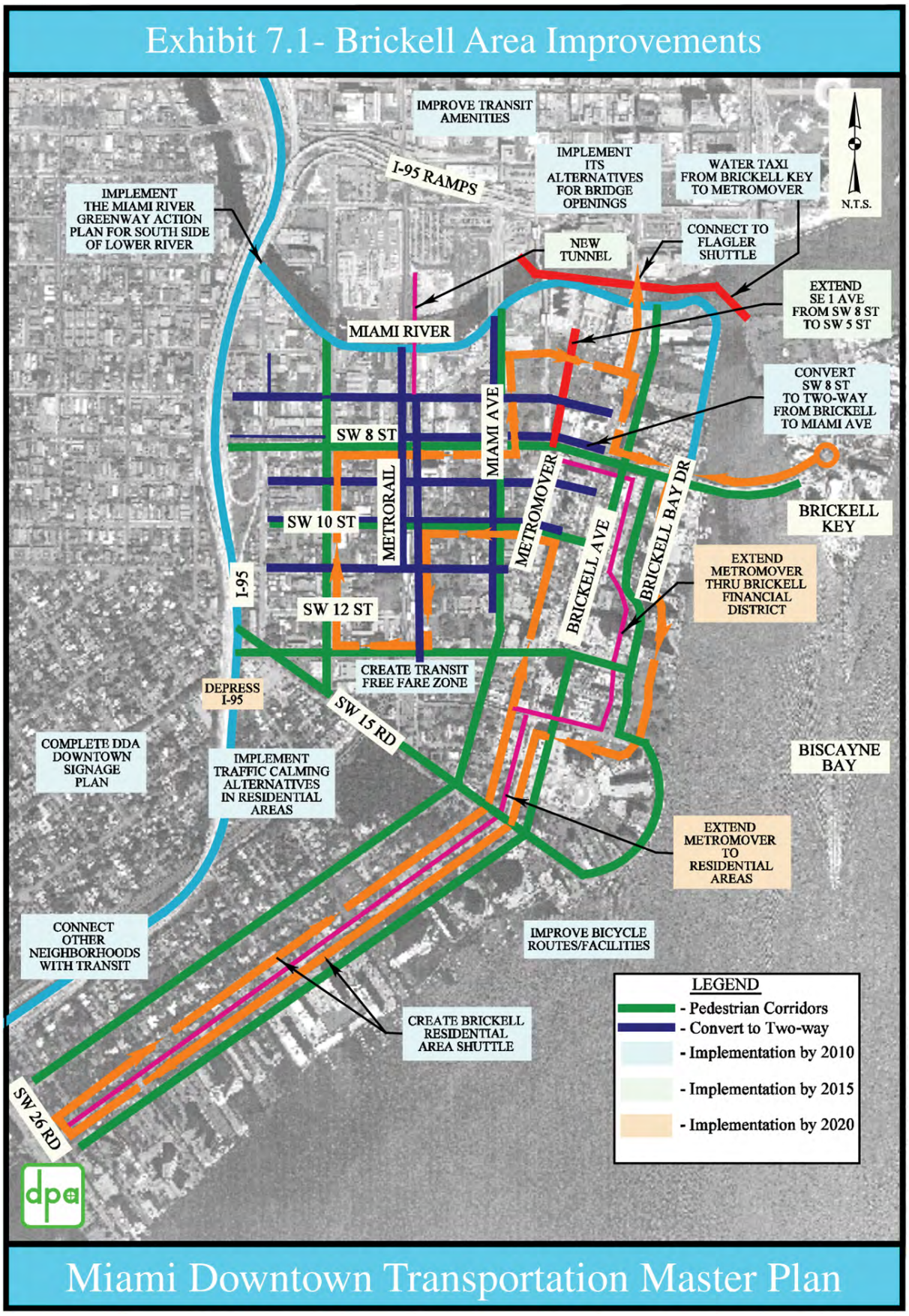
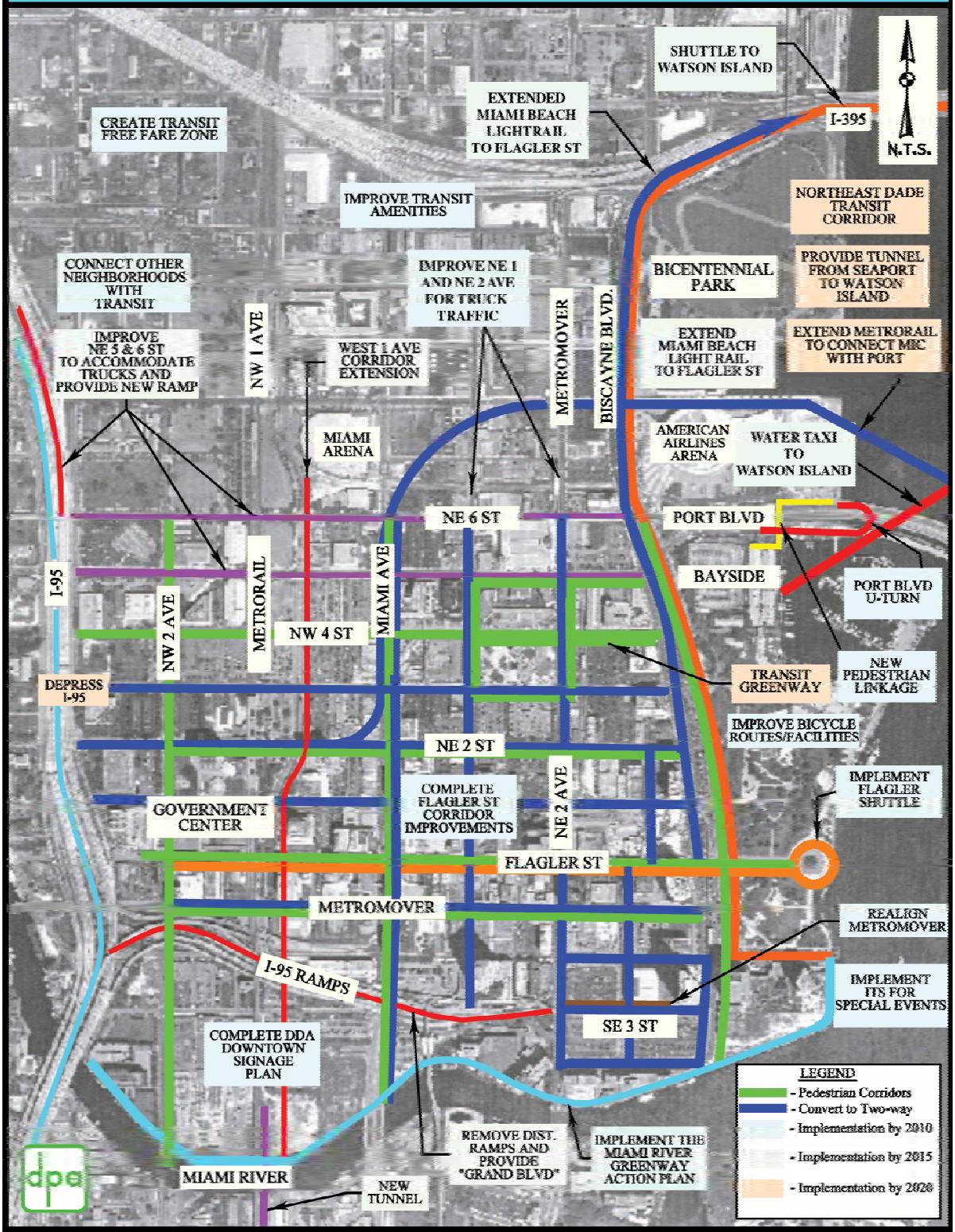


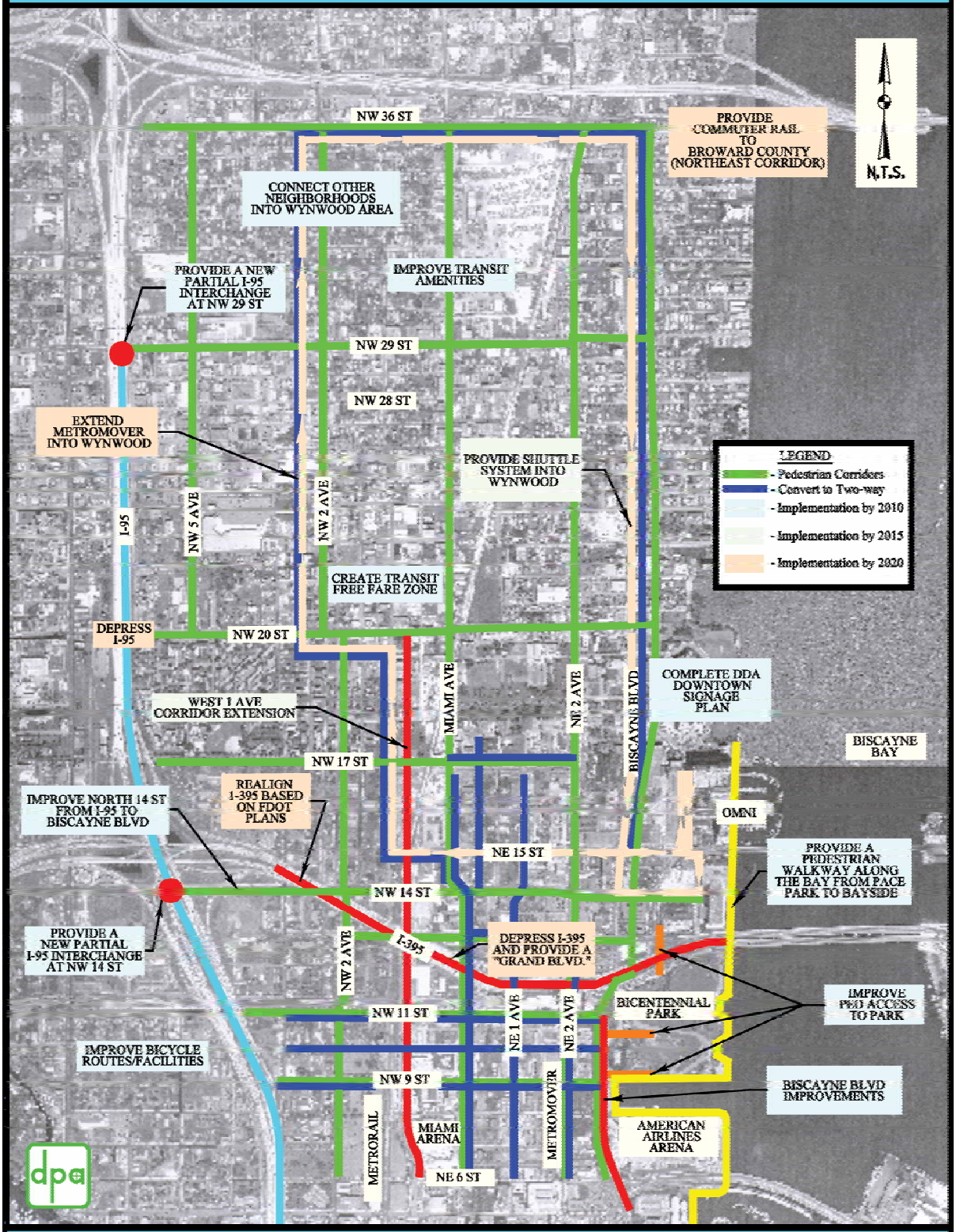
Exhibit 7.1- Brickell Area Improvements
IMPROVE TRANSIT AMENITIES
I-95 RAMPS
IMPLEMENT ITS ALTERNATIVES FOR BRIDGE OPENINGS
WATER TAXI FROM BRICKELL KEY TO METROMOVER
N.T.S.
IMPLEMENT THE MIAMI RIVER GREENWAY ACTION PLAN FOR SOUTH SIDE OF LOWER RIVER
NEW TUNNEL
CONNECT TO FLAGLER SHUTTLE
EXTEND SE 1 AVE FROM SW 8 ST TO SW 5 ST
MIAMI RIVER
CONVERT SW 8 ST TO TWO-WAY FROM BRICKELL TO MIAMI AVE
SW 8 ST
MIAMI AVE
METRORAIL
METROMOVER
BRICKELL AVE
BRICKELL BAY DR
BRICKELL KEY
SW 10 ST
I-95
EXTEND METROMOVER THRU BRICKELL FINANCIAL DISTRICT
SW 12 ST
CREATE TRANSIT FREE FARE ZONE
DEPRESS I-95
SW 15 RD
COMPLETE DDA DOWNTOWN SIGNAGE PLAN
IMPLEMENT TRAFFIC CALMING ALTERNATIVES IN RESIDENTIAL AREAS
BISCAYNE BAY
EXTEND METROMOVER TO RESIDENTIAL AREAS
CONNECT OTHER NEIGHBORHOODS WITH TRANSIT
IMPROVE BICYCLE ROUTES/FACILITIES
CREATE BRICKELL RESIDENTIAL AREA SHUTTLE
SW 26 RD
LEGEND
- Pedestrian Corridors
- Convert to Two-way
- Implementation by 2010
- Implementation by 2015
- Implementation by 2020
dpa
Miami Downtown Transportation Master Plan

Exhibit 7.2- CBD Area Improvements



Miami Downtown Transportation Master Plan

Exhibit 7.3-Omni/Overtown/Park West Area Improvements



Miami Downtown Transportation Master Plan

8.0 IMPLEMENTATION

Implementation of any transportation plan involves numerous logistic, jurisdictional, funding, and process-related issues. Although the study area is located within the City of Miami boundaries, some of the principal transportation components are owned and operated by other agencies. For example, Metrorail, Metromover, and all of the traffic signals are under the jurisdiction of Miami-Dade County. Brickell Avenue, Biscayne Boulevard, the I-95 Distributor Ramps, and I-395 are owned and operated by the FDOT. Further, the U.S. Department of Transportation also has some jurisdiction over the Interstate and the U.S. Highway System.

Additionally, federal funding is conditioned upon a continuous transportation planning process that must be followed by all metropolitan areas. In Miami-Dade, the agency responsible for coordinating the planning and funding of transportation projects is the Metropolitan Planning Organization (MPO). The process used for this coordinated planning process is open to the public, and all the agencies and jurisdictions involved and/or affected are participants. Elected officials are responsible for setting policy direction as members of the MPO Governing Board.

The area's transportation agencies provide technical expertise, follow-through, and effort necessary to utilize implementation funding based on policy direction. It is ultimately the elected officials who decide what portions of the plan are pursued, what the priorities should be, and how funding gaps should be addressed. Therefore, the direct, continued and aggressive participation of elected officials is perhaps the most important implementation element of a plan. This type of leadership has been in place since the beginning of this study and its continuity is critical to the success of this ambitious and visionary MDTMP.

> ***"…the direct, continued and aggressive participation of elected officials is perhaps the most important implementation element of a plan."***

8.1 Schedule

The MDTMPs Technical Evaluation Committee estimated an implementation schedule for each improvement: Phase 1–through 2010, Phase 2–2011 through 2015, and Phase 3–2016 through 2020. The schedule recognizes that more detailed studies, conceptual and final designs, and construction timeframes must be accommodated. See Exhibits 8-1 through 8-3 for the expected implementation phase for each improvement.

Exhibit 8.1- Brickell Area Improvements

Recommended Improvement	Phase
Create a Transit Free-Fare Zone	1
Implement Intelligent Transportation Systems (ITS) alternatives to help with bridge openings	1
Improve transit amenities	1
Connect Brickell to other neighborhoods with transit	1
Develop pedestrian corridors	1
Implement Miami River Greenway Action Plan for the south side of the Miami River	1
Convert one-way streets to two-way streets	1
Connect Brickell Shuttle to Flagler Shuttle	1
Construct a new tunnel under the Miami River at SW 1 Avenue	2
Extend SE 1 Avenue from SE 8 Street to SE 5 Street	2
Complete Downtown DDA Downtown signage plan	1
Loop Metromover through the Brickell Financial District	3
Improve bicycle routes/facilities	1
Provide shuttle system for the Brickell residential areas	1
Implement traffic calming alternatives through Brickell residential areas	1
Extend the Metromover to SE 26 Road	3
Provide a water taxi from Brickell Key to the Riverwalk Metromover station	1
Depress I-95 and create a Grand Boulevard	3

Note: Phase 1: Implementation by 2010, Phase 2: Implementation by 2015, Phase 3: Implementation by 2020

Exhibit 8.2- CBD Area Improvements

Recommended Improvement	Phase
Create a Transit Free-Fare Zone	1
Provide pedestrian connections from Bayside to AA Arena	1
Extend Miami Beach light rail (Baylink) into downtown	2
Convert one-way streets to two-way streets	1
Improve transit amenities	1
Connect CBD to other neighborhoods with transit	1
Complete the Flagler Street Corridor improvements	1
Develop pedestrian corridors	1
Implement Miami River Greenway Action Plan for the north side of the Miami River	1
Re-align Metromover and add new station at DuPont Plaza area	1
Implement Intelligent Transportation System (ITS) for special events	1
Complete Biscayne Boulevard improvements	1
Construct a new tunnel under the Miami River at SW 1 Avenue	2
Complete DDA Downtown signage plan	1
Extend W 1 Avenue Corridor (Arena Boulevard)	2
Improve bicycle routes/facilities	1
Extend fixed guideway to AA Arena and Seaport	3
Remove Distributor Ramps and provide a Grand Boulevard on S 3 St	2
Implement Flagler Shuttle	1
Provide Port Boulevard U-turn	1
Implement shuttle system from Watson Island	1
Provide a Transit Greenway	3
Provide a I-95 NB on-ramp at NW 6 St to provide access to WB SR 836 & Improve N 5 & 6 Streets for truck traffic	2
Provide Commuter Rail to Broward County	3
Provide a water taxi from Watson Island	1
Depress I-95 and create a Grand Boulevard	3

Note: Phase 1: Implementation by 2010, Phase 2: Implementation by 2015, Phase 3: Implementation by 2020

Miami Downtown Transportation Master Plan

Exhibit 8.3- Omni/Overtown/Park West Area Improvements

Recommended Improvement	Phase
Create a Transit Free-Fare Zone	1
Extend Miami Beach light rail (Baylink)	2
Connect O/OT/PW with other neighborhoods with transit	1
Develop pedestrian corridors	1
Convert one-way streets to two-way streets	1
Implement Intelligent Transportation System (ITS) for special events	1
Provide a pedestrian walkway along the Bay from Pace Park to Bayside	1
Complete Biscayne Boulevard improvements	1
Improve pedestrian connections to Bicentennial Park	1
Provide tunnel from Seaport to Watson Island	3
Extend W 1 Avenue Corridor Extension	2
Implement DDA Downtown signage plan	1
Improve bicycle routes/ facilities	1
Provide a shuttle system into Wynwood	1
Depress I-395 to provide Grand Boulevard	3
Extend Metromover into Wynwood	3
Improve N 14 St from I-95 to Biscayne Blvd	1
Provide Commuter Rail to Broward County	3
Provide a new partial I-95 Interchange at NW 29 St	1
Provide a new I-95/NW 14 St Interchange	2
Depress I-95 and create a Grand Boulevard	3

Note: Phase 1: Implementation by 2010, Phase 2: Implementation by 2015, Phase 3: Implementation by 2020

Miami Downtown Transportation Master Plan

The aforementioned phases are predicated on the estimated time needed to get improvements ready for construction (planning/studies, design, securing funding, and bidding). Phase 1 recommendations, therefore, are those that require the least time to get ready. Most of them would need a relatively minor amount of funding. In some cases, a funding source is already available for these projects. Projects in Phase 2 would require a considerable amount of funding and significant planning to move them forward. Fortunately, a new, dedicated funding source for transportation projects was implemented on January 1, 2003–the Half-Cent Transit Sales Tax, which is discussed in more detail below. Additional funding, such as special grants, may still be necessary for certain major projects.

The Phase 3 projects are even more complex technically and many will require extensive funds that may not be available based on available funding sources and expected funding levels. This is perhaps the biggest challenge and the area where aggressive leadership from elected officials will be most effective. New and/or unconventional funding methods will likely be required to achieve the full implementation of the MDTMP, especially, the projects in Phase 3.

8.2 The Half-Cent Transit Sales Tax

The philosophy of the Downtown Task Force was that this MDTMP should focus on visionary solutions to its transportation system. Securing the funding for the transportation improvements would follow with political and community leadership. In November 2002, the voters in Miami-Dade County overwhelmingly passed the People's Transportation Plan. This plan levies a half-cent transit sales surtax to provide (1) more and higher quality transit and (2) funding to municipalities for roadway and transportation projects.

The half-cent transit sales surtax will provide more and higher quality transit.

Twenty percent of the sales surtax proceeds will be distributed to municipalities based on their population. Each municipality shall apply 20% of its share of the proceeds towards transit improvements, with the balance to be used for other transportation/roadway projects. It is estimated that the City of Miami, being the largest municipality in Miami-Dade County,

will receive annual surtax proceeds of over $10M. This new, dedicated funding source will enable implementation of many of the MDTMPs recommendations by the year 2020.

8.3 Long Range Plan

All transportation improvements within Miami-Dade, regardless of municipal boundaries, must follow the guidelines established by the Federal Highway Administration and the Federal Transit Agency. These requirements are very specific in that transportation improvements using public funding must be included in the Long Range Transportation Plan (LRTP) and the (shorter range) Transportation Improvement Program (TIP). The recommendations in this study are no exception. Each recommendation must be included in the LRTP and the TIP. However, all recommendations need not be included simultaneously. Given the required process, each recommendation should follow its own path until implementation is competed for all. The Paramics simulation model developed as part of this Master Plan should be used, on a continuous basis, for more detailed analysis and further evaluation of the recommendations as part of the process that will move the improvements closer to implementation.

8.4 MDTMP Flexibility

Finally, the recommendations in this study are based on several scenarios of how Downtown Miami may develop through the year 2020. Inevitably, the market and external economic factors will play a role in how much, when, and where development will occur within the study area.

Since this study cannot anticipate every possible variation that might happen over time, the MDTMP must be considered a "living plan." This means that implementation should be constantly checked against actual conditions and deviation from the forecasted development scenarios. Development type, intensity, and timing all affect what transportation improvements are implemented and when. The MDTMP, therefore, must not only remain flexible and react to changing conditions, but must be constantly checked against its guiding principles, goals, and objectives. This approach will ensure implementation in a sequence that is consistent with the original intent, satisfies the most urgent needs at that particular point in time, and does not create conflicts between the various components of the transportation system.

"The MDTMP, therefore, must not only remain flexible and react to changing conditions, but must be constantly checked against its guiding principles, goals, and objectives."

The MDTMP presents the most viable long-range vision for the Downtown Miami transportation system. The resulting MDTMP focuses on multiple modes of transportation to help resolve mobility issues for Downtown Miami and better connect neighborhoods to this area. This plan places an emphasis on the continual upgrade of the transit system and pedestrian environment which are key components needed to turn the vision of Downtown Miami–a unique, progressive, and vibrant place in which to work, live, and play–into reality.

The MDTMP presents the most viable long range vision for Downtown Miami- a truly world class city.

Appendix A

Transportation Projects/Studies in Downtown Miami

Transportation Projects/Studies in Downtown Miami

Reports Inventory and Summary

Miami Downtown People Mover Demand Analysis Model
This includes the various tables and comparative graphs developed from past experiences and available data to analyze and model transit system in the Miami Downtown Area.

Port of Miami Tunnel & Access Improvements PD&E Study (1996)
The purpose of this study is to develop a cost effective program to link The Port of Miami to the Interstate system and to consider various issues to establish future traffic patterns and projections.

East-West Multi Modal Corridor Study – Preferred Investment Strategy Report (1995)
The study analyses various alternatives for improving the transportation capacity in the project corridor and propose the best transportation improvements from the alternatives evaluated.

Downtown Miami Traffic Access and Mobility Improvement Study (1981)
The purpose of this report is to define traffic characteristics and to establish and quantify the traffic demand and make future projections. Also to identify travel demands that exceed the street and transit capacities and develop and evaluate alternatives.

Miami Surface Shuttle Services: Feasibility Study for Transit Circulator Services in Downtown Miami, Brickell, Overtown and Airport West (2000)
The purpose of this report is to analyze the potential of Flagler Street and Brickell to support shuttle services and to develop alternative routes and represent their levels of service along with the approximate capital and operating services associated with each. The report will identify the potential sources of funds for paying for these services.

Year 2000 Fast Track Transportation Initiative (1999)
The City of Miami Downtown Development Authority (DDA) has an economic plan that includes a sound transportation system balancing Rapid-rail, Metromover, buses, motor vehicles and pedestrian modes of travel. This report features the immediate transportation needs that DDA has identified in that plan.

Downtown Miami: A Conceptual Transportation Plan (1973)
The general goal of this study is to develop improved transportation facilities which will provide for fast, safe and efficient movement of vehicular and pedestrian traffic in downtown Miami. In addition, these facilities will provide the greatest positive benefits and least negative impacts for the City of Miami.

Southwest Second Avenue Crossing the Miami River Comparative Analysis of Alternative River Crossings (1985)
This report presents in detail the facts and conclusions derived from a comparative study of several alternate proposals for improvement in the crossing of the Miami River along the line of SW 2nd Avenue.

Miami - The Downtown Master Plan (1989)
The Downtown Miami Master Plan builds a overall policy framework for a functional, accessible, stimulating and friendly downtown. This plan is designed to meet the technical needs of developers, administrators, politicians, and planners and to provide insight to citizens about the potential of downtown.

I 95 Downtown Ramps - Downtown Circulation Loop Master Plan (1997)
This report does a traffic analysis and provides the alternatives for the SR 970/I 95 Downtown Distributor Ramps (DDR). This is part of a Project Development & Environmental (PD&E) study to determine if reconstruction or elimination of the SR 970/I 95 Downtown Distributor Ramps is beneficial and practical from a transportation and socio-economic perspective.

Maritime Park Preliminary Concept Master Plan Project (1997)
This is a concept plan that proposes that, port expansion occur in a new pier configuration, with megaships placed on each side, and provides for a third mega-ship parallel to the shoreline in a future phase if necessary. This plan attempts to balance the need for revenues with an equally profound need for an accessible, desirable and vibrant destination on the waterfront.

Traffic Impact Study for Performing Arts Center (1997)
The purpose of this report is to indicate the traffic impact due to the development of the Performing Arts Center, on the surrounding roadway network.

I-95 Dupont Plaza Ramps, Alternative Feasibility study (1993)
The objective of the this study is 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.

NW SW 1st Avenue – NE/NW 14th Street Feasibility study (1998)
This report studies the feasibility of enhancing the NW/SW 1st Ave and NW 14th Street corridors by modifying the existing roadway cross-sections on these corridors and creating a better geometric connection between NW 1st Ave and NW 14th Street. The objective of the improvement is to provide an alternative route for motorists traveling from Biscayne Boulevard in the vicinity of the Venetian Causeway to the Government Center area in downtown Miami.

Downtown Miami Circulation Study (2000)
This study analyses the existing Downtown Miami roadway network to identify: critical traffic demand locations and the potential solutions, and areas with available capacity.

Port of Miami Cruise Ship Terminal Operations Traffic Study (1981)
The purpose of this report is to analyze the travel patterns of cruise ship passengers and project traffic volumes and further make recommendations to effectively handle it.

Brickell Key Traffic Calming Study (1996)
This report studies the traffic circulation and traffic operations in the Brickell Key and makes recommendations for traffic calming measures.

Port of Miami Master Development Plan (1988)
This report presents information about existing and future conditions in the Port and adjacent area and the guidelines the Port has developed to guide its day to day operations and its long term expansion program.

Downtown Miami Transportation Report (1985)
The report addresses issues related to Streets and Highways, Transit/Para Transit, Parking and Pedestrian Circulation in the downtown area. It also makes recommendations for improvements taking future conditions into consideration.

One Miami Master Traffic Study for Master Use Special Permit (MUSP) (2000)
This report does the MUSP traffic impact study in accordance to the Downtown Miami DRI and makes recommendations regarding the projects compliance.

Miami CBD Maintenance of Traffic (1982)
This report proposes maintenance of traffic, required due to the reconstruction and eastern extension of the I-95 downtown distributor, by rerouting traffic to alternate roadway facilities.

I 95 Downtown Distributor - Design Study Report (1982)
The report studies and recommends geometric design layouts and develops operating strategies for the improved I-95 Downtown Distributor.

Downtown Miami Convention and Cultural Center (1968)
This report does an inventory analysis of existing conditions and the development of proposals and plans for developing convention and cultural accommodations with amenities suitable for business, social and intellectual exchange.

Downtown Miami Transportation Center and Air Rights Development (1968)
This report presents the proposal for the development of the air rights over the combined system of railroad and road transport rights-of-way provided by the East-West Major Arterial and the area of interchange with the North-South major arterial, and a Transportation Center.

Biscayne Boulevard/SR-5/US-1 (From NE 35th Terrace to NE 105th St) PD&E Study (2000)
The objective of this report is to develop and document the design criteria and engineering decisions used to develop alternatives for roadway improvements on this section of Biscayne Boulevard.

Long Range Transportation Plan Update (1995)
This is a technical memorandum, which describes the computer program developed and assumptions used to produce directional trip distribution from a zone.

Metro Miami – Market Place (1995)
This is to make recommendations and hence establish goals for development in the major areas including the Downtown area in Miami to accommodate future growth.

Appendix B

Acknowledgements

ACKNOWLEDGMENTS

CITY OF MIAMI COMMISSIONERS

Mayor Manuel A. Diaz
Commissioner Angel Gonzalez
Commissioner Joe Sanchez
Commissioner Johnny L. Winton
Commissioner Tomas Regalado
Commissioner Arthur E. Teele, Jr.

MIAMI-DADE COUNTY COMMISSIONERS

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Steve Shiver, County Manager
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Dennis C. Moss, District Nine
Katy Sorenson, District Eight
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Rafael DeArazoza, FDOT
Richard Judy, Community Redevelopment Agency
Josie Correra, Downtown Miami Partnership
J. Megan Kelly, Brickell Area Association
Jose Padilla, St. Agustine Real Estate Advisors
Rosa Cornejo, Wynwood Citizens Advisory Comm.
David Miller, Miami River Commission
William Senn, American Airlines Arena, LLC.
Valerie Riles Robinson, Performing Arts Center

Appendix C

Summary of Survey Responses

Summary of Survey Response

Brickell Area

Pedestrian

- Pedestrian overpasses
- Wider sidewalks
- Pedestrian friendly intersections
- Improve lighting for evening pedestrians
- Provide pedestrian overpasses on Brickell Avenue

Greenspaces

- Parks, fountains, museums
- Air quality
- More trash cans
- Upkeep of benches, streets, sidewalks, landscaping
- Provide benches along Brickell Avenue
- Public gathering spaces
- Use European example to model Miami

Brickell Avenue Bridge

- Limit bridge opening during rush hours

Parking

- Parking
- Eliminate employer subsidized parking downtown, use metrorail
- Increase cost of parking
- New construction should provide adequate parking spaces
- More parking near Brickell Bay Village
- Reduce illegal parking

Transit

- Provide metrorail service to airport
- At-grade rail/trolley
- Expanded metromover service
- Exclusive bus lanes
- Smaller buses
- Better advertising of new Brickell bus service, people not aware
- Increase promotion of metrorail/metromover locally and in tourist publications

- Additional bus routes
- Improve bus service
- Improve better public transportation service to reduce dependence on cars
- Provide shuttle service from residential areas to financial district and downtown
- Do not provide exclusive bus lanes or wider sidewalks
- Cleaner metromover
- Eliminate bus service in Brickell area, connections should be made at metromover or metrorail station
- Provide free/very inexpensive shuttle services
- Route metrorail to proper areas: Airport, Kendall area, Aventura area. Properly maintaining facilities, provide adequate parking at remote stations

Access/Connectivity

- Provide better access from Brickell Avenue to I-95
- Improve access to Bayside: paths for bikes, runners, skaters
- Improved accessibility
- Do not close Brickell Bay Drive
- Build tunnel under Brickell Bridge
- Alternate routes to US-1 from downtown to Kendall
- Provide bike lanes
- Limit automobile use in the downtown area
- Close Brickell Bay Drive
- Eliminate the forced northbound right turn past the bridge
- Provide access lanes to larger buildings and developments

Development

- Too much clustering downtown due to PAC, arena, and new stadium
- No stadiums or arenas
- Night life, more quality restaurants
- Do not issue any more building permits
- Additional retail in vicinity to minimize use of cars
- Better mix of residential/retail/office spaces
- Place moratorium on construction in Brickell Area until traffic study is completed
- Brickell Bay Village will be a burden to the Brickell Area

Signals/Signing

- Traffic signal coordination
- Improve signage, lighting, and lane markings from Biscayne Boulevard to I-395
- Traffic signal at Coral Way/15 Road
- Improve signage and reduce number of signs

- Enforcement of signs and signals
- Have cameras to catch red light violators

Traffic

- Implement traffic calming in residential areas to redirect through traffic away from them
- Improve special event traffic rerouting from AA arena
- Convert NE 2 Avenue to two-way during sporting events
- Provide use of right lane on Biscayne Boulevard during rush hour
- Implement a route along the Bay
- Construction traffic (trucks)
- Additional lanes on Brickell Key bridge
- Westbound traffic at SW 8 Street/Brickell Avenue, redirect traffic from SW 8 Street
- No buses from 15 Road to 26 Avenue, local traffic only, more traffic lights to exit driveways
- Lower speed limits and enforce them
- Restrict truck loading/unloading hours
- Implement two-way traffic on SW 8 Street, center lane should be reversible
- Eliminate forced right turn lane north of Brickell bridge
- Improve maintenance of traffic during construction
- Median lighting
- Do not widen Brickell Avenue
- Reduce noise caused by traffic

Downtown CBD Area

Greenspace

- Increase greenspaces
- Provide more public gathering spaces for socializing, representing the cultural diversity of the city

Parking

- Provide free motorcycle parking

Transit

- Provide Metrorail service to Miami Beach and Airport from CBD
- Act on discussions of providing residential land uses at Metrorail station areas, high density residential should be encouraged at all station areas
- Provide Metrorail service to other counties

Access/Connectivity

- Provide better connection between downtown and rest of the County

Development

- Increase residential use downtown
- Provide after-hours activities in the CBD

Traffic

- Concerned how changing travel patterns downtown will affect existing businesses (converting one-way streets to two-way, and changing of bus routes)

OMNI/Overtown Area

Pedestrian

- Wider sidewalks
- Improve security
- Increase Police presence on the streets
- Provide pedestrian overpasses on Flagler Street
- Provide shelters for bus stops

Greenspace

- Provide more benches along the streets
- Increase landscaping along sidewalks

Parking

- Provide more parking downtown

Transit

- Provide Handicap Accessibility and no cost passes
- Extend Metromover/Metrorail service to Wynwood and reduce fares
- Provide frequent shuttle bus service to Wynwood area
- Make bus passes more accessible to wider age bracket
- Remove Jitneys from Street eliminate conflicts with buses
- Extend Metromover to Overtown at NW 1st Avenue/NW 15 Street
- Provide bus benches (with dividers to prohibit lying down) under bridges
- Provide shuttle service similar to one in Brickell Area to connect neighborhoods and activity centers within the OMNI area and with the CBD
- Transportation System improvements for school children in area, unloading of buses at Metrorail/Metromover stations to get to desired locations

Access/Connectivity

- Implement expressway exit onto 36 Street or 29 Street
- Implement bike paths through Wynwood
- Provide bike paths/lanes and parking for bicycles
- Provide pedestrian and bicycle connectivity between neighborhoods and activity centers within the OMNI area
- Improved pedestrian amenities and connectivity between the OMNI Area and the CBD, specifically the extension of Baywalk from the OMNI Area to the AmericanAirlines Arena and other activity centers in the CBD

Development

- Increase retail downtown
- Take recent increase in residential demand in consideration for future land use areas in Study

Traffic

- Widen Biscayne Boulevard and NE 2 Avenue
- Convert NE 2 Avenue to one-way southbound
- Widen streets downtown so that buses can pass through
- Eliminate one-way streets
- Reduce car and truck traffic in area
- Enforcement of speed limits
- Provide tunnels to minimize traffic

Appendix D

List of Meetings

List of Meetings and Public Forums

No.	Meeting With	Date
1	Task Force Meeting #1	24-Jan-01
2	Technical Committee Meeting # 1	12-Mar-01
3	Forum #1 – (CBD)	09-Apr-01
4	Forum I - OMNI/Overtown	09-Apr-01
5	Forum I – Brickell	09-Apr-01
6	Performing Arts Center	02-May-01
7	Brickell Area Association	14-May-01
8	Brickell Homeowners Association	16-May-01
9	Downtown Miami Partnership	16-May-01
10	Grand Condo Association (Omni)	23-May-01
11	Wynwood Citizen Advisory Committee	12-Jun-01
12	Community Redevelopment Agency (Overtown/ Park West)	25-Jun-01
13	Greater Miami Chamber of Commerce	26-Jul-01
14	Task Force Meeting # 2	01-Aug-01
15	Forum # 2 (Omni)	04-Oct-01
16	Downtown Task Force #3	12-Dec-01
17	DDA	15-Feb-02
18	Brickell Town Hall Meeting	25-Feb-02
19	Task Force #4	1-April-02
20	Evaluation Committee	22-July-02
21	Task Force #5	5-Sept.-02
22	Forum #3 (Brickell)	22-Oct-02

Appendix E

Evaluation Scores

Evaluation Criteria

Un-weighted Scores

OPTIONS	Transportation	Social	Economic	Environmental	Development	Investment	AVERAGE
BRICKELL AREA							
Develop the following roadways into pedestrian corridors	3	7	2	9	7	3	5.17
Brickell Avenue - from Miami River to 26 Road (Rickenbacker Cswy)							
Brickell Bay Drive - from S. 8 Street to 15 Road							
Miami Avenue - from Miami River to S. 12 Street							
Miami Avenue/SE 1 Avenue - from S. 12 Street to 26 Road (Rickenbacker Cswy)							
S. 13 Street - from I-95 to Brickell Avenue							
S. 10 Street - from I-95 to Brickell Avenue							
S. 8 Street - from I-95 to Brickell Key							
S. 15 Road - from I-95 to Bayshore Drive							
W. 2 Avenue - from Miami River to SW 15 Road							
Miami River Greenway Action Plan for the south side of the Lower River	3	7	2	9	6	4	5.17
ITS alternatives to help w/ bridge openings	8	4	4	2	3	5	4.33
Improve bicycle routes/facilities	1	1	0	9	3	7	3.50
Improve transit amenities in the area	5	6	3	6	3	9	5.33
DDA Downtown Signage plan	3	4	3	1	1	5	2.83
Two-Way Conversion in Brickell	2	5	7	1	6	8	4.83
S.11 Street from I-95 to S 1 Avenue							
S.11 Street from S 1 Avenue to Brickell Place							
S. 10 Street from I-95 to S 1 Avenue							
S. 8 Street from Brickell to Miami Avenue.							
S. 8 Street from Miami Avenue to I-95							
S. 7 Street from Brickell to I-95							
S. 9 Street from Miami Avenue SW 1 Avenue							
S. 3 Avenue from SW 7 Street to SW 6 Street							
SW 1 Avenue (west of Metrorail) from SW 11 Street to Miami River							
SW 1 Avenue (east of Metrorail) from SW 13 Street to SW 7 Street							
Miami Avenue from SW 12 Street to Miami River							
Extend SE 1 Avenue from S. 8 Street to S. 5 Street	4	3	3	0	5	-1	2.33
Water Taxi from Brickell Key to Metromover station @ Hyatt	1	0	3	0	1	1	1.00
Implement Traffic calming alternatives through Brickell residential areas	1	4	2	1	3	2	2.17
Connect other neighborhoods with Transit	5	7	5	5	5	5	5.33
Shuttle System for the Brickell residential area (from 13 Road to 26 Road)	4	2	2	1	2	0	1.83
Connect Brickell Shuttle to Flagler Shuttle	7	5	3	5	3	0	3.83
Transit Free Fare Zone	9	7	8	6	6	7	7.17
Loop Metromover through the Brickell Financial District	5	3	2	3	2	-4	1.83
Extend the Metromover to 26 Road	4	1	2	2	2	-4	1.17
New tunnel under the Miami River @ W 1 Avenue	8	3	5	0	1	-3	2.33
Depress I-95 and create a Grand Boulevard	-1	1	0	-1	0	-5	-1.00

OPTIONS	Transportation	Social	Economic	Environmental	Development	Investment	AVERAGE
CBD AREA							
Develop the following roadways into pedestrian corridors	3	8	2	9	7	3	5.33
Miami Avenue - from Miami River to N. 6 Street							
Biscayne Boulevard - from Biscayne Blvd. Way to N. 6 Street							
Flagler Street - from I-95 to Bayfront Park							
W. 2 Avenue - from Miami River to N 6 Street							
N. 5 Street - from NE 1 Avenue to Biscayne Blvd.							
NE 2 Avenue - from NE 3 Street to NE 5 Street							
NE 3 Street - from NE 1 Avenue to NE 2 Avenue							
NE 1 Avenue - from NE 3 Street to NE 5 Street							
NE 2 Street - from NW 2 Avenue to Biscayne Boulevard							
S. 1 Street - from SW 2Avenue to Biscayne Boulevard							
N. 4 Street - from I-95 to Biscayne Blvd.							
Miami River Greenway Action Plan for the north side of the Lower River	3	8	2	9	7	3	5.33
Pedestrian connections from Bayside to AA Arena	5	8	6	9	7	8	7.17
Improve bicycle routes/facilities	1	2	0	9	3	7	3.67
Improve transit amenities in the area	6	6	3	6	3	9	5.50
Extend Miami Beach light rail (Baylink) into downtown	8	6	8	6	5	-1	5.33
Port Boulevard U-turn	5	1	2	-1	1	2	1.67
DDA Downtown Signage plan	4	4	4	1	1	6	3.33
Implement Flagler Shuttle	2	3	3	0	5	0	2.17
Improve N 5 and 6 street for truck traffic	5	-2	4	2	3	8	3.33
Provide a I-95 NB on-ramp at N 8 Street to provide access to WB SR 836	6	-3	4	1	-2	-2	0.67
Complete the Flagler Street Corridor improvements	4	6	5	7	5	2	4.83
Provide tunnel from Seaport to Watson Island	5	2	7	0	4	-4	2.33
Two-way conversion in CBD	3	6	8	1	7	9	5.67
E 2 Avenue from Biscayne Boulevard Way to NE 6 Street							
Biscayne Boulevard Way from SE 2 Avenue to Biscayne Boulevard							
S 3 Street from SE 2 Avenue to Biscayne Boulevard							
S 2 Street from SE 2 Avenue to Biscayne Boulevard							
S 1 Street from W 2 Avenue to Biscayne Boulevard							
N 1 Street from W 3 Avenue to Biscayne Boulevard							
N 2 Street from W 1 Avenue to Biscayne Boulevard							
N 3 Street from W 3 Avenue to Biscayne Boulevard							
E 3 Avenue from Biscayne Boulevard Way to NE 2 Street							
Biscayne Boulevard from SE 2 Street to Biscayne Boulevard Way							
S. Miami Avenue from Miami River to NE 6 Street							
E 1 Avenue from S 3 Street to NE 6 Street							
Connect other neighborhoods with Transit	5	7	5	5	5	5	5.33
W. 1 Avenue Corridor Extension (Arena Boulevard)	4	5	2	0	5	0	2.67
Provide a Transit Greenway	2	3	1	3	5	0	2.33
Re-align Metromover and add new station @ DuPont Plaza	5	6	6	2	5	-1	3.83
ITS for Special Events	6	2	4	1	3	5	3.50
Create a Transit Free Fare Zone	9	7	8	6	6	7	7.17
Extend Fixed Guideway to AA Arena and Seaport	4	3	4	3	2	-4	2.00
Remove Distributor Ramps and provide a "Grand Boulevard" on S. 3 Street	2	2	3	1	9	-2	2.50
Depress I-95 and create a Grand Boulevard	-1	1	0	-1	0	-5	-1.00

OPTIONS	Transportation	Social	Economic	Environmental	Development	Investment	AVERAGE
OMNI/OVERTOWN/PARK WEST AREA							
Develop the following roadways into pedestrian corridors	3	8	2	9	7	3	5.33
Miami Avenue - from N. 6 Street to N. 36 Street							
Biscayne Boulevard - from N. 6 Street to NW 36 Street							
W. 2 Avenue - from N. 20 Street to N. 36 Street							
W. 5 Avenue from N 21 Street to N 36 Street							
N. 9 Street - from I-95 to Biscayne Blvd.							
N. 11 Street - from I-95 to Biscayne Blvd.							
N. 13 Street - from I-95 to Biscayne Blvd.							
N. 14 Street - from I-95/I-395 Interchange to Biscayne Blvd.							
N. 17 Street - from I-95 to NE 2 Avenue							
N. 20 Street - from I-95 to Biscayne Blvd.							
N. 29 Street - from I-95 to Biscayne Blvd.							
N. 36 Street - from I-95 to Biscayne Blvd.							
E 2 Avenue - from 6 St. to NW 20 Street							
Provide a pedestrian walkway along the Bay from Pace Park to Bayside	1	3	2	8	8	8	5.00
Improve pedestrian connections to Bicentennial Park	1	4	2	8	5	8	4.67
Improve bicycle routes/facilities	1	2	0	9	3	7	3.67
Realign I-395 and improve on/off ramps (based on FDOT plans)	3	-3	3	0	-1	-1	0.17
Two-way conversion in Omni/Overtown/Park West	2	5	7	1	6	8	4.83
N 9 Street from N 2 Avenue to Biscayne Blvd.							
E 2 Avenue from N 6 Street to NE 13 Street							
Miami Avenue from N 6 Street to NE 17 Street							
E 1 Avenue from N 6 Street to NE 17 Street							
NE Miami Court from NE 14 Street to NE 18 Street							
N 10 Street from NW 3 Avenue to Biscayne Blvd.							
N 11 Street from NW 3 Avenue to Biscayne Blvd.							
N 13 Street from Miami Avenue to NE 2 Avenue							
N 17 Street from Miami Avenue to NE 2 Avenue							
Complete Downtown Signage plan (from DDA)	3	4	3	1	1	5	2.83
Improve transit amenities in the area	6	6	3	6	3	9	5.50
Biscayne Boulevard Improvements (FDOT Plan)							0.00
Biscayne Boulevard Improvements (City of Miami Plan)	4	5	3	2	7	1	3.67
W. 1 Avenue Corridor Extension	4	5	2	0	5	0	2.67
Improve N. 14 Street from I-95 to Biscayne Blvd.	0	3	1	0	5	1	1.67
Connect other neighborhoods with Transit	5	7	5	5	5	5	5.33
Provide a shuttle system into Wynwood (NW 2 Avenue/ 36 Street/ Biscayne/ Omni)	4	3	2	1	3	0	2.17
Create a Transit Free Fare Zone	9	7	8	6	6	7	7.17
Depress I-395 from west of R/R to provide "Grand Boulevard"	2	3	3	1	8	-4	2.17
Extend Metromover into Wynwood (N 2 Avenue/ 29 Street/ Biscayne/ Omni)	3	2	2	3	2	-3	1.50
Provide a new partial I-95 interchange at N 29 Street	0	0	1	0	2	-1	0.33
I-95/NW 14 Street Interchange	1	1	0	0	0	-1	0.17
Depress I-95 and create a Grand Boulevard	-1	1	0	-1	0	-5	-1.00
Provide Commuter Rail to Broward County	3	0	1	2	1	-1	1.00

Evaluation Criteria

Weighted Scores

OPTIONS	Transportation	Social	Economic	Environmental	Development	Investment	TOTAL
Goal Weights	**31%**	**14%**	**20%**	**11%**	**14%**	**10%**	
BRICKELL AREA							
Develop the following roadways into pedestrian corridors	0.93	0.98	0.4	0.99	0.98	0.3	4.6
Brickell Avenue - from Miami River to 26 Road (Rickenbacker Cswy)							
Brickell Bay Drive - from S. 8 Street to 15 Road							
Miami Avenue - from Miami River to S. 12 Street							
Miami Avenue/SE 1 Avenue - from S. 12 Street to 26 Road (Rickenbacker Cswy)							
S. 13 Street - from I-95 to Brickell Avenue							
S. 10 Street - from I-95 to Brickell Avenue							
S. 8 Street - from I-95 to Brickell Key							
S. 15 Road - from I-95 to Bayshore Drive							
W. 2 Avenue - from Miami River to SW 15 Road							
Miami River Greenway Action Plan for the south side of the Lower River	0.93	0.98	0.4	0.99	0.84	0.4	4.5
ITS alternatives to help w/ bridge openings	2.48	0.56	0.8	0.22	0.42	0.5	5.0
Improve bicycle routes/facilities	0.31	0.14	0	0.99	0.42	0.7	2.6
Improve transit amenities in the area	1.55	0.84	0.6	0.66	0.42	0.9	5.0
DDA Downtown Signage plan	0.93	0.56	0.6	0.11	0.14	0.5	2.8
Two-Way Conversion in Brickell	0.62	0.7	1.4	0.11	0.84	0.8	4.5
S.11 Street from I-95 to S 1 Avenue							
S.11 Street from S 1 Avenue to Brickell Place							
S. 10 Street from I-95 to S 1 Avenue							
S. 8 Street from Brickell to Miami Avenue.							
S. 8 Street from Miami Avenue to I-95							
S. 7 Street from Brickell to I-95							
S. 9 Street from Miami Avenue SW 1 Avenue							
S. 3 Avenue from SW 7 Street to SW 6 Street							
SW 1 Avenue (west of Metrorail) from SW 11 Street to Miami River							
SW 1 Avenue (east of Metrorail) from SW 13 Street to SW 7 Street							
Miami Avenue from SW 12 Street to Miami River							
Extend SE 1 Avenue from S. 8 Street to S. 5 Street	1.24	0.42	0.6	0	0.7	-0.1	2.9
Water Taxi from Brickell Key to Metromover station @ Hyatt	0.31	0	0.6	0	0.14	0.1	1.2
Implement Traffic calming alternatives through Brickell residential areas	0.31	0.56	0.4	0.11	0.42	0.2	2.0
Connect other neighborhoods with Transit	1.55	0.98	1	0.55	0.7	0.5	5.3
Shuttle System for the Brickell residential area (from 13 Road to 26 Road)	1.24	0.28	0.4	0.11	0.28	0	2.3
Connect Brickell Shuttle to Flagler Shuttle	2.17	0.7	0.6	0.55	0.42	0	4.4
Transit Free Fare Zone	2.79	0.98	1.6	0.66	0.84	0.7	7.6
Loop Metromover through the Brickell Financial District	1.55	0.42	0.4	0.33	0.28	-0.4	2.6
Extend the Metromover to 26 Road	1.24	0.14	0.4	0.22	0.28	-0.4	1.9
New tunnel under the Miami River @ W 1 Avenue	2.48	0.42	1	0	0.14	-0.3	3.7
Depress I-95 and create a Grand Boulevard	-0.31	0.14	0	-0.11	0	-0.5	-0.8

OPTIONS	Transportation	Social	Economic	Environmental	Development	Investment	TOTAL
Goal Weights	**31%**	**14%**	**20%**	**11%**	**14%**	**10%**	
CBD AREA							
Develop the following roadways into pedestrian corridors	0.93	1.12	0.4	0.99	0.98	0.3	4.7
Miami Avenue - from Miami River to N. 6 Street							
Biscayne Boulevard - from Biscayne Blvd. Way to N. 6 Street							
Flagler Street - from I-95 to Bayfront Park							
W. 2 Avenue - from Miami River to N 6 Street							
N. 5 Street - from NE 1 Avenue to Biscayne Blvd.							
NE 2 Avenue - from NE 3 Street to NE 5 Street							
NE 3 Street - from NE 1 Avenue to NE 2 Avenue							
NE 1 Avenue - from NE 3 Street to NE 5 Street							
NE 2 Street - from NW 2 Avenue to Biscayne Boulevard							
S. 1 Street - from SW 2Avenue to Biscayne Boulevard							
N. 4 Street - from I-95 to Biscayne Blvd.							
Miami River Greenway Action Plan for the north side of the Lower River	0.93	1.12	0.4	0.99	0.98	0.3	4.7
Pedestrian connections from Bayside to AA Arena	1.55	1.12	1.2	0.99	0.98	0.8	6.6
Improve bicycle routes/facilities	0.31	0.28	0	0.99	0.42	0.7	2.7
Improve transit amenities in the area	1.86	0.84	0.6	0.66	0.42	0.9	5.3
Extend Miami Beach light rail (Baylink) into downtown	2.48	0.84	1.6	0.66	0.7	-0.1	6.2
Port Boulevard U-turn	1.55	0.14	0.4	-0.11	0.14	0.2	2.3
DDA Downtown Signage plan	1.24	0.56	0.8	0.11	0.14	0.6	3.5
Implement Flagler Shuttle	0.62	0.42	0.6	0	0.7	0	2.3
Improve N 5 and 6 street for truck traffic	1.55	-0.28	0.8	0.22	0.42	0.8	3.5
Provide a I-95 NB on-ramp at N 8 Street to provide access to WB SR 836	1.86	-0.42	0.8	0.11	-0.28	-0.2	1.9
Complete the Flagler Street Corridor improvements	1.24	0.84	1	0.77	0.7	0.2	4.8
Provide tunnel from Seaport to Watson Island	1.55	0.28	1.4	0	0.56	-0.4	3.4
Two-way conversion in CBD	0.93	0.84	1.6	0.11	0.98	0.9	5.4
E 2 Avenue from Biscayne Boulevard Way to NE 6 Street							
Biscayne Boulevard Way from SE 2 Avenue to Biscayne Boulevard							
S 3 Street from SE 2 Avenue to Biscayne Boulevard							
S 2 Street from SE 2 Avenue to Biscayne Boulevard							
S 1 Street from W 2 Avenue to Biscayne Boulevard							
N 1 Street from W 3 Avenue to Biscayne Boulevard							
N 2 Street from W 1 Avenue to Biscayne Boulevard							
N 3 Street from W 3 Avenue to Biscayne Boulevard							
E 3 Avenue from Biscayne Boulevard Way to NE 2 Street							
Biscayne Boulevard from SE 2 Street to Biscayne Boulevard Way							
S. Miami Avenue from Miami River to NE 6 Street							
E 1 Avenue from S 3 Street to NE 6 Street							
Connect other neighborhoods with Transit	1.55	0.98	1	0.55	0.7	0.5	5.3
W. 1 Avenue Corridor Extension (Arena Boulevard)	1.24	0.7	0.4	0	0.7	0	3.0
Provide a Transit Greenway	0.62	0.42	0.2	0.33	0.7	0	2.3
Re-align Metromover and add new station @ DuPont Plaza	1.55	0.84	1.2	0.22	0.7	-0.1	4.4
ITS for Special Events	1.86	0.28	0.8	0.11	0.42	0.5	4.0
Create a Transit Free Fare Zone	2.79	0.98	1.6	0.66	0.84	0.7	7.6
Extend Fixed Guideway to AA Arena and Seaport	1.24	0.42	0.8	0.33	0.28	-0.4	2.7
Remove Distributor Ramps and provide a "Grand Boulevard" on S. 3 Street	0.62	0.28	0.6	0.11	1.26	-0.2	2.7
Depress I-95 and create a Grand Boulevard	-0.31	0.14	0	-0.11	0	-0.5	-0.8

OPTIONS	Transportation	Social	Economic	Environmental	Development	Investment	TOTAL
Goal Weights	**31%**	**14%**	**20%**	**11%**	**14%**	**10%**	
OMNI/OVERTOWN/PARK WEST AREA							
Develop the following roadways into pedestrian corridors	0.93	1.12	0.4	0.99	0.98	0.3	4.7
Miami Avenue - from N. 6 Street to N. 36 Street							
Biscayne Boulevard - from N. 6 Street to NW 36 Street							
W. 2 Avenue - from N. 20 Street to N. 36 Street							
W. 5 Avenue from N 21 Street to N 36 Street							
N. 9 Street - from I-95 to Biscayne Blvd.							
N. 11 Street - from I-95 to Biscayne Blvd.							
N. 13 Street - from I-95 to Biscayne Blvd.							
N. 14 Street - from I-95/I-395 Interchange to Biscayne Blvd.							
N. 17 Street - from I-95 to NE 2 Avenue							
N. 20 Street - from I-95 to Biscayne Blvd.							
N. 29 Street - from I-95 to Biscayne Blvd.							
N. 36 Street - from I-95 to Biscayne Blvd.							
E 2 Avenue - from 6 St. to NW 20 Street							
Provide a pedestrian walkway along the Bay from Pace Park to Bayside	0.31	0.42	0.4	0.88	1.12	0.8	3.9
Improve pedestrian connections to Bicentennial Park	0.31	0.56	0.4	0.88	0.7	0.8	3.7
Improve bicycle routes/facilities	0.31	0.28	0	0.99	0.42	0.7	2.7
Realign I-395 and improve on/off ramps (based on FDOT plans)	0.93	-0.42	0.6	0	-0.14	-0.1	0.9
Two-way conversion in Omni/Overtown/Park West	0.62	0.7	1.4	0.11	0.84	0.8	4.5
N 9 Street from N 2 Avenue to Biscayne Blvd.							
E 2 Avenue from N 6 Street to NE 13 Street							
Miami Avenue from N 6 Street to NE 17 Street							
E 1 Avenue from N 6 Street to NE 17 Street							
NE Miami Court from NE 14 Street to NE 18 Street							
N 10 Street from NW 3 Avenue to Biscayne Blvd.							
N 11 Street from NW 3 Avenue to Biscayne Blvd.							
N 13 Street from Miami Avenue to NE 2 Avenue							
N 17 Street from Miami Avenue to NE 2 Avenue							
Complete Downtown Signage plan (from DDA)	0.93	0.56	0.6	0.11	0.14	0.5	2.8
Improve transit amenities in the area	1.86	0.84	0.6	0.66	0.42	0.9	5.3
Biscayne Boulevard Improvements (FDOT Plan)	0	0	0	0	0	0	0.0
Biscayne Boulevard Improvements (City of Miami Plan)	1.24	0.7	0.6	0.22	0.98	0.1	3.8
W. 1 Avenue Corridor Extension	1.24	0.7	0.4	0	0.7	0	3.0
Improve N. 14 Street from I-95 to Biscayne Blvd.	0	0.42	0.2	0	0.7	0.1	1.4
Connect other neighborhoods with Transit	1.55	0.98	1	0.55	0.7	0.5	5.3
Provide a shuttle system into Wynwood (NW 2 Avenue/ 36 Street/ Biscayne/ Omni)	1.24	0.42	0.4	0.11	0.42	0	2.6
Create a Transit Free Fare Zone	2.79	0.98	1.6	0.66	0.84	0.7	7.6
Depress I-395 from west of R/R to provide "Grand Boulevard"	0.62	0.42	0.6	0.11	1.12	-0.4	2.5
Extend Metromover into Wynwood (N 2 Avenue/ 29 Street/ Biscayne/ Omni)	0.93	0.28	0.4	0.33	0.28	-0.3	1.9
Provide a new partial I-95 interchange at N 29 Street	0	0	0.2	0	0.28	-0.1	0.4
I-95/NW 14 Street Interchange	0.31	0.14	0	0	0	-0.1	0.4
Depress I-95 and create a Grand Boulevard	-0.31	0.14	0	-0.11	0	-0.5	-0.8
Provide Commuter Rail to Broward County	0.93	0	0.2	0.22	0.14	-0.1	1.4

Appendix F

Abbreviations and Acronyms

Abbreviations and Acronyms

AA	American Airlines
AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
AGT	Automated Guideway Transit
AGV	Automated Guideway Vehicles
AM	Ante Meridian
APTS	Advanced Public Transportation System
ATMS	Advanced Traffic Management System
Ave	Avenue
Avg	Average
Blvd	Boulevard
BMP	Best Management Practice
CA	California
CAC	Citizen Advisory Committee
CBD	Central Business District
CCTV	Closed Circuit Television
CD	Collector Distributor
CMS	Congestion Management System
CO	Colorado
Cswy	Causeway
Ct	Court
DART	Dallas Area Rapid Transit
DDA	Downtown Development Authority
DPA	David Plummer and Associates
DTF	Downtown Task Force
E	East
EB	Eastbound
ECC	Evaluation Criteria Committee
FDOT	Florida Department of Transportation
FHWA	Florida Highway Administration
FIU	Florida International University
FL	Florida
FS	Florida Statutes

FSUTMS	Florida Standard Urban Transportation Model Structure
FY	Future Year
HAR	Highway Advisory Radio
I	Interstate
ITS	Intelligent Transportation System
LCE	Leftwich Consulting Engineers
LOS	Level of Service
LRTP	Long Range Transportation Plan
MD	Midday
MDCC	Miami Dade Community College
MDTMP	Miami Downtown Transportation Master Plan
MDX	Miami-Dade Expressway Authority
MDT	Miami-Dade Transit
MI	Michigan
MIA	Miami International Airport
MPO	Metropolitan Planning Organization
MUATS	Miami Urban Area Transportation Study
N	North
NB	Northbound
NE	North East
NW	North West
PD&E	Project Development and Environment
PM	Post Meridian
PSWADT	Peak Season Weekday Average Daily Traffic
Rd	Road
R/R	Railroad
R/W	Right-of-way
S	South
SB	Southbound
SE	South East
SR	State Road
SW	South West
St	Street

TAZ	Traffic Analysis Zone
TEA-21	Transportation Equity Act for the 21st Century
TEC	Technical Evaluation Committee
TDM	Transportation Demand Management
Terr	Terrace
TIP	Transportation Improvement Program
TLOS	Transit Level of Service
TN	Tennessee
TSM	Transportation System Management
TV	Television
TX	Texas
UA	Urbanized Area
USDOT	United State Department of Transportation
v/c	volume to capacity
vph	vehicles per hour
W	West
WB	Westbound