

HEALTH DISTRICT TRAFFIC STUDY



Submitted to:
Metropolitan Planning Organization



Submitted by:
THE CORRADINO GROUP, INC.

May, 2009

Health District Traffic Study

Metropolitan Planning Organization



Prepared by:

THE CORRADINO GROUP, INC.

Joseph M. Corradino, AICP, President

4055 NW 97th Ave.

Doral, FL 33178

Phone: 305-594-0735

Fax: 305-594-0755

jmcorradino@corradino.com

May 2009

Table of Contents

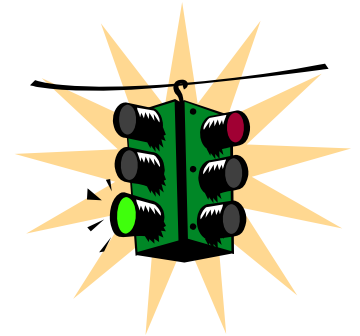
Executive Summary.....	ES-1
1. Land Use and Zoning	1
2. Comparison of TCEA and Concurrency Policies.....	3
3. Traffic Conditions: traffic volumes, traffic levels of service, traffic patterns, existing roadway network, traffic controls	11
4. Existing Transportation Plans	19
5. Existing Transportation	31
5.1 Emergency Vehicle Routes, Pedestrian Flows	31
5.2 Parking Inventory.....	31
5.3 Transit Conditions	33
5.4 Bicycle and Pedestrian Conditions	49
5.5 Socio-economic Information	53
6. Traffic Modeling	67
6.1 Existing Conditions Modeling	67
6.2 Future Conditions Modeling.....	68
6.3 Traffic Micro Simulation Methodology	87
6.3.1 Data Collection.....	87
6.3.2 Highway Capacity Analysis.....	88
6.3.3 Traffic Micro Simulation Methodology	90

6.3.4 Traffic Analysis Results	91
6.2 Needs Assessment.....	120
7. Recommendations	123
7.1 Current Planned and Recommended Transportation Projects.....	124
7.2 Transportation Management Organization.....	141
7.3 Intersection Modifications.....	139
7.4 Pedestrian & Transit Improvements.....	143
7.5 Additional Capacity.....	147
7.6 New Facilities.....	151
8. Conclusion.....	152

Executive Summary

Background:

The Health District is the second largest employment center in Miami-Dade County outside of Downtown Miami with more than 39,000 people employed at major healthcare, social service, judicial and educational institutions. Thousands of people come to the area every day to work, to receive world-class medical care, to seek assistance from a variety of agencies, participate in the legal system or to go to school. The area is strategically located just two miles northwest of downtown, bound by I-95 on the east, SR 836 on the south, NW 20th Street on the north and NW 17th Avenue on the west. Major new development is slated for the Health District and the surrounding neighborhoods. In order to plan for growth and the new employment associated with it, the Health District stakeholders held a meeting with representatives from all city, county and state transportation and planning agencies. The Miami-Dade County Manager's office assisted with scheduling the meeting and determining who should participate. At the meeting it was determined that the Metropolitan Planning Organization (MPO) would oversee a comprehensive traffic study to evaluate mobility issues, existing transportation projects and deficiencies in the greater transportation network that directly serve the Health District. The purpose of this study is to provide agencies with the necessary justification to move forward with recommendations and mobility improvements that will enable the Health District stakeholders to better serve employees and visitors.



The Study:

First Task: A Study Advisory Committee was formed that included stakeholders from transportation agencies and Health District institutions to oversee the methodology for the study, identify available data, provide policy guidance as the study progressed, and examine the work product of each task.

Second Task: Existing conditions and previous reports/studies were reviewed and appropriate traffic counts were collected.

Third Task: Traffic Model Development was implemented to determine the methodology for two levels of analysis: examination of the regional Long Range Transportation Plan Model and a micro simulation of the specific study area. Once the methodology was agreed upon, transportation needs, which included examining level of service on freeways, ramps, roadways and intersections for the existing year of 2008 and the future year of 2015, were analyzed. From the deficiencies found in the analysis, project needs were identified and a host of multimodal recommendations were developed.



Recommendations

A series of multimodal recommendations have been developed to address the identified transportation deficiencies, improve the study area in terms of safety and provide an adequate level of service.

The recommendations include projects from the Transportation Improvement Program (TIP) that have been justified by the Long Range Transportation Plan (LRTP), and streetscape, signage and gateway projects from the recently completed City of Miami Basis of Design Report (BODR). The model also determined that new, additional capacity projects at intersections and links were warranted. The Advisory Committee prioritized projects to reflect Health District needs in the following time frames:

- Short Term – 1-2 Years
- Mid Term – 5 Years
- Long Term – +5 Years

Recommendations were made in six categories which include:

- Currently Planned and Recommended Projects in the LRTP, TIP and City of Miami BODR
- Creation of a Transportation Management Organization
- Intersection Modifications
- Pedestrian and Transit Improvements
- Signage and Wayfinding Improvements
- Additional Capacity Improvements
- New Facilities

Each of the projects has been cross referenced and mapped (where appropriate) with the existing projects from the Transportation Improvement Program (TIP), Long Range Transportation Plan (LRTP) and City of Miami Basis of Design Report (BODR) to assure that conflicting recommendations are eliminated.

In general, the future transportation system will consist of existing roadways with several capital improvements to widen roadways, provide additional bike lanes, sidewalk improvements, transit improvements, and operational improvements throughout the network.

Throughout the study, the Study Advisory Committee worked to ensure that the needs of Miami-Dade County Public Works, Miami-Dade Transit, Health District stakeholders, the City of Miami, FDOT, Miami-Dade Expressway Authority and the Transportation Local Disadvantaged Community were considered.

As input was taken, it was recommended that the streets or roadways that are adjacent to the largest employee and visitor generators, institutional uses, major parking facilities and Metrorail stations have a well interconnected system of sidewalks to provide for an efficient pedestrian system. Additionally a



better signage program needs to be developed to direct motorists to the Health District from the highway system. Additionally, there is a need for an improved bike-path system between the residential areas located in the eastern and western neighborhoods.

The analysis of level of service for existing and future conditions indicates there is a need to improve the transportation network within the study area. However, a closer study of the intersections reveals that operational improvements that are short term and relatively low in cost will improve the efficiency of the network. These improvements, such as signal timing optimization, additional turn lanes and additional storage capacity for turn lanes, are recommended.

Many improvements to the freeway system are being studied by the Florida Department of Transportation, and a Project, Development and Environment Study (PD&E) is currently underway along SR 836. One project identified within this PD & E study has been recommended as a short term stand-alone project which would widen the NW 14th Street exit from I-95 and provide a dedicated right turn at NW 10th Avenue. Improvements along I-95 such as the High Occupancy Toll (HOT) lanes are currently being implemented. A new study is recommended to determine whether a new exit ramp from I-95 north of NW 20th Street is warranted.

It is incumbent upon the various stakeholders to work with FDOT, MDX, the City of Miami and Miami Dade County Public Works to have the recommended projects placed on the appropriate work programs. The analysis and recommendations provided in this report should provide sufficient justification for the various agencies to enable expeditious implementation of projects.

Introduction

The following sections of the report explore the existing conditions in the Health District and the surrounding study area:

1. Examination of Land Use and Zoning Information
2. Comparison of TCEA and concurrency policies, an analysis of existing traffic conditions including traffic volumes, and traffic levels of service
3. Traffic Conditions, including existing roadway network and traffic controls
4. Existing transportation plans
5. Existing transportation network was evaluated including an examination of the traffic counts, parking inventory, and emergency vehicle routes. Transit conditions, including existing transit routes, transit ridership, transit levels of service and transit infrastructure, were examined. Bicycle and pedestrian conditions were also studied. Additionally, Socio-economic information was researched including residential and employment information
6. Traffic Modeling
7. Recommendations, including bicycle and pedestrian conditions, generalized pedestrian flows, pedestrian volumes, pedestrian and bicycle infrastructure, were reviewed

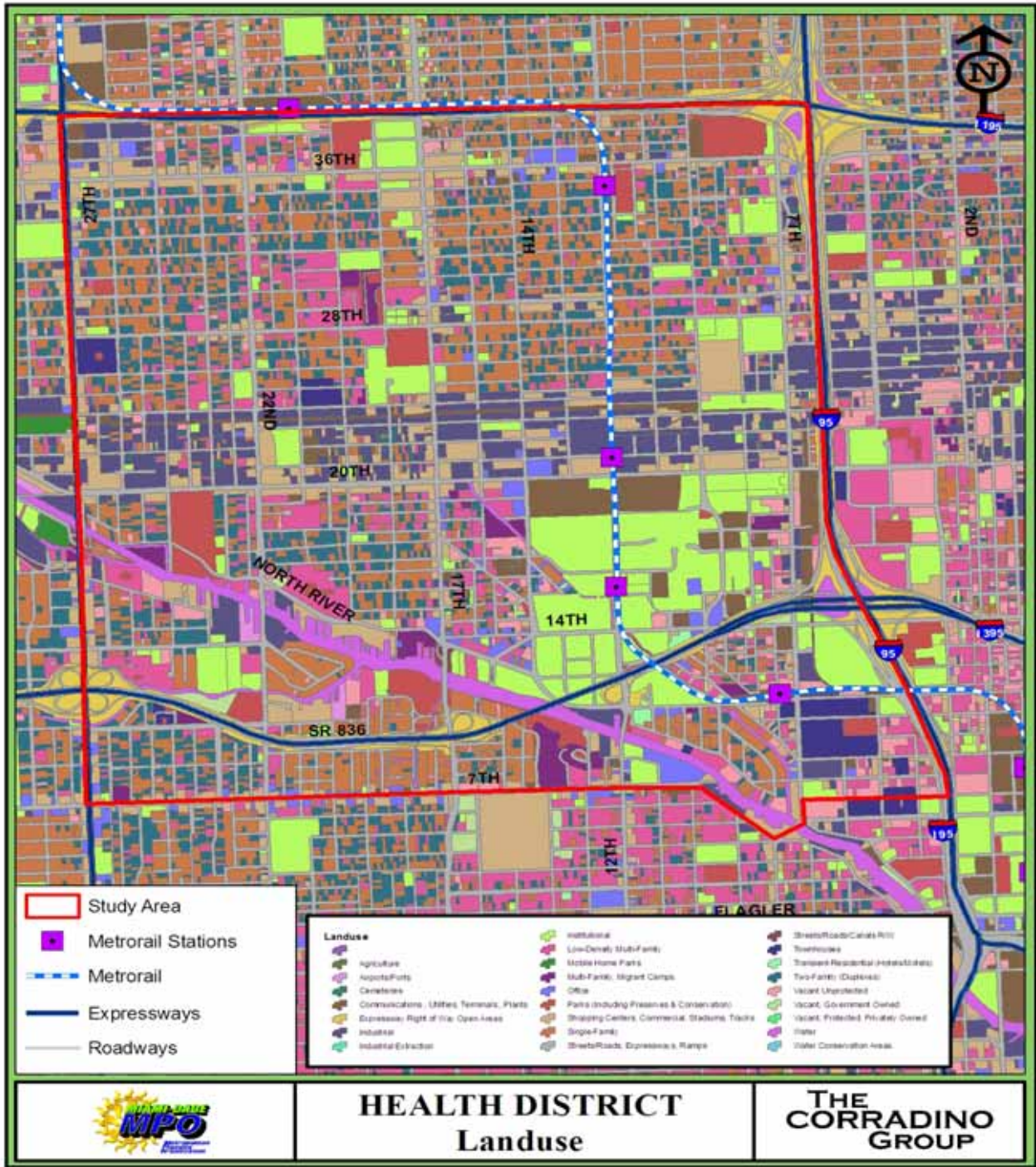
1. Land Use and Zoning

As the largest city in a populous and growing metropolitan region, with the exception of dispersed vacant parcels, Miami is substantially developed from a spatial context. Additionally, a number of neighborhoods with concentrations of properties are underutilized or have been previously utilized but are currently not in use, and are thus primed for infill development. Presently, redevelopment is rapidly transforming some areas, with positive and negative impacts, while other areas demonstrate unmet redevelopment needs.

The study area, called the Health District, is one of the major economic engines of Miami-Dade County. It is bound by 27th Avenue on the west, 7th Street on the South, I-95 on the East and SR 112 Street on the north. The heart of the Health District's area, what was formally known as the Civic Center, is home to primarily medical and government uses and is bound by NW 17th Avenue on the west, 11th Street SR 836 on the south, I-95 on the east and NW 20th Street on the north.

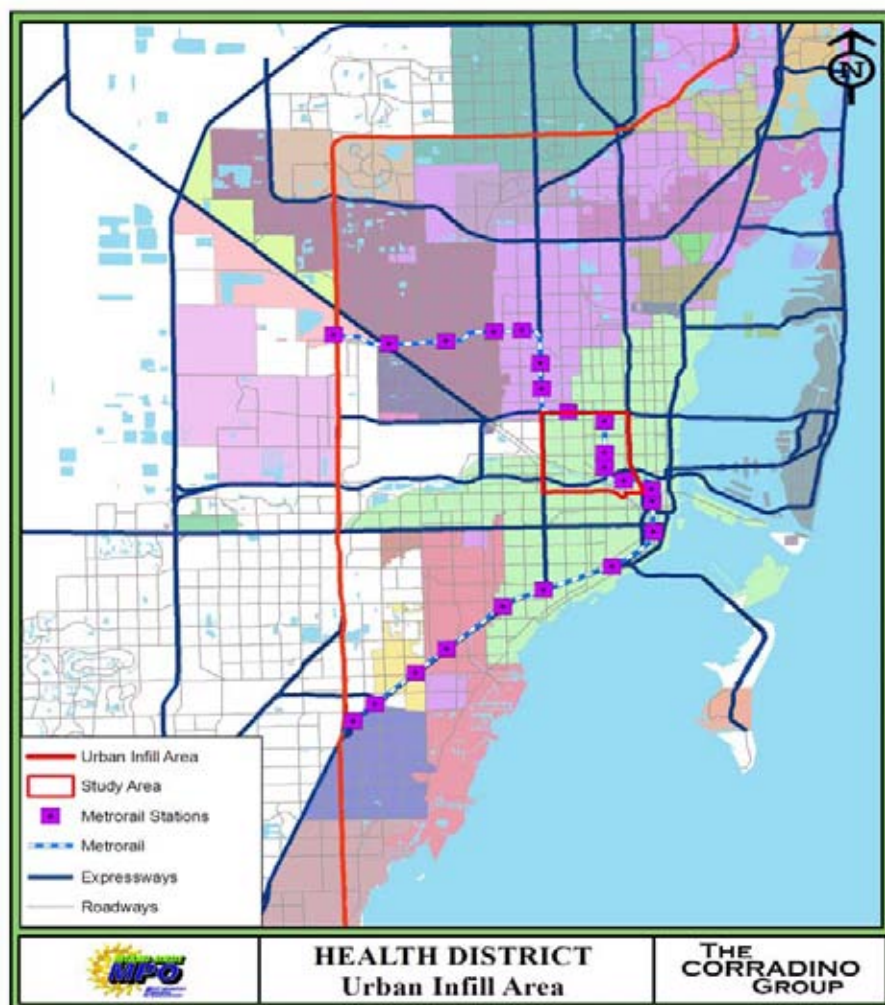
Land use in the area is predominantly Institutional with significant communication/utility uses and a ringlike fringe of residential use to the west. North of this core area there is an east/west strip between 24th Street and 20th Street that is predominantly office/commercial and industrial that includes the produce market area. All other land is predominantly single or multi-family residential with some institutional uses. Residential uses in the outlying area are largely single family. Multi-family, high-density residence exists closer to the Health District's core study area, particularly to the west and south east.





2. Comparison of TCEA and Concurrency Policies

Growth management or concurrency has been in place in the State of Florida since the 1980's. In Miami-Dade County, an urban infill area was designated to focus redevelopment on an urban core to combat the continuing sprawl of low density, single-family developments that are far from existing utilities. The urban infill area in Miami-Dade County is defined as that part of the county located east of, and including, SR 826 (Palmetto Expressway) and NW/SW 77th Avenue, excluding the area north of SR 826 and west of I-95, and the City of Islandia. To understand how concurrencies operate requires the examination of three important jurisdictions: State regulations; coordination with the Miami-Dade County's Comprehensive Plan; and the City of Miami Comprehensive Neighborhood Plan.



Miami-Dade County has 128,000 square miles designated as a Transportation Concurrency Exception Area (TCEA) for urban infill development, urban redevelopment and public transit. This area was designated in 1994 pursuant to Amendment 94-2 of the Miami-Dade County Comprehensive Development Master Plan (CDMP). The 2005 legislation requires that TCEA's existing prior to July 1, 2005, shall meet, at a minimum, the provisions of Section 163.3180(5)(d), (e) and (f), F.S., by July 1,

2006, or at the time of the comprehensive plan update pursuant to the evaluation and appraisal report (EAR), whichever occurs last.

Local governments may grant exceptions from concurrency requirements for transportation facilities located within TCEA's. The local government shall adopt, into the plan implementation, strategies to support and fund mobility within the designated exception area, including alternative modes of transportation. The City of Miami incorporated the city's designated TCEA, as per the county's CDMP in 1999 pursuant to Ordinance 11864, into the Master Comprehensive Neighborhood Plan.

State Requirements (Rule 14-94.003) and TCEA exemptions (F.A.C. 9J-5.0055(6)).

Pursuant to Rule 14-94.003, FDOT must be consulted as provided by Section 163.3180(5), (7), or (15), Florida Statutes, regarding level of service standards set on Strategic Intermodal System, (SIS), or Transportation Regional Incentive Program (TRIP) facilities impacted by Transportation Concurrency Management Areas (TCMAs), Multimodal Transportation Districts (MMTDs), or Transportation concurrency Exception Areas (TCEAs) respectively, in order to set the Statewide Minimum Level of Service Standards on the State Highway System, roadways on the Strategic Intermodal System (SIS), roadways on the Florida Intrastate Highway System (FIHS) and roadway facilities funded in accordance with section 339.2819, Florida Statutes, the Transportation Regional Incentive Program (TRIP), inside Transportation Concurrency Exception Areas.

The City of Miami Comprehensive Neighborhood Plan (MCNP) and the county's Comprehensive Development Master Plan (CDMP) have set the Level of Service for the TCEA/Urban Infill Area as LOS E. There are bonuses for transit built into the LOS, as part of the infill incentive.

The State Level of Service Standards in Rule 14-94.003 have specific assumptions and restrictions that will be reviewed for consistency with the City and County Comprehensive Plans.

Miami-Dade County CDMP

The Transportation and Capital Improvements Element of the Miami-Dade County CDMP has established a multi-modal approach to implementing improvements to the transportation system. The Transportation Element sets forth the goals, objectives, and policies that the County will follow as it plans and implements transportation improvements. It is divided into five sub-elements: Traffic Circulation, Mass Transit, Aviation, Port of Miami River, and Port of Miami Master Plan. The Capital Improvements Element ensures that all plans in the CDMP are fiscally feasible and that services and facilities in place are consistent with the impacts of future development. It also establishes levels of service for infrastructure and other facilities including transportation.

Miami-Dade County has adopted, in the Transportation Element and the Capital Improvement Elements, a minimum-acceptable peak-period LOS for all State and County roads within the Urban Infill Area as follows:

- Where no public mass transit service exists, roadways shall operate at, or above, LOS E.
- Where mass transit service having headways of 20 minutes or less is provided within ½ mile distance, roadways shall operate at no greater than 120 percent of their capacity at LOS E.
- Where extraordinary transit service, such as commuter rail or express bus service, exists parallel to a roadway within ½ mile, roadways shall operate at no greater than 150 percent of their capacity at LOS E.

Even though the CDMP has peak period provisions for facilities located within the Urban Infill Area, the CDMP does make provisions to comply with section 163.3180 F.S. which are standards for SIS, FIHS and Trip-Funded facilities.

Additionally, the CDMP in its Capital Improvement Element has incorporated a minimum peak-hour, mass-transit level of service within the Urban Development. Provisions for mass transit service will be required where a combined resident and work force population reach 10,000 persons per square mile or more. This requires public transit service having a thirty-minute headway and an average route spacing of one mile, provided that:

- The average combined population and employment density along the corridor between the existing transit network and area of expansion exceeds 4,000 per square mile. The corridor is 0.5 miles on either side of any necessary new routes or route extensions to the area of expansion.
- It is estimated there is sufficient demand to warrant service.
- The service is economically feasible.
- The expansion of transit service into new areas is not provided at a detriment to existing or planned services in higher density areas with greater need.

City of Miami Comprehensive Neighborhood Plan

The City of Miami Comprehensive Neighborhood Plan (MCNP) “indicates how the City will meet the needs of existing and future residents, visitors, and businesses, while preserving the character and quality of its communities” specifically through goals, objectives and policies.

The MCNP provides for policies requiring provision of adequate public facilities and levels of service. It also provides for the designation of the city as an urban infill area for purposes of redevelopment. Policies for the city’s land development regulations encourage high density residential development and redevelopment in close proximity to Metrorail and Metromover stations that support mixed use, walkable neighborhoods.

The MCNP provides for policies which correspond with the creation of transportation demand management as is typical in transportation concurrency exception areas, such as the Health District. It also promotes intergovernmental coordination efforts with other agencies involved in transportation in the area. Policies relevant to the Health District include:

Policy TR-1.5.3: The city shall encourage use of its land development regulations to assist the University of Miami/Jackson Memorial Hospital to participate in transportation management initiatives and strategies to assist in meeting the demands of the health district/civic center expansion and helping to solve the consequent accessibility, traffic circulation and parking problems. Through its membership on the board of directors of the Civic Center Transportation Management Organization (CCTMO), the city shall encourage the health district/civic center stakeholders and facility operators to work together to increase Metrorail ridership and utilization of the transit station to help decrease the need for excessive surface parking demand in the Civic Center.

Policy TR-1.5.7: The city shall, through its membership and regular attendance at meetings of the MPO’s Transportation Planning Council, and through its intergovernmental coordination policies,

request that Miami-Dade County include appropriate public transit systems in its transportation plan to connect the following: Bayside to Flagler Street, the seaport to Metromover, the Miami International Airport to downtown, Southeast Bayshore Drive to Metromover, Metrorail Phase II in the west Omni area to Metromover, Stadium to health district/civic center, and Miami Beach to downtown and the FEC Corridor to downtown.

In 1989, the City of Miami adopted the “Transportation Corridors: Meeting the Challenge of Growth Management in Miami” as part of the Transportation Element of the Miami Comprehensive Neighborhood Plan 1989-2000. The person-trip methodology contained in Policy TR-1.1.2 provides the procedure to measure the local level of service for the purpose of transportation concurrency review. The person-trip methodology measures travel as the movements of people as opposed to the movements of vehicles. In the person-trip methodology, the transportation capacity is the sum of two or more modes of travel counting the people utilizing those modes. This is essentially a less stringent standard than FDOT LOS processes because it counts 1.6 people for each vehicle.

This methodology is documented in the “Transportation Corridors: Meeting the Challenge of Growth Management in Miami” from the Transportation Element of the Miami Comprehensive Neighborhood Plan 1989-2000, adopted in 1989 and revised in September 1990.

The person-trip methodology introduces the Transportation Corridor concept where specially designated areas in the City of Miami have certain characteristics that distinguish them from other streets and highways. There are two main types of Transportation Corridors:

- Type LS Corridor: contains a major surface roadway having bus-transit service with at least a 20 minute frequency. Its service area is 1/4 mile each side of the roadway.
- Type HS Corridor: contains one or more major surface roadways, surface bus-transit service, and a rail transit line, limited access highway, or both. It may also contain other medium-to-high capacity transportation options such as HOV lanes, express bus service, expressway ramp metering, and the like. Its service area is a circle 1/2 mile in diameter centered on an expressway interchange or rail transit station.

The person-trip methodology establishes transportation corridor capacity measured as the sum of two or more modes of person trip travel and not based on vehicle capacity alone. Transportation Corridor capacity and level of service are established in person-trip quantities and ratios, determined from vehicle trip evaluation tables and transit ridership data provided by Miami-Dade Transit. The person trip v/c levels of service are established in the Data, Inventory and Analysis section of the Comprehensive Plan and are shown on the following page. The calculated person trip levels of service within the transportation corridors yield letter grades A through F, as do those using the vehicle-based methodology, to denote utilization as a percent of total capacity. They are measured in the peak period, which is the average of the two highest consecutive hours of trip volume during a weekday.

Person-Trip v/c Level of Service

Level of Service	TC Person Trip Volume as a percent of TC Person Trip Capacity
A	0.01-0.60
B	0.61-0.70
C	0.71-0.80
D	0.81-0.90
E	0.91-1.00
F	1.01 +

Source: City of Miami, Transportation Element: Data, Inventory and Analysis, November 2003

In Transportation Corridors, an overall minimum peak period LOS standard E (100 percent of corridor person-trip capacity) will be maintained with the following exceptions:

- Where no public transit exists and private passenger vehicles are the only vehicular mode available for travel on the facility: minimum LOS E (100 percent of capacity).
- Where local bus transit service on minimum 20-minute headway is available parallel to, and within, ½ mile of the facility, the facility shall operate at no greater than 120 percent of capacity at LOS E.
- Where express bus transit and/or premium transit service on minimum 20-minute headways is available parallel to and within ½ mile of the facility, the facility shall operate at no greater than 150 percent of capacity at LOS E.

It shall be noted that the person-trip methodology is based on a peak-period analysis while minimum LOS standards pursuant to State Requirements represent the lowest acceptable operating conditions in the peak hour, as based on the definitions and measurement criteria used for the minimum LOS standards. The peak hour requirements can be found in the Transportation Research Board's *Highway Capacity Manual Special Report 2000* and FDOT's 2002 *Quality/Level of Service Handbook*, or a methodology determined by the department to be of comparable reliability.

Proposed Concurrency Revisions and Updates

The City of Miami is currently reviewing it's Comprehensive Plan, specifically the Goals, Objectives and Policies section of the report relative to "person trip" and transportation concurrency, which includes Objective TR-1.1 and its accompanying policies, and Objective CI-1.1 with accompanying Policies CI-1.2.2(c) and CI-1.2.3(f)

Simultaneously, the City of Miami is currently reviewing it's Downtown Development of Regional Impact (DRI), which is an incremental DRI that establishes a development program that specifies the total amount of development (build-out) located anywhere within the DRI boundaries subject to local land development regulations. The Master Development Order was originally adopted by the City of Miami in 1987 and established Increments I through III. Increments I and II are under way and will continue through May 28, 2009.

The city has submitted a Notification of Extension to the South Florida Regional Planning Council through May 28, 2012 and to transfer unreserved development credits from the Increment II development program into the Increment III development program.

Additionally, the city is proposing to review the person-trip methodology as part of the downtown DRI application and the EAR-based amendments. The city has submitted a pre-application package to the South Florida Regional Planning Council dated April 2008, and a proposed methodology as part of Question 21- Transportation.

In conversations with city staff and their consultants, the calculations for the person-trip methodology would be streamlined and adjustments for multimodal would be made at the end. Additionally, the vehicle occupancy rates would be revised (from the established 1.6 persons per vehicle as the practical capacity of a private passenger vehicle to a lower number, possibly 1.23 persons per vehicle, as determined by vehicle occupancy surveys performed in the City of Miami and Census data).

Other considerations would be to review the scope of the person-trip methodology to certain areas of the city. This is being currently considered by city staff.

The city is also initiating a Regional Activity Center (RAC) designation for the Health District. This would increase the Development of Regional Impact thresholds permitted within the proposed Health District RAC, and would have implications on the total trips within the study area, as a result of the increased thresholds and future development. However, as part of the RAC submittal, an analysis of the regional mobility connections within the Health District will be studied regarding projected development patterns for the area. Due to the multimodal nature of the Health District, and the land patterns and systems alternatives, it is relatively certain that the area would meet the requirements of a RAC.

Policy Implications in the Study Area

There are considerations that all Transportation Concurrency Exception Areas shall meet pursuant to F.A.C. 9J-5.0055 (6) and adopt guidelines and policies which specify programs to address transportation needs within the area. The city requires transportation control measures in order to mitigate intersections that do not meet the levels of service adopted in the city's comprehensive plan.

The Health District is currently designated a major institutional, public facilities, transportation and utilities area in the future land use map. Areas with this designation have provisions to increase the maximum floor area ratio (FAR) to 3.0 times the gross lot area of the subject property, with the exception of one parcel within the health/civic center district where the FAR may not exceed a total of 3.2 times the gross lot area of the subject property. When evaluating the mixed uses within the proposed Health District RAC, the intensities and densities, FAR and other planning considerations shall be analyzed in concert with the provision of adequate facilities within the area.

The Health District RAC will be in proximity of, and accessible to, interstate or major arterial roads. Some of these roads are designated as SIS, FIHS or Trip-funded facilities and, as such, will have to comply with the LOS standards established by the Department of Transportation. The remainder of the roadways facilities within the study area will need to comply with the CDMP and the MCNP and their different methodologies as follows:

- The LOS established for SIS, FIHS and Trip-funded facilities will be based on a peak-hour, while the rest of the facilities will consider a peak-period LOS standard.
- V/C ratios for SIS, FIHS and Trip-funded corridors will be measured pursuant to vehicle capacity as per the Transportation Research Board's *Highway Capacity Manual Special Report 2000* and the Department's 2002 *Quality/Level of Service Handbook*.
- The remainder of the corridors will establish a person-trip capacity based on two or more modes of transportation and a vehicle capacity of 1.6 practical capacity per vehicle (currently this number is being reviewed by city staff).

Some of the main policy conclusions of the concurrency white paper are as follows:

- While the CDMP establishes a 120 percent of LOS E capacity for corridors where transit service exists every 20 minutes or less and 150 percent of LOS E capacity for corridors where extraordinary transit exists, the Miami Comprehensive Neighborhood Plan takes it a step forward by establishing these over capacity ratios but measured at a person-trip ratio where there is a transportation corridor designation.
- The study area contains the Miami VA Medical Center, University of Miami Hospital and Jackson Memorial Hospital, which require emergency vehicle access from the surrounding regional and local transportation network. Concurrency policy implications shall consider loading areas/emergency access to these sites, priority emergency access from the regional and local network especially during peak periods of the day, and Transportation Control Measures which developers in the area can utilize as mitigation to meet concurrency.
- Multimodal improvements are utilized for mitigation in TCEA's. These improvements are appropriate for the Health District and fit well with the person trip methodology. A program of potential improvements can be monitored by the City or the proposed transportation management organization. While the City of Miami has been proactive in studying the Health District, it is believed that current efforts such as the review of the person-trip methodology, the creation of the RAC, and the EAR-based amendments may all greatly impact the concurrency policy implications for the area.
- The City of Miami is currently working with the review agencies on issues pertaining to concurrency. It is recommended that continued coordination occur, specifically on emergency access and on issues pertaining to state and regional multimodal facilities.

3. Traffic Conditions

The study area has a connected grid pattern of streets which is characterized by three large and disruptive physical barriers. Traffic is able to access the study area and distribute on this network, which remains connected over two large and potentially disruptive physical barriers of the SR 836 expressway and the Miami River.

The county section line and half section line roads provide primary access into and out of the study area, as well as linking the major traffic generators I-95, SR 836, and SR 112 with the local street network. These primary streets include:

- NW 27th Avenue
- NW 22nd Avenue
- NW 17th Avenue
- NW 12th Avenue
- NW 7th Avenue
- NW 36th Street
- NW 28th Street
- NW 20th Street
- SR 836
- NW 14th Street
- NW 7th Street

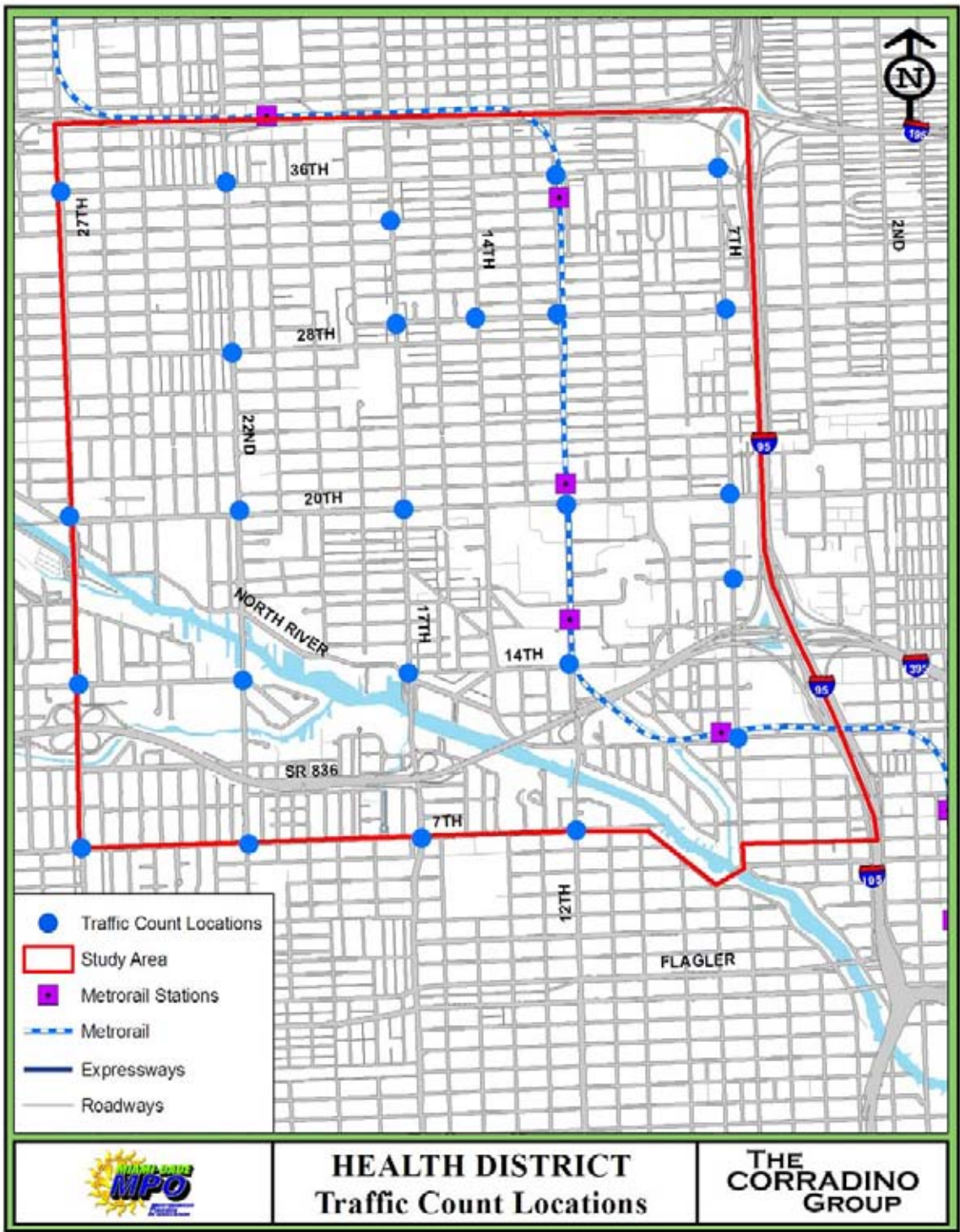
A sub-layer of streets provides internal access between the larger access facilities and the local streets. These include:

- NW 14th Avenue
- NW 15th Street
- NW 14th Street



Traffic Conditions

Traffic counts were taken at 31 intersections to determine traffic volumes, levels of service and travel patterns.



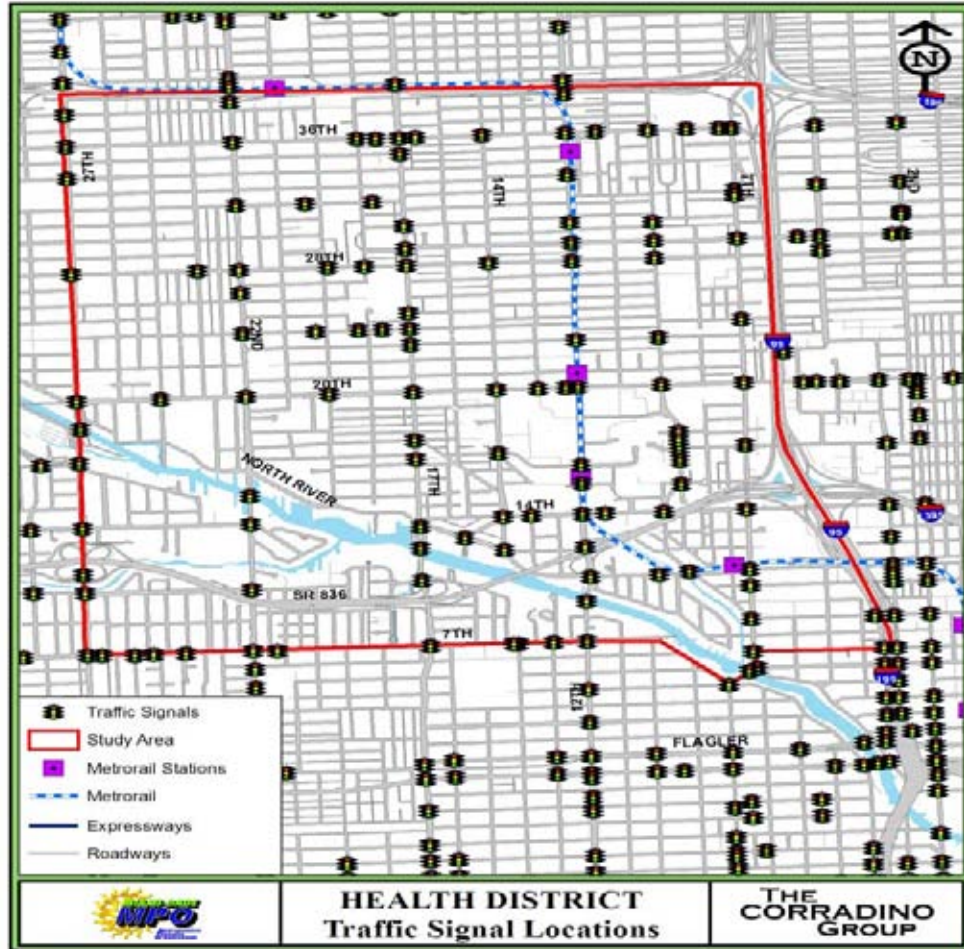
Traffic Conditions

Intersection (please justify left)	Vehicular Volume		Pedestrian Volume		Ped (Total)	AM %	PM %
	AM	PM	AM	PM			
NW 36th Street & 22nd Avenue	2,971	3,228	10	30	40	0.34%	0.93%
NW 36th Street & 27th Avenue	3,326	3,523	19	22	41	0.57%	0.62%
NW 36th Street & 7th Avenue	2,694	2,571	9	24	33	0.33%	0.93%
NW 36th Street & 12th Avenue	2,865	3,076	50	50	100	1.75%	1.63%
NW 34th Street & 17th Avenue	1,101	961	0	8	8	0.00%	0.83%
NW 29th Street & 14th Avenue	807	878	0	0	0	0.00%	0.00%
NW 29th Street & 7th Avenue	2,753	2,578	13	6	19	0.47%	0.23%
NW 28th Street & 22nd Avenue	1,910	2,418	1	9	10	0.05%	0.37%
NW 28th Street & 17th Avenue	1,739	1,904	6	1	7	0.35%	0.05%
NW 29th Street & 12th Avenue	2,588	2,456	2	1	3	0.08%	0.04%
NW 20th Street & 27th Avenue	4,907	5,459	0	11	11	0.00%	0.20%
NW 20th Street & 22nd Avenue	2,404	3,106	1	8	9	0.04%	0.26%
NW 20th Street & 17th Avenue	2,685	3,001	24	39	63	0.89%	1.30%
NW 20th Street & 12th Avenue	3,250	3,411	5	5	10	0.15%	0.15%
NW 20th Street & 10th Avenue	2,023	1,827	2	4	6	0.10%	0.22%
NW 20th Street & 7th Avenue	3,004	2,768	10	25	35	0.33%	0.90%
NW 17th Street & 7th Avenue	1,818	1,699	5	2	7	0.28%	0.12%
NW 14th Street & 27th Avenue	3,712	3,833	5	7	12	0.13%	0.18%
NW 14th Street & 22nd Avenue	1,449	1,994	9	10	19	0.62%	0.50%
NW 14th Street & 10th Avenue	1,582	1,265	1	4	5	0.06%	0.32%
N River Dr & 17th Avenue	1,978	1,908	7	9	16	0.35%	0.47%
NW 14th Street & 14th Avenue	1,780	1,697	18	16	34	1.01%	0.94%
N River Dr & 14th Avenue	699	646	90	47	137	12.88%	7.28%
NW 7th Street & 27th Avenue	4,900	4,826	13	11	24	0.27%	0.23%
NW 7th Street & 22nd Avenue	2,981	3,367	4	1	5	0.13%	0.03%
NW 7th Street & 17th Avenue	3,083	2,814	2	0	2	0.06%	0.00%
NW 7th Street & 12th Avenue	2,445	2,059	5	3	8	0.20%	0.15%
NW 14th Street & 7th Avenue	1,622	1,722	1	0	1	0.06%	0.00%
NW 14th Street & 12th Avenue	4,437	3,168	209	101	310	4.71%	3.19%
NW 11th Street & 12th Avenue	1,975	2,485	1	3	4	0.05%	0.12%
NW 11th Street & 7th Avenue	1,274	1,297	0	11	11	0.00%	0.85%
Total	76,762	77,945	522	468	990		
Average	2,476	2,514	17	15	32	0.85%	0.74%

Traffic volumes on the counted intersections range in the AM peak hour between 699 vehicles per hour at the North River Drive/NW 14th Avenue intersection, and up to 4,907 at the NW 27th Avenue/20th Street intersection. In the PM, it ranges from a low of 646 at the North River Drive/NW 14th Avenue Intersection, to a high of 5,459 at the NW 27th Avenue/NW 20th Street intersection. For the intersections counted, the average volume in the AM and PM peak hours is over 2,400 vehicles per hour. The bulk of the traffic is carried on the primary thorough-fares and most connective streets with the regional system. Traffic is generally evenly divided between the AM and the PM peak hours, with the PM peak having nominally more volume. The highest volume intersection is NW 27th Avenue/NW 20th Street, with a volume of 10,366 vehicles, followed by the intersection at NW 27th Avenue/NW 7th Avenue, with 9,726 vehicles. Most traffic on the system is carried either on the NW 27th Avenue corridor, the NW 12th Avenue corridor or the NW 20th Street corridor.

Traffic Conditions

There are about 120 traffic signals in the study area controlling this traffic. They are on the main primary corridors, primarily 27th Avenue, 22nd Avenue, 17th Avenue, 12th Avenue, 10th Avenue, 7th Avenue, as well as on 28th Street, 20th Street and 7th Street.



Traffic flows toward the core of the study area in the morning and away in the evening. This is particularly true in the northern end of the area, where the traffic generally flows south and east on 36th Street in the morning, and north and west in the evening. On 20th Avenue traffic flows south and east in the morning and west and north in the evening, adhering to this pattern. Traffic converges in the core of the area, which is defined here as the intersection of 14th Street and 12th Avenue. This intersection has a total volume of 4,437 vehicles in the AM/Peak. It also carries more than 200 pedestrians, by far the highest amount counted. Surrounding intersections don't reach half of these pedestrian volumes. One major deficiency in the mobility system is the lack of adequate directional and way finding signage in the area, particularly directing people to and through the area from the SR 836 and I-95 expressway systems.





External travel patterns show that the study area is a destination for the remainder of Miami-Dade County. Total vehicular trips in Miami-Dade County equal about 1,463,034. About 3,192 of these trips have origins and destinations within the study area. There are about 19,809 trips originating in the study area destined for other parts of the county, primarily the central planning area. Conversely, there are 59,146 trips destined to the study area from other parts of the county, primarily the Central and North planning areas. Following the tables, a graphic of the planning areas is shown .

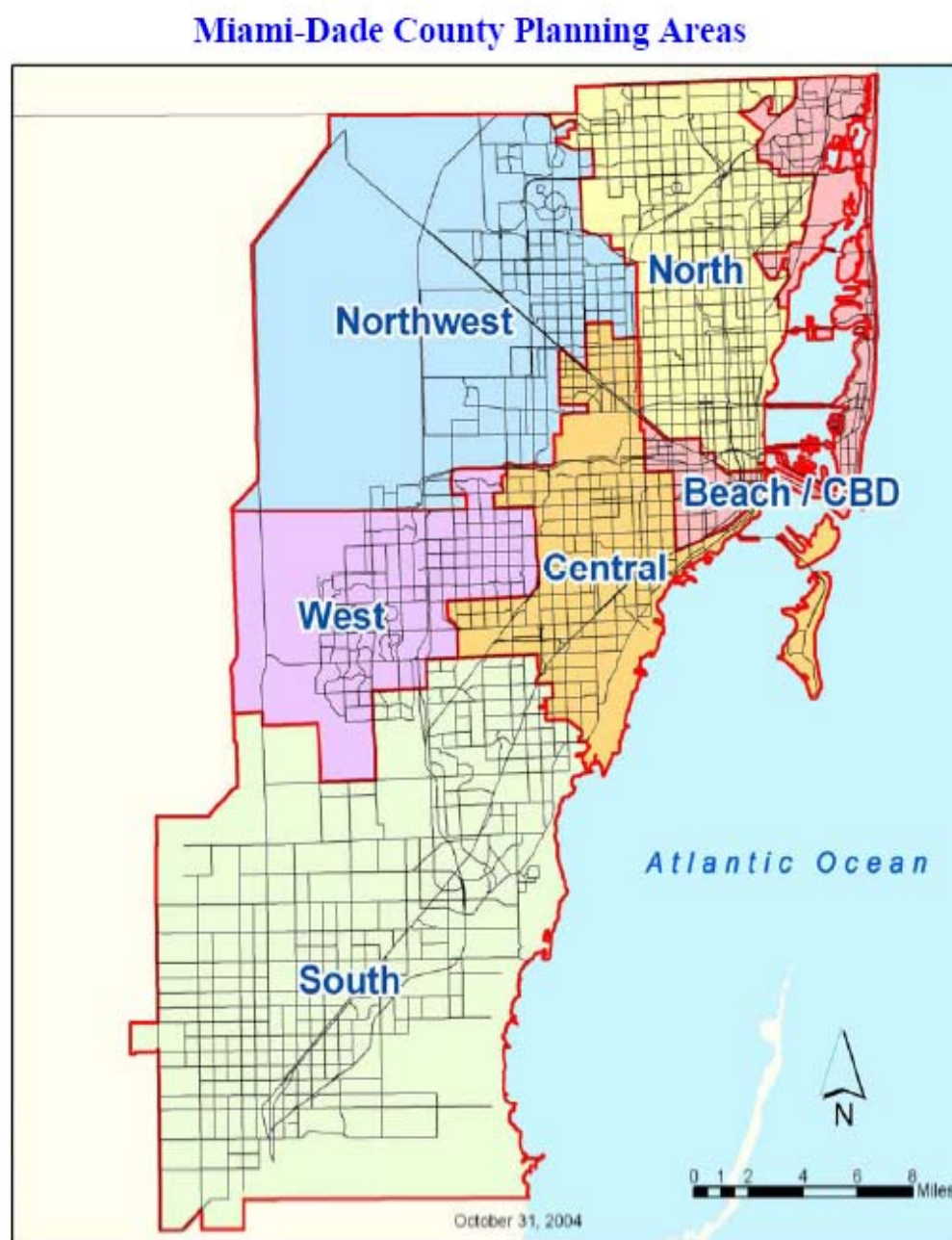
Table 1: Work Trips from Study Area to the Rest of the County

From	To (Miami Dade County Planning Areas*)	Number of Trips
M-D Health Study Area	Northwest	4,200
	North	3,868
	Beach CBD	5,489
	West	441
	Central	5,642
	South	169
Total Trips from M-D Health Study Area to rest of County		19,809

Table 2: Work Trips from Rest of the County to the Study Area

From (Miami Dade County Planning Areas*)	To	Number of Trips
Northwest	M-D Health Study Area	9,232
North		13,367
Beach CBD		7,752
West		8,441
Central		16,773
South		3,581
Total Trips from rest of County to M-D Health Study Area		59,146

*Note: The planning areas have been shown in Figure 1



Source: Miami-Dade Transportation Plan
(to the Year 2030) dated December 2004

Figure 1

4. Existing Transportation Plans

The following section provides an overview of the different transportation plans that affect the study area and the previous background studies that have been undertaken within the study area.

It shall be noted that the Health District has been the object of several transportation and planning studies in the past, where each study addresses and focuses on a specific issue for the area such as transportation, transit, planning and redevelopment.

The Miami-Dade Long Range Transportation Plan (LRTP) Update to the Year 2030 has been developed by the Metropolitan Planning Organization (MPO) to guide transportation investments in Miami-Dade County through the next twenty years with the purpose of achieving the best possible mobility connections in the transportation system. Transportation planning and implementation in Miami-Dade County follows an ever narrowing, detailed process which is led by the MPO. Long-range planning is provided by the MPO's Long Range Transportation Plan (LRTP), which looks out to a 20-year horizon. Here, long term projects are tested and prioritized. The funded "capital improvements" aspect of this is seen and included in a more detailed level of planning called the Transportation Improvement Program (TIP), which is the prioritized five-year plan. In addition, the county and each of the municipalities develop Comprehensive Plans that set goals objectives and policies for land use and transportation, among other elements. These are then further implemented through the detailed master planning, leading to the design and construction of individual projects as they near implementation. Several components of the LRTP, TIP, both county and City of Miami Comprehensive Plans, as well as specific master plans, and individual projects like the Miami River Master Plan, Miami Street Car, and the Civic Center Basis of Design Report and Circulator Study impact the Health District Area.

Miami-Dade 2030 Long Range Transportation Plan

The Miami-Dade 2030 Long Range Transportation Plan (LRTP) was developed to establish a long term strategy for transportation improvements within Miami-Dade County. The LRTP consists of multi-modal projects such as major roadways, airports and seaport surface access, transit, and intermodal facilities that function together as an integrated transportation system. The LRTP groups these projects in terms of priority based on relative need and funding availability:

- *Priority I:* The projects in most need of being completed in order to respond to the most pressing and current urban travel problems. These projects are scheduled to be funded by 2009 and are programmed in the Miami-Dade Transportation Improvement Program 2005-2009.
- *Priority II:* Projects are planned to be funded between 2010 and 2015.
- *Priority III:* Projects are planned to be funded between 2016 and 2020.
- *Priority IV:* Projects are planned to be funded between 2021 and 2030.
- *Priority IV: Unfunded:* Projects that have been identified as needed but however, revenues are not available to fund these projects.

Existing Transportation Plans

The following projects listed in Table 3 are projects in the LRTP within the area of the Health District. Most projects include expressway facilities that bound the study area. They will be helpful in providing ingress and egress to the health districts. The LRTP includes 17 projects total. Four projects are in Priority One. These include a new toll plaza on the east bound ramp to NW 17th Ave, and a widening of NW 14th Street to three lanes between NW 10th Ave and I-95. Priority Two consist of four projects, most notably the I-95 managed lanes, as well as, interchanges and ramp improvements at the SR 112/I-95. Priority Three has two projects including the reconstruction of SR 836. Priority Four has one project dealing with more ramp improvements to the SR 112/I-95 interchange. Unfunded priorities include the baseball stadium, Metrorail station, the street car, and the Metrorail north to the county Line. There are three Greenway projects in the LRTP for the area.

Table 3: Long Range Transportation Plan Improvement

Priority	Facility	Project Limits		Project Description
		From	To	
Priority I	SR 836 EB Toll Plaza	NW 27 Ave	NW 17 Ave	New Toll Plaza on EB Ramp to NW 17 Ave
		ITS At SR 836, 112, I-95		Maintenance of Field Electronic Devices
		ITS At SR 836, 112, I-95		Service Patrols
	NW 14 St	NW 10 Ave	I-95	Widen to 3 Lanes and Resurface
Priority II	I-95	South of I-395	North of SR 112	Add Reversible Managed Lanes
	SR 112 / I-95	I-95 (NW 10 Ave)	Biscayne	Interchange/Ramp Improvements and Auxiliary Lanes
	NW/NE 36 St Corridor	SR 826	US-1	ITS (Includes CCTV, Roadway Sensors, Arterial Dynamic Message Signs, Wireless Communication)
	US 441 / NW 17 Ave / 27 Ave Corridor	US-1	Broward County Line	ITS (Includes CCTV, Roadway Sensors, Arterial Dynamic Message Signs, Wireless Communication)
Priority III	SR 836 / NW 27 Ave Interchange	NW 27 Ave	NW 17 Ave	Reconstruct SR 836
	SR 836 / I-395	West of NW 17 Ave	I-95	Corridor Improvement: C-R Road
Priority IV	SR 112 / I-95	I-95 (NW 10 Ave)	Biscayne	Interchange/Ramp Improvements and Auxiliary Lanes
Priority IV Unfunded	New Baseball Stadium Metrorail Station			
	Miami Street Car*	SW 1 St	NE 79 St	LRT
	BRT/LRT Metrorail Feeder	NW 12 Ave/NW 36 St(Allapattah Metrorail Station)	Miami-Dade/Broward County Line	Premium Transit
Greenways and Trails	Miami River Greenway	SR 836	Palmer Lake/NW 37 Ave	NEW / improved paved path along both sides of the Miami Canal
	Miami River Greenway	Metrorail	SW 2 Ave	New paved path along the south side of the Miami River
	Miami River Greenway	SW 12 Ave	SR 836	New paved path along the south side of the Miami River

Miami Streetcar Project

The Miami Streetcar project is a joint effort by the City of Miami and the Florida Department of Transportation to develop a streetcar to connect downtown Miami to the growing and redeveloped areas of Wynwood/Edgewater, midtown Miami, the Miami design district, the Buena Vista East Historic District, and the Health District. The 10-mile streetcar project would operate on existing roadways connecting to transit stations and multi-modal centers.

The project has been studied by the 2005 City of Miami Initial Streetcar Corridor Feasibility Study and the 2006 City of Miami Streetcar Corridor Alternative Analysis Report. The proposed route flows in a north/south alignment, with a westward spur into the Health District. This would connect the residential

LEGEND

- STREETCAR ALIGNMENT
- B&W CORNER CUP LOCATION
- TRUCK/POWER SUBSTATION LOCATION
- MAINTENANCE AND OPERATIONS FACILITY SITE
- STREETCAR STOP LOCATION

MIAMI STREETCAR SYSTEM

CITY OF MIAMI, FL
DEPARTMENT OF CIP & TRANSPORTATION
PROJECT NO. B-71215
MIAMI STREETCAR ALTERNATIVES ANALYSIS

21

Miami River Multi-Modal Transportation Plan

The Miami River Multi-Modal Transportation Plan was conducted in order to address the various types of transportation on and along the corridor. The Miami River is an essential transportation artery as roads in the City of Miami become more congested because of the recent growth in the area. The plan took into account the Miami River Greenway Action plan and the diverse modes of transportation along the corridor such as pedestrian, bicycle, transit and roadway improvements. The Miami River Multi-modal Transportation Plan categorized the needs and deficiencies into the following categories:

- Greenway
- Pedestrian
- Bicycle
- Roadway
- Public Transit
- Freight

Miami-Dade Transportation Improvement Program

The TIP is split into six different improvement characteristics: intermodal, highway, transit, aviation, seaport and non-motorized improvements. On the following page, Table 4 shows the projects listed in the 2009 TIP that are within the Miami Health District.

The 2009 TIP has nearly 30 projects directly affecting the area. One is the City of Miami Health District Circulator, currently being implemented. Five projects are sponsored by Miami-Dade Transit, and are split between the I-95 Express, High Occupancy Toll Lanes, Bus Rapid Transit project, and the NW 7th Ave Transit Hub. About 19 projects are either under the control of the Miami-Dade Expressway Authority or FDOT District Six and deal with capacity improvements, tolling or signage.

Existing Transportation Plans

Table 4

MPO Project No.	Project Facility	From	To	Project Description	Proposed Funding Year	Proposed Funding (\$000s)
TA4236101	City of Miami	Health Center Circulator Civic Center	Metrorail Station	Transit Service Demonstration	2008-2009	OPS: 374; OPS: 374
TA4202311	MDTA - I-95 Express	Downtown MIA Along I-95	Sheridan St & Broward BLVD	Urban Corridor Improvements	2008-2009 / 2009-2010 / 2010-2011 / 2011-2012 / 2012-2013	1,090 / 1,123 / 1,156 / 1,191 / 1,227
TA4204623	MDTA - I-95 Express	South Florida Commuter Services		Urban Corridor Improvements	2008-2009 / 2009-2010 / 2010-2011 / 2011-2012 / 2012-2014	163 / 168 / 173 / 178 / 183
TA4137545	MDTA - NW 7th Ave	Transit Hub		Public Transportation Shelter	2008-2009 / 2009-2010	163,652 / 169,677
TA4137546	MDTA - NW 7th Ave	Transit Hub		Public Transportation Shelter	2008-2009 / 2009-2010	259; 65 / 274; 69
TA4137548	MDTA - NW 7th Ave	Transit Hub		Public Transportation Shelter	2008-2009	123; 490
PW671203	NW 14 St	Civic Center	Biscayne Blvd	Widening to 3 lanes and resurface	2010-2011 / 2011-2012	100; 400 / 500
PW20060244	NW 7 Ave	NW 6 St	NW 119 St	Reversible Flow Lanes	2008-2009 / 2009-2010	248; 12,077 / 2,000
XA10007	SR 112 Communications and Incident Mgmt/Surveillance	Miami International Airport	I-95	Installation of communication equipment	2008-2009 / 2009-2010	3,603 / 1,167
XA11209	SR 112 Infrastructure Modifications for Open Road Tolling	NW 17th Ave	NW 12 Ave	SR 112 Infrastructure Modifications for Open Road Tolling	2010-2011 / 2011-2012 / 2012-2013	PDE: 68 / FD: 219 / CST: 2,127
XA11210	SR 112 Open Road Tolling Signage	LeJune Rd	I-95	Open Road Tolling Signage	2008-2009 / 2009-2010 / 2010-2011 / 2011-2012 /	PDE: 40; FD: 98 / FD: 37 / CST: 307 / CST: 1,429
XA10016	SR 112 Toll System Conversion	LeJune Rd	I-95	Toll System Conversion	2010-2011 / 2011-2012	DSB: 5,977; PDE: 89 / DSB: 5,041
DT4184141	SR 112 / Airport Expy	Ramp Z	I-95	Bridge Painting	2009-2010	CST: 1,146; CST: 48
DT4235151	SR25 / NW 36 St	NW 17 Ave	NW 22 Ave	Intersection (Modify)	2008-2009 / 2009-2010	PE: 3; PE: 32 / CST: 384
XA83611	SR 836 / I-95 Interchange Environmental Impact Study	NW 17th Ave	I-95	Coordination of Operational Improvements	2008-2009 / 2009-2010	PDE: 50 / PDE: 138
XA83627	SR 836 Express Bus Service Study	NW 137th Ave	I-95	Express Bus Service Study	2008-2009	PDE: 8
XA83626	SR 836 Open Road Tolling Signage	NW 137th Ave	I-95	Open Road Tolling Signage	2008-2009 / 2009-2010 / 2010-2011 / 2011-2012	PDE: 134 / FD: 459 / CST: 1,021 / CST: 4,746
XA10017	SR 836 Toll System Conversion	NW 137th Ave	I-95	Toll System Conversion	2010-2011 / 2011-2012	DSB: 21,316; PDE: 89 / DSB: 5,041
DT2516701	SR 836 / I-395 / I-95	NW 17th Ave	Macarthur Cswy Bridge	PD&E / EMO Study	2008-2009	PDE: 511
DT4231261	SR 836 / I-95	NW 12 Ave	I-95	Intersection (Modify)	2009-2010 / 2010-2011 / 2011-2012 / 2012-2013	PE: 5,000; PE: 300 / PE: 5,000 / ROW: 9,921; ROW: 298 / ROW: 14,332
DT4128081	SR 7/NW 5th St	Bridge From NW 3 St	NW 8th St	Replace Movable Span Bridge	2010-2011	INC: 3,600
DT4226121	SR 9 / NW 27 Ave	100' S of NW 11 St	220' S of NW 43 Ter	Resurfacing	2008-2009 / 2009-2010 / 2010-2011	PE: 50 / PE: 50 / CST: 5,453
DT4198471	SR 9 / NW 27 Ave	SW 8 St	NW 11 St	Resurfacing	2008-2009	CST: 26; CST: 47; CST: 462; CST: 2,633
DT2496401	SR 933 / NW 12 Ave	Over Miami River	BR.#870662	Replace Movable Span Bridge	2008-2009	INC: 3,600
DT2496402	SR 933 / NW 12 Ave	NW 7 St	NW 16 St	Landscaping	2009-2010	CST: 318; CST: 2
DT4154561	SR 9A / I-95 Express	N of SR 836 / I-395	Golden Glades Interchange	Add Special Use Lane	2008-2009 / 2009-2010 / 2010-2011	DSB: 4,000; INC: 2,487; INC: 513 / DSB: 340; DSB: 3,035; INC: 5,000 / 53,715
DT4149641	SR 9A / I-95	S of SR 836/I-395	Golden Glades Interchange	Add Special Use Lane	2010-2011	PDE: 2,235; PDE: 10,800
DT4154563	SR 9A / I-95 Express	Operations & Maintenance		Add Special Use Lane	2008-2009 / 2009-2010 / 2010-2011 / 2011-2012 / 2012-2013	OPS: 2,973 / 2,916 / 3,004 / 3,094 / 3,187

**Table 5: Additional Lower River Transportation Improvements
Developed in Miami River Corridor Multimodal Transportation Plan
Mouth of River to 5th Street Bridge**

Location	Improvement Type	Recommended Improvement
Roadway Improvements		
Along Miami River Corridor	Signage	Install wayfinding signage along corridor and on the local major highways (i.e. I-95) indicating major attractions
Brickell Avenue, South Miami Avenue, SW 2nd Avenue, SW 1st Street, West Flagler Street, NW 5th Street	ITS/Signalization	Implement an automated drawbridge traffic management system, including extended green times following bridge openings and dynamic message signs
I-95 Downtown Distributor Ramps	Reconstruction	Study alternatives to replace existing ramp system (PD&E study removed from work program)
NW 4th Street from NW 8th Avenue to NW 9th Avenue	Traffic Flow Modification	Convert to one-way westbound traffic flow, as part of the 5th Street Bridge intersection modification
South River Drive @ NW 5th Street/ NW 8th Avenue/ NW 4th Street	Traffic Flow Modification	Close driveway within the intersection, leaving the east and west driveways serving the adjacent open
North River Drive and Flagler Street (surface street)	Traffic Flow Modification	Install raised median deflectors for traffic calming
Flagler Street from I-95 to North River Drive	Traffic Flow Modification	Continue implementation of 2-way traffic flow (this project has recently been completed)
SW 3rd Street @ S. Miami Avenue	Traffic Flow Modification	Modify intersection to permit eastbound through movement (improvement is under design - to be constructed as part of Riverfront development)
SW 3rd Avenue from SW 8th Street to SW 7th Street	Traffic Flow Modification	Convert to two-way traffic flow
NW 2nd Street and NW 3rd Street	Traffic Flow Modification	Convert the one-way pair to two-way streets from North River Drive to NW 3rd Avenue, where it is already two-way flow
North River Drive @ NW 2nd Street and southbound, north of NW 2nd Street	Signage	Street sign correction, change South River Drive sign to accurately read North River Drive. Add advance warning signage for low bridge clearance at SW 1st Street Bridge
North River Drive northbound @ NW 8th Avenue	Signage	Add advance signage in northbound direction indicating that left-turns are not permitted at NW 7th Avenue
NW 5th Street & NW 8th Street from NW 7th Avenue to NW 4th Avenue	Traffic Flow Modification	Convert the one-way pair to two-way streets and install streetscape improvements
North River Drive, northbound, south of SW 2nd Street	Signage	Add advance warning signage for low bridge clearance at SW 1st Street Bridge
North River Drive, southbound, south of NW 5th Street/NW 7th Avenue	Signage	Add advance warning signage for low bridge clearance at SW 1st Street Bridge
South River Drive, southbound, south of NW 8th Avenue/NW 4th Street/ 5th Street Bridge intersection	Signage	Add advance warning signage for low bridge clearance at SW 1st Street Bridge
SW 4th Avenue, northbound, north of intersection with SW 8th Street	Signage	Add advance warning signage for low bridge clearance at SW 1st Street Bridge
SW 2nd Street, westbound, west of intersection with SW 2nd Avenue	Signage	Add advance warning signage for low bridge clearance at SW 1st Street Bridge
NW 1st Street from NW 8th Avenue to South River Drive	Traffic Flow Modification	Convert to two-way traffic flow
Transit Improvements		
Metrobus	Service Expansion	Improve service as demand warrants
Water bus	New Service	Implement water bus service to provide mobility between downtown terminal/port and MIC
Metromover	Service Expansion	Extend service hours as development occurs and demand warrants
North River Drive @ West Flagler Street - NB	Bus Stop	Provide pedestrian level lighting and bench at bus stop
North River Drive @ West Flagler Street - SB	Bus Stop	Provide pedestrian level lighting and bench with shelter at bus stop
North River Drive @ NW 2nd Street - NB	Bus Stop	Provide pedestrian level lighting and shelter at bus stop
North River Drive @ NW 2nd Street - SB	Bus Stop	Provide pedestrian level lighting and bench at bus stop
North River Drive @ NW 3rd Street - NB	Bus Stop	Provide pedestrian level lighting and bench at bus stop
North River Drive @ NW 3rd Street - SB	Bus Stop	Provide pedestrian level lighting and shelter at bus stop
Bicycle/Pedestrian Improvements		
Miami River Greenway	Riverwalk/ On-street	Complete the Miami River Greenway
Miami River Corridor	Parking	Remove parking meters from sidewalk and replace with "Pay and Display" machines throughout the Corridor
Bridges in Lower River Section	Bicycle Facilities	Install wheel gutters for bicycles at all feasible pedestrian stairs on Brickell Avenue Bridge, SW 2nd Avenue Bridge, SW 1st Street Bridge, Flagler Street Bridge
Brickell Bridge Pedestrian staircase	Sidewalk	Install sidewalk connecting bridge to existing Riverwalk
North River Drive @ NW 5th Avenue/ NW 7th Street	Bicycle Facilities	Install a bike rack at bus stop
Maintenance on south side of River	Signage & Maintenance	Provide proper M-Path signage / and remove fences that restrict M-Path access
SW 7th Street @ SW 1st Court, M-Path	Crosswalk	Install crosswalk for M-Path and improve paved connectivity of M-Path
SW 1st Avenue between SW 7th Street & SW 8th Street	Sidewalk	Widen sidewalk to match sidewalk between SW 8th Street and Brickell Metrorail Station
Fort Dallas Park	Maintenance	Remove fence near the Park which disconnects the surrounding area to the Riverwalk
SW 4th Avenue and SW 4th Street	Crosswalk	Install pedestrian crosswalks at all approaches of the intersection
Beneath South Miami Avenue Bridge	Riverwalk/ On-street	Create riverwalk section connecting One Riverview Square to riverwalk section to the west of the bridge
South River Drive between NW 8th Avenue and NW 2nd Street	ADA Ramps/Crosswalks	Provide ADA ramps and crosswalks, specifically at the intersections of South River Drive & NW 2nd Street, NW 3rd Street, NW 7th Avenue and NW 8th Avenue
North River Drive from SW 2nd Street to NW 2nd Street	Sidewalk	Sidewalk along north side of road needs to be replaced and overgrown landscape needs to be removed
North River Drive and Flagler Street (surface street)	Maintenance	Remove chain link fence in front of pedestrian stairs at Flagler Street Bridge and move chain link fence to allow access to sidewalk on south side of street
SW 1st Street Bridge	Pedestrian Facilities	Provide ADA ramps, pedestrian level lighting at stairs, and enhance pedestrian pathway leading to bridge
Flagler Street Bridge	ADA Ramps	Provide ADA ramps
North River Drive from NW 1st Street to NW 3rd Street - west side	Sidewalk	Construct sidewalk, maintain streetscape
North River Drive @ NW 2nd Street	ADA Ramps	Reconstruct existing ADA ramps to feed directly into existing paved crosswalk
North River Drive @ NW 3rd Street	Lighting	Provide pedestrian level lighting adjacent to Lummus Park
North River Drive @ NW 5th Street/NW 7th Avenue	ADA Ramps/Crosswalks	Provide ADA ramps on north leg of the intersection and north side of NW 5th Street/Provide crosswalks on north leg of the intersection

**Table 6: Additional Upper River Transportation Improvements
Developed in Miami River Corridor Multimodal Transportation Plan
NW 22nd Avenue to NW 36th Avenue**

Location	Improvement Type	Recommended Improvement
Roadway Improvements		
Along Miami River Corridor	Signage	Install wayfinding signage along corridor and on the local major highways (i.e. SR 112) indicating major attractions
NW 27th Avenue Bridge	ITS/Signalization	Implement an automated drawbridge traffic management system, including extended green times following bridge openings and dynamic message signs
North River Drive @ NW 30th Street	Signal/Maintenance/ Signage	Re-hang signal heads on span wire, replace broken guardrail, resurface, add overhead North River Drive sign, and replace broken signs/add gateway signs for entrance into the Miami River Corridor
South River Drive @ NW 30th Street	Signal	Install gateway signs for entrance into the Miami River Corridor
North River Drive between NW 30th Street and NW 27th Avenue	Maintenance	Resurface roadway
South River Drive between NW 30th Street and NW 28th Street	Lighting/Maintenance	Install street lights, repair storm drain, resurface and grade shoulder
Transit Improvements		
Metrobus, Metromover and Metrorail	Service Expansion	Improve service as demand warrants
Water bus	New Service	Implement water bus service to provide mobility between downtown terminal/port and MIC
North River Drive @ NW 21st Street	Bus Stop	Provide pedestrian level lighting and benches at bus stop on northbound and southbound sides
North River Drive @ NW 21st Terrace	Bus Stop	Provide pedestrian level lighting and benches at bus stop on northbound side
North River Drive @ NW 30th Avenue	Bus Stop	Provide pedestrian level lighting and benches at bus stop on southbound side
Freight Improvements		
Implement Short Seas Shipping Plan (1)	Major Marine Industrial Related Facility	Potential sites include: (1) vacant 8-acre parcel east of NW 37th Avenue, (2) west of South Florida Rail Corridor Crossing, and (3) public right-of-way adjacent/beneath proposed Metrorail
Bicycle/Pedestrian Improvements		
Miami River Greenway	Riverwalk/ On-street	Complete the Miami River Greenway
Bicycle/ Pedestrian connector from MIC to Greenway	Bicycle Facilities	Establish connectivity between MIC and Miami River Greenway
North River Drive @ NW 20th Street/ NW 27th Avenue	Signal	Install pedestrian signalized crossing
North River Drive @ NW 32nd Avenue	Signal/ Crosswalk	Repair existing pedestrian signal heads and crosswalk between NW 32nd Avenue and NW 28th Street
North River Drive @ NW 30th Street	Signal	Replace existing pedestrian signal heads
North River Drive between NW 30th Street and NW 27th Avenue	ADA/Maintenance	Provide ADA ramps and repair and reconstruct sidewalk

Note:

(1) Short Seas Shipping consists of transporting cargo containers from the Port of Miami to a new facility in the Port of Miami River where the containers would be transferred to trucks or rail.

**Table 7: Additional Upper River Transportation Improvements
Developed in Miami River Corridor Multimodal Transportation Plan
NW 22nd Avenue to NW 36th Avenue**

Location	Improvement Type	Recommended Improvement
Roadway Improvements		
Along Miami River Corridor	Signage	Install wayfinding signage along corridor and on the local major highways (i.e. SR 112) indicating major attractions
NW 27th Avenue Bridge	ITS/Signalization	Implement an automated drawbridge traffic management system, including extended green times following bridge openings and dynamic message signs
North River Drive @ NW 36th Street	Signal/Maintenance/ Signage	Re-hang signal heads on span wire, replace broken guardrail, resurface, add overhead North River Drive sign, and replace broken signs/add gateway signs for entrance into the Miami River Corridor
South River Drive @ NW 36th Street	Signal	Install gateway signs for entrance into the Miami River Corridor
North River Drive between NW 36th Street and NW 27th Avenue	Maintenance	Resurface roadway
South River Drive between NW 36th Street and NW 28th Street	Lighting/Maintenance	Install street lights, repair storm drain, resurface and grade shoulder
Transit Improvements		
Metrobus, Metromover and Metrorail	Service Expansion	Improve service as demand warrants
Water bus	New Service	Implement water bus service to provide mobility between downtown terminal/port and MIC
North River Drive @ NW 21st Street	Bus Stop	Provide pedestrian level lighting and benches at bus stop on northbound and southbound sides
North River Drive @ NW 21st Terrace	Bus Stop	Provide pedestrian level lighting and benches at bus stop on northbound side
North River Drive @ NW 30th Avenue	Bus Stop	Provide pedestrian level lighting and benches at bus stop on southbound side
Freight Improvements		
Implement Short Seas Shipping Plan (1)	Major Marine Industrial Related Facility	Potential sites include: (1) vacant 8-acre parcel east of NW 37th Avenue, (2) west of South Florida Rail Corridor Crossing, and (3) public right-of-way adjacent/beneath proposed Metrorail
Bicycle/Pedestrian Improvements		
Miami River Greenway	Riverwalk/ On-street	Complete the Miami River Greenway
Bicycle/ Pedestrian connector from MIC to Greenway	Bicycle Facilities	Establish connectivity between MIC and Miami River Greenway
North River Drive @ NW 20th Street/ NW 27th Avenue	Signal	Install pedestrian signalized crossing
North River Drive @ NW 32nd Avenue	Signal/ Crosswalk	Repair existing pedestrian signal heads and crosswalk between NW 32nd Avenue and NW 28th Street
North River Drive @ NW 36th Street	Signal	Replace existing pedestrian signal heads
North River Drive between NW 36th Street and NW 27th Avenue	ADA/Maintenance	Provide ADA ramps and repair and reconstruct sidewalk

Note:

(1) Short Seas Shipping consists of transporting cargo containers from the Port of Miami to a new facility in the Port of Miami River where the containers would be transferred to trucks or rail.

Other Health District Plans

Miami Health District Streetscape, Gateway, and Signage Improvements

The Miami Partnership, a partnership formed by the City of Miami and the University of Miami, envisioned a series of improvement projects that would revitalize the Health District and eventually transform the neighborhood into an appealing and attractive place. The Miami Health District Streetscape, Gateway and Signage Improvements Basis of Design Report (BODR) was prepared to support this goal.

For the purpose of the BODR effort, streetscapes were defined as right-of-way modifications intended to improve function, appearance, safety, and comfort for pedestrians and drivers. Gateways were defined as features on transit, pedestrian, or vehicular routes that mark the transition from one defined area to another. Wayfinding signage was defined as graphics and text that provides an easy way to comprehend directions to a comprehensive set of health district destinations.

NW 17th Street, NW 15th Street, and NW 15th Street Road and NW 14th Avenue are considered linkage streets in the BODR and, as such, the designation of a health walk as a component of the streetscape improvements was proposed for implementation. The improvements include shaded sidewalks, street trees, landscaping, specialty paving, lighting, and information panels to provide for healthful activity.

Gateway improvements were developed for regional, district and local level gateways and were intended to function as a *family* of improvements with common elements including a stainless steel or brushed aluminum spire topped with a light and the “H” Health District Branding symbol. The local gateways would have only the “H” overall Health District symbol.

As for signage improvements there are four sign types:

- District signs
- Local signs
- Pedestrian destination signs
- Pedestrian orientation signs

The City of Miami has approved of the project and has moved forward with implementing the first phase of the project.

Health District Circulator

The Health District Circulator Study was prepared by The Corradino Group for the City of Miami. The study area for the project consisted of I-95 on the east, SR 836 on the south, NW 20th Street on the north, and NW 17th Avenue on the west.

The two-phased planning effort conducted surveys of people within the Health District and held meetings with agencies and organizations in order to establish the need for, and the financial feasibility, of a circulator. As a result, the circulator service was deemed necessary and feasible.

Phase II of the project focused on refining the proposed routes and services, resolving operational issues, and identifying a financial plan. Currently, the project is initially funded for three years by the City of Miami and FDOT. FDOT will also be funding a marketing plan that will be managed by South Florida Commuter Services. The City will issue a RFP for operators in the near future. Below is the most updated Health District Circulator map.

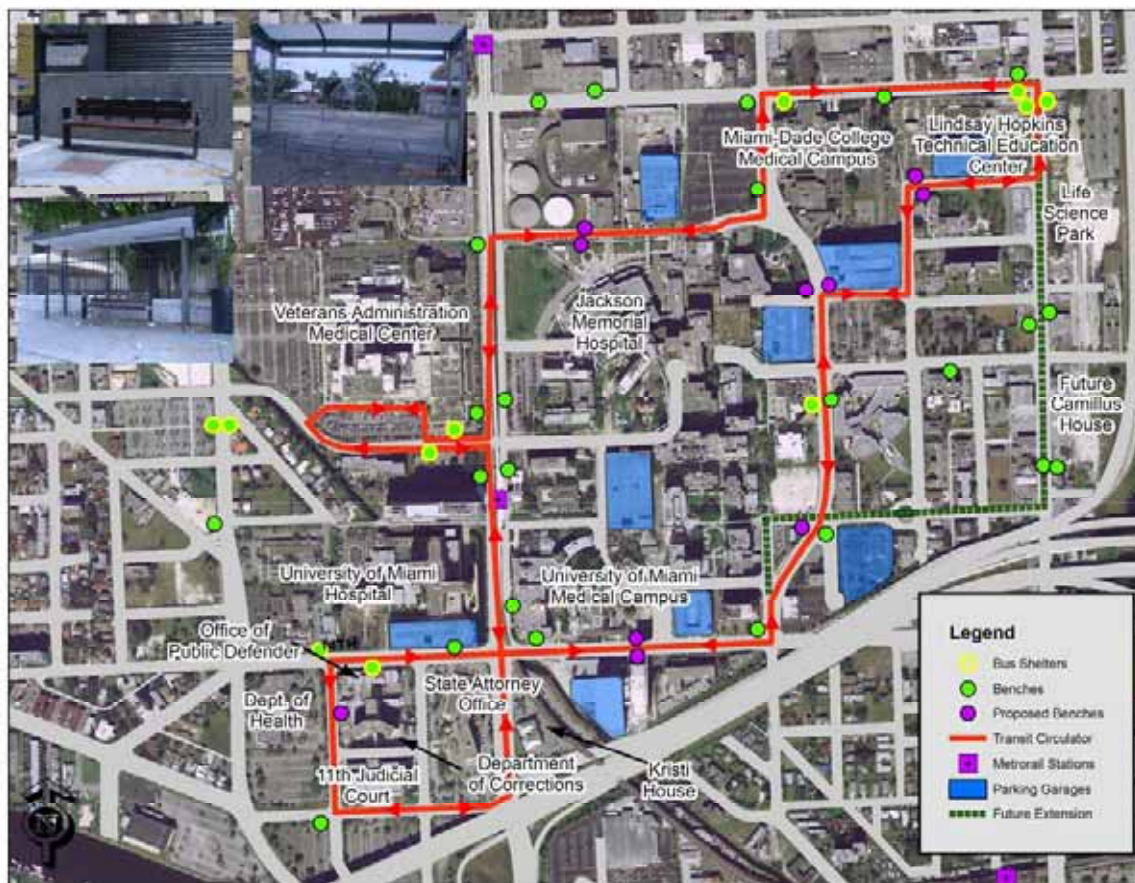


Figure 3: Health District Circulator Map

Existing Transportation Plans

Some of the common findings of the previous reports are to provide for capacity improvements of several north-south and east-west main corridors within the study area such as NW 12th Avenue, NW 27th Avenue, NW 20th Street, N. 12th Street; needs for a multimodal approach to transportation; better links between parking, transit, pedestrian, transportation, planning and public works; and better interconnectivity between the different functional areas of the study area.

Additionally, an analysis of a regional interconnectivity to the area, via the main highway system, is crucial during the development of the traffic analysis.

5. Existing Transportation

This section of the report details traffic conditions within the study area, including parking-inventories, emergency vehicle routes, transit conditions, bicycle-pedestrian conditions, pedestrian flows and socio-economic conditions.

5.1 Emergency Vehicle Routes, Pedestrian Flows

Emergency Services Routing

Emergency services routes will be considered in the final stage of the comprehensive traffic study. Today, it is assumed that emergency vehicles access their destinations from all directions. They enter the district through a variety of locations, primarily using the connected portion of the grid network, including the east west corridors of 36th Street, 28th Street, 20th Street and 14th Street. North South access corridors include 27th Avenue, 22nd Avenue, 17th Avenue, 14th Avenue, 12th Avenue, 10th Avenue and 7th Avenue.

5.2 Parking Inventory

Parking is predominantly provided through surface parking lots and a number of large parking garages. The core business area within the district, around half a square mile, contains over 12,000 parking spaces. The table below lists the number of spaces found in each lot and garage within this region. Parking outside of the core area is typified by very few public lots, and many individual private lots. Nearly each street has on-street parking, often metered, except in the residential areas.

Table 8: Parking Spaces per Lot

Lot	Spaces
Kristi House Surface Lot	7
North Garage	720
University of Miami Garage	2,000
Jackson Memorial Garage	2,000
Lindsey Hopkins Garage	900
Dominion Towers (Private)	888
On-street Parking	265
Lot 18	671
12th Street/13th Avenue	
Graham Building Surface Lot	318
Lot 25	241
Civic Center Jury Lot	176
Mahi Shrine Lot	385
One Bob Hope Road Surface Lot	100
Veterans Medical Center Surface Lot	592 Employee; 870 Public
Lot 26 (12th Street at 14th Avenue)	349
University of Miami (UC)	1,400

Details on parking are presented below.

11th Circuit Court

- 2,000 employees work from 8 a.m. to 5 p.m. and park in Lots 18, 26, 27 (27 is not listed in chart). There are 349 spaces in Lot 26 and 385 spaces at Mahi Shrine.
- 11,000 visitors per day park in Lot 18 and at Mahi Shrine. There are 671 public in Lot 18.
- 400 jurors per day.
- The cost for employee parking in Lot 26 is \$73 per month.
- Public parking cost is:

1 hour = \$3.50

1-2 hours = \$6.00

2-3 hours = \$7.50

3-4 hours = 9.00

Maximum = \$10.00

ER Graham Building

- 831 employees on staggered shifts from 7:30 a.m. to 5 p.m. park in Lot 25 (241 spaces, it says Lot 26), ER Graham Lot (200 spaces) and Mahi parking lot
- 350 to 450 visitors per day park at ER Graham Lot (341 spaces).
- Civic Park Plaza (50 spaces) Civic Center Jury Lot, Mahi Shrine.

Lindsey Hopkins

- 966 employees; 366 employee spaces.
- 100 visitors per day; 250 student spaces.
- Have 900-space garage, which is underutilized.

Florida Department of Health

- 300 employees DTV (170 parking spaces total)
- 400 visitors per day.

Miami- Dade Corrections and Rehabilitation Department

- 781 employees on multiple shifts around the clock 30 parking spaces on jail property.
- Six handicapped spaces on 13th Street.
- 25 spaces at Women's Detention Center lot at 7th Street/14th Avenue.
- 100 visitors; no spaces.

Women's Detention Center

- 140 employees on three shifts around the clock. 41 spaces on jail property; 25 spaces on WDC lot.
- 40 visitors per day; 12 dedicated parking spaces on jail property.

VA Medical Center

- 2,435 employees on three shifts around the clock; 592 employee spaces.

- 870 public spaces
- 300 students.
- 300 visitors.
- 400 outpatients.

5.3 Transit Conditions

The dense, mixed-use nature of the health district, coupled with the health, judicial, and educational institutions located within its core, creates a neighborhood that is conducive to regular and frequent public transportation access.

The study area is served by four Metrorail stations—Culmer, Civic Center, Santa Clara, and Allapattah. The proximity to various transit stations creates a neighborhood with relatively cohesive transit connectivity. Ridership is high.

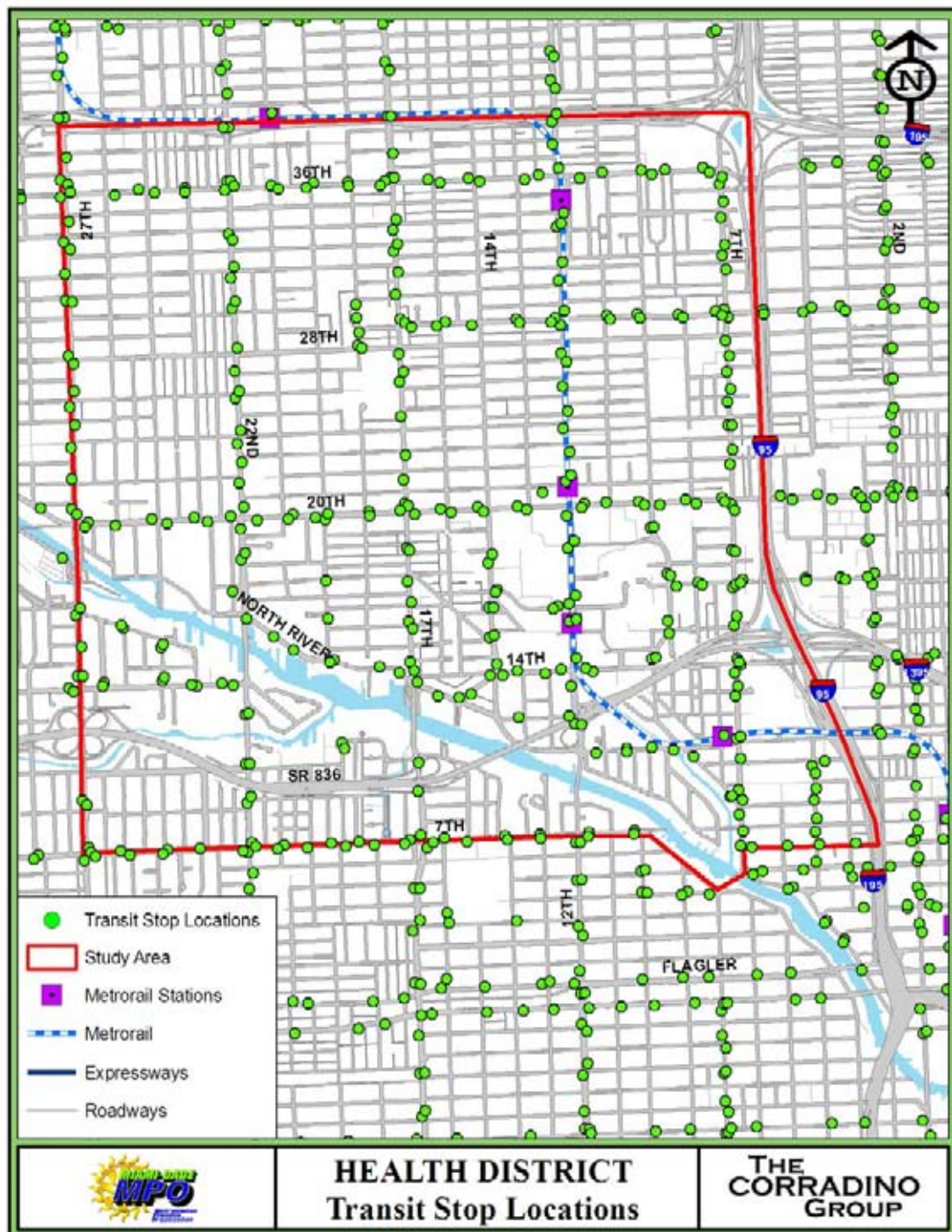
The study area is one of the most well-connected areas in Miami-Dade County. There are bus stops throughout the study area. Most are “sign on post” stops with no bench or shelter. These indicate the relative coverage of transit, but most routes using these stops circulate at a variety of frequencies and are not generally perceived as conducive to people making short trips.

Thirteen Metrobus routes provide regular service to the study area. Route 27, along the western border of the study region provides 24/7 coverage to the region and overnight service is provided by route 246, the Night Owl. There are also three express bus routes that service the health district, transporting commuters from the Northern Golden Glades Park-and-Ride facility to the central core of the civic center.

Due to recent budget cuts MDT will be making its most extensive service rearrangement since 1986. Changes in the Health District Area include:

- Headway changes will impact service on the Route 32 seven days a week: during peak hours, the headway will be increased from 20 to 24 minutes, on Saturdays, from 30 to 40 minutes, and on Sundays, from 30 to 60 minutes.
- Overnight service on the Route 77 (NW 7th Avenue route) will be discontinued between 1 a.m. and 5 a.m.
- Mid-day service on the Route 95 Express to downtown Miami and the Civic Center will be discontinued between 9:30 a.m. and 2:30 p.m.

As the county continues to experience budget concerns, cuts to transit service may become more severe.

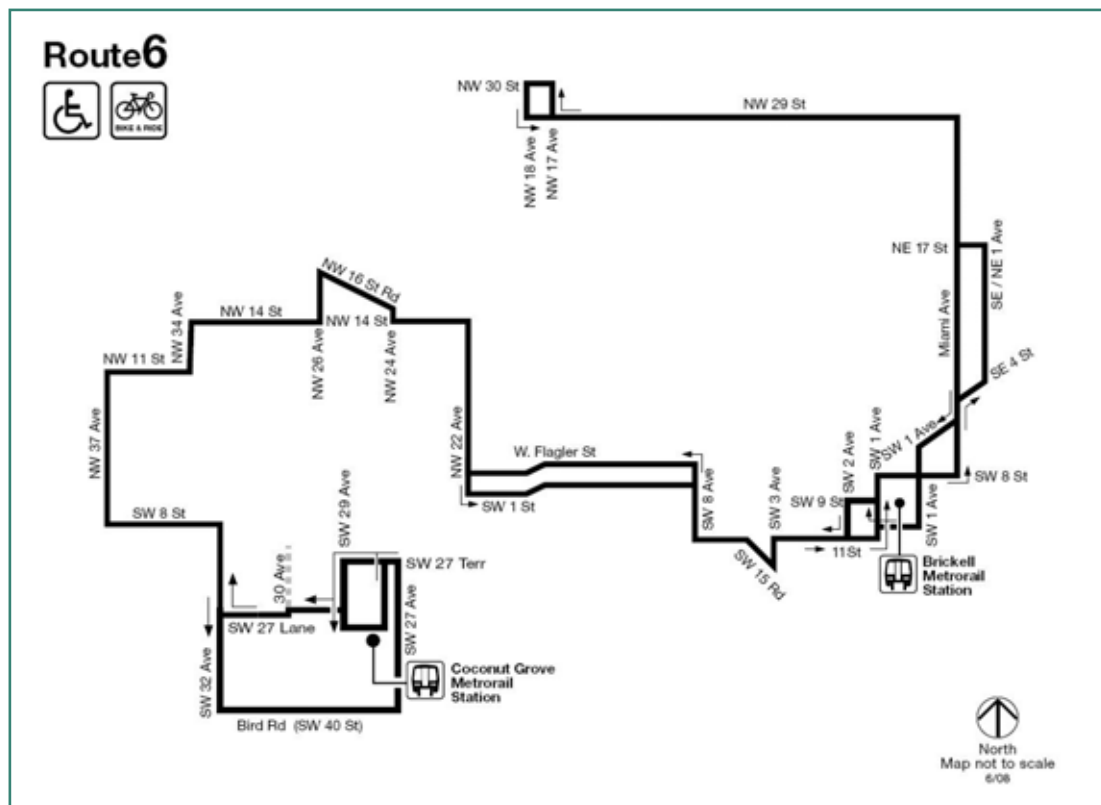


Source: Miami-Dade Transit

Figure 4: Civic Center Transit Service

Route 6:

Bus Route 6 services the Coconut Grove, Little Havana, Brickell, downtown central business district, Wynwood, and Brownsville neighborhoods. The route's northern terminus, in the Brownsville neighborhood of the Health District, completes a loop between NW 29th Street, 30th Street and NW 17th and 18th Avenues. The bus accesses the Health District along the 29th street corridor. This route has two Metrorail connections: at the Coconut Grove and Brickell Stations. The route begins weekday service at 8:30 AM (northbound) and operates at one-hour headways until 5:30 PM. Route 6 takes approximately 71 minutes to complete half of the full route length. Saturday and Sunday schedules are similar to the weekday timetable, with one-hour headways and operation from approximately 8:30 AM to 4:30 PM. The buses utilized to service the route are handicap accessible and feature bicycle racks. In 2007, Route 6 averaged 856 weekday riders, a decrease of 22.13 percent compared to 2006.

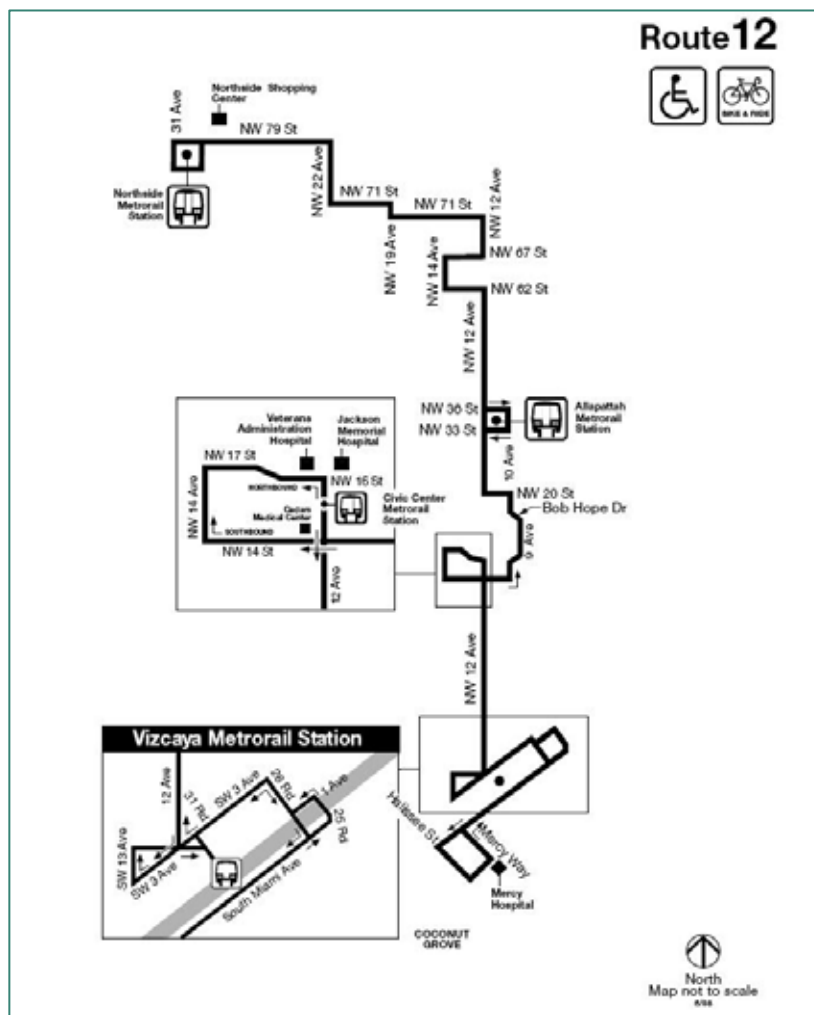


Source: Miami-Dade Transit

Figure 5: Route 6

Route 12:

Bus Route 12 services the Coconut Grove, Little Havana, Civic Center, Allapattah, and Liberty City neighborhoods. The route enters the Health District along NW 12th Avenue and completes a loop between NW 14th Street, 16th/17th Street and NW 12th and 14th around the University of and Veterans Affairs Hospitals. The route bisects the core of the medical campus along Bob Hope Drive. This route has four Metrorail connections: Vizcaya, Civic Center, Allapattah, and Northside Stations. The route begins weekday service at 5:40 AM (northbound) and operates at peak 30 minute headways until 11:40 PM. Route 12 takes approximately 63 minutes to complete half of the full route length. Saturday and Sunday schedules are similar to the weekday timetable, with 30-minute headways and operation from approximately 5:40 AM to 11:40 PM. The buses utilized to service the route are handicap accessible and feature bicycle racks. In 2007, Route 12 averaged 3,017-weekday riders, a decrease of 4.5 percent compared to 2006.

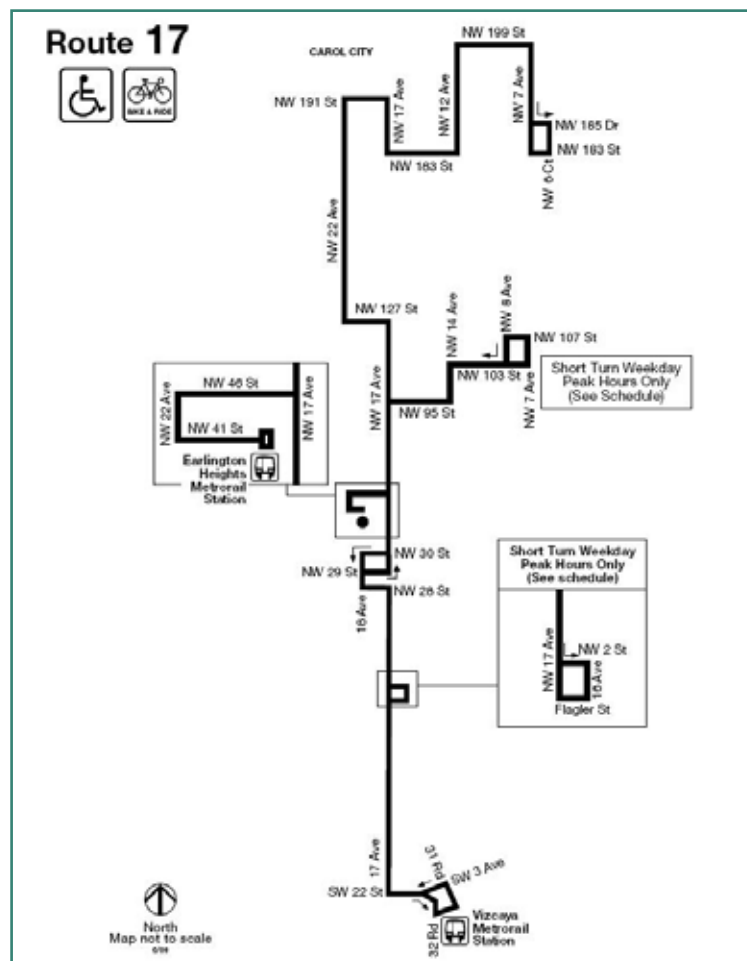


Source: Miami-Dade Transit

Figure 6: Route 12

Route 17:

Bus Route 17 services the Little Havana, Allapattah, Model City, Opa-Locka, Carol City, Miami Gardens, and Norwood neighborhoods. The route services the 17th Avenue North/South corridor of the Health District. In the district, the route travels along the predominantly residential area south of 20th Street and industrial/commercial area north of 20th Street. This route has two Metrorail connections: Vizcaya and the Earlington Heights Station. The route begins weekday service at 4:50 AM (northbound) and operates at peak 15 minute headways until 12:30 AM. Route 12 takes approximately 90 minutes to complete half of the full route length. Saturday and Sunday schedules are similar to the weekday timetable, with 30-minute headways and operation from approximately 6:15 AM to 11:30 PM. The buses utilized to service the route are handicap accessible and feature bicycle racks. In 2007, Route 17 averaged 4,399-weekday riders, an increase of 14.26 percent compared to 2006.

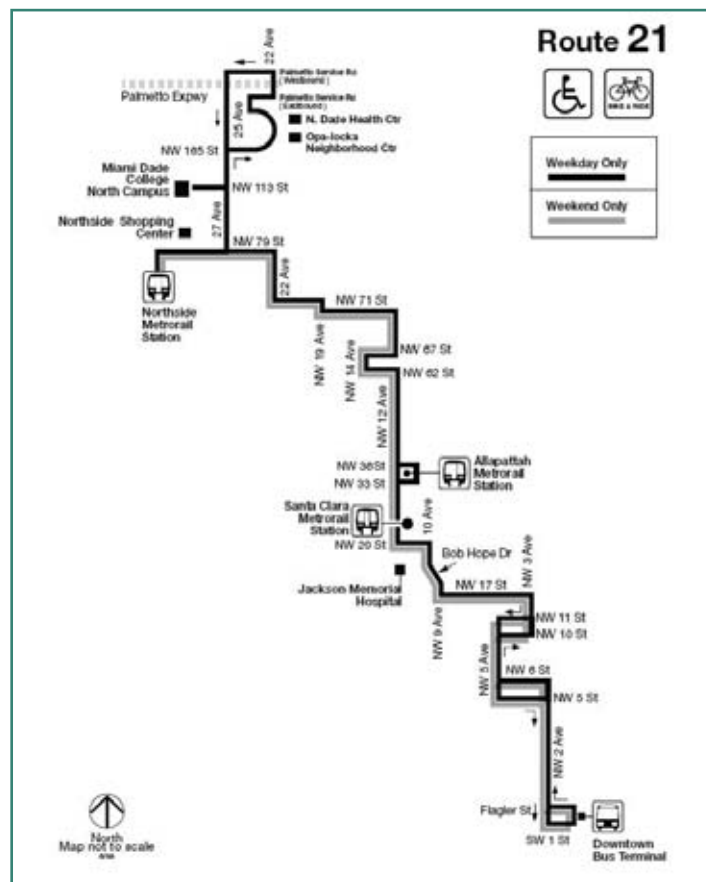


Source: Miami-Dade Transit

Figure 7: Route 17

Route 21:

Bus Route 21 services the Downtown/Central Business District, Overtown, Civic Center, Allapattah, Liberty City and Opa-Locka neighborhoods. The route enters the Health District along NW 17th Street (northbound) and NW 12th Avenue (southbound) bisecting the core of the medical campus along Bob Hope Drive. This route has 3 Metrorail connections in addition to its southern terminus at the downtown bus terminal: at the Santa Clara, Allapattah, and Northside Stations. The route begins weekday service at 5:35 AM (northbound) and operates at peak 30 minute headways until 11:40 PM. Route 21 takes approximately 65 minutes to complete half of the full route length. Saturday and Sunday schedules are similar to the weekday timetable, however, the route is shorter than the normal weekday route terminating at the Northside Metrorail station instead of at the Palmetto Expressway and NW 22nd Avenue. The weekend route operates at 30-minute headways from approximately 5:35 AM to 11:10 PM. The buses utilized to service the route are handicap accessible and feature bicycle racks. In 2007, Route 21 averaged 2,117-weekday riders, a decrease of 10.12 percent compared to 2006.

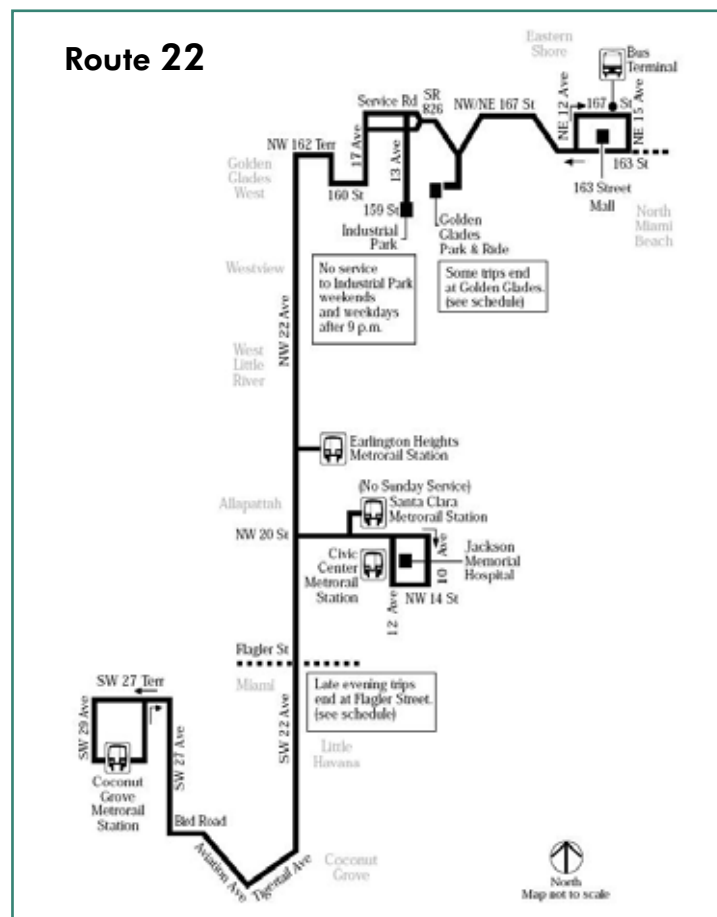


Source: Miami-Dade Transit

Figure 8: Route 21

Route 22:

Bus Route 22 services the Coconut Grove, Little Havana, Civic Center, Allapattah, West Little River, Opa-Locka, and North Miami Beach neighborhoods. The route enters the Health District along NW 12th Avenue (northbound) and runs a closed loop around the Civic Center and Santa Clara Metrorail Stations. This route has 4 Metrorail connections in addition to its northern terminus at the 163rd Street bus terminal: Coconut Grove, Civic Center, Santa Clara, and the Earlington Heights Station. The route begins weekday service at 5:15 AM (northbound) and operates at peak 15 minute headways until 11:45 PM. Route 22 takes approximately 100 minutes to complete half of the full route length. Saturday and Sunday schedules are similar to the weekday timetable operating at 30-minute headways from approximately 5:35 AM to 11:20 PM. The buses utilized to service the route are handicap accessible and feature bicycle racks. In 2007, Route 22 averaged 4,012-weekday riders, an increase of 15.87 percent compared to 2006.

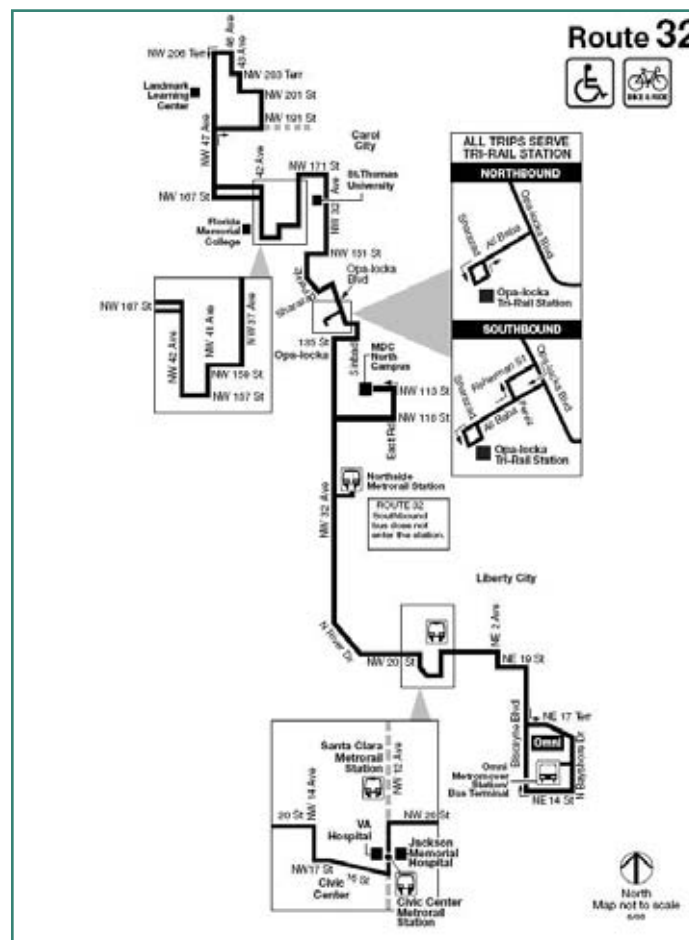


Source: Miami-Dade Transit

Figure 9: Route 22

Route 32:

Bus Route 32 services the Omni/Wynwood District, Overtown, Civic Center, Brownsville, Opa-Locka and Carol City neighborhoods. The route enters the Health District along NW 20th Street (Northbound) and North River Drive (southbound) bisecting the core of the medical campus along NW 12th Avenue. This route has 2 Metrorail connections in addition to its southern terminus at the Omni Metromover/Bus Terminal: at the Civic Center and Northside stations. The route begins weekday service at 5:30 AM (northbound) and operates at peak 24 minute headways until 11:00 PM. Route 32 takes approximately 110 minutes to complete half of the full route length. Saturday and Sunday schedules are similar to the weekday timetable, operating at 40-minute headways from approximately 6:00 AM to 9:10 PM. The buses utilized to service the route are handicap accessible and feature bicycle racks. In 2007, Route 32 averaged 3,769-weekday riders, a decrease of 2.64 percent compared to 2006.

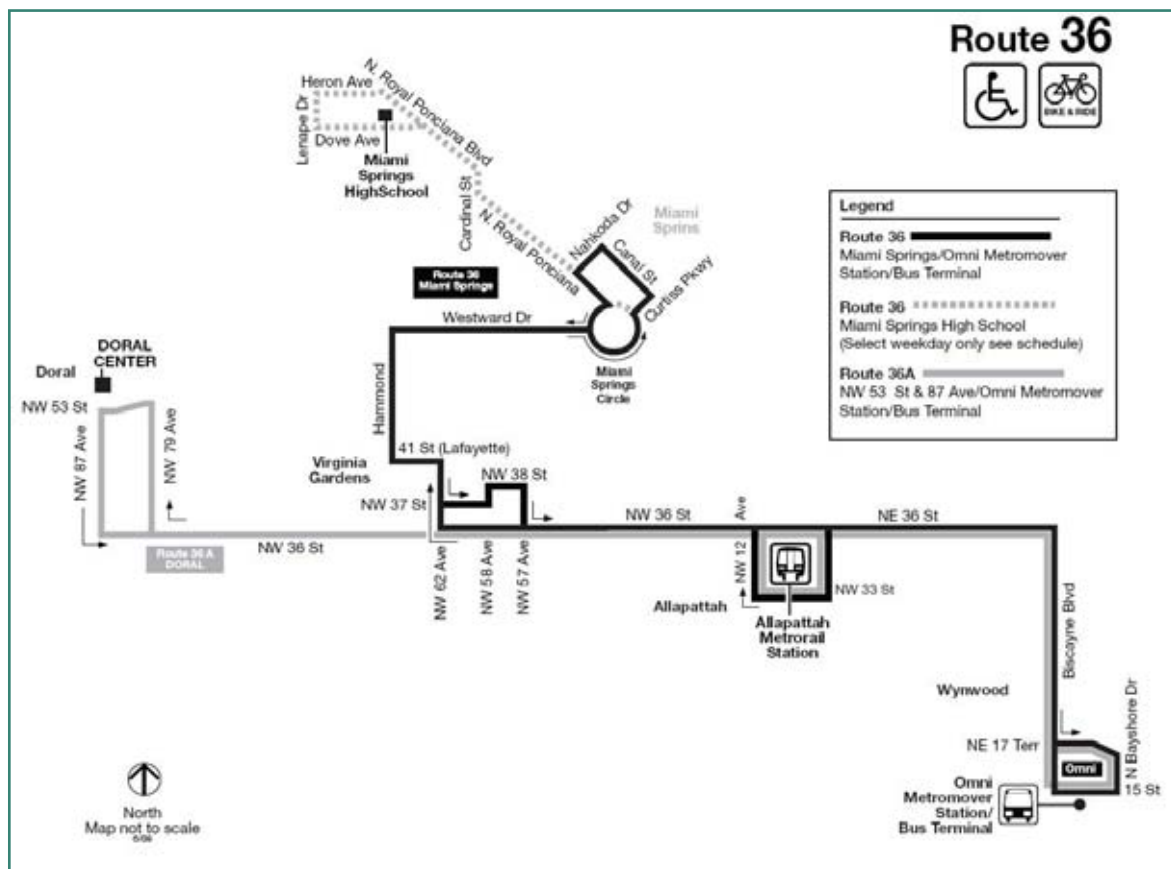


Source: Miami-Dade Transit

Figure 10: Route 32

Route 36:

Bus Route 36 services the Omni/Wynwood District, Allapattah, Virginia Gardens, and Miami Springs neighborhoods. The route bisects the Heath District east/west along NW 36th Street. This route has 1 Metrorail connection in addition to its southern terminus at the Omni Metromover/Bus Terminal: at the Allapattah Station. The route begins weekday service at 5:30 AM (northbound) and operates at peak 20 minute headways until 10:10 PM. Route 36 takes approximately 55 minutes to complete half of the full route length. Saturday and Sunday schedules are similar to the weekday timetable, however, the route is shorter than the normal weekday route terminating at Nahkoda Drive instead of at Miami Springs Senior High. The weekend route operates at 30-minute headways from approximately 6:00 AM to 8:05 PM. The buses utilized to service the route are handicap accessible and feature bicycle racks. In 2007, route 36 averaged 2,686-weekday riders, a decrease of 11.39 percent compared to 2006.

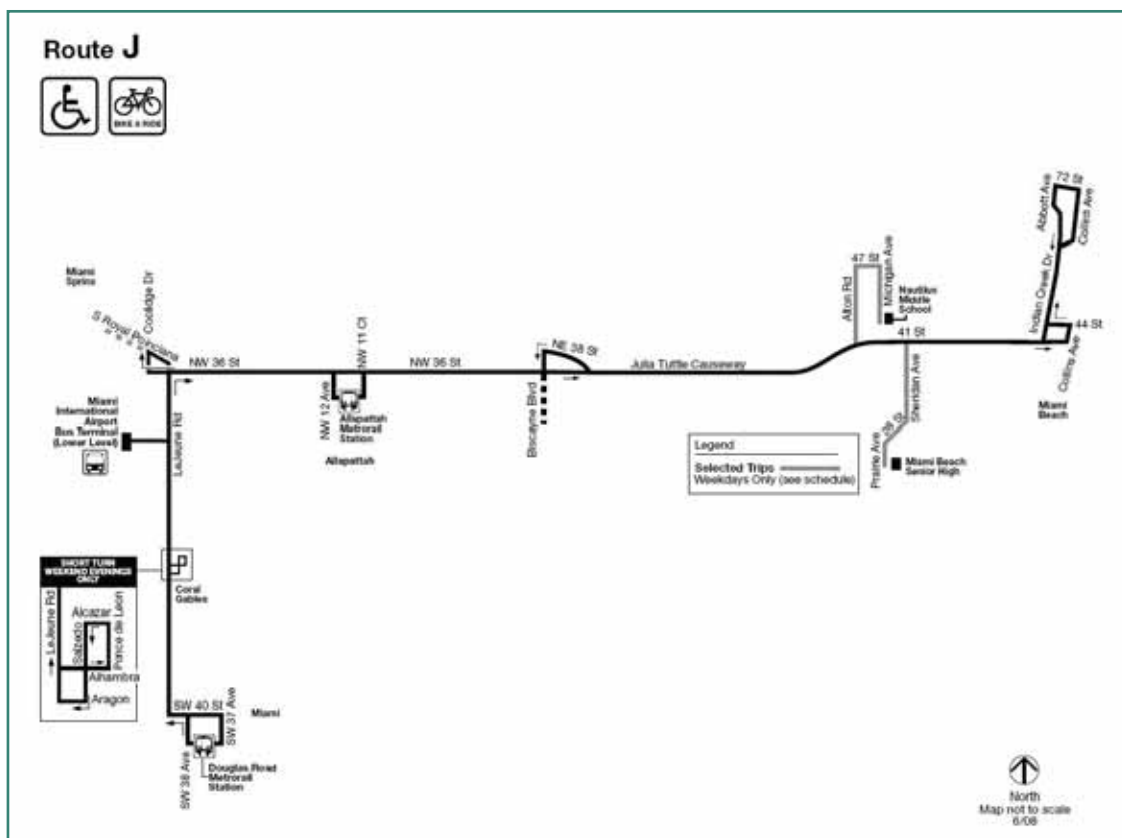


Source: Miami-Dade Transit

Figure 11: Route 36

Route J (110):

Bus Route J services the Miami Beach, Wynwood, Allapattah, and Coral Gables Neighborhoods. The route bisects the Heath District east/west along NW 36th Street. This route has 2 Metrorail connections in addition to its midpoint stop at the Miami International Airport Bus Terminal: the Allapattah and Douglas Road Stations. The route begins weekday service at 4:20 AM and operates at peak 15 minute headways until 11:20 PM. Route J takes approximately 85 minutes to complete half of the full route length. Saturday and Sunday schedules are similar to the weekday timetable, operating at 30-minute headways from approximately 4:35 AM to 11:45 PM. The buses utilized to service the route are handicap accessible and feature bicycle and luggage racks. In 2007, Route J averaged 4,754-weekday riders, an increase of 3.66 percent compared to 2006.

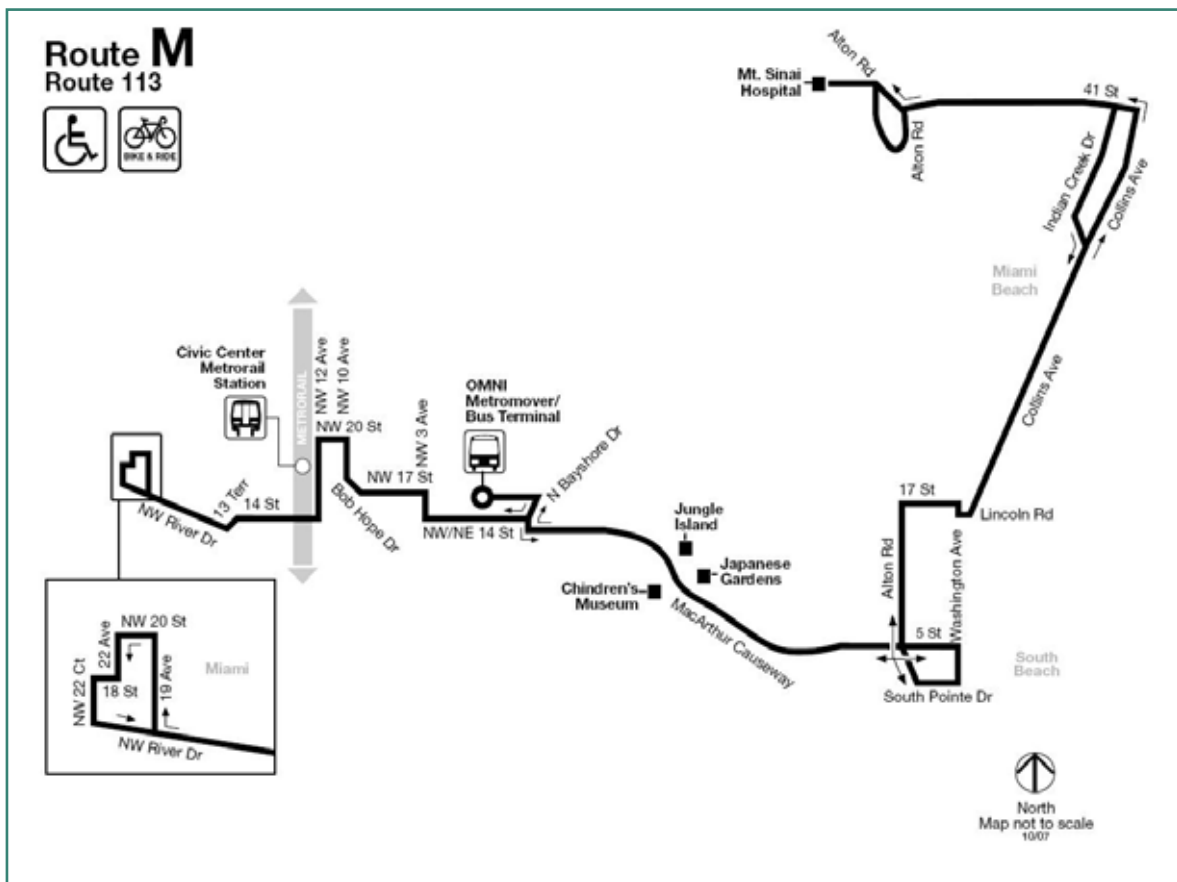


Source: Miami-Dade Transit

Figure 12: Route J

Route M (113):

Bus Route M services the Miami Beach, South Beach, Omni/Wynwood, and Civic Center neighborhoods. The route enters the Health District along NW 17th Street (westbound) and North River Drive (eastbound) bisecting the core of the medical campus along Bob Hope Drive and NW 12th Avenue. This route has 1 Metrorail connections in addition to its midpoint stop at the Omni Metromover/Bus Terminal: at the Civic Center station. The route begins weekday service at 5:40 AM (westbound) and operates at peak 30 minute headways until 9:30 PM. Route M takes approximately 80 minutes to complete half of the full route length. Saturday and Sunday schedules are similar to the weekday timetable, with 30-minute headways and operation from approximately 5:50 AM to 9:30 PM. The buses utilized to service the route are handicap accessible and feature bicycle racks. In 2007, Route M averaged 1,599-weekday riders, a decrease of 11.25 percent compared to 2006.

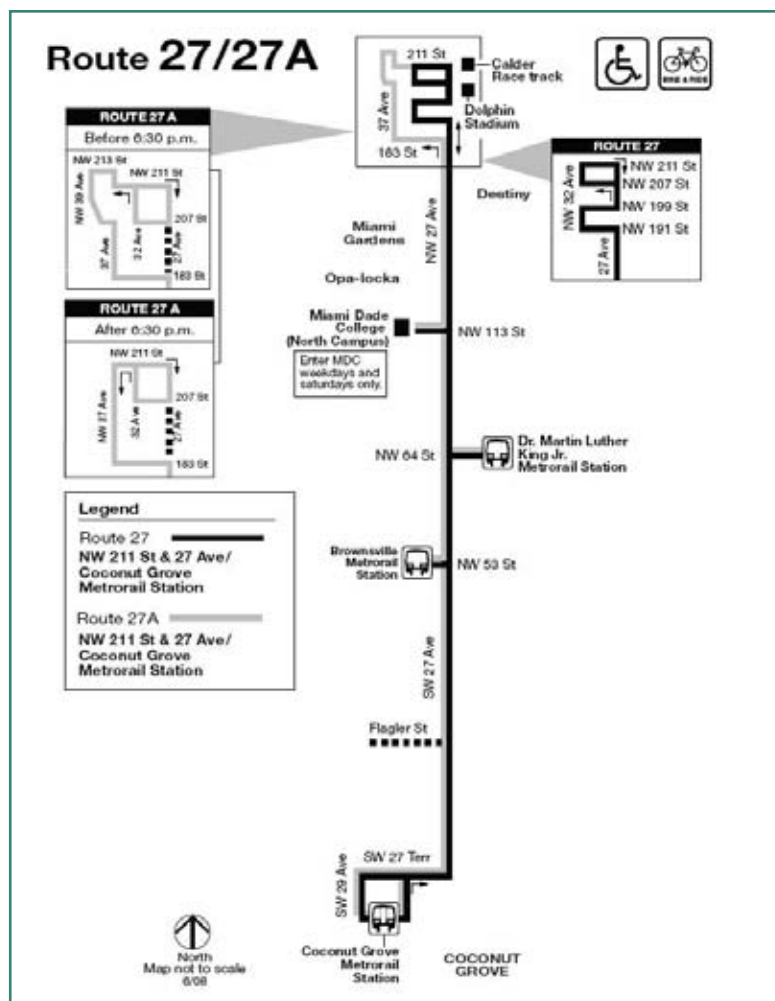


Source: Miami-Dade Transit

Figure 13: Route M

Route 27/27A:

Bus Route 27/27A services the Coconut Grove, Little Havana, Brownsville, Opa-Locka, and Miami Gardens neighborhoods. The route travels along the western border of the Health District along NW 27th Avenue. This route has 3 Metrorail connections: the Coconut Grove, Brownsville, and Dr. Martin Luther King Jr. Stations. The route begins weekday service at 4:50 AM (northbound) and operates at peak 15 minute headways until 4:15 AM. Route 27/27A takes approximately 60 minutes to complete half of the full route length. Saturday and Sunday schedules are similar to the weekday timetable operating at 20-minute headways from approximately 5:30 AM to 4:15 AM. The buses utilized to service the route are handicap accessible and feature bicycle racks. In 2007, Route 27/27A averaged 8,411-weekday riders, a decrease of 3.81 percent compared to 2006.

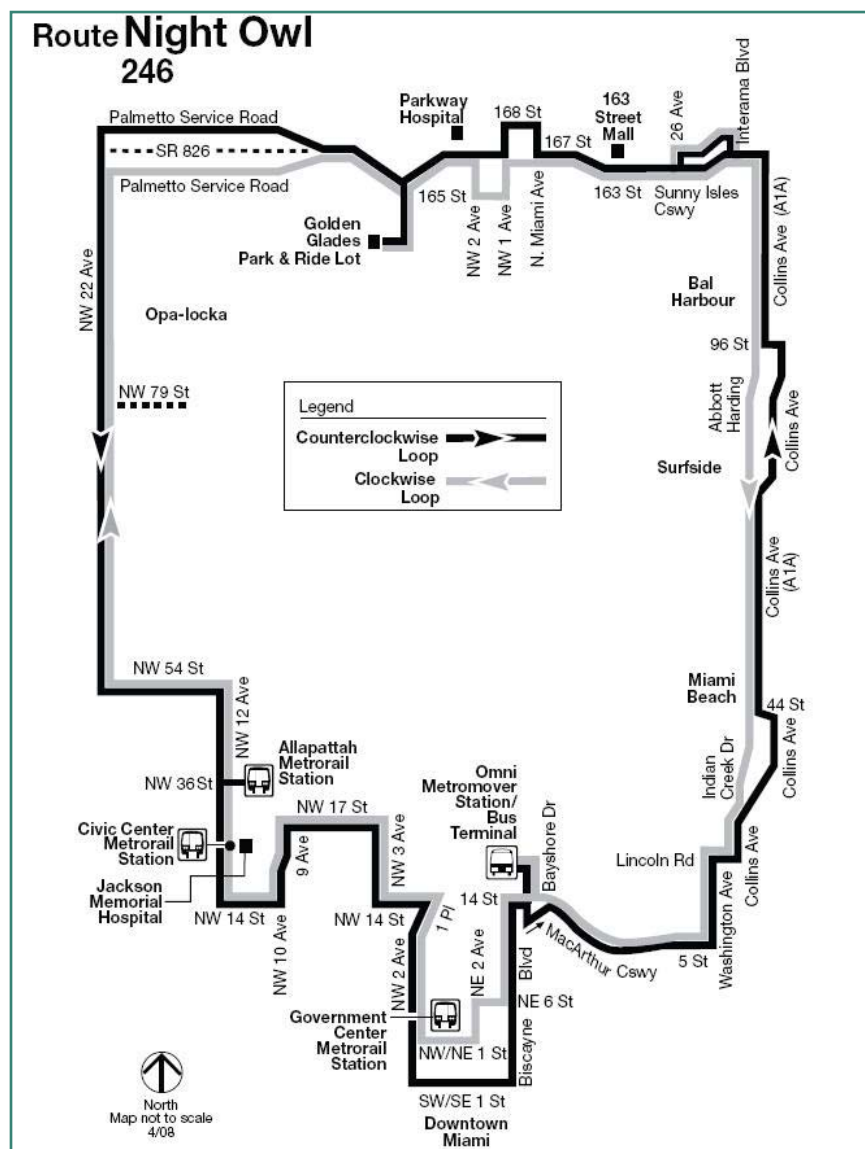


Source: Miami-Dade Transit

Figure 14: Route 27

Route 246 (Night Owl):

Bus Route 264 (Night Owl) services the Allapattah, Downtown Miami, Miami Beach, Surfside, Bal Harbour, Sunny Isles, and Opa-locka neighborhoods. The route travels through the center and south eastern area of the Health District along NW 12th Avenue, NW 14th Street, NW 10 Avenue and NW 17th Street. This route has 3 Metrorail connections and 2 Metromover Connections: the Allapattah, Civic Center, Government Center, and Omni Stations. The route begins weekday and weekend service at 10:30 PM (Counter clock wise) and operates at 60 minute headways until 6:39 AM. Route 246 takes approximately 2 hours and 9 minutes to complete a full route length. The buses utilized to service the route are handicap accessible and feature bicycle racks. In 2007, Route 246, averaged 434 weekday riders, a decrease of 14.2 percent compared to 2006.



Source: Miami-Dade Transit

Figure 15: Route 246

CORRADINO

CORRADINO

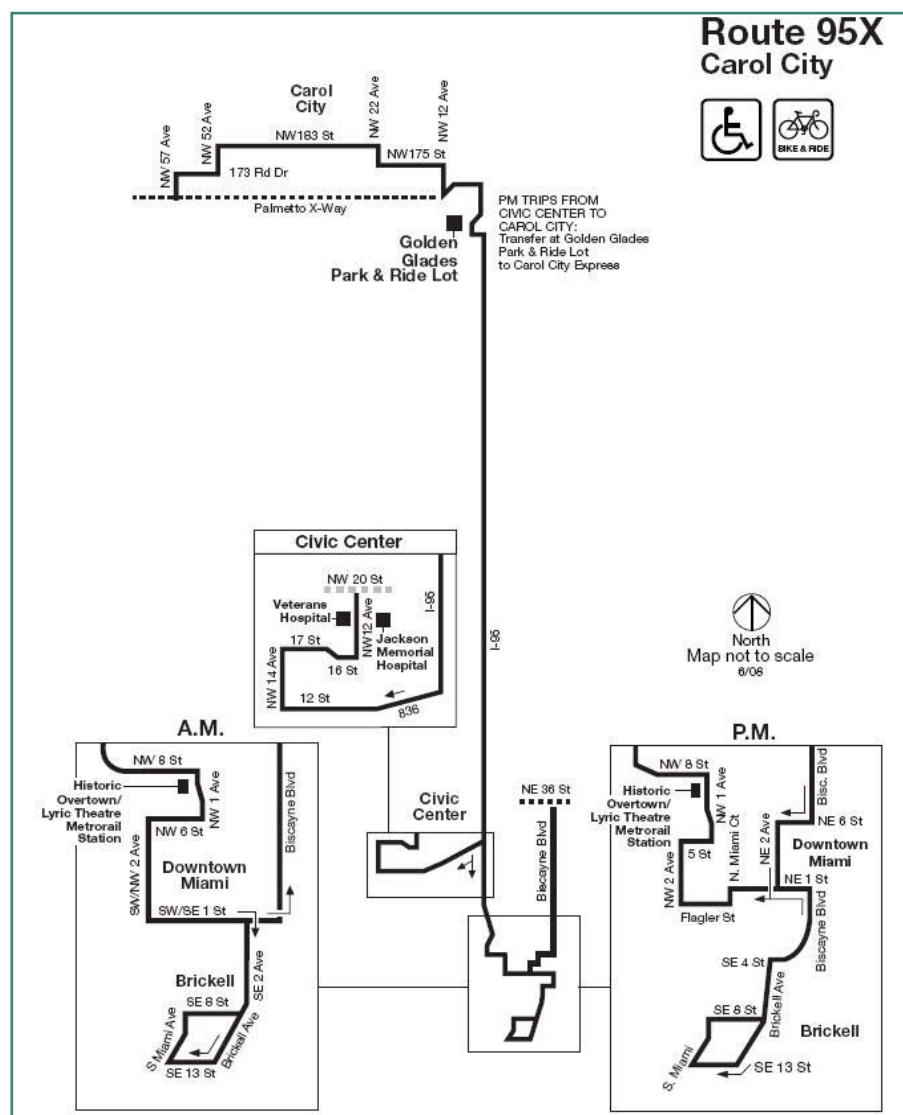


CORRADINO

CORRADINO

Route 953 (Carol City):

Bus Route 953 services the Carol City, Downtown Miami and Brickell neighborhoods. The route travels through the south-eastern area of the Health District along NW 12th Street, NW 14th Avenue, NW 17th Street, NW 12th Avenue and NW 20th Street. This route has a Metrorail connection at the Historic Overtown/Lyric Theater Station. The route begins weekday service at 6:00 AM (southbound) and operates at peak 30 min headways till 8:30 AM. The route starts up again at 4:42PM till 7:01 PM. This route does not run on weekends. The buses utilized to service the route are handicap accessible and feature bicycle racks. In 2007, Route 953 averaged 1,461 weekday riders, a decrease of 5.13 percent compared to 2006.

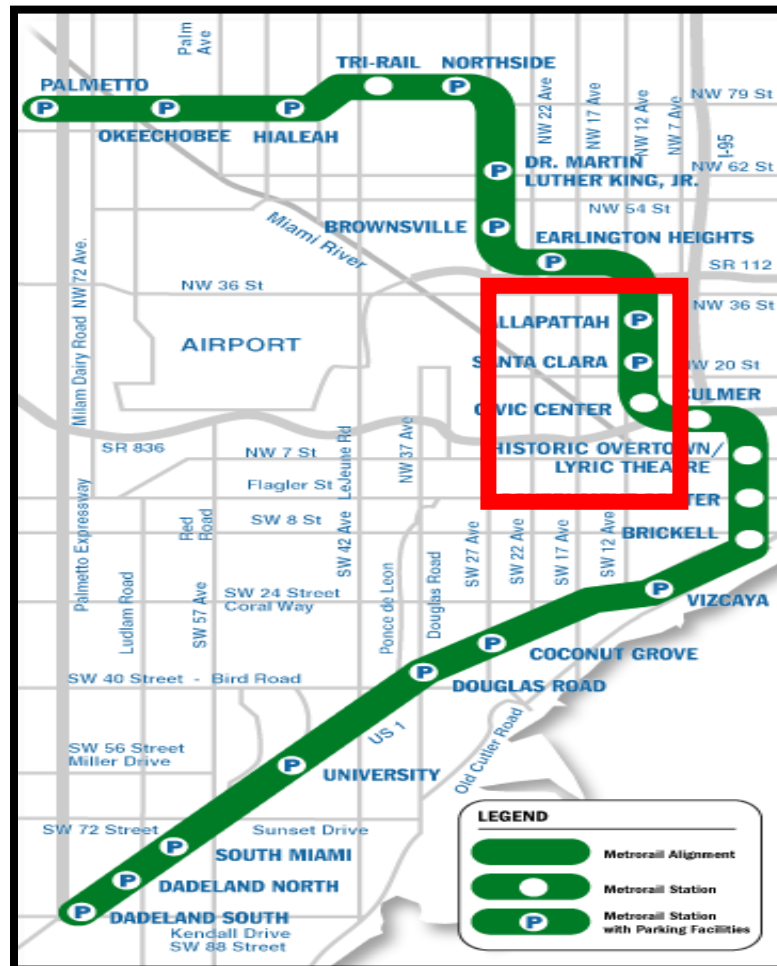


Source: Miami-Dade Transit

Figure 18: Route 953

Metrorail

Four Metrorail stations—Culmer, Civic Center, Santa Clara, and Allapattah—serve the study area. They run from 5 a.m. to midnight, seven days a week.



Source: Miami-Dade Transit

Figure 19: Metrorail Transit Service

Culmer Station has an average weekday boarding (2007) of 1,078 riders and connects to Metrobus Service, NW 7 Avenue MAX, and the Overtown Circulator.

The Civic Center Station, averages weekday boarding's (2007) of 6,142 riders (4th highest in the system), connecting Metrobus Service routes 12, 22, 32, 95x, M, Night Owl (246).

Santa Clara Station averages weekday boarding's (2007): 9200, connecting Metrobus routes 12, 21, 22, 32, M, Night Owl (246).

Allapattah Station has average weekday boarding's of (2007) 2,069 riders. It connects Metrobus Service: 12, 21, 36, J, Night Owl (246).

5.4 Bicycle and Pedestrian Conditions

A comprehensive and readily accessible pedestrian and bicycle network enhances urban neighborhoods while providing direct access to and from employment centers and public transportation. Walkable neighborhoods are extremely important to the economic and functional success of urban areas. These facilities enhance the use of public transportation and provide reasonable alternatives to the personal car. Typically, areas with a comprehensive bicycle and pedestrian network also realize less vehicular congestion, a reduction of pollution, and vibrant street activity. The connection with the pedestrian realm enhances the character and livable qualities of neighborhoods and allows the maximization of the potential of public transportation and mixed-use development.

The Health District, as one of the densest urban areas in Miami-Dade County with hospitals, educational institutions, and judicial offices, is ideally situated in what should be a favorable pedestrian environment.

Key bicycle and pedestrian movements include from the Miami VA Medical Center to Jackson Memorial Hospital and from the bus stops in front of the Miami VA Medical Center to the courts complex. There are also several distinct areas of pedestrian movement inside the core of the Health District. The pedestrian and bicycle facilities are not adequate for the numbers of pedestrians in the area.

Although a sidewalk network covers most of the Health District, pedestrian facilities are inconsistent. They lack marked crosswalks, directional signage and adequate signalization, feature large curb cuts and segments of discontinuity, and, in places, do not meet ADA requirements. Generally, the width and condition of most of the sidewalks in the district are inadequate. Pedestrian zones should be redesigned featuring the recommendations of the BODR. The BODR proposed health walk would also greatly enhance east-west pedestrian mobility in the core of the district.

The intersections analyzed throughout the study area averaged 32 pedestrian crossings in the AM and PM Peak hours. On average, pedestrian activity accounts for nearly 1 percent of all traffic volumes. Pedestrian traffic remained consistent from the AM to the PM peak, with the AM experiencing only slightly greater volume counts than the PM. The peak pedestrian volumes were clustered around key intersections in the heart of the Health District near the Metrorail stations.

NW 14th Street and 12th Avenue is the busiest pedestrian intersection in the study area, with 310 pedestrians crossing in the AM and PM Peak hours alone. This intersection is located south of the Civic Center Metrorail station and serves as the vital link between the health and judicial centers of the district. At this intersection, pedestrians comprise approximately 4 percent of the total intersection volume.

The next busiest intersection, N. River Drive and 14th Avenue, handles approximately 137 pedestrians during the AM and PM peak hours. In a marked difference with the intersection of NW 14th Street and 12th Avenue, the pedestrian volume accounts for over 10 percent of the peak hour volume. Much of this pedestrian activity can be attributed to the parking lots that are located on three corners of the intersection. Given the fact that this intersection is bound on three corners by surface parking lots and the high eastbound figures for the AM peak period, it can be concluded that much of this pedestrian activity is attributed to the parking lots associated with the courts.

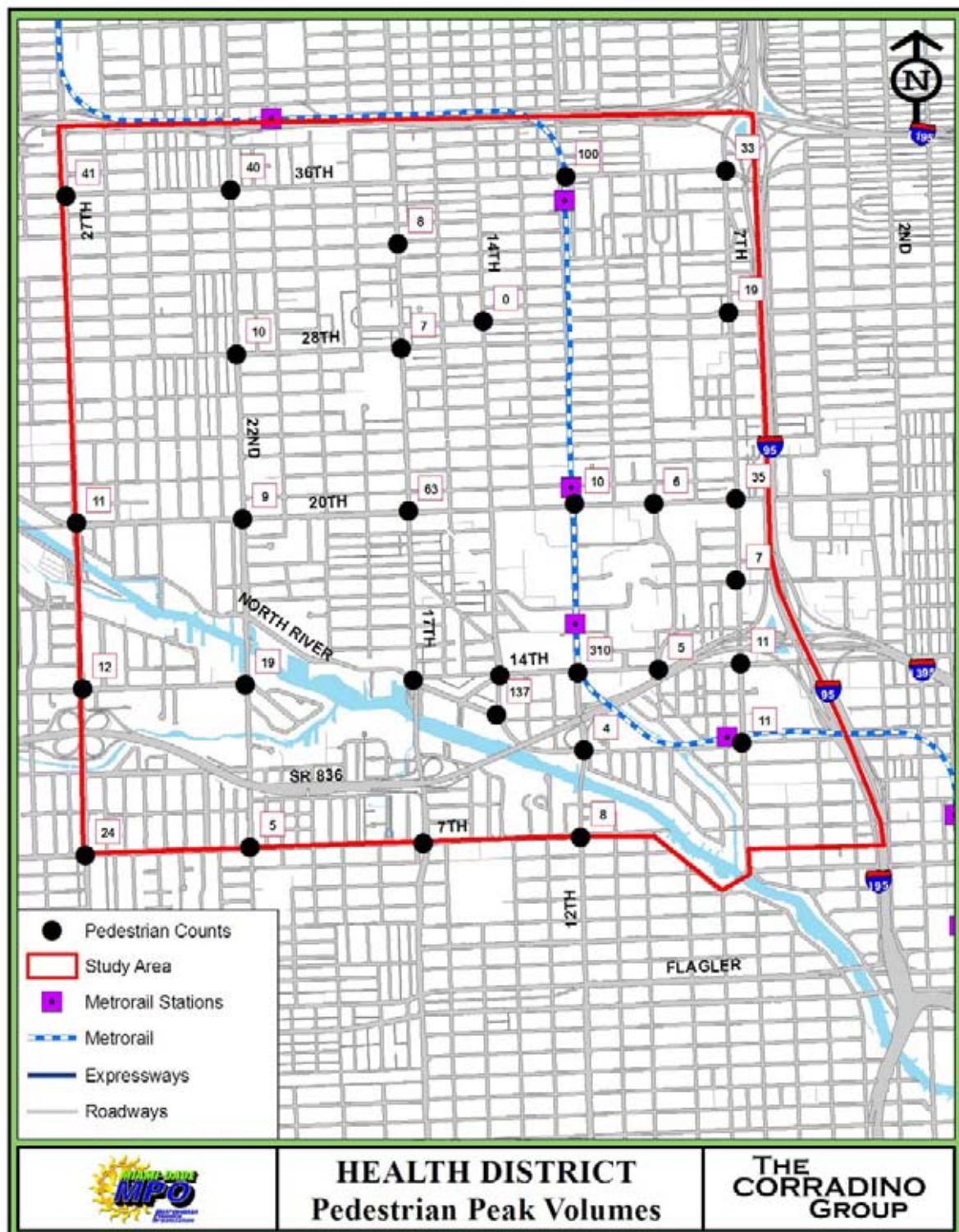
Existing Transportation

The third busiest intersection is located outside of the Health District at NW 36th Street and 12th Avenue. This intersection is a critical access point for the Allapattah Metrorail station. Above average pedestrian counts along the entire NW 36th Street corridor within the study area illustrates the influence the Metrorail station has on pedestrian traffic in the area.

The 7th Avenue Corridor also experiences above average pedestrian crossings. This area from the Lindsay Hopkins Technical School on NW 20th Street, north to NW 36th Street is a predominantly industrial land use zone.

Table 9: Vehicular and Pedestrian Volumes

Intersection	Vehicular Volume		Pedestrian Volume		Ped (Total)	AM %	PM %
	AM	PM	AM	PM			
NW 36th Street & 22nd Avenue	2,971	3,228	10	30	40	0.34%	0.93%
NW 36th Street & 27th Avenue	3,326	3,523	19	22	41	0.57%	0.62%
NW 36th Street & 7th Avenue	2,694	2,571	9	24	33	0.33%	0.93%
NW 36th Street & 12th Avenue	2,865	3,076	50	50	100	1.75%	1.63%
NW 34th Street & 17th Avenue	1,101	961	0	8	8	0.00%	0.83%
NW 29th Street & 14th Avenue	807	878	0	0	0	0.00%	0.00%
NW 29th Street & 7th Avenue	2,753	2,578	13	6	19	0.47%	0.23%
NW 28th Street & 22nd Avenue	1,910	2,418	1	9	10	0.05%	0.37%
NW 28th Street & 17th Avenue	1,739	1,904	6	1	7	0.35%	0.05%
NW 29th Street & 12th Avenue	2,588	2,456	2	1	3	0.08%	0.04%
NW 20th Street & 27th Avenue	4,907	5,459	0	11	11	0.00%	0.20%
NW 20th Street & 22nd Avenue	2,404	3,106	1	8	9	0.04%	0.26%
NW 20th Street & 17th Avenue	2,685	3,001	24	39	63	0.89%	1.30%
NW 20th Street & 12th Avenue	3,250	3,411	5	5	10	0.15%	0.15%
NW 20th Street & 10th Avenue	2,023	1,827	2	4	6	0.10%	0.22%
NW 20th Street & 7th Avenue	3,004	2,768	10	25	35	0.33%	0.90%
NW 17th Street & 7th Avenue	1,818	1,699	5	2	7	0.28%	0.12%
NW 14th Street & 27th Avenue	3,712	3,833	5	7	12	0.13%	0.18%
NW 14th Street & 22nd Avenue	1,449	1,994	9	10	19	0.62%	0.50%
NW 14th Street & 10th Avenue	1,582	1,265	1	4	5	0.06%	0.32%
N River Dr & 17th Avenue	1,978	1,908	7	9	16	0.35%	0.47%
NW 14th Street & 14th Avenue	1,780	1,697	18	16	34	1.01%	0.94%
N River Dr & 14th Avenue	699	646	90	47	137	12.88%	7.28%
NW 7th Street & 27th Avenue	4,900	4,826	13	11	24	0.27%	0.23%
NW 7th Street & 22nd Avenue	2,981	3,367	4	1	5	0.13%	0.03%
NW 7th Street & 17th Avenue	3,083	2,814	2	0	2	0.06%	0.00%
NW 7th Street & 12th Avenue	2,445	2,059	5	3	8	0.20%	0.15%
NW 14th Street & 7th Avenue	1,622	1,722	1	0	1	0.06%	0.00%
NW 14th Street & 12th Avenue	4,437	3,168	209	101	310	4.71%	3.19%
NW 11th Street & 12th Avenue	1,975	2,485	1	3	4	0.05%	0.12%
NW 11th Street & 7th Avenue	1,274	1,297	0	11	11	0.00%	0.85%
Total	76,762	77,945	522	468	990		
Average	2,476	2,514	17	15	32	0.85%	0.74%

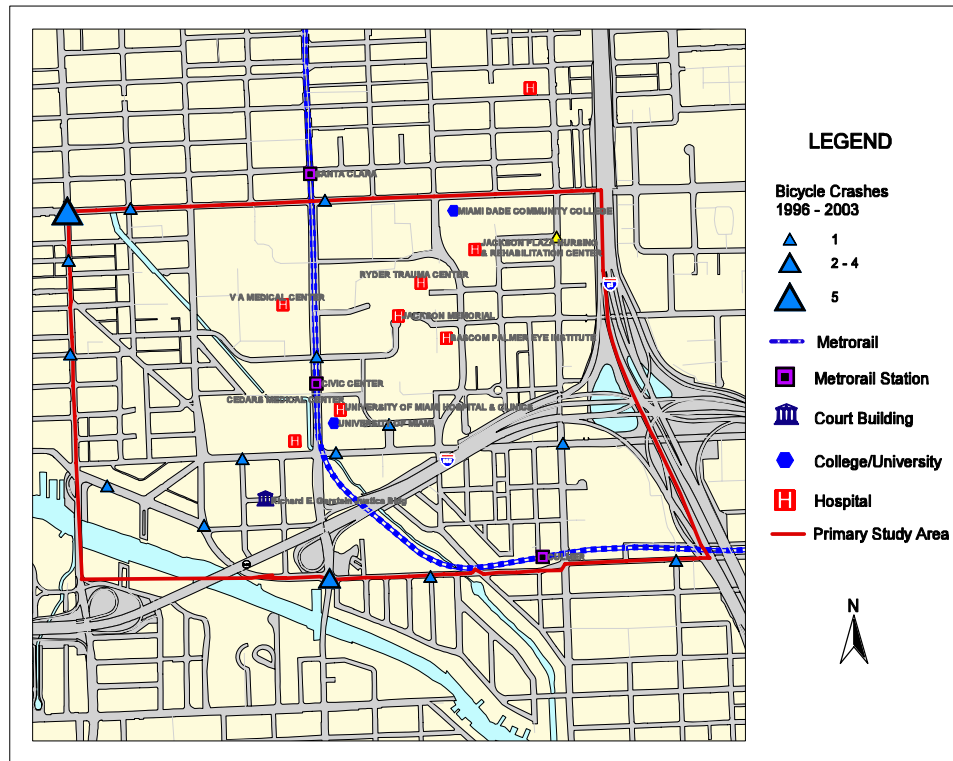


Information on pedestrian and bicycle crashes¹ that occurred over a three-year period in the core of the area is presented below. As seen, the crashes are fairly well distributed over the core area with

¹ This information is based on data provided by the Miami-Dade MPO's Bicycle-Pedestrian Coordinator.

Existing Transportation

some concentrations at locations such as 7th Avenue and 20th Street). The data shows that in the vicinity of the core of the Health District, there were about 20 pedestrian crashes in the seven-year period. In the total study area shown in Figure 20, there were 109 pedestrian crashes inventoried.



Source: The Corradino Group, Inc.

Figure 20: Pedestrian Crashes

Crashes are between pedestrians and autos and bicycles and autos, unless noted.

5.5 Socio-Economic Information

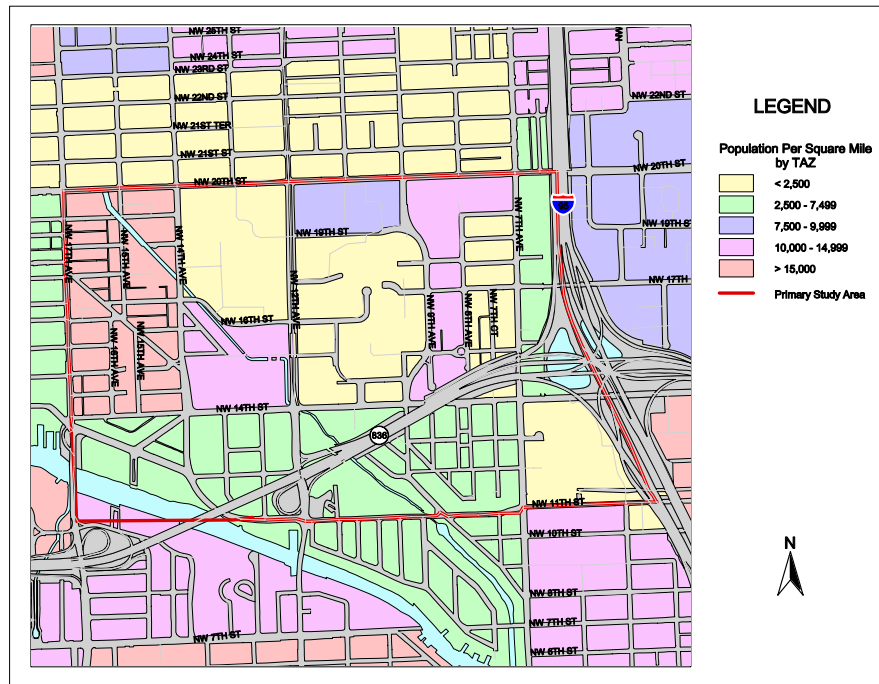
The purpose of this task is to identify socio-economic information relative to the Health District, particularly shift sizes, employment information, beds, students and visitors. As a result this will help assess the impact current and future development will have on mobility within the area. This task aims to provide a comprehensive analysis of the socio-economic underpinnings of the Health District.

Study Area Demographics

Figure(s) 21 and 22 show population and employment information for the traffic analysis zones (TAZ) in, and around, the Health District. TAZ data are used by Miami-Dade County for transportation planning purposes. The distribution of TAZ's in the study area is shown in Figure 23. The area can be described as urban, horizontally mixed in use between residents and business. The core of the study area is the institutional center of the health district, and as such, it has very few residential units and is almost entirely composed of institutional establishments. North of the central study area there is a large industrial/warehousing area with very low population and employment density. However, this area houses the produce market and experiences heavy truck traffic during operational hours. While there are few residential units in these areas, there are generally more than 15,000 employees per square mile. The remainder of the area outside of the central study-area is residential. The area of greatest population is a super block bound by 20th Street to the north, 14th Avenue to the east, 14th Street to the south and 17th Avenue to the west. This contains more than 15,000 people per square mile. Relatively dense residential area surrounds the business core of the district.

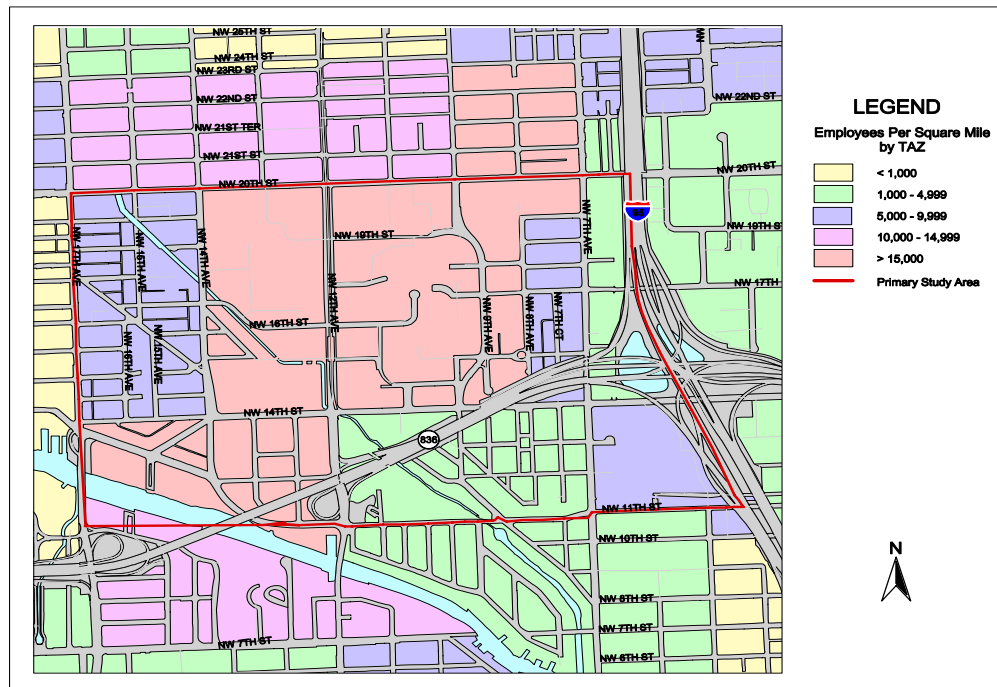
The racial composition of the study area closely resembles that of Miami-Dade County. Approximately 44 percent of residents were born in the United States (30 percent born in Florida) while 55 percent are immigrants. The district has a higher incidence of non U.S. citizen foreigners than Miami-Dade County, accounting for 35 percent of the area residents.

Existing Transportation



Source: The Corradino Group, Inc.

Figure 21: Population per Square Mile by TAZ



Source: The Corradino Group, Inc.

Figure 22: Employment per Square Mile by TAZ



Figure 23: Study area TAZ

Household Characteristics

The study area is also home to over 58,000 residents. The approximately three and a half square mile district has an average population density of 10,515 people/mi² (16.43 people/acre) and an average of 9.58 households per acre. This is of sufficient density to warrant high capacity specialized transit. The health district currently contains more than 21,500 residential housing units.

According to the City of Miami there are about 37 developments that have been approved through the development approval process. These are listed and mapped below. There are nearly 8,300 units coming on line with an average of 225 units per building. The use is generally mixed, and will have nearly 1,100,000 square feet of commercial space, an average of 287,000 square feet per building. As such, 20,000 new parking spaces have been approved. This is an average of 543 spaces per building.

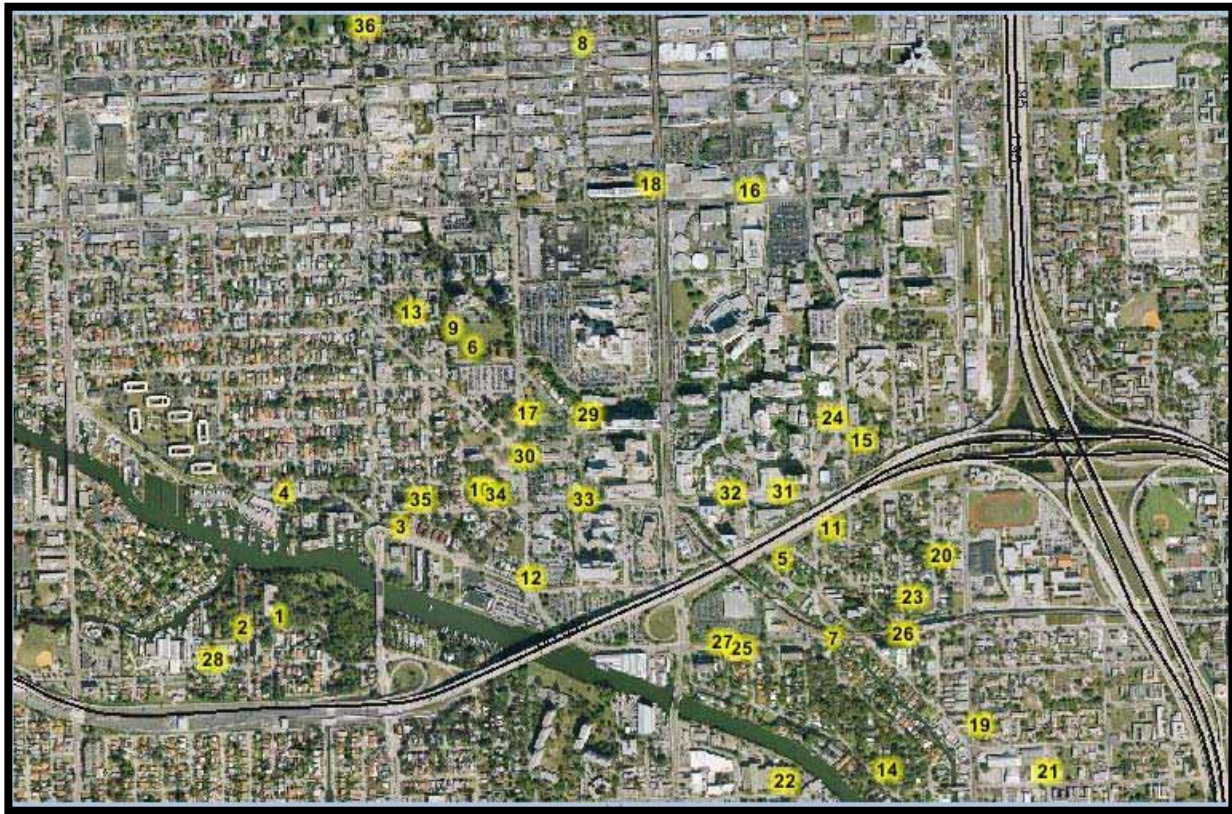


Figure 24: Location of Approved Development in Study Area

- | | |
|---|---|
| 1 Terrazas River Park Village | 2 River Oaks (Hidden Harbor) |
| 3 1690 NW North River Drive | 4 Hurricane Cove |
| 5 Spring Garden | 6 1471 NW 17th Street |
| 7 The Twelve | 8 Amber Garden |
| 9 Wagner Square | 10 River Grand |
| 11 The Residences at Jackson | 12 Miami Rivertown |
| 13 1627 NW 18 Street | 14 Miami River Place |
| 15 UM Medical Staff Parking Garage | 16 Jackson Memorial Hospital North Parking Garage |
| 17 Jenny Tower | 18 Santa Clara Apartments |
| 19 The Atrium at Spring Garden | 20 Energe Residences |
| 21 Urban River | 22 Rio Miami (fka Royal Atlantic) |
| 23 Residences at Highland Park | 24 UM Interdisciplinary Laboratory Building BUILT |
| 25 Miami Riverhouse (Parcel B) | 26 Seybold Pointe |
| 27 River Garden Condos (fka Miami River Condos) | 28 1975-2051 NW 11th Street |
| 29 Wagner's Place | 30 The Urban Club |
| 31 Civica Towers | 32 Lima |
| 33 University of Miami Clinical Research Bldg. & Pkg. | 34 Florida Department of Health |
| 35 New Miami City View Apartments | 36 Tequesta Knoll |
| 37 YMCA Allapattah | |

Table 9: Pending Developments

Development	Address	Use	Stories	Height (ft)	Units	Square Feet (Commercial)	Square Feet (Total)	Parking	Status
Terrazas River Park Village	1861 NW South River Drive	Residential	27	270	324	4,182	343,309	517	B UNDER CONSTRUCTION
River Oaks (Hidden Harbor)	1951 NW South River Drive	Residential	21	218	199		229,963	352	B UNDER CONSTRUCTION
1690 NW North River Drive	1690 NW North River Drive	Mixed Use: Residential & Office	22	237	172	900	190,129	303	C APPROVED PROJECTS
Hurricane Cove	1818 & 1884 NW N. River Drive	Residential with 130-slip Marina, remodel existing bldg to restaurant & retail	27	308	1,073	5,000	1,177,591	1,737	C APPROVED PROJECTS
Spring Garden		Mixed Use: Residential & Office	15	138	87	12,154	94,556	145	
1471 NW 17th Street									
The Twelve	950 NW 11th Street	Residential (Refurbish existing 12-unit building)	3	244	12	19,335	259,447	203	E PRELIMINARY PHASE
Amber Garden	1471 NW 17th Street	Residential	6	237	172	900	190,129	303	B UNDER CONSTRUCTION
Wagner Square	1700 NW 14 Avenue	Mixed Use: residential & retail (Affordable Housing)	14	159	99		113,089	171	D APPLICATION PHASE
River Grand	1415 NW 15th Avenue	Residential	16	159	132		113,089	171	E PRELIMINARY PHASE
The Residences at Jackson	1311 NW 10th Avenue	Residential	11	108	173	19,335	159,076	253	E PRELIMINARY PHASE
Miami Rivertown	1400-1500 NW North River Drive	Mixed Use: Residential, Retail & Office (3 Buildings)	35	368	985	98,129	1,167,373	1,866	C APPROVED PROJECTS
1627 NW 18 Street	1627 NW 18 Street	Residential	35	368	30		1,167,373		A COMPLETED PROJECTS
Miami River Place	710-720 NW North River Drive	Residential	5	50	19	28,687	28,840	36	E PRELIMINARY PHASE
UM Medical Staff Parking Garage	1453 NW 9th Avenue	Parking Garage and Chiller Plant built on existing surface parking lot	10	137			58,955	1,431	E PRELIMINARY PHASE
Jackson Memorial Hospital North Parking Garage	1120 NW 20th Street	Hospital Parking Garage	10	137			58,955	804	A COMPLETED PROJECTS
Jenny Tower	1524 NW 14th Avenue	Residential			115		58,955	804	B UNDER CONSTRUCTION
Santa Clara Apartments	2000 NW 12 Avenue (Metrorail Station - Santa Clara)	Residential: Joint Development with Metrorail Station for Affordable Housing along with 288 parking spaces (88 dedicated to Metrorail). Phase I: 9-story, 208-unit affordable rental apartment building, surface parking. Phase II: 17-story, 204-unit affordable rental apartment building; five levels of parking with ground floor dedicated to transit parking.	15	137	412		58,955	288	A COMPLETED PROJECTS
The Atrium at Spring Garden	808-880 NW 7th Avenue	Mixed Use: Residential & Office	15	138	87	12,154	94,556	145	E PRELIMINARY PHASE
Energe Residences	1212 NW 7th Court	Residential & Retail	16	151	186	12,154	145,751	223	E PRELIMINARY PHASE
Urban River	601, 649, 685 NW 7 Street; 650 NW 8 Street; 734 NW 6 Avenue	Residential (2 buildings)	19	197	577	7,700	606,616	930	C APPROVED PROJECTS
Rio Miami (Ika Royal Atlantic)	1001 NW 7 Street	Residential & Retail	27	279	744	9,400	767,334	1,073	C APPROVED PROJECTS
Residences at Highland Park	1146 NW 8th Avenue	Residential	12	197	577	7,700	606,616	930	E PRELIMINARY PHASE
UM Interdisciplinary Laboratory Building	1501 NW 10th Avenue	Medical offices and research	10	271		178,383	178,383	2,563	C APPROVED PROJECTS
Miami Riverhouse (Parcel B)	1035 NW 11 Street	Mixed Use: Residential & Office	13	138	37	350	53,764	66	F WITHDRAWN PROJECTS
Seybold Pointe	816 NW 11th Street	Mixed Ude: Residential & Retail	11	138	96	945	53,764	66	A COMPLETED PROJECTS
River Garden Condos (Ika Miami River Condos)	1170 NW 11 Street	Mixed Use: Residential & Retail replacing existing Travel Inn on site	25	299	199	7,000	259,447	333	E PRELIMINARY PHASE
1975-2051 NW 11th Street	1975-2051 NW 11th Street	Mixed Use: Residential & Retail (3 buildings)	24	271	1,085	178,383	1,252,430	1,599	E PRELIMINARY PHASE
Wagner's Place	1511 NW 13 Court	Residential	17	174	60		57,060	87	E PRELIMINARY PHASE
The Urban Club	1444 NW 14 Avenue	Residential	21	174	150		57,060	87	B UNDER CONSTRUCTION
Civica Towers									
Lima	2955 Biscayne Boulevard	Mixed Use: Residential & Retail (Existing 40,500 sq. ft. Technomarine Building to remain) Substantial Modification to approved MUSP (R-06-0132 on March 14, 2006)	43	460	206	32,731	207,818	402	C APPROVED PROJECTS
University of Miami Clinical Research Building & Pkg	1150 NW 14 ST	Clinical Research Office Building w/60,000 sf Wellness Center	15	233		336,000	336,000	1,410	B UNDER CONSTRUCTION
Florida Department of Health	1350 NW 14th Street	Medical Lab & Clinic	4			105,389	153,795	286	E PRELIMINARY PHASE
New Miami City View Apartments	1455-73 NW 14 Street	Residential	13	149	130		88,736	98	C APPROVED PROJECTS
Tequesta Knol	1629 NW 14th Street	Residential	13	149	100		105,000	98	A COMPLETED PROJECTS
YMCA Allapattah	2370 NW 17th Avenue	Mixed-use: Residential and retail, and YMCA Recreational Center	12	120	121	21,676	135,635	320	E PRELIMINARY PHASE
Totals			582	6,813	8,359	1,098,587	10,629,549	20,100	
Average			15.73	184.14	225.92	29,691.54	287,285.11	543.24	

Household Characteristics

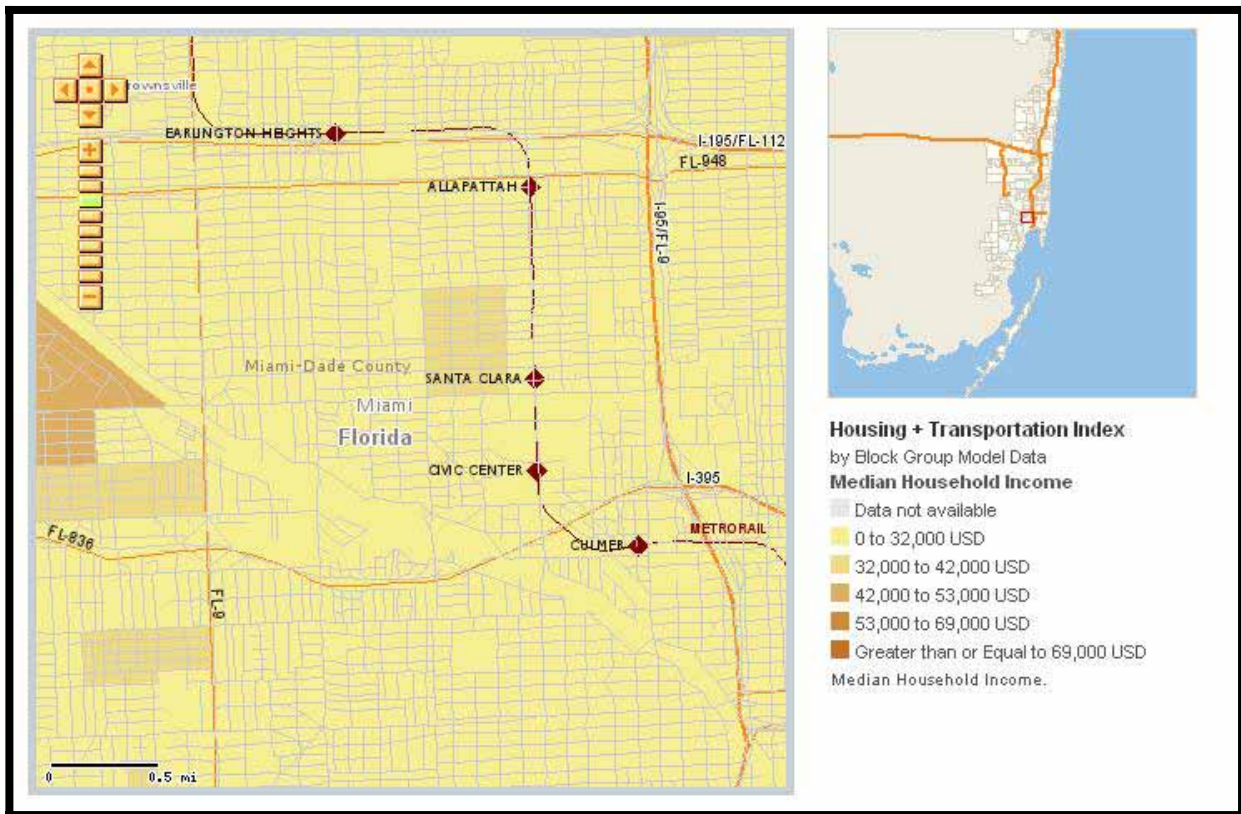
Applying the area's average household size of 2.73 residents per household the population is expected to increase by more than 22,000 residents in the coming years. Much of this residential growth is concentrated around the Miami River in relatively dense multi-family units. The district's population density varies between nine and 25 people/acre

The area just west of the Health District will likely experience the greatest changes in population over the coming years. The area between 17th Avenue on the west, 12th Avenue on the East, Allapattah Drive to the north, and the Miami River is slated to receive an additional 1,466 housing units. This particular area's average household size is 2.43, equating to over 3,500 new residents, in a neighborhood where the current population is 2,696, according to the US Census.

The next densest quadrants of the health district, located north of 28th Street, have population densities around 21 people per acre, and will experience few changes over the coming years. Few residential developments are planned for these sections.

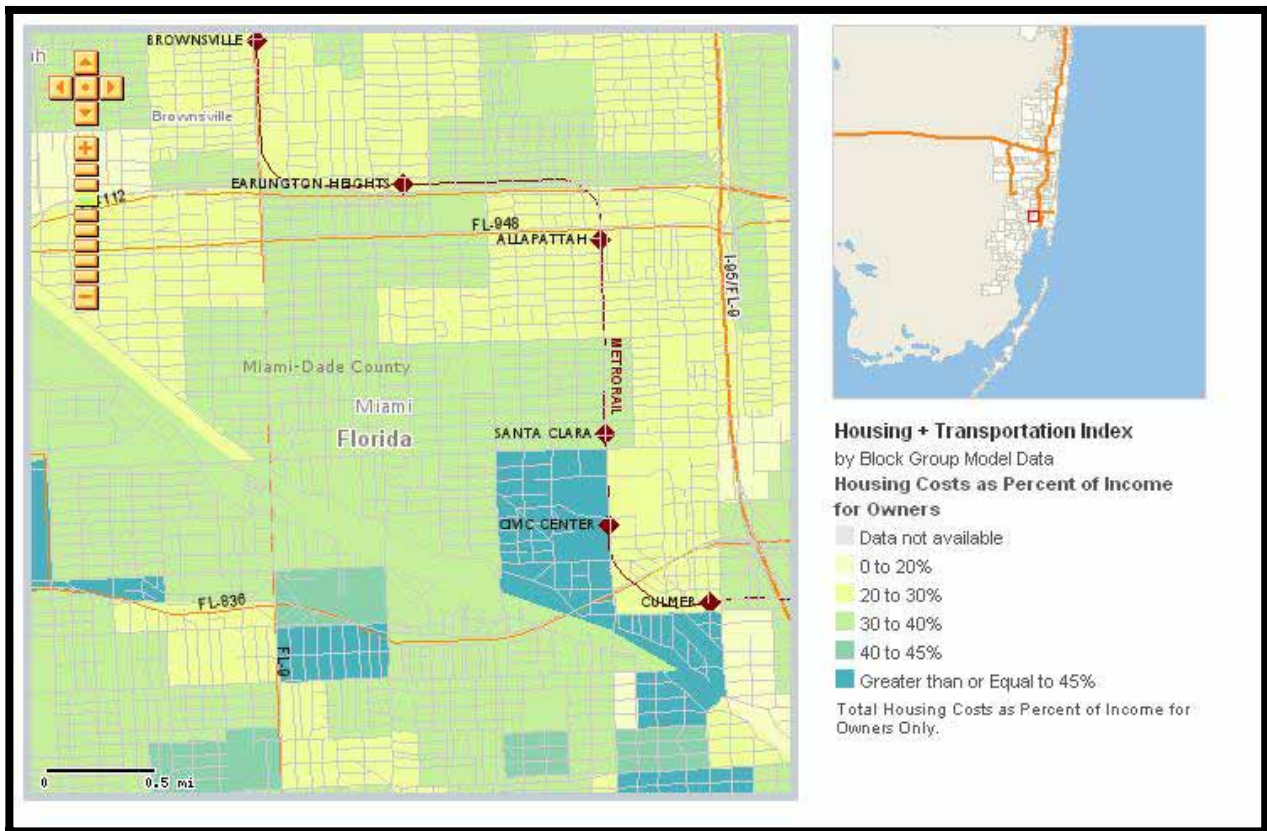
Household Income Considerations

According to the Housing and Transportation Index, the Health District has a median household income of \$38,632. The median household income remains constant throughout much of the district. Housing costs account for approximately 20 percent of household income for health district renters and over 35 percent of income for owners. Certain areas, particularly along the Miami River, experience housing costs accounting for as much as 50 percent of household income for owners.



Source: Center for Neighborhood Technology

Figure 25: Median Household Income



Source: Center for Neighborhood Technology

Figure 26: Household Costs as percent of Income for Owners

Employment Characteristics

The Health District has an employment density of nearly 39,000 employees per square mile (214 employees per acre). The medical-related facilities represent 21,800 employees, and generate 25,000 additional daily visitors. The educational facilities within the Health District represent 10,000 students (Lindsey Hopkins, MDCollege) and 1,650 employees.

The total study area includes 52,500 employees. The top fifteen employers represent 26,400 of these employees as shown on the following table. The judicial services employ 2,680 employees and generate more than 4,000 visitors per day. The social services component of the study area employs 240 persons. There are nearly 700 hospital beds in the area.

Table 10: Major Employers

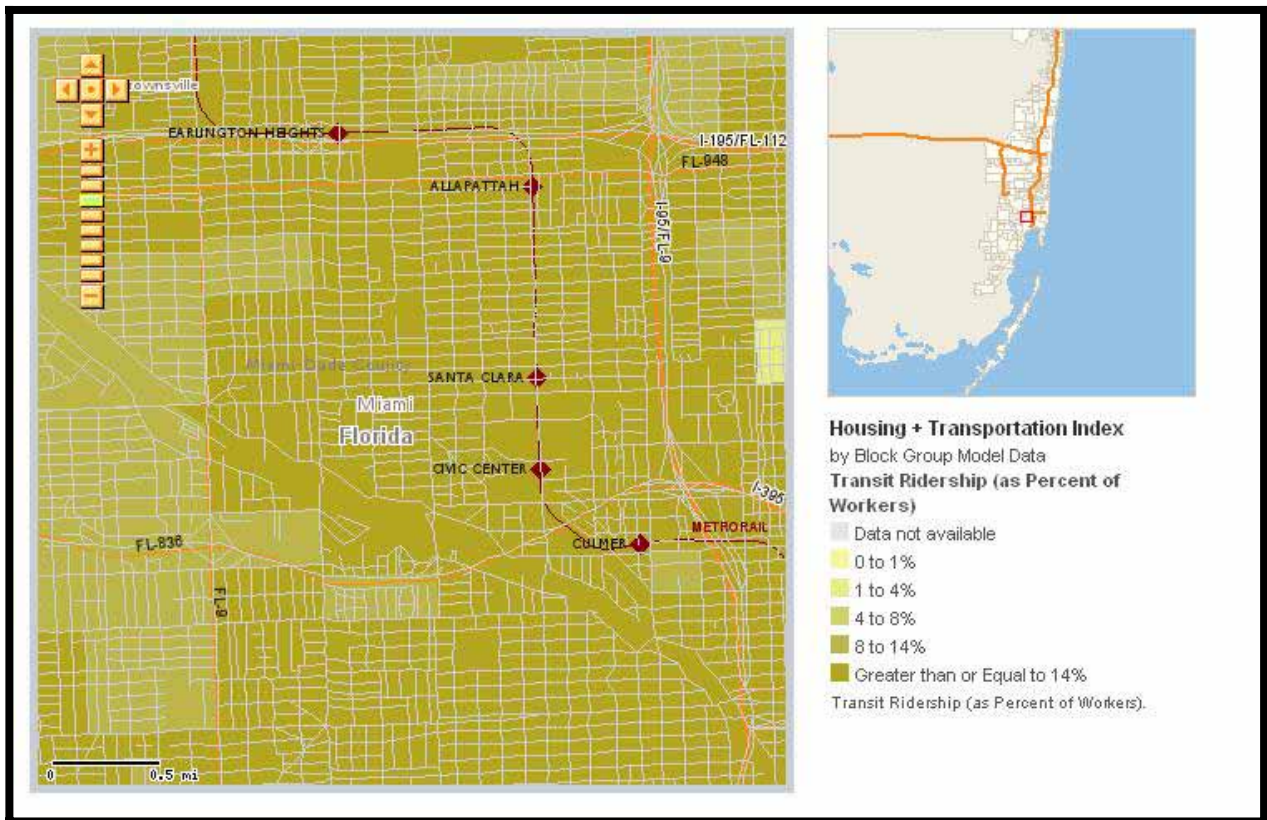
Generator	Employees
Jackson Memorial Hospital	11,116
Miami VA Medical Center	2,483
11th Judicial Circuit Court	2,000
UM Hospital	1,646
State Attorney	1,149
Department of Corrections	996
Lindsey Hopkins Technical Education	966
ER Graham Building	831
Miami-Dade College, Medical Campus	653
University of Miami School of Medicine	625
Department of Health	609
Public Defender	404
Booker T Washington Senior High	374
Children's Home Society	215
Women's Detention Center	140

Source: The Corradino Group, Inc.

Household Transportation Characteristics

More than 20 percent of Health District workers utilize public transit as their primary means of transportation to travel to and from work. 45 percent of workers around the Culmer Metrorail station use the Metrorail to get to work while only 10 percent use transit to get to areas south of the Miami River. Most other areas in the district hover around the 20 percent average.

Due to the high incidence of public transportation use, there is a large disparity in the number of people who commute to work in a private vehicle compared to the rest of the county. Only 56 percent of the district's residents, compared to 73 percent of the rest of the county, commute daily alone in a private vehicle. Carpooling, public-transit use, and bus-use rates were also twice the county averages at 21.44 percent, 12.37 percent, and 10.07 percent, respectively. The mixed use, compact nature of the district enables 1.03 percent of residents to bike to work and 5.79 percent to walk.

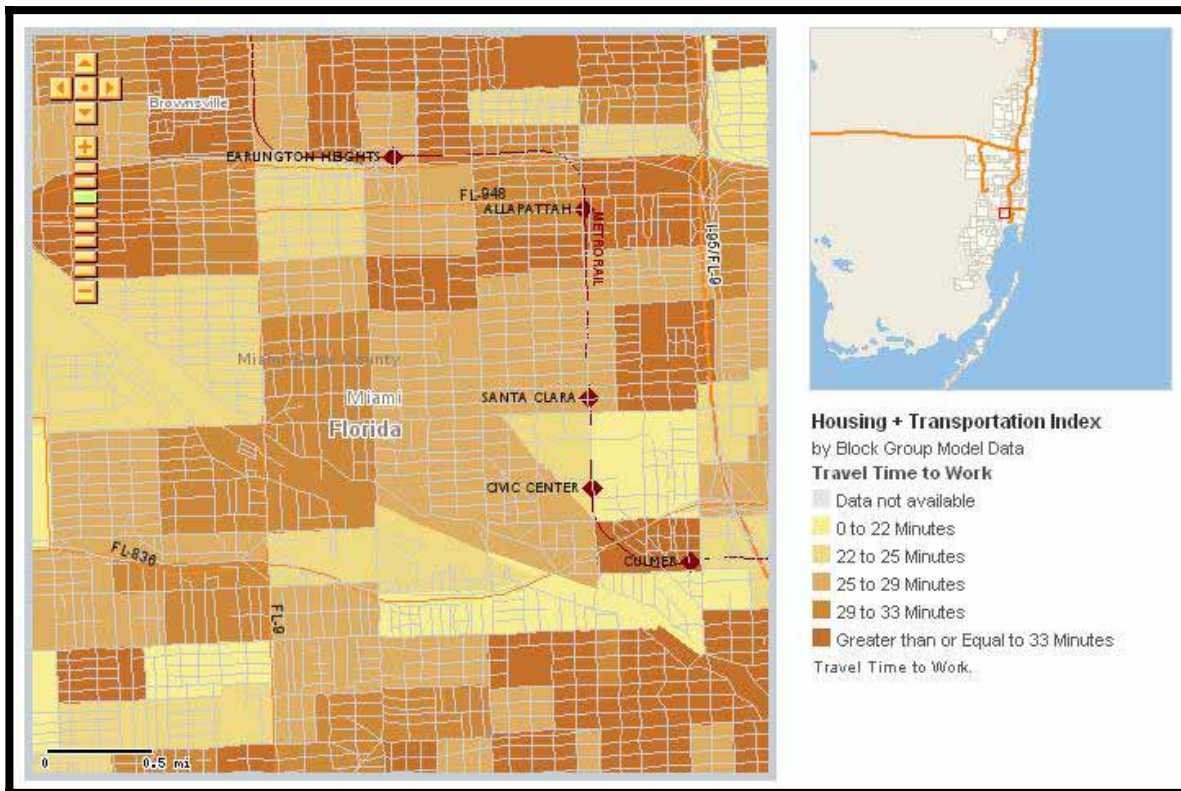


Source: Center for Neighborhood Technology

Figure 27: Transit Ridership as Percent of Workers

Household Travel Time

The average travel time to work serves as an indicator of the proximity of residents to their work place. This region has varying travel times to work and no inherent geographic pattern can be detected. The area average travel time to work of 29.33 minutes hovers around the national average or 30 minutes. The two parcels adjacent to the Allapattah and Culmer Metrorail stations experience the longest travels times of 49 minutes and 50 minutes, respectively. The average travel times of most neighborhoods within the study area likely indicate that most residents do not work within the district.

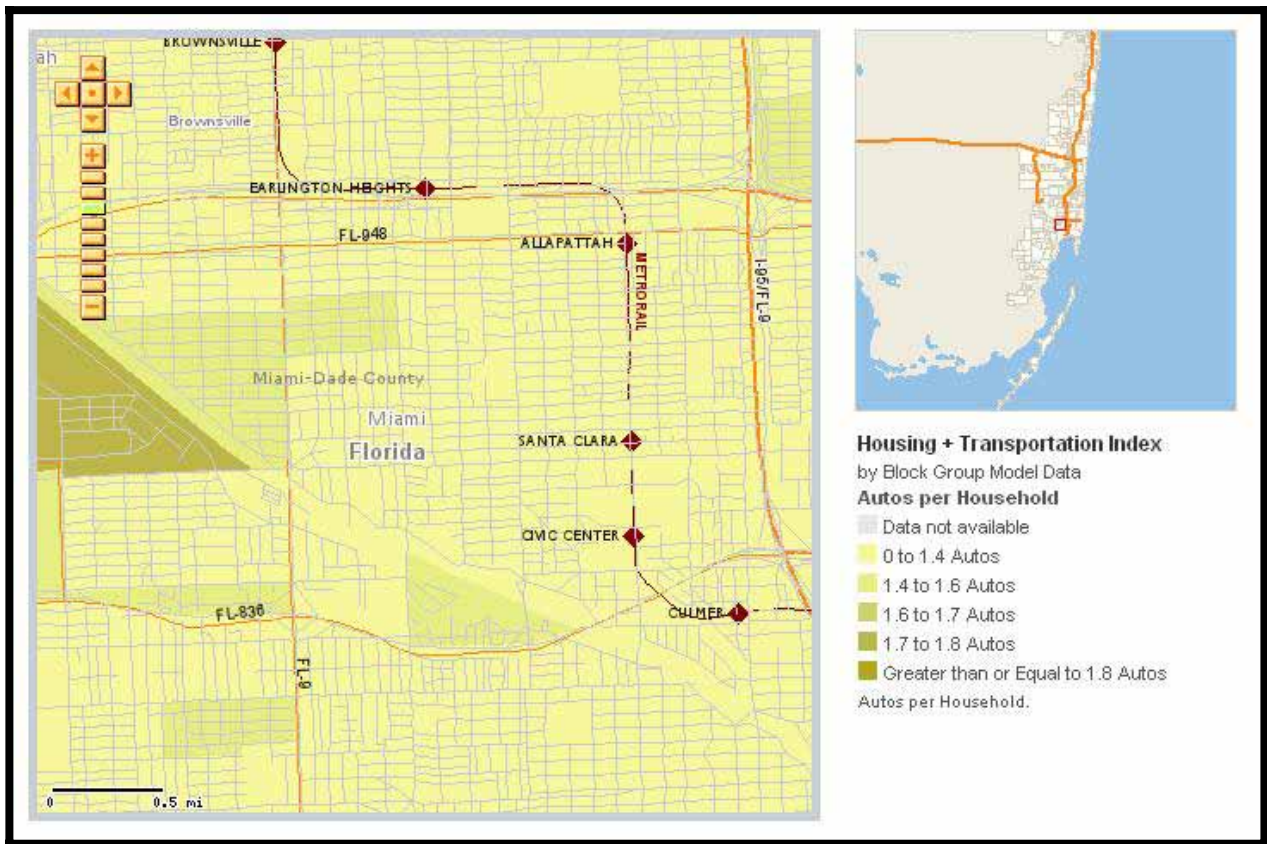


Source: Center for Neighborhood Technology

Figure 28: Travel Time to Work

Vehicle Use

The close proximity of the various transit stations, coupled with the low income characteristics of the neighborhood, provides for relatively low vehicle ownership compared to other neighborhoods within the county. The average household vehicle ownership for the study area is 1.26. The lowest ownership level occurs around the Culmer station, and is only 0.94 vehicles per household. The areas within the study area with the poorest transportation connectivity and lowest public transit use also have the highest vehicle ownership rates.

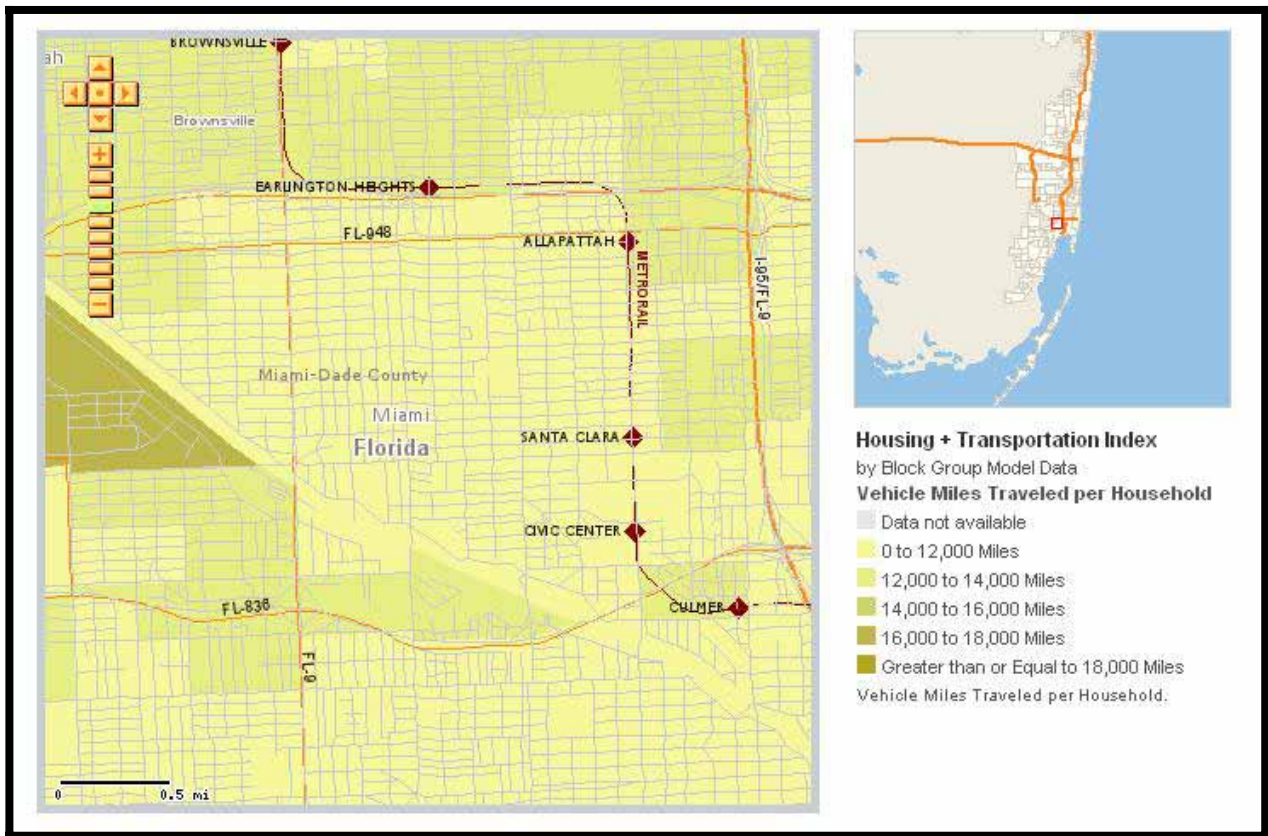


Source: Center for Neighborhood Technology

Figure 29: Vehicles per Household

Vehicle miles of travel (VMT) are the number of miles that a residential vehicle is driven over the span of a year. VMT are key sources of data for highway planning and management as well as a consistent measure of roadway use. VMT can be used to estimate area congestion as well as the effects of driver related policies.

The study area's VMT remain nearly constant throughout the neighborhood, averaging 11,097 VMT per household, above the national average of 10,500 miles per year.



Source: Center for Neighborhood Technology

Figure 30: Vehicle Miles Traveled per Household

6. Traffic Modeling

This chapter includes the traffic modeling section of the study, including the macro modeling performed with the Miami-Urbanized Area Transportation Study Model and the micro simulation model performed with VISSIM and SYNCHRO. Both analyses have been performed for the year 2008 and projected to the future analysis year of 2015.

The first portion of the chapter will summarize the macro modeling assumptions, data inputs and results for the Health District Comprehensive Traffic Study. The macro modeling was performed using the updated Miami Urban Area Transportation Study (MUATS) model, Cube Voyager version.

MUATS' model-base year is 2000 and the forecast year is 2030. The model's performance in the MPO area is satisfactory with an overall Percent Root Mean Square Error (RMSE) of 26 percent. Mini validation efforts were performed within the study area to improve model's performance. This includes verifying the centroid connectors for loading patterns, updating interchange configurations and turning movement characteristics in the model. An overall RMSE of 23.6 percent was observed within the study area. This model was used to forecast the target years: 2008 and 2015.

The second portion of the chapter will summarize the methodology used in the data collection, model calibration, future volume projects, Highway Capacity Analysis (using Synchro and VISSIM) and the VISSIM micro simulation modeling.

6.1 Existing Conditions Modeling (2008)

The model was further updated to replicate existing conditions through discussions with the MPO staff. It should be noted that the model was not revalidated to 2008 conditions. However, several checks were made to ensure the model's reasonable performance.

The following improvements were made in this process.

- The networks were updated to replicate SERPM6.5, 2005 model network and transit network. Several modifications in the transit network were considered to replicate existing conditions.
- Centroid connectors were verified and updated as needed within the study area.
- 2008 Z data files were obtained by interpolating the 2005 and 2035 data from SERPM6.5.

6.2 Future Conditions Modeling (2015)

The 2008 networks and Zdata files were used as a starting point to develop 2015 model inputs. The study networks were made consistent with the existing plus committed (E+C) scenario (2013) of the Regional Long Range Plan². In addition, the projects were verified with Priority I projects of the current Miami Dade Long Range Transportation Plan (LRTP), 2009 Transportation Improvement Program (TIP). The list of roadway improvements is presented in Table 11. The list of transit improvements are presented in Table 12.

The Z data files were prepared using 2008 files as the base. The study team developed a list of committed developments for the 2015 year, shown in Table 15. All these developments were added to the corresponding TAZ's. For each project, the estimated trip generation values were considered and used in special generator files of the model.

ITE trip estimation was performed in the following fashion:

The trips for all the committed developments were obtained from ITE Trip Generation Handbook 7th Edition. The trips for residential land use were generated based on the number of proposed residential units. The commercial and office trips were calculated based on the gross floor area. The closest ITE land uses were chosen to generate the trips. For commercial land uses, ITE land uses 820 and 932 were used in generating the daily trips. For office land uses, ITE land uses 710 and 720 were used. For residential land uses, ITE land uses 210, 220 and 230 were used in generating the daily trips.

ITE Calculations example:

- Project 6: The Twelve;** Commercial Intensity: 19,335 sq ft
ITE Trips $T = 42.94 (X) = 42.94 * (19.335) = 830$ Trips

Similarly the ITE Trips were determined for all the committed developments. The ITE trips that were obtained were used in ZDATA3 and the committed developments were coded as special generators in the model.

Table 11: 2015 Roadway improvements within the study area

MPO Project No.	Project Facility	From	To	Project Description	Proposed Funding Year
PW671203	NW 14 St	Civic Center	Biscayne Blvd	Widening to 3 lanes and resurface	2010-2011 / 2011-2012
DT4149641	SR 9A / I-95	S of SR 836/I-395	Broward County Line (I-595)	PD&E / EMO Study/Addl 2 Lanes Two HOT/Express Lanes	
6432290	NE 5th and 6th Street	Design and Construct Intersection Modifications on NE 5th and 6th St to accommodate new I-95 ramps to SR 836			
Priority I	SR 836 EB Toll Plaza	NW 27 Ave	NW 17 Ave	New Toll Plaza on EB Ramp to NW 17 Ave	
	NW 14 St	NW 10 Ave	I-95	Widen to 3 Lanes and Resurface	
SERPM6.5 MDL	The roadway network was modified to reflect all the roadways and roadway characteristics incorporated in SERPM6.5 Model				

² Miami-Dade, Broward and Palm Beach Counties are developing a comprehensive Regional Long Range Plan with FDOT's assistance. The model's existing and committed scenario includes 2013 cost feasible networks.

Table 12: 2015 Transit Network Changes for the Study Area

Model ID	Route	Alt. Name	Model Line Name	Service Change	Effective Date	Comments*
9	6		M5L24	The route will be extended to provide service between the Coconut Grove Metrorail Station and Bird Ave. on a one-way loop, seven days a week	May-07	Made Changes to the Route
10	6		M5L24	HW Improvement: to 60 min	Jun-08	Made Attribute Changes
13	7		M5L25 + M5L26	Realignment	Dec-07	Realignment of Route
16	11		M5L33 + M5L34	HW Improvement: PK- 8; OPK- 12	Jul-06	Made Attribute Changes
24	32		M5L49	HW Improvement: rush hour- 20 to 24 min	Jun-08	Made Attribute Changes
35	36		M5L52MD + M5L53MD	HW Improvement: Rush Hour- 20 min	May-07	Made Attribute Changes
77	77		M5L76	HW Improvement: PK-8	Dec-06	Made Attribute Changes
151	M		M5L5	HW Improvement: midday- 40 to 45. Segment between Mt. Sinai and Miami Heart discontinued	Oct-07	Made Attribute and Route Changes
161			M7L1MD	HW Improvement: PK-7.5; OPK-15		Made Attribute Changes
	95	95 Express	M5L109 - 113 (MI/MO/MD)	Midday service discontinued	Jun-08	Made Attribute Changes
	97	27th Ave MAX	M5L88MD	HW PK: 15 to 18 min	May-07	Made Attribute Changes
86	95	95 Express	M5L109 - 113 (MI/MO/MD)	HW Improvement: Midday 30 to 60 min	Dec-06	Made Attribute Changes
6	6		M5L24	Discontinuation of service on NW 11 ST/19 AVE	Jul-05	Made Changes to the Route
7	6		M5L24	HW Improvement: Midday 60 to 30 min	Dec-05	Made Attribute Changes
8	6		M5L24	Truncate at Coconut Grove Station seven days a week.	Dec-06	Made Changes to the Route
11	7		M5L25 + M5L26	Realign out of Miami International Mall; will stop on the street.	Dec-06	Realignment of Route
12	7		M5L25 + M5L26	The route will be restructured by removing the recent extension to NW 25 St. The route will be extended, in both directions, to loop through International Mall via (approx.) 15 St.	Oct-07	Realignment of Route
55	51	Flagler Max	M5L87	Flagler MAX added to existing local stop at Flagler St / 57 Avenue	Apr-05	Made Changes to the Route
48	41		M5L171MD	Realignment: refer to transit map. HW 40 min	Jun-08	Realignment of Route
116	238	East-West Connection	M5L152	Extend to Airport Cargo area (NW 22 St. and approx. 66 Av.) Remove diversions to Corporate Way and Carlos Albizu Univ. (NW 21 St.).	Oct-07	Made Changes to the Route

Results:

Model volumes were compared for the years 2000, 2008 and 2015. It was observed that the model shows consistent growth in highway and transit trips. Table 13 shows a comparison of model volumes for the links with available historic counts within the study area and Table 14 shows the comparison for freeways near the study area.

Table 13: A comparison of Model Results with Historical Count Data

Roadway Segment	Info from FDOT CD		Calculated Y2008 AADT using K= 8.69 on Freeways K = 7.17 on Non- Freeways	Obtained from MUATS model			
				MUATS Zonal Data used	SERPM Data Used		
	Y2000 AADT	Y2005 AADT		Year 2000 VT_1	Year 2005 VT_1	Year 2008 VT_1	Year 2015 VT_1
NW 36 St, 200' W NW 36 Ave	25,500	20,000	N/A	25,053	27,372	29,754	35,088
NW 36 St, 200' W NW 27 Ave	21,300	23,500	20,292	27,429	28,084	31,325	34,117
NW 36 St, 200' E NW 27 Ave	23,600	21,800	20,133	25,096	23,783	24,748	30,211
NW 27 Ave, 200' N SR 112	36,000	37,000	32,201	38,341	39,688	42,717	46,999
NW 36 St, 200' W NW 12 Ave	21,200	17,500	18,117	22,304	19,953	21,233	24,872
NW 12 Ave, 200' N NW 36 St	23,500	24,500	26,573	32,234	38,119	40,960	44,886
NW 36 St, 200' W NW 7 Ave	16,300	15,900	15,810	27,064	25,132	25,672	28,284
NW 20 St, W NW 7th Ave	N/A	17,746	18,827	28,100	26,784	27,427	30,302
NW 7 Ave, 200' N of NW 20 St	21,000	25,000	28,241	29,946	30,975	31,965	34,728
NW 12 Ave, 200' N NW 20 St	21,500	19,800	24,615	28,309	29,211	29,949	33,230
NW 20 St, E of NW 12 Ave	N/A	25,618	24,484	29,143	28,790	28,416	31,726

Table 14: Comparison of Model Results with Historical Count Data for Freeways

Freeway Segment	Location	Info from FDOT CD		Obtained from MUATS model			
				MUATS Zonal Data used	SERPM Data Used		
		Y2000 AADT	Forecasted Y2008 AADT	Year 2000 VT_1	Year 2005 VT_1	Year 2008 VT_1	Year 2015 VT_1
SR 112/ AIRPORT EXPWY	200' E NW 17 AV	109,000	90,500	125,372	122,575	124,001	136,946
SR 9A/I-95	200' S NW 79 ST/SR 934	277,000	226,400	210,662	215,280	225,436	239,571
SR 112/ AIRPORT EXPWY	200' W NW 17 AV	85,000	85,000	97,283	92,935	95,693	108,646
SR 9A/I-95	200' S SR 112/AIRPORT EXPWY	210,000	214,900	165,244	165,698	188,880	198,686
SR 836/ DOLPHIN EXPWY	400' W NW 12 AV	128,500	130,900	122,551	127,198	130,083	138,002
SR 836/ DOLPHIN EXPWY	800' E NW 27 AV	135,000	140,900	144,516	151,114	152,759	161,095
SR 836/ DOLPHIN EXPWY	200' W BRIDG NW 10 AV	95,500	123,500	130,883	134,347	139,512	148,933
SR9A/I-95 NORTH-SOUTH EXPWY	200' S OF NW 62 ST	N/A	211,200	233,342	241,325	255,912	272,575

Table 15 shows the Vehicles-Miles Traveled (VMT) and the Vehicles-Hours Traveled (VHT) summary. It can be interpreted that the model shows consistent growth in VMT and VHT.

Table 15: VMT & VHT Summary

Health District Study Area					
	Year_2000	Year_2008	% Increase	Year_2015	% Increase
VMT (veh-miles)	2,436,794	2,631,762	8%	2,922,636	11%
VHT (veh-hours)	63,254	69,256	9%	76,220	10%
MPO Model Area					
VMT (veh-miles)	44,285,044	53,041,560	20%	59,695,731	13%
VHT (veh-hours)	1,269,509	1,520,484	20%	1,713,337	13%

The model volumes within the study area were used to estimate the Level of Service (LOS) on which the roadways are operating. Figures 31 and 32 show the model volumes and LOS analysis, for the analysis years 2008 (Existing Conditions) and 2015 (Future Analysis Year).



Figure 31: 2008 Model Volumes

Roadways shown in red operate at Level of Service (LOS) F indicating a volume over capacity ratio greater than 1.0.



Figure 32: 2015 Model Volumes

Post Processing:

Since there will always be a difference between model volumes and ground counts, the model results should be post processed to accounting for the differences, prior to inputting into micro simulation. This is achieved by developing growth factors (GF) from the model and applying them to ground counts. The ratio of 2015 model volume to 2008 model volume will be used as 2015 GF, for obtaining 2015 actual peak hour volumes for Micro Simulation.

For the Health District study, the traffic counts collected were peak-hour, turning-movement counts at the intersections. Figure 33 shows the developed growth factors for the intersections to be analyzed in Health District.



CORRADINO

Deficiency Analysis:

Peak hour counts were collected at most of the roadway segments in the study area. Average Annual Daily Traffic (AADT) for the Year 2008 and Year 2015 were calculated by using a K value of 7.17 for local roadways and 8.69 on freeways. Calculations for the K factor are included in the following section. A deficiency analysis was performed and the level of service for Year 2008 and Year 2015 was determined. The Volume over Capacity ratio (V/C) was determined for the peak hour traffic with respect to the corresponding roadway capacity. LOS values were assigned for Year 2008 and Year 2015 based on V/C ratio as shown in Figures 34 and 35 respectively.

K Factor and Peak Hour Determination

The Planning Analysis Hour Factor or “K” factor is the ratio of the traffic volume in the study hour to the annual average daily traffic (AADT). The peak hour period is the time of the day, either AM or PM, during which demand for capacity is at the highest.

The FDOT has continuous count locations from which the “K” factors are developed. The state collects this data and issues for public use on a yearly basis. The latest version available for public use is the Florida Traffic Information (FTI) 2007 DVD. A total of 12 continuous count-station data was collected from the FTI 2007 DVD.

The Miami-Dade County Department of Public Works carries out 72-hour traffic counts on a yearly basis from which “K” factors are developed. The county collects this data and it is made available for public use upon request; the latest 72-hour counts were carried out in 2007. A total of 5-72 hr count station data was collected from the county.

Additionally, from the county’s 72-hour traffic counts, the peak AM and PM periods were derived. See Table 16 on the next page for a summary of the data collected.

Table 16: K-factors and Peak Hours Summarized

STATE COUNT STATIONS ON ROADS							
Site	DESCRIPTION		"K" FCTR				
1146	SR 933/SW/NW 12 AV,	200' N NW 20 ST	8.01				
1147	SR 933/SW/NW 12 AV,	200' N NW 36 ST	8.01				
5005	SR 7/US-441/NW 7 AV,	200' S OF NW 21 ST	8.01				
STATE COUNT STATION ON FREEWAYS, EXPRESSWAYS AND INTERSTATES.							
SITE	DESCRIPTION		"K" FCTR				
2023	SR 112/AIRPORT EXPWY,	200' E NW 17 AV	7.19				
2036	SR 9A/I-95,	200' S NW 79 ST/SR 934	8.36				
2050	SR 112/AIRPORT EXPWY,	200' W NW 17 AV	7.19				
2095	SR 9A/I-95,	200' S SR 112/AIRPORT EXPWY	8.36				
2208	SR 836/DOLPHIN EXPWY,	400' W NW 12 AV	10.02				
2232	SR 836/DOLPHIN EXPWY,	800' E NW 27 AV	10.02				
2240	SR 836/DOLPHIN EXPWY,	200' W BRIDG NW 10 AV	10.02				
2553	SR9A/I-95 NORTH-SOUTH EXWY,	200' S OF NW 62 ST	8.36				
COUNTY COUNT STATION ON ROADS							
Site	DESCRIPTION		"K" FCTR	PEAK	Day 1	Day 2	Day 3
336	NW 7 AVE,	S/O NW 20 ST	8.47	AM	8 - 9 AM	7 - 8 PM	8 - 9 AM
				NOON	3 - 4 PM	3 - 4 PM	3 - 4 PM
				PM	4 - 5 PM	4 - 5 PM	5 - 6 PM
352	NW 11 ST,	E/O NW 7 AVE	6.93	AM	7 - 8 AM	7 - 8 AM	7 - 8 AM
				NOON	3 - 4 PM	3 - 4 PM	3 - 4 PM
				PM	5 - 6 PM	6 - 7 PM	5 - 6 PM
378	NW 17 ST,	W/O I-95	5.43	AM	5 - 6 AM	5 - 6 AM	5 - 6 AM
				NOON	12 - 1 PM	2 - 3 PM	1 - 2 PM
				PM	4 - 5 PM	4 - 5 PM	4 - 5 PM
382	NW 20 ST,	W/O I-95	5.57	AM	6 - 7 AM	6 - 7 AM	6 - 7 AM
				NOON	2 - 3 PM	1 - 2 PM	1 - 2 PM
				PM	4 - 5 PM	4 - 5 PM	4 - 5 PM
384	NW 20 ST,	E/O NW 12 AVE	4.57	AM	9 - 10 AM	6 - 7 AM	9 - 10 AM
				NOON	10 - 11 AM	1 - 2 PM	1 - 2 PM
				PM	4 - 5 PM	4 - 5 PM	4 - 5 PM

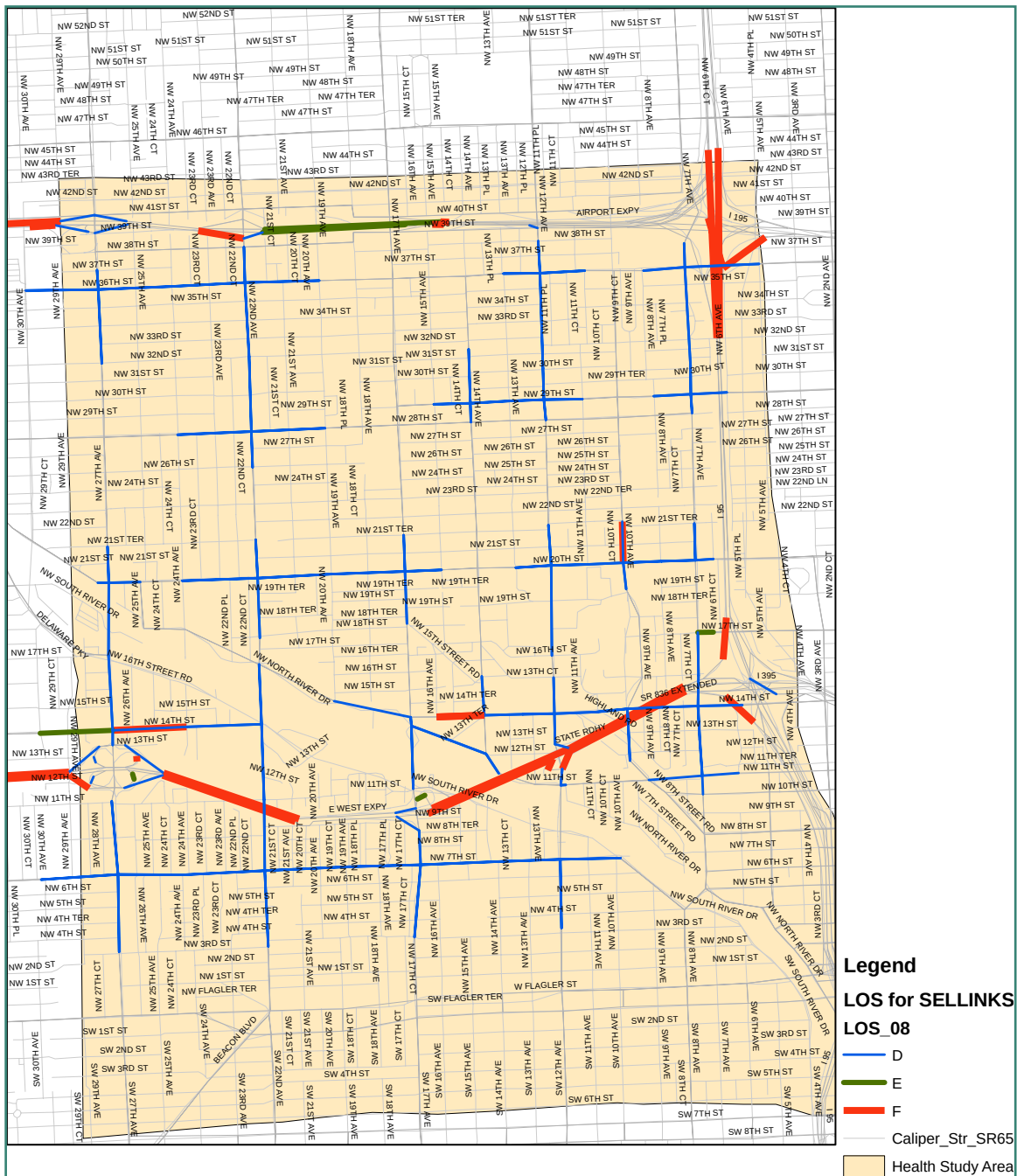


Figure 34: Deficiency Analysis for Year 2008 using Post-Processed Results

Roadways shown in red operate at LOS F indicating a volume over capacity ratio greater than 1.0.



Figure 35: Deficiency Analysis for Year 2015 using Post Processed Results

Table 17: Macro Model Needs Per Roadway Segment

S.No	Roadway Segment	From	To	Number of Lanes	Peak Hour Volume	Peak Hour Model Capacity @ LOS E	Peak Hour Model Capacity@ LOS E+20%	V/C @ LOS E	V/C @ LOSE+20%	Proposed Number of Lanes	New Model Capacity	Improved V/C @ LOS E +20%
1	NW 28th Street	NW 24th Ave	NW 22nd Ave	1 Lane	397	530	636	0.749	0.6242			
		NW 22nd Ave	NW 24th Ave	1 Lane	534	530	636	1.007	0.8392			
		NW 22nd Ave	NW 19th Ave	1 Lane	491	530	636	0.9255	0.7713			
		NW 19th Ave	NW 22nd Ave	1 Lane	534	530	636	1.0081	0.8401			
2	NW 10th Ave	NW 20th St	NW 21st Ter	1 Lane	716	530	795*	1.351	0.9007			
		NW 21st Ter	NW 20th St	1 Lane	552	530	795*	1.0409	0.6939			
3	NW 7th Ave	NW 20th St	NW 21st Ter	2 Lanes	1,269	1,536	1,843	0.8262	0.6885			
		NW 21st Ter	NW 20th St	2 Lanes	1,553	1,536	1,843	1.0111	0.8426			
4	NW 14th St	NW 30th Ave	NW 27th Ave	1 Lane	357	530	636	0.674	0.5613			
		NW 27th Ave	NW 30th Ave	1 Lane	541	530	636	1.022	0.8506			
		NW 27th Ave	NW 24th Ave	1 Lane	391	530	636	0.7369	0.6148			
		NW 24th Ave	NW 27th Ave	1 Lane	682	530	636	1.2859	1.0723	1	1,272	0.5362
		NW 16th Ave	NW 14th Ave	1 Lane	727	530	636	1.372	1.1433	1	1,272	0.5717
		NW 14th Ave	NW 16th Ave	1 Lane	1,003	530	636	1.8933	1.5778	1	1,272	0.7889
		NW 10th Ave	NW 8th Ct	1 Lane	544	740	888	0.7357	0.6131			
6	NW 17th St	NW 7th Ave	NW 6th Ct	1 Lane	224	530	636	0.4221	0.3518			
		NW 6th Ct	NW 7th Ave	1 Lane	904	530	636	1.7052	1.4210	1	1,272	0.7105
7	EB Airport Expwy Off Ramp onto NW 22nd Ave	Airport Expwy	NW 22nd Ave	1 Lane	2,787	1,445	1,734	1.9286	1.6072	1	3,468	0.8036
8	EB Airport Expwy	NW 22nd Ave	NW 17th Ave	3 Lanes	5,661	5,151	6,181	1.0991	0.9159			
9	WB Airport Expwy	NW 15th Ave	NW 22nd Ave	3 Lanes	5,459	5,151	6,181	1.0598	0.8832			

10	I-95 NB	NW 32nd St	NW 44th St	3 Lanes	12,778	5,349	6,419	2.3889	1.9908	1	12,838	0.9954
11	I-95 SB	NW 44th St	NW 32nd St	3 Lanes	12,767	5,349	6,419	2.3868	1.9890	1	12,838	0.9945
12	NB I-95 Off Ramp	I-95	EB Airport Expwy	1 Lane	3,127	1,445	1,734	2.164	1.8033	1	3,468	0.9017
		I-95	WB Airport Expwy	1 Lane	1,809	1,445	1,734	1.2519	1.0433	1	3,468	0.5216
13	SB I-95 Off Ramp	I-95	Dolphin Expwy	2 Lanes	3,112	2,890	3,468	1.0769	0.8974			
14	SB I-95 On Ramp	Dolphin Expwy	I-95	1 Lane	2,307	1,445	1,734	1.5963	1.3303	1	3,468	0.6651
15	EB Dolphin Expwy	NW 31st Ave	NW 27th Ave	3 Lanes	10,930	5,151	6,181	2.122	1.7683	1	12,362	0.8842
		NW 27th Ave	NW 21st Ave	3 Lanes	8,776	5,151	6,181	1.7038	1.4198	1	12,362	0.7099
		NW 17th Ave	NW 12th Ave	3 Lanes	8,125	5,151	6,181	1.5774	1.3145	1	12,362	0.6573
		NW 12th Ave	NW 7th Ave	3 Lanes	7,670	5,151	6,181	1.4891	1.2409	1	12,362	0.6205
16	WB Airport Expwy	NW 7th Ave	NW 12th Ave	3 Lanes	7,501	5,151	6,181	1.4563	1.2136	1	12,362	0.6068
		NW 12th Ave	NW 17th Ave	3 Lanes	7,807	5,151	6,181	1.5157	1.2631	1	12,362	0.6315
		NW 21st Ave	NW 27th Ave	3 Lanes	8,335	5,151	6,181	1.6182	1.3485	1	12,362	0.6743
		NW 27th Ave	NW 31st Ave	3 Lanes	10,273	5,151	6,181	1.9944	1.6620	1	12,362	0.8310
17	EB Dolphin Expwy Off Ramp	Dolphin Expwy	NW 27th Ave SB	1 Lane	2,113	1,445	1,734	1.4624	1.2187	1	3,468	0.6093
		Dolphin Expwy	NW 27th Ave NB	1 Lane	1,493	1,445	1,734	1.0334	0.8612			
18	WB Dolphin Expwy Off Ramp	Dolphin Expwy	NW 12th Ave	1 Lane	1,486	1,445	1,734	1.0281	0.8568			
19	EB Dolphin Expwy On Ramp	NW 27th Ave NB	WB Dolphin Expy	1 Lane	2,113	1,445	1,734	1.4624	1.2187	1	3,468	0.6093
		NW 17th Ave NB	WB Dolphin Expy	1 Lane	822	758	910	1.0838	0.9032			
		NW 12th Ave NB	EB Dolphin Expy	1 Lane	1,638	1,445	1,734	1.1334	0.9445			
		NW 12th Ave SB	EB Dolphin Expy	1 Lane	1,563	710	852	2.2021	1.8351	1	1,704	0.9175

Appendix A: Trip Generation for Committed Developments for 2015 by Traffic Analysis Zone (TAZ)

Prj No	TAZ No	Develop ment	Address	Use	Units	Square Feet (Comme rcial)	Squar e Feet (Total)	Status	Res Trips	Comm Trips	Office Trips	Total Trips	Cumulative Trips
1	147 1	Terrazas River Park Village	1861 NW South River Drive	Residential	324	4,182	343,309	B UNDER CONSTRUCTI ON	1,446	180		1,626	21,209
2		River Oaks (Hidden Harbor)	1951 NW South River Drive	Residential	199		229,963	B UNDER CONSTRUCTI ON	974			974	
4		Hurricane Cove	1818 & 1884 NW N. River Drive	Residential with 130-slip Marina, remodel existing bldg to restaurant & retail	1,073	5,000	1,177,591	C APPROVED PROJECTS	4,269	133		4,402	
27		1975-2051 NW 11th Street	1975-2051 NW 11th Street	Mixed Use: Residential & Retail (3 buildings)	1,085	178,383	1,252,430	E PRELIMINAR Y PHASE	4,314	9893		14,207	
3	147 2	1690 NW North River Drive	1690 NW North River Drive	Mixed Use: Residential & Office	172	900	190,129	C APPROVED PROJECTS	872		35	907	4,340
21		Rio Miami (fka Royal Atlantic)	1001 NW 7 Street	Residential & Retail	744	9,400	767,334	C APPROVED PROJECTS	3,029	404		3,433	
5	147 3	Spring Garden	1471 NW 17th Street	Mixed Use: Residential & Office	87	12,154	94,556		552		263	815	4,827
7		Amber Garden	1471 NW 17th Street	Residential	172	900	190,129	B UNDER CONSTRUCTI ON	872	39		911	
8		Wagner Square	1700 NW 14 Avenue	Mixed Use: residential & retail (Affordable Housing)	99		113,089	D APPLICATION PHASE	597			597	
9		River Grand	1415 NW 15th Avenue	Residential	132		113,089	E PRELIMINAR Y PHASE	721			721	
12		1627 NW 18 Street	1627 NW 18 Street	Residential	30		1,167,373	A COMPLETED PROJECTS	337			337	
16		Jenny Tower	1524 NW 14th Avenue	Residential	115		58,955	B UNDER CONSTRUCTI ON	657			657	
29		The Urban Club	1444 NW 14 Avenue	Residential	150		57,060	B UNDER CONSTRUCTI ON	789			789	
6	147 4	The Twelve	950 NW 11th Street	Residential (Refurbish existing 12-unit building)	12	19,335	259,447	E PRELIMINAR Y PHASE	269	830		1,099	7,380
13		Miami River Place	710-720 NW North River Drive	Residential	19	28,687	28,840	E PRELIMINAR Y PHASE	295	3016		3,311	
24		Miami Riverhouse (Parcel B)	1035 NW 11 Street	Mixed Use: Residential & Office	37	350	53,764	F WITHDRAWN PROJECTS	363	17		380	

26		River Garden Condos (aka Miami River Condos)	1170 NW 11 Street	Mixed Use: Residential & Retail replacing existing Travel Inn on site	199	7,000	259,447	E PRELIMINARY PHASE	974	301		1,275	
34		New Miami City View Apartments	1455-73 NW 14 Street	Residential	130		88,736	C APPROVED PROJECTS	714			714	
35		Tequesta Knolls	1629 NW 14th Street	Residential	100		105,000	A COMPLETED PROJECTS	601			601	
10		The Residences at Jackson	1311 NW 10th Avenue	Residential	173	19,335	159,076	E PRELIMINARY PHASE	876	830		1,706	
18		The Atrium at Spring Garden	808-880 NW 7th Avenue	Mixed Use: Residential & Office	87	12,154	94,556	E PRELIMINARY PHASE	552	134		686	
19	1475	Emerge Residences	1212 NW 7th Court	Residential & Retail	186	12,154	145,751	E PRELIMINARY PHASE	925	522		1,447	7,196
22		Residences at Highland Park	1146 NW 8th Avenue	Residential	577	7,700	606,616	E PRELIMINARY PHASE	2,399	331		2,730	
25		Seybold Pointe	816 NW 11th Street	Mixed Use: Residential & Retail	96	945	53,764	A COMPLETED PROJECTS	586	41		627	
11	1476	Miami Rivertown	1400-1500 NW North River Drive	Mixed Use: Residential, Retail & Office (3 Buildings)	985	98,129	1,167,373	C APPROVED PROJECTS	3,937	4271	770	8,978	8,978
14	1477	UM Medical Staff Parking Garage	1453 NW 9th Avenue	Parking Garage and Chiller Plant built on existing surface parking lot			58,955	E PRELIMINARY PHASE	0			0	0
15	1478	Jackson Memorial Hospital North Parking Garage	1120 NW 20th Street	Hospital Parking Garage			58,955	A COMPLETED PROJECTS	0			0	0
17	1479	Santa Clara Apartments	2000 NW 12 Avenue (Metrorail Station - Santa Clara)	Residential: Joint Development with Metrorail Station for Affordable Housing along with 288 parking spaces (88 dedicated to Metrorail). Phase I: 9-story, 208-unit affordable rental apartment building, surface parking. Phase II: 17-story, 204-unit affordable	412		58,955	A COMPLETED PROJECTS	1,777			1,777	1,777
20	1480	Urban River	601, 649, 685 NW 7 Street; 650 NW 8 Street; 734 NW 6 Avenue	Residential (2 buildings)	577	7,700	606,616	C APPROVED PROJECTS	2,399	331		2,730	2,730
23	1481	UM Interdisciplinary Laboratory Building	1501 NW 10th Avenue	Medical offices and research		178,383	178,383	C APPROVED PROJECTS			7080	7,080	9,804

Traffic Modeling

CORRADINO

32		University of Miami Clinical Research Building & Pkg	1150 NW 14 ST	Clinical Research Office Building w/60,000 sf Wellness Center		336,000	336,000	B UNDER CONSTRUCTION			2724	2,724	
28	14 82	Wagner's Place	1511 NW 13 Court	Residential	60		57,060	E PRELIMINARY PHASE	450			450	4,545
33		Florida Department of Health	1350 NW 14th Street	Medical Lab & Clinic		105,389	153,795	E PRELIMINARY PHASE			4095	4,095	
31	14 83	Lima	2955 Biscayne Boulevard	Mixed Use: Residential & Retail (Existing 40,500 sq. ft. Technomarine Building to remain) Substantial Modification to approved MUSP (R-06-0132 on March 14, 2006)	206	32,731	207,818	C APPROVED PROJECTS	1,000	3286		4,286	4,286
36	14 84	YMCA Allapattah	2370 NW 17th Avenue	Mixed-use: Residential and retail, and YMCA Recreational Center	121	21,676	135,635	E PRELIMINARY PHASE	680	931		1,611	1,611
30		Civica Towers										0	

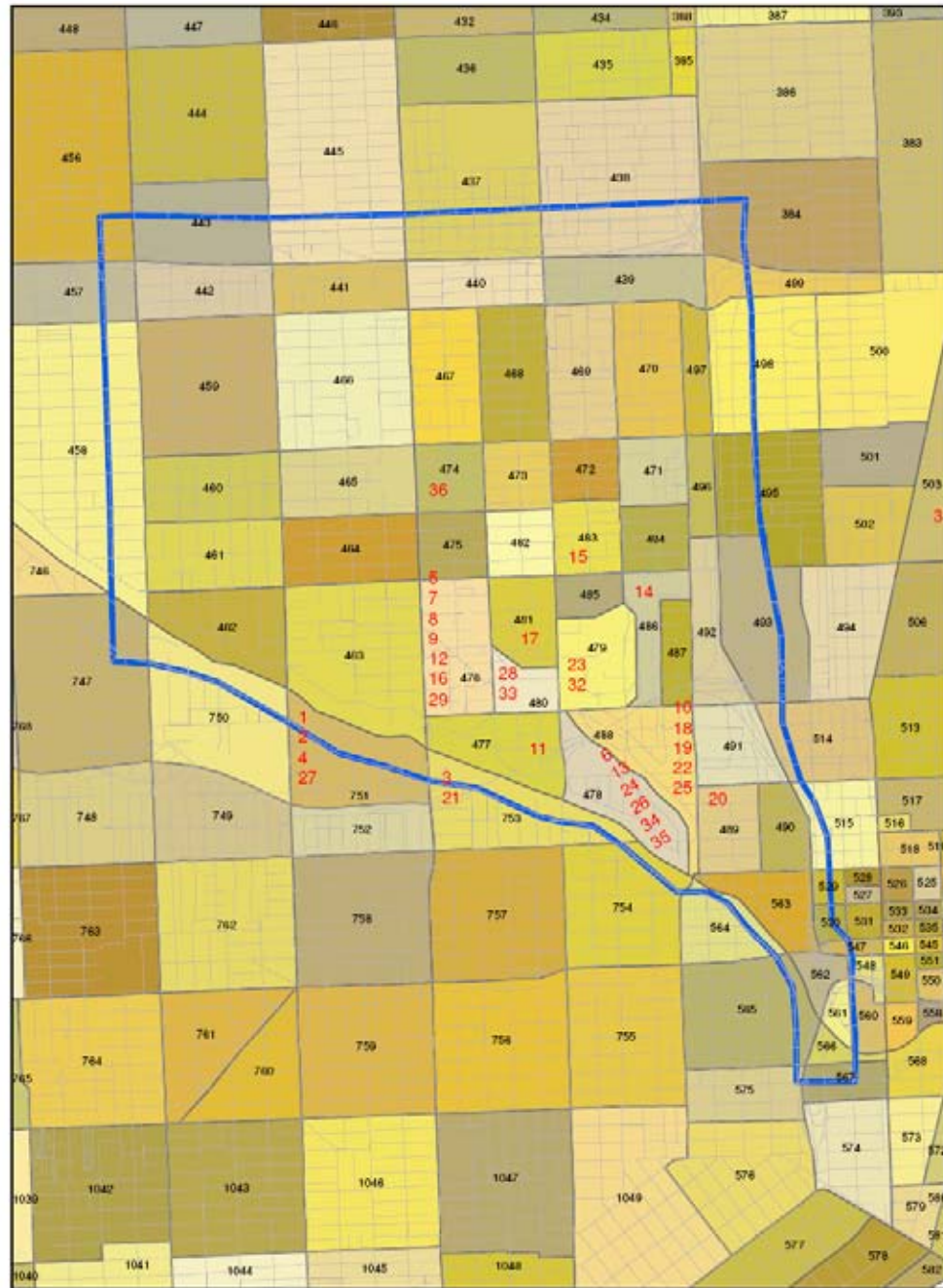


Figure 36: Committed Development Locations and Correspondence to the TAZ's

Note: Labels in red are committed development project numbers. Labels in black are TAZ numbers.

6.3 Traffic Micro Simulation Methodology

This section describes the methodology used in the data collection, model calibration, future volume projects, Highway Capacity Analysis (using Synchro and VISSIM) and the VISSIM micro simulation modeling.

6.3.1 Data Collection

The data collected for conducting the capacity analyses and creating the VISSIM models included aerial images, traffic signal timing, roadway design plans, traffic volumes, traffic cameras, and online traffic sources.

In June 2008, traffic counts were conducted at 30 intersections within the Miami Health District Study Area bounded by SR112, SR836, I-95 and NW 27th Avenue. In addition, 2007 traffic counts for the freeway system were taken from the FDOT Traffic Data hour count reports and traffic volumes from the SERPM6.5 model. These counts can be found in Appendix A (to be completed). The counts provided peak hour traffic volumes for the AM peak hour (7:30 to 8:30AM) and the PM peak hour (4 to 5PM). In addition, the counts distinguished between passenger cars and trucks (heavy vehicles), so the analysis using the *Synchro* and *VISSIM* included the specific movement of trucks within the overall traffic streams.

The current NW 12th Avenue ongoing construction project between NW 7th Street and NW 14th Street results in traffic patterns in the Miami Health District that would differ then expected traffic patterns under normal operations. The design traffic volumes from the NW 12th Avenue/SR.933 PD&E Study were obtained and then used to adjust the traffic volumes as seen in Appendix B (to be completed).

Base Year (2008) Traffic Volumes Projections

Using the existing traffic volumes, FDOT Traffic Data, and traffic volumes from the SERPM6.5 model, the existing traffic volumes were redistributed through the intersection and freeway system. The traffic volumes were balanced on the freeway system and the intersection volumes were adjusted with the traffic volumes from the NW 12th Avenue/SR 933 PD&E Study.

Future Year (2015) Traffic Volumes Projections

Growth Factors were obtained from the Future Macro Conditions Modeling for 2015 and averaged for the entire local intersection and freeway system.

6.3.2 Highway Capacity Analysis

Freeway Operations

The Level of Service (LOS) was determined and assigned to each freeway segment based upon the density criteria established in the *Highway Capacity Manual* (HCM). These criteria are summarized in Table 18. Levels of Service are determined based on the number of passenger per mile per lane (pc/mi/ln). Level of Service E, or better, is typically considered acceptable in the study area.

Table 18: Level of Service Criteria for Freeway Segments

Level of Service (LOS)	Density (pc/mi/ln)	Description
A	11	Free-flow operations
B	> 11 and 18	Reasonably free-flow operations; freedom to maneuver within the traffic stream is only slightly restricted.
C	> 18 and 26	Freedom to maneuver within the traffic stream is noticeably restricted; minor incidents may still be absorbed.
D	> 26 and 35	Speeds begin to decline. Freedom to maneuver within the traffic stream is limited; even minor incidents will cause queuing.
E	> 35 and 45	Operating at capacity. Vehicles are closely spaced with little room to maneuver within the traffic stream; any disruption will cause queuing.
F	> 45	Breakdown in traffic flow. Queues form on the freeway.

Like freeway segments, Levels of Service for the typical merge and diverge influence areas (one lane on/off ramps) and weaving segments were determined based upon density criteria established in the *Highway Capacity Manual*. The LOS criteria for ramp merge and diverge areas are summarized in Table 19, with the criteria for weaving segments summarized in Table 20. The Levels of Service were determined based on the number of passenger cars per mile per lane (pc/mi/ln) so that a common base is presented for comparison purposes.

Table 19: Level of Service Criteria for Ramp Merge and Diverge Areas

Level of Service (LOS)	Density (pc/mi/ln)	Description
A	10	Unrestricted operations.
B	> 10 and 20	Merging and diverging maneuvers become noticeable to through drivers; merging drivers must adjust speeds to transition smoothly.
C	> 20 and 28	Speeds begin to decline within the influence area. Both ramp and freeway vehicles begin to adjust their speeds to transition smoothly.
D	> 28 and 35	Freeway operations remain stable. All vehicles slow to accommodate merging and diverging; some ramps queues may form.
E	> 35	Approaching capacity. Speeds reduce significantly; small changes in demand or disruptions can cause both ramp and freeway queues to form.
F	Demand exceeds capacity	Breakdown in traffic flow. Queues form on both ramp and freeway.

Table 20: Level of Service Criteria for Weaving Segments

Level of Service (LOS)	Density (pc/mi/ln)	Description
A	10	Free-flow operations.
B	> 10 and 20	Reasonably free-flow operations; freedom to maneuver within the traffic stream is only slightly restricted.
C	> 20 and 28	Freedom to maneuver within the traffic stream is noticeably restricted; minor incidents may still be absorbed.
D	> 28 and 35	Speeds begin to decline. Freedom to maneuver within the traffic stream is limited; even minor incidents will cause queuing.
E	> 35 and 43	Operating at capacity. Vehicles are closely spaced with little room to maneuver within the traffic stream; any disruption will cause queuing.
F	> 45	Breakdown in traffic flow. Queues form on both ramps and freeway.

Local Intersections

For each peak hour analyzed, the delay experienced by each traffic movement and approach at every intersection in the *Synchro* and *VISSIM* model has been determined. For signalized intersections, a Level of Service was determined for each approach, and for the intersection as a whole. These are summarized in Table 21. Level of Service D is typically considered to be the minimum acceptable design Level of Service in the urban areas for signalized intersections.

Table 21: Level of Service Criteria for Signalized Intersections

Level of Service (LOS)	Average Total Delay (sec/veh)	Description
A	10	Very low delay; most vehicles do not stop at all.
B	> 10 and 20	More vehicles stop than with LOS A, increasing the average delay.
C	> 20 and 35	The number of vehicles stopping is significant; however, many still pass through the intersection without stopping
D	> 35 and 55	Congestion is readily apparent with many vehicles stopping and individual cycle failures are noticeable (ie. not all vehicles waiting in the intersection queue are able to get through the intersection on the first green indication.)
E	> 55 and 80	Poor progression; long cycle lengths and frequent cycle failures.
F	> 80	Unacceptable operations, which include many cycle failures caused by arrival flow rates exceeding intersection capacity.

6.3.3 VISSIM Micro Simulation

VISSIM produces output in two ways: (1) statistical data and reports that define measures of effectiveness (MOEs); and, (2) graphical animation. The first includes text-based data that contain MOEs such as travel time, delay stops, queue lengths, speed, and flow density. VISSIM can produce these very detailed results for any location within the modeled network over any time interval.

VISSIM's graphical animation allows the user to view traffic control operations, traffic interactions, and congestion levels on the simulated roadways to verify that the model is replicating conditions realistically. VISSIM produces both 2-D and 3-D animations from "multiple camera" perspectives. These animations can be viewed in the VISSIM software or exported to the AVI format which can be played on any Windows-based computer.

Error Checking

Before calibration began, the accuracy of the input coding was verified through error checking. Manually checking the coding to ensure that all elements of an individual aspect of the model (roadway geometry, interchange ramp grades, lane assignment, traffic control, speed zones, traffic distributions, input volumes, traffic "sources and sinks," etc.) were coded correctly.

Roadway geometry is the easiest element to check visually on the computer screen, as are certain other elements that control traffic behavior. VISSIM is checked through successive modes which highlight each type of element so it can be seen if any are missing or miscoded. For example "Speed Zone" mode is used to ensure right and left-turn movements have the proper speeds coded; and "Stop Sign" and "Traffic Signal" modes are used to ensure all traffic control devices have been coded in the correct location.

Typically, the most common errors occur during the coding of the complex traffic routing decisions in the VISSIM model. This is especially likely for this project where there are numerous location where the intersections are so tightly spaced together that routing decision for the multiply intersection are combined to create realistic traffic behavior. In addition, more effort is involved in checking traffic routing decisions because the beginning and end points of each route (which are in multiple directions) need to be selected individually to display the route and the coded volume. Therefore, checking of the traffic-volume routing goes through a more involved checking process (and is verified again later in the calibration process).

The next phase of error checking was running the simulation and observing the animation. At this stage, the animation was reviewed to ensure the traffic was behaving realistically and that all forms of traffic control were operating as defined. The traffic flow was observed on every link to determine any unrealistic behavior or coding flaw. The operation of all traffic signals was inputted from the traffic control signal information was provided for the AM and PM peak hour. Unrealistic traffic or traffic control behavior led to more detailed checking of the coding of those elements and corrections, where needed.

Calibration Methodology

Once the error checking/correcting was completed, the model was calibrated to ensure that it properly replicated traffic conditions specific to the location being simulated. Calibration involves the following steps:

Capacity

The capacity of the roadway was obtained using the base VISSIM software parameters. These parameters have been validated as being representative of average traffic operations in the United States.

Volume Comparison

Once coding of the traffic routing decisions has been checked, they must be verified to ensure the model properly simulates them. Data collection points coded within the simulation model allow VISSIM to report the traffic volumes that passed through every movement at every intersection, through every ramp on the freeway system, and through any point in the model defined by the modeler. This output was imported to a spreadsheet and compared to the volumes that were coded in the model to determine how close the throughput of each data collection point matched the inputs. Due to the nature of microscopic simulations, the traffic volumes are not the same for each simulation run, and will not match the inputs exactly. Therefore, a statistical comparison was made to determine if any throughputs in the model were deviating significantly from the traffic volume inputs by use of the GEH Statistic.

The GEH Statistic is a self-scaling formula that provides an acceptance threshold of traffic volumes. Appendix B provides a detailed description of the GEH Statistic. For an acceptable calibration, a GEH Statistic of less than five should be realized on at least 85 percent of the links in the model.

Under the Base Year (2008), each peak-hour model was run five times and the resulting traffic volume throughputs were averaged for comparison with the traffic volume inputs that were coded in the model. In each case, a few of the GEH Statistics were greater than five. Each of these errors was corrected, the model was rerun five times, and the results averaged again for comparison. By repeating this process interactively for each peak-hour model, all instances of a GEH Statistic greater than five were eliminated. Therefore, each peak-hour model was successfully calibrated for traffic volumes. The detailed final comparison of traffic volume and throughputs is also included in Appendix B (to be completed).

6.3.4 Traffic Analysis Results

Existing Conditions (Base Year 2008)

The existing conditions were modified to incorporate the geometry and traffic flows that will occur at the completion of the 12th Avenue Bascule Bridge Replacement Project. The analysis of the Base Year (2008) conditions provide a baseline against which to compare the results of future alternatives. The tables found in this section summarize the results of the capacity analysis conducted for the Base Year (2008) conditions.

Freeway Operations/Mainline Segments

Table 22 summarizes the density output from the VISSIM model by only the selected segments of the freeway system that are operating poorly and the corresponding Level of Service under the Base Year (2008) conditions for AM and PM peak hour.

**Table 22: Density Output and LOS Year 2008
SR 112 Eastbound Freeway Segments**

SR 112 EB Freeway Segments		2008 AM		2008 PM	
		Density	LOS	Density	LOS
Freeway	Between NW 32nd/NW 27th Ave	19.4	C	19.8	C
Diverge	West NW 27th Ave Off Ramp	20.6	C	21.3	C
Freeway	Thru NW 27th Ave Interchange	17.0	B	16.9	B
Merge	NW 27th Ave On Ramp Merge	17.7	B	18.2	B
Merge	NW 27th Ave 2nd On Ramp Merge	19.9	B	19.1	C
Freeway	Between NW 27th/NW 22nd Ave	18.6	C	21.0	C
Diverge	NW 22nd Ave Off Ramp	19.9	B	21.0	C
Freeway	Thru NW 22nd Ave Interchange	13.8	B	11.7	B
Merge	NW 22nd Ave On Ramp Merge	13.3	B	11.5	B
Freeway	Between NW 22nd/NW 17th Ave	19.3	C	16.5	B
Weave	Between NW 15th/NW 12th Ave	32.4	D	17.5	B
Freeway	Between NW 12th/I-95 Interchange	21.7	C	19.3	C
Freeway	Thru I-95 Interchange (2-Lane)	14.3	B	10.4	A
Freeway	Thru I-95 Interchange (1-Lane)	25.3	C	19.1	C
Merge	East of I-95 Interchange merge area	29.7	D	27.2	C
Freeway	East of I-95 Interchange	29.7	D	27.1	D

The SR112-195 corridor EB from west of the I95 interchange to east of NW 27th Street interchange performs at a LOS of E or better in the AM and PM peak hour.

Table 22 (Continued): SR 112 Westbound Freeway Segments

SR 112 WB Freeway Segments		2008 AM		2008 PM	
		Density	LOS	Density	LOS
Freeway	East of I-95 Interchange	35.5	E	74.8	F
Diverge	East of I-95 Interchange	42.5	E	69.5	F
Freeway	Thru I-95 Interchange (2-Lane)	11.8	B	23.9	C
Merge	Section SR112/195 WB 2 Lanes to 1 Lane	17.7	B	34.0	D
Freeway	Thru I-95 Interchange (1-Lane)	19.8	C	38.2	E
Merge	SR112 WB Merge HOV ramp	12.6	B	22.0	C
Merge	West of I-95 Interchange	11.5	B	20.0	B
Diverge	Diverge Off Ramp 40th St at NW 13th Ave	11.6	B	19.8	B
Freeway	Between NW 13th Ave/18th Ave	11.7	B	18.0	B
Freeway	Between NW 18th/NW 22nd Ave (4-L)	15.1	B	22.8	C

Freeway	Between NW 18th/NW 22nd Ave (3-L)	17.7	B	27.2	D
Merge	Merge Weave NW 22nd Ave On Ramp	32.8	D	43.7	E
Weave	Weave Between NW 22nd/NW 27th Ave	25.8	C	36.6	E
Freeway	Thru NW 27th Ave Interchange	18.5	C	24.9	C
Merge	Merge NW 27th Ave On Ramp	19.8	B	25.2	C
Freeway	West of NW 27th Ave Interchange	21.6	C	26.6	D

The SR112 corridor WB from east of the I-95 interchange has segments that perform at a LOS of E and F. These segments are the I-95 WB diverge to I-95 NB/SB that performs at a LOS E/F in AM/PM peak as well as the through movement in the interchange. To the west, the merge and weave sections between NW 22nd Ave and NW 27th Avenue begin to become unstable in the afternoon peak hours. The merge section on SR112 WB at NW 22nd Ave on ramp performs at a LOS E in the PM peak due to the short 300' on ramp merging with SR112 WB traffic conflicting with vehicles attempting to make the NW 27th Ave off ramp.

Table 22 (Continued): SR 836 Eastbound Freeway Segments

SR 836 EB Freeway Segments		2008 AM		2008 PM	
		Density	LOS	Density	LOS
Freeway	West of NW 27th Interchange	49.5	F	19.6	C
Diverge	SR 836 EB Diverge NW27th Ave Off Ramp	68.1	F	23.2	C
Freeway	Between Off Ramp and Weave	36.4	E	20.0	C
Weave	Weave Area	37.6	E	15.7	B
Freeway	Between Weave and On Ramp	27.6	D	13.5	B
Diverge	Merge On Ramp I-95 SB	23.2	C	11.7	B
Freeway	Between NW 17th/12th Ave	24.1	C	12.8	B
Merge	Merge First NW 12th Ave On Ramp	20.6	C	12.2	B
Merge	Merge Second NW 12th Ave On Ramp	28.0	D	16.3	B
Freeway	Between NW 12th Ave and I-95 Interchange	25.9	C	16.3	B
Diverge	Diverge Off Ramp I-95 SB	24.9	C	22.1	C
Diverge	Diverge Off Ramp I-95 NB	31.2	D	33.2	D
Freeway	Thru I-95 Interchange	17.3	B	4.7	A

The SR 836 Eastbound corridor performs at a LOS of D or better in the AM and PM except at the NW 27th Ave Interchange area in the AM peak hour. Here the freeway west of the interchange and the weaving area inside the interchange performs at a LOS F/E. Congestion west of the freeway is caused by the high volume of traffic coming into the interchange and the vehicles trying to exit to southbound NW 27th Ave. The weaving section inside the interchange breaks down due to the high volume of weaving traffic in a short distance which is often the case in these full cloverleaf style interchanges.

Table 22 (Continued): SR 836 Westbound Freeway Segments

SR 836 WB Freeway Segments		2008 AM		2008 PM	
		Density	LOS	Density	LOS
Freeway	East of I-95 Interchange	16.8	B	26.2	D
Diverge	Diverge with I-95 NB Off Ramp	17.0	B	32.9	D
Diverge	Between I-95 NB Off Ramp and I-95 SB Off Ramp	15.5	B	28.1	D
Freeway	Thru I-95 Interchange	15.3	B	22.4	C
Weave	Weave Between I-95 SB On Ramp and NW 12th Ave On Ramp	18.0	B	33.0	D
Freeway	Between NW 12th/NW 17th Ave	14.5	B	31.2	D
Merge	Merge with 17th Ave On Ramp	13.5	B	43.4	E
Merge	Merge with 17th Ave On Ramp	15.1	B	61.5	F
Freeway	Between NW 17th/NW 27th Ave	19.0	C	79.5	F
Diverge	Off Ramp to 27th NB Avenue	20.4	C	84.8	F
Freeway	Between NW 27th Ave Off Ramp Weave	22.0	C	67.3	F
Weave	Weave at NW 27th Ave	33.3	D	71.8	F
Freeway	Between Weave and 27th Ave On Ramp	25.3	C	42.5	E
Merge	West of NW 27th Ave Merge	19.9	B	30.7	D
Freeway	West of NW 27th Ave	19.4	C	29.7	D

The SR836/395 WB corridor performs at an acceptable LOS from the east of I-95 interchange to the approach to NW 27th Avenue interchange. In the PM peak hour however the LOS after NW 12th Ave begins to break down primarily because of the poor operations at the weaving section within the cloverleaf interchange.

Table 22 (Continued): I-95 Northbound Freeway Segments

I-95 Northbound Freeway Segments		2008 AM		2008 PM	
		Density	LOS	Density	LOS
Diverge	South of SR836/395 Interchange	16.4	B	81.6	F
Diverge	Diverge to SR836 EB Off Ramp	17.4	B	70.0	F
Freeway	Between SR836 EB Off Ramp and NW 3rd Ave On Ramp	21.1	C	60.7	F
Weave	Merge Weave NW 3rd Ave On Ramp	23.0	C	70.2	F
Weave	Weave Between NW 3rd Ave and 195 Bypass	23.1	C	51.1	F
Freeway	Between 195 Off Ramp Bypass and 195 On Ramp Bypass	19.9	C	32.2	D
Freeway	195 EB/WB Bypass	24.2	C	24.2	C
Merge	Merge to SR112/195 Off Ramp	19.0	B	32.3	D
Diverge	Diverge to SR112/195 Off Ramp	19.9	B	51.5	F
Freeway	Thru SR112/195 Interchange	21.6	C	36.9	E
Diverge	Merge with SR112/195 On Ramp	17.7	B	27.8	C
Freeway	North SR112/195 Interchange	17.2	B	26.9	D

The I-95 NB corridor contains sections that perform at a LOS of E and F in the afternoon peak hour according to the VISSIM model. The freeway is at capacity and the interchanges with a medley of on ramps, off ramps and weaving, the freeway system breaks down to a LOS of F.

At the interchange with SR836/195 there are sections that perform at a LOS of E/F that is due to the high volumes along the freeway and vehicles attempting to maneuver to I-95NB lanes and the SR836/195 EB WB lanes.

Table 22 (Continued): I-95 Southbound Freeway Segments

I-95 Southbound Freeway Segments		2008 AM		2008 PM	
		Density	LOS	Density	LOS
Freeway	North SR112/195 interchange	54.4	F	25.0	C
Diverge	Diverge SR112/195 Off Ramp	51.7	F	29.2	D
Freeway	Thru SR112/195	67.4	F	29.5	D
Merge	Merge SR112/195 On Ramp	53.3	F	22.7	C
Freeway	Between 195 and 836 interchange	51.7	F	26.1	D
Diverge	95SB off ramps to SR836/395 EB/WB	48.7	F	21.5	C
Diverge	Thru SR836/395	52.6	F	27.8	C
Diverge	Diverge NW 8th St Off Ramp	49.0	F	25.3	C
Freeway	Between NW 8th St Off Ramp SR836/395 On Ramp	31.8	D	18.9	C
Merge	Merge with SR836/195 On Ramp	29.0	D	19.6	B
Freeway	South of SR836/195 Interchange	31.5	D	22.1	C

The I-95 SB corridor section that performs at a LOS of E and F during the AM Peak Hour. This is due to the high volume of vehicles using the freeway in the morning rush hour traffic with destinations within the Health District.

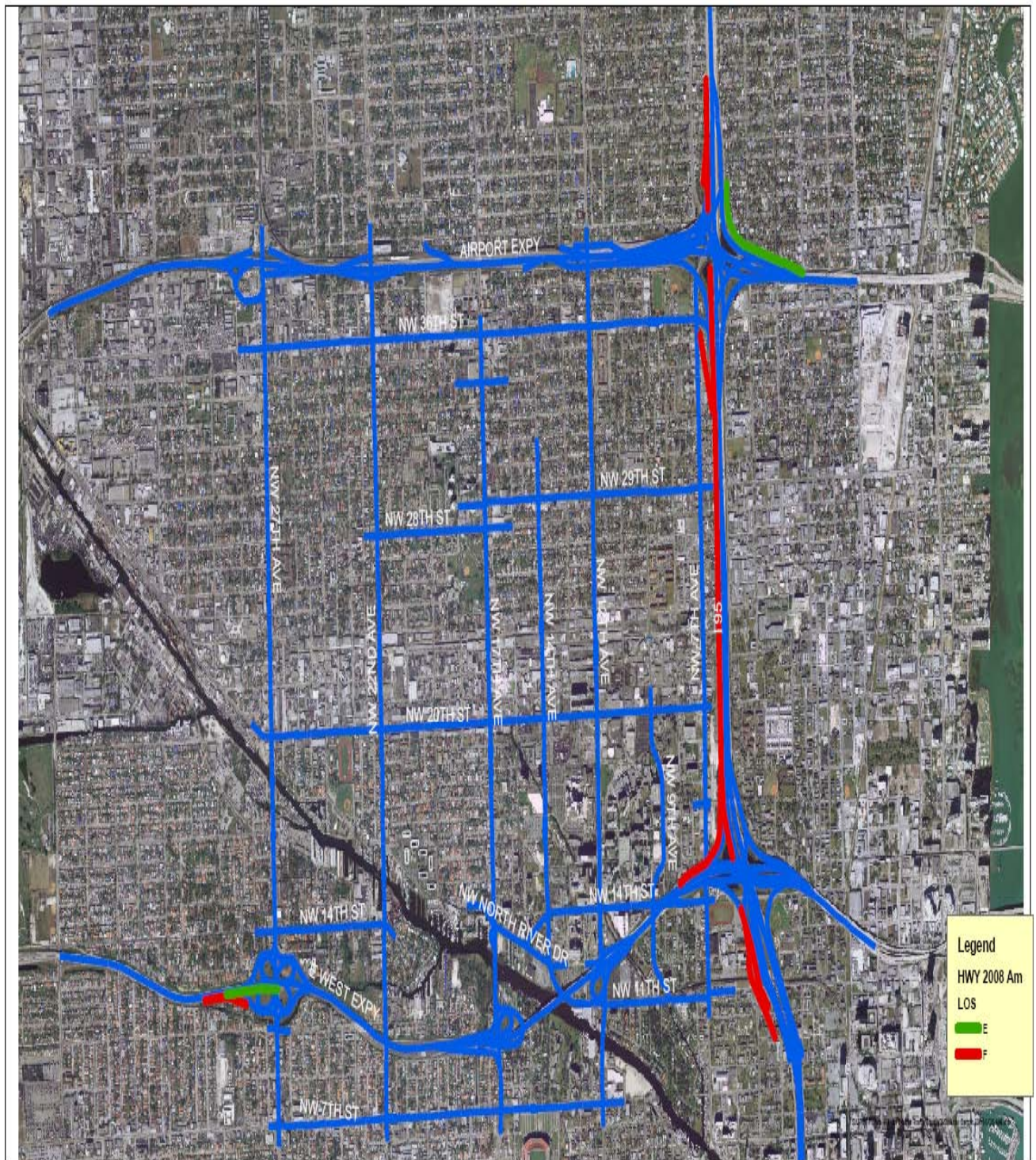


Figure 37: Level of Service - Existing Conditions AM Peak Hour

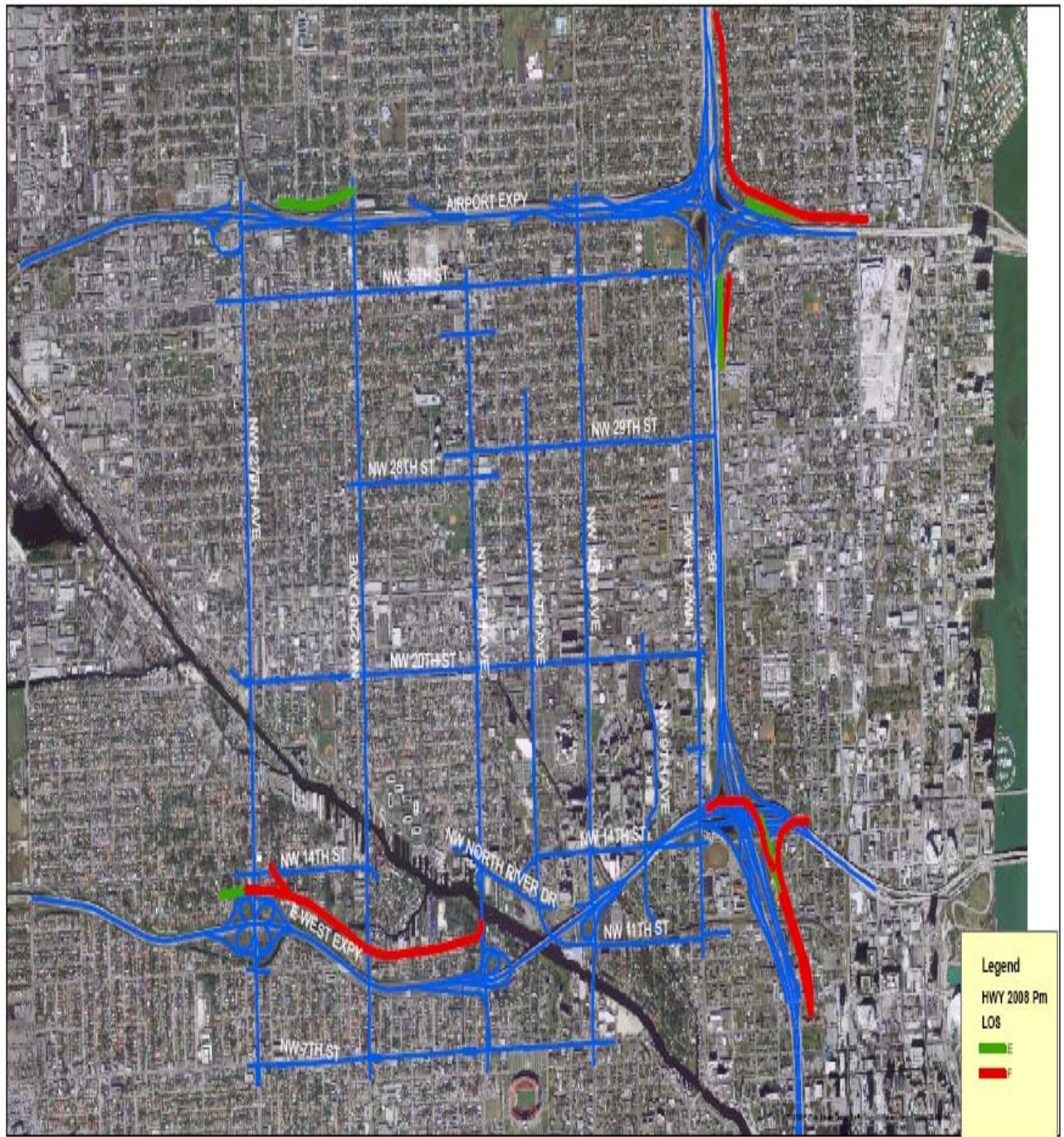


Figure 38: Level of Service - Existing Conditions PM Peak Hour

Table 23 summarizes the density output from VISSIM model by only the selected segments of the freeway system that are operating poorly in the future year (2015) and the corresponding Level of Service for AM and PM peak hour.

**Table 23: Density Output and LOS Year 2015
SR 112 Eastbound Freeway Segments**

SR 112 EB Freeway Segments		2015 AM		2015 PM	
		Density	LOS	Density	LOS
Freeway	Between NW 32nd/NW 27th Ave	21.7	C	21.3	C
Diverge	West NW 27th Ave Off Ramp (Diverge Influence Area)	22.2	C	23.2	C
Freeway	Thru NW 27th Ave Interchange	19.2	C	19.2	C
Merge	NW 27th Ave On Ramp Merge	21.3	C	21.0	C
Merge	NW 27th Ave 2nd On Ramp Merge	25.1	C	22.5	C
Freeway	Between NW 27th/NW 22nd Ave	22.9	C	28.6	D
Diverge	NW 22nd Ave Off Ramp	25.1	C	28.6	D
Freeway	Thru NW 22nd Ave Interchange	18.9	C	34.1	D
Merge	NW 22nd Ave On Ramp Merge	20.0	B	95.6	F
Freeway	Between NW 22nd/NW 17th Ave	25.2	C	100.0	F
Weave	Between NW 15th/NW 12th Ave	45.9	F	17.8	B
Freeway	Between NW 12th/I-95 Interchange	31.9	D	19.8	C
Freeway	Thru I-95 Interchange (2-Lane)	17.7	B	12.0	B
Freeway	Thru I-95 Interchange (1-Lane)	31.3	D	21.5	C
Merge	East of I-95 Interchange merge area	33.4	D	27.9	C
Freeway	East of I-95 Interchange	33.4	D	27.8	D

The short weaving section between the NW 15th Ave on-ramp and the NW 12th Ave off-ramp is operating poorly in the morning peak hour. Sections of mainline and merge just upstream is also failing in the afternoon peak hour between the NW 22nd Ave on-ramp and NW 17th Ave.

**Table 23 (Continued): Density Output and LOS Year 2015
SR 112 Westbound Freeway Segments**

SR 112 WB Freeway Segments		2015 AM		2015 PM	
		Density	LOS	Density	LOS
Freeway	East of I-95 Interchange	35.4	E	67.8	F
Diverge	East of I-95 Interchange	40.6	E	64.9	F
Freeway	Thru I-95 Interchange (2-Lane)	15.4	B	22.6	C
Merge	Section SR112/195 WB 2 Lanes to 1 Lane	23.4	C	32.5	D
Freeway	Thru I-95 Interchange (1-Lane)	26.5	D	37.5	E
Merge	SR112 WB Merge HOV ramp	15.1	B	22.4	C
Merge	West of 195 Interchange	13.3	B	22.2	C
Diverge	Diverge Off Ramp 40th St at NW 13th Ave	12.9	B	22.4	C
Freeway	Between NW 13th Ave/18th Ave	13.0	B	20.2	C
Freeway	Between NW 18th/NW 22nd Ave (4-L)	16.4	B	25.9	C

Freeway	Between NW 18th/NW 22nd Ave (3-L)	19.5	C	30.2	D
Merge	Merge Weave NW 22nd Ave On Ramp	38.0	E	46.7	F
Weave	Weave Between NW 22nd/NW 27th Ave	30.1	D	39.9	E
Freeway	Thru NW 27th Ave Interchange	20.8	C	28.1	D
Merge	Merge NW 27th Ave On Ramp	23.5	C	30.0	D
Freeway	West of NW 27th Ave Interchange	24.5	C	30.4	D

East of the I-95 Interchange in the morning peak hour and the merge at 22nd Ave are not operating acceptably according to the VISSIM freeway analysis. Additional sections to the morning deficiencies in the afternoon peak hour occur through the I-95 Interchange and at the short weaving area between 22nd Ave and 27th Ave.

**Table 23 (Continued): Density Output and LOS Year 2015
SR 836 Eastbound Freeway Segments**

SR 836 EB Freeway Segments		2015 AM		2015 PM	
		Density	LOS	Density	LOS
Freeway	West of NW 27th Interchange	28.9	D	20.3	C
Diverge	SR 836 EB Diverge NW27th Ave Off Ramp	43.9	E	27.0	C
Freeway	Between Off Ramp and Weave	38.1	E	21.0	C
Weave	Weave Area	45.3	F	16.4	B
Freeway	Between Weave and On Ramp	29.1	D	14.0	B
Diverge	Merge On Ramp I95 SB	23.5	C	12.1	B
Freeway	Between NW 17th/12th Ave	24.9	C	13.2	B
Merge	Merge First NW 12th Ave On Ramp	21.6	C	13.1	B
Merge	Merge Second NW 12th Ave On Ramp	31.0	D	18.6	B
Freeway	Between NW 12th Ave and I95 Interchange	27.3	D	17.6	B
Diverge	Diverge Off Ramp I95 SB	26.7	C	21.2	C
Diverge	Diverge Off Ramp I95 NB	35.0	E	32.3	D
Freeway	Thru I-95 Interchange	18.0	B	5.6	A

In the morning peak hour the approach diverge and weave section eastbound on SR 836 is showing operational breakdowns in addition to the diverge ramp to I-95 Northbound.

**Table 23 (Continued): Density Output and LOS Year 2015
SR 836 Westbound Freeway Segments**

SR 836 WB Freeway Segments		2015 AM		2015 PM	
		Density	LOS	Density	LOS
Freeway	East of I-95 Interchange	18.3	C	42.6	E
Diverge	Diverge with I-95 NB Off Ramp	18.8	B	57.1	F
Diverge	Between I-95 NB Off Ramp and I95 SB Off Ramp	17.7	B	34.4	D
Freeway	Thru I-95 Interchange	16.6	B	34.9	D
Weave	Weave between I-95 SB On Ramp and NW 12th Ave	18.4	B	96.1	F

	On Ramp				
Freeway	Between NW 12th/NW 17th Ave	17.1	B	24.4	C
Merge	Merge with 17th Ave On Ramp	16.0	B	21.4	C
Merge	Merge with 17th Ave On Ramp	17.2	B	24.7	C
Freeway	Between NW 17th/NW 27th Ave	21.2	C	39.3	E
Diverge	Off Ramp to 27th NB Avenue	22.8	C	49.7	F
Freeway	Between NW 27th Ave Off Ramp Weave	23.8	C	50.6	F
Weave	Weave at NW 27th Ave	30.4	D	64.3	F
Freeway	Between Weave and 27th Ave On Ramp	27.4	D	39.6	E
Merge	West of NW 27th Ave Merge	22.3	C	29.0	D
Freeway	West of NW 27th Ave	21.7	C	28.3	D

In the afternoon peak hour sections east of the I-95 Interchange are operating poorly as is the sections west of 17th Ave including the mainline and diverge are a at 27th Ave.

**Table 23 (Continued): Density Output and LOS Year 2015
SR I-95 Northbound Freeway Segments**

I-95 Northbound Freeway Segments		2015 AM		2015 PM	
		Density	LOS	Density	LOS
Diverge	South of SR836/395 Interchange	18.8	B	94.4	F
Diverge	Diverge to SR836 EB Off Ramp	20.3	C	95.1	F
Freeway	Between SR836EB Off Ramp and NW 3rd Ave On Ramp	23.9	C	73.9	F
Weave	Merge Weave NW 3rd Ave On Ramp	26.3	C	77.2	F
Weave	Weave Between NW 3rd Ave and 195 Bypass	28.5	D	59.6	F
Freeway	Between 195 Off Ramp Bypass and 195 On Ramp Bypass	22.1	C	34.1	D
Freeway	195 EB/WB Bypass	24.2	C	24.2	C
Merge	Merge to SR112/195 Off Ramp	21.0	C	36.2	E
Diverge	Diverge to SR112/195 Off Ramp	22.5	C	51.9	F
Freeway	Thru SR112/195 Interchange	24.6	C	34.7	D
Diverge	Merge with SR112/195 On Ramp	19.2	B	26.7	C
Freeway	North SR112/195 Interchange	18.4	C	26.0	D

Afternoon operations approaching and within the SR836/I-395/I-95 interchange are failing due to the saturated conditions expected there in 2015.

**Table 23 (Continued): Density Output and LOS Year 2015
SR I-95 Southbound Freeway Segments**

I-95 Southbound Freeway Segments		2015 AM		2015 PM	
		Density	LOS	Density	LOS
Freeway	North SR112/195 interchange	72.3	F	31.9	D
Diverge	Diverge SR112/195 Off Ramp	71.4	F	44.8	E
Freeway	Thru SR112/195	76.2	F	46.9	F
Merge	Merge SR836/195 On Ramp	52.3	F	47.9	F
Freeway	Between 195 and 836 interchange	43.0	E	71.3	F
Diverge	I-95SB off ramps to SR836/395 EB/WB	42.9	E	60.1	F
Diverge	Thru SR836/395	45.4	F	24.6	C
Diverge	Diverge NW 8th St Off Ramp	43.2	E	20.7	C
Freeway	Between NW 8th St Off Ramp SR836/395 On Ramp	28.9	D	16.2	B
Merge	Merge with SR836/195 On Ramp	26.7	C	19.1	B
Freeway	South of SR836/195 Interchange	29.6	D	21.1	C

The majority of the southbound sections of I-95 are saturated in the morning peak hour and thus showing unstable and poor operations. Likewise, in the afternoon peak-hour the section from the diverge area to SR 112 and through and including the diverge to SR 836 are operating poorly.



Figure 39: Level of Service – Year 2015 AM Peak Hour

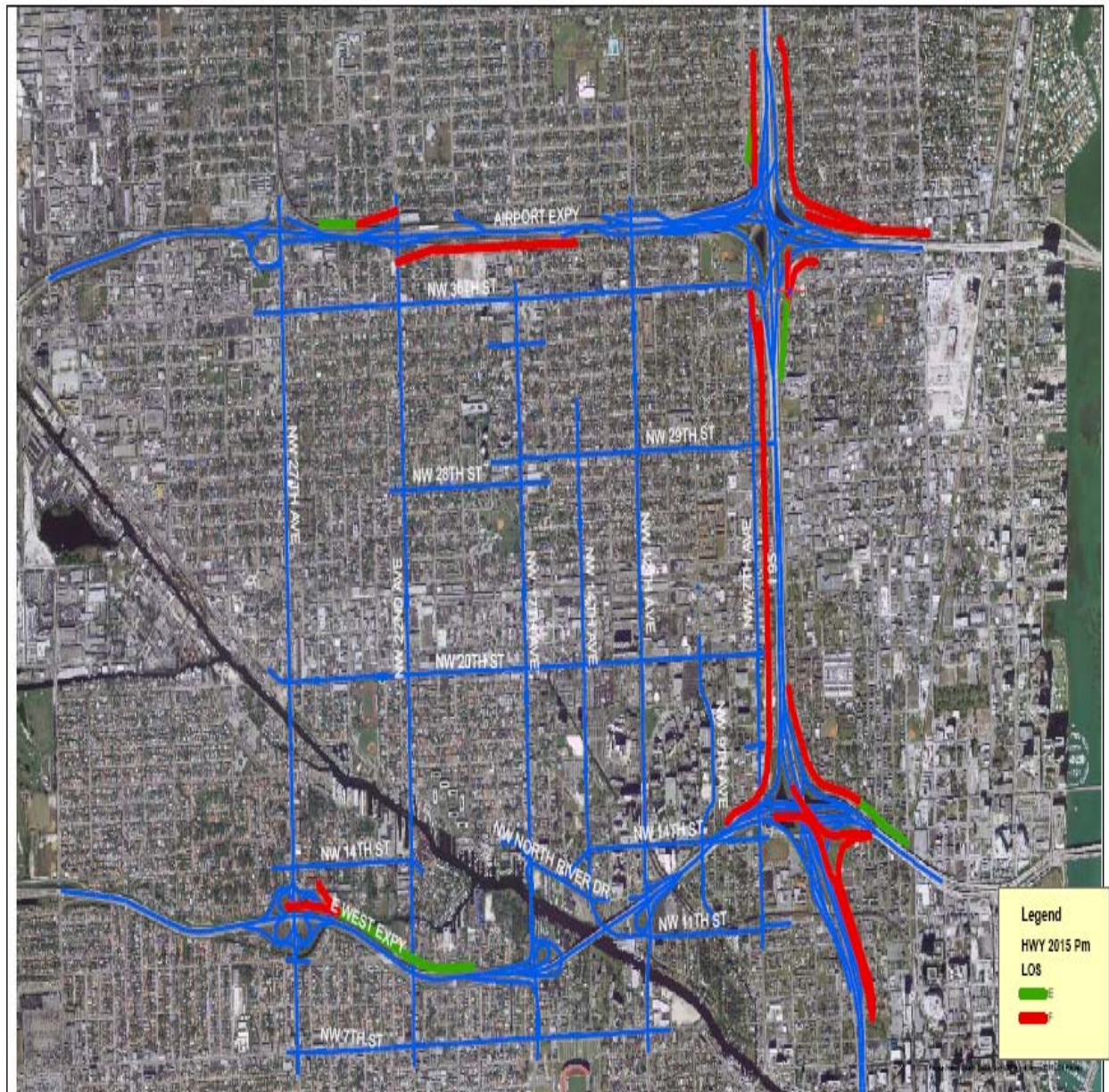


Figure 40: Level of Service – Year 2015 PM Peak Hour

Local Intersections

Under the Base Year (2008) conditions the delay output from the VISSIM and Synchro model for each network intersection was analyzed and the Levels of Service assigned to the intersection as a whole are summarized in the Tables below. The green shading in the Synchro results highlights LOS F. If the shading is on the first line the specific movement has failed and the movement is annotated. If the green shading is on the LOS line the approach to the intersection is operating at LOS F. See the deficiency list after the tables for a summary of the problem intersection, approaches, and movements.

The comprehensive network was expanded and volumes balanced beyond the initial count locations so results for a total of 43 signalized intersections and two unsignalized locations at NW 34th St and NW 17th Ave and NW 29th St and NW 14th Avenue are shown in the analysis.

Table 24: Existing Conditions Delay and Level of Service Summary

Intersection	2008								2008							
	Synchro AM Peak				VISSIM AM Peak				Synchro PM Peak				VISSIM PM Peak			
	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
NW36 th St / 22 nd Ave																
Delay	32.3	30.8	20.3	22.6	29	26	21	22	39.1	37.0	23.2	22.7	29.3	28.3	25.6	30.7
LOS	C	C	C	C	C	C	C	C	D	D	C	C	C	C	C	C
Overall:			25.9	C	Overall:		24	C	Overall:		29.4	C	Overall:		28.3	C
NW36 th St / 27 th Ave																
Delay	42.4	44.5	19.2	19.3	35	32	17	17	44.3	45.2	19.4	19.2	35.3	33.7	19.5	16.1
LOS	D	D	B	B	C	C	B	B	D	D	B	B	D	C	B	B
Overall:			27.3	C	Overall:		22	C	Overall:		29.3	C	Overall:		24.3	C
NW 36 th St / 12 th Ave																
Delay	30.7	36.4	9.9	18.9	32	30	16	17	37.1	39.5	12.6	20.9	34	28	17.4	19.1
LOS	C	D	A	B	C	C	B	B	D	D	B	C	C	C	B	B
Overall:			20.8	C	Overall:		22	C	Overall:		23.4	C	Overall:		22.4	C
NW 36 th St / 7 th Ave																
Delay	46.8	64.2	13.4	27.3	35	35	12	18	22.3	20.3	20.3	22.7	33.7	26.6	24.7	22
LOS	D	E	B	C	D	D	B	B	C	C	C	C	C	C	C	C
Overall:			34.9	C	Overall:		23	C	Overall:		21.1	C	Overall:		26.5	C

Traffic Modeling

CORRADINO

NW 34 th St/ 17 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	13.8	36.0	1.3	0.3	4	5	2	0.3	14.1	15.1	1.2	0.2	4.3	3.7	1.2	0.1
LOS	B	E	A	A	A	A	A	A	B	C	A	A	A	A	A	A
Overall:					Overall:				Overall:				Overall:			
NW 29 th St/ 14 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	0.2	1.3	16.4	20.8	0.2	0.4	6.5	8.2	0.5	1.5	33.2	33.1	0.3	0.4	10.6	11.4
LOS	A	A	C	C	A	A	A	A	A	A	D	D	A	A	B	B
Overall:					Overall:				Overall:				Overall:			
NW 29 th St/ 12 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	19.7	19.1	8.2	6.3	18	15	10	9	28.7	32	8.3	7.8	26.6	30.2	9	9.2
LOS	B	B	A	A	B	B	A	A	C	C	A	A	C	C	A	A
Overall:			10.3	B	Overall:		11	B	Overall:		13.0	B	Overall:		13.6	B
NW 28 th St/ 17 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	39.6	32.7	7.6	9.6	42	28	12	7	40.2	38.1	7.2	7.8	35.6	29.6	12.1	8.3
LOS	D	C	A	A	D	C	B	A	D	D	A	A	D	C	B	A
Overall:			20.7	C	Overall:		21	C	Overall:		19.4	B	Overall:		18.7	B
NW 20 th St/ 27 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NBL	SB	EB	WB	NB	SB
Delay	49.8	45.9	33.4	31.5	36	42	41	29	49.0	50.4	36.7	31.4	29.5	46.4	22.6	26.4
LOS	D	D	C	C	D	D	D	C	D	D	D	C	C	D	C	C
Overall:			38.6	D	Overall:		37	D	Overall:		40.5	D	Overall:		29.9	C
NW 20 th St/ 22 nd Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	63.7	28.5	28.0	27.8	32	27	22	24	34.7	39.8	28.1	25.7	27	41.3	24.6	20.5
LOS	E	C	C	C	C	C	C	C	C	D	C	C	C	D	C	C
Overall:			41.8	D	Overall:		27	C	Overall:		32.9	C	Overall:		29.6	C

	2008								2008							
Intersection	Synchro AM Peak				VISSIM AM Peak				Synchro PM Peak				VISSIM PM Peak			
NW20 th St/ 17 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	34.0	25.3	36.2	31.1	27	76	30	28	32.0	37.9	34.4	36.4	28.1	44.4	26.7	41
LOS	C	C	D	C	C	E	C	C	C	D	C	D	C	D	C	D
	Overall: 31.9 C				Overall: 38 D				Overall: 35.3 D				Overall: 35.6 D			
NW20 th St/ 12 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	32.4	34.1	29.2	32.8	24	29	26	37	40.5	37.5	37.7	74.6	27.4	33	29.6	55.7
LOS	C	C	C	C	C	C	C	D	D	D	D	E	C	C	C	E
	Overall: 31.7 C				Overall: 29 C				Overall: 49.7 D				Overall: 38.1 D			
NW20 th St/ 7 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EBL	WB	NB	SB	EB	WB	NB	SB
Delay	29.8	31.1	21.7	67.2	22	24	20	45	60.2	33.3	16.6	15.8	26.2	26.5	14.3	13.9
LOS	C	C	C	E	C	C	B	D	E	C	B	B	C	C	B	B
	Overall: 45.2 D				Overall: 31 C				Overall: 29.2 C				Overall: 19.1 B			
NW17 th St/ 7 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	32.8	154.6	7.8	12.2	32	103	8	11	194.3	28.1	10.8	9.6	131.5	62.7	9.1	8.8
LOS	C	F	A	B	C	F	A	B	F	C	B	A	F	E	A	A
	Overall: 42.3 D				Overall: 29 C				Overall: 48.5 D				Overall: 37.4 D			
NW14 th St/ 27 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	47.7	130.3	19.4	18.1	40	100	15	18	47.5	49.3	21.2	20.0	41	41.7	14.3	13.6
LOS	D	F	B	B	D	F	B	B	D	D	C	B	D	D	B	B
	Overall: 39.2 D				Overall: 30 C				Overall: 25.4 C				Overall: 18.4 B			
NW14 th St/ 22 nd Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	41.2	35.8	5.0	8.0	31	36	8	9	34.9	29.0	5.7	9.8	23.7	30	6.7	9.2
LOS	D	D	A	A	C	D	A	A	C	C	A	A	C	C	A	A
	Overall: 15.2 B				Overall: 15 B				Overall: 12.8 B				Overall: 10.7 B			
NW14 th St/ 14 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	28.0	32.9	31.2	28.9	14	24	9	21	34.0	38.9	19.7	20.8	30.3	33.3	11.4	16.7
LOS	C	C	C	C	B	C	A	C	C	D	B	C	C	C	B	B
	Overall: 30.3 C				Overall: 20 C				Overall: 29.4 C				Overall: 24.2 C			
NW14 th St/ 12 th Ave	EBL	WBL	NBL	SB	EB	WB	NB	SB	EBL	WBL	NBL	SB	EB	WB	NB	SB
Delay	68.1	157.3	134.1	32.5	50	91	48	26	60.3	213.2	34.4	30.8	45.5	59.2	24.8	30.3
LOS	E	F	F	C	D	F	D	C	E	F	C	C	D	E	C	C
	Overall: 101.8 F				Overall: 52 D				Overall: 77.0 E				Overall: 37.7 D			
NW14 th St/ 10 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	22.9	24.5	46.6	35.4	18	29	49	42	20.7	16.8	74.4	43.5	23.3	21.5	131.2	30.2
LOS	C	C	D	D	B	C	D	D	C	B	E	D	C	C	F	C
	Overall: 29.1 C				Overall: 31 C				Overall: 36.4 D				Overall: 45.3 D			

Intersection	2008								2008							
	Synchro AM Peak				VISSIM AM Peak				Synchro PM Peak				VISSIM PM Peak			
NW14 th St/ 7 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	58.7	29.6	8.1	10.1	32	31	7	11	147.2	23.3	12.0	10.8	33.2	27.2	10.6	12.7
LOS	E	C	A	B	C	C	A	B	F	C	B	B	C	C	B	B
Overall:	19.4 B				16 B				36.4 D				17.7 B			
NW11 th St/ 12 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	39.4	46.1	32.0	13.8	30	36	19	12	46.0	51.2	29.1	27.8	33.5	59.8	24.1	26.5
LOS	D	D	C	B	C	D	B	B	D	D	C	C	C	E	C	C
Overall:	29.2 C				20 C				36.4 D				33.9 C			
N River Dr/ 17 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	34.2	28.7	7.9	10.1	21	21	6	8	59.7	30.4	15.2	17.6	22.6	30.2	12.5	13.4
LOS	C	C	A	B	C	C	A	A	E	C	B	B	C	C	B	B
Overall:	17.1 B				12 B				28.7 C				17.3 B			
N River Dr/ 14 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	8.2	9.0	30.6	29.4	4	6	22	20	10.0	17.0	27.0	27.8	7.9	11.7	27.5	22.7
LOS	A	A	C	C	A	A	C	B	B	B	C	C	A	B	C	C
Overall:	17.6 B				12 B				18.8 B				15.7 B			
NW11 th St/ 7 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	46.8	34.2	3.9	4.9	NA	22	1.5	3.1	25.0	23.4	24.9	24.3	0	41.6	4.9	5.1
LOS	D	C	A	A	NA	C	A	A	C	C	C	C		D	A	A
Overall:	11.9 B				4.2 A				24.3 C				14.3 B			
NW7 th St/ 27 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NBL	SB	EB	WB	NB	SB
Delay	45.8	40.1	32.1	37.7	34	30	22	26	49.2	55.2	39.5	34.8	39.7	52.9	25.5	33.9
LOS	D	D	C	D	C	C	C	C	D	E	D	C	D	D	C	C
Overall:	37.4 D				26 C				41.8 D				36.2 D			
NW7 th St/ 22 nd Ave	EB	WB	NB	SB	EB	WB	NB	SB	EBL	WB	NB	SB	EB	WB	NB	SB
Delay	37.2	35.5	24.9	27	31	32	21	20	56.0	44.3	22.9	23.2	34.8	42.2	23.1	21.5
LOS	D	D	C	C	C	C	C	C	E	D	C	C	C	D	C	C
Overall:	31.0 C				26 C				36.3 D				30.4 C			
NW7 th St/ 17 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	24.9	27.0	29.7	25.5	20	20	23	21	34.0	31.1	26.0	26.2	26.6	25.3	21.1	21
LOS	C	C	C	C	B	B	C	C	C	C	C	C	C	C	C	C
Overall:	26.9 C				21 C				29.5 C				23.8 C			
NW7 th St/ 12 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SBR	EB	WB	NB	SB
Delay	29.3	34.3	23.6	43.4	25	32	20	22	34.8	47.1	23.8	86.8	35.8	44.5	17.3	60.3
LOS	C	C	C	D	C	C	B	C	C	D	C	F	D	D	B	E
Overall:	33.4 C				23 C				59.4 E				44.2 D			

Additional Intersections (AM)	2008								2008							
	Synchro AM Peak				VISSIM AM Peak				Synchro PM Peak				VISSIM PM Peak			
NW 12th Ave & WB 836 Off-Ramp	EB	WB	NBL	SB	EB	WB	NB	SB	EB	WB	NBL	SB	EB	WB	NB	SB
Delay	0.0	22.3	55.3	81.3	25	32	20	22	0.0	64.1	48.7	12.8	35.8	44.5	17.3	60.3
LOS	A	C	E	F	C	C	B	C	A	E	D	B	D	D	B	E
Overall:			50.4	D	Overall:		23	C	Overall:		33.5	C	Overall:		44.2	D
NW 40th St & 12th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	0.0	14.3	5.4	7.0	20	20	23	21	0.0	29.7	5.5	4.5	26.6	25.3	21.1	21
LOS	A	B	A	A	B	B	C	C	A	C	A	A	C	C	C	C
Overall:			7.7	A	Overall:		21	C	Overall:		8.3	A	Overall:		23.8	C
NW 39th St & 12th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	16.4	0.0	8.5	4.6	20	20	23	21	31.8	0	8.4	3.3	26.6	25.3	21.1	21
LOS	B	A	A	A	B	B	C	C	C	A	A	A	C	C	C	C
Overall:			6.9	A	Overall:		21	C	Overall:		7.8	A	Overall:		23.8	C
NW 11th St & NW 27th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NBL	SB	EB	WB	NB	SB
Delay	21.11	22.8	18.3	10.8	20	20	23	21	46.2	42.6	22.1	10.8	26.6	25.3	21.1	21
LOS	C	C	B	B	B	B	C	C	D	D	C	B	C	C	C	C
Overall:			14.7	B	Overall:		21	C	Overall:		20.1	C	Overall:		23.8	C
NW 22nd Ave & EB Ramp	EB	WB	NB	SB	EB	WB	NB	SB	EBT	WB	NB	SB	EB	WB	NB	SB
Delay	36.4	0.0	8.6	8.4	20	20	23	21	82.1	0.0	10.5	28.2	26.6	25.3	21.1	21
LOS	D	A	A	A	B	B	C	C	F	A	B	C	C	C	C	C
Overall:			18.8	B	Overall:		21	C	Overall:		42.9	D	Overall:		23.8	C
NW 17th Ave & Ramp from EB 836	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	8.4	11.8	9.3	10.2	20	20	23	21	9.3	10.2	6.3	36.3	26.6	25.3	21.1	21
LOS	A	B	A	B	B	B	C	C	A	B	A	D	C	C	C	C
Overall:			10.3	B	Overall:		21	C	Overall:		27.1	C	Overall:		23.8	C
NW 36th Street & NW 17th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	26.2	37.3	24.6	24.6	20	20	23	21	25.6	46.5	20.9	25.5	26.6	25.3	21.1	21
LOS	C	D	C	C	B	B	C	C	C	D	C	C	C	C	C	C
Overall:			28.2	C	Overall:		21	C	Overall:		31.0	C	Overall:		23.8	C
NW 20th St & NW 14th Ave	EB	WBL	NB	SB	EB	WB	NB	SB	EB	WBL	NB	SB	EB	WB	NB	SB
Delay	17.8	38.0	15.4	16.9	20	20	23	21	19.2	28.1	11.4	13.8	26.6	25.3	21.1	21
LOS	B	D	B	B	B	B	C	C	B	C	B	B	C	C	C	C
Overall:			23.3	C	Overall:		21	C	Overall:		20.7	C	Overall:		23.8	C
NW 20th St & NW 10th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	30.9	27.6	24.3	19.2	20	20	23	21	37.4	32.6	13.1	16.8	26.6	25.3	21.1	21
LOS	C	C	C	B	B	B	C	C	D	C	B	B	C	C	C	C
Overall:			26.0	C	Overall:		21	C	Overall:		31.0	C	Overall:		23.8	C

Additional Intersections (AM)	2008								2008							
	Synchro AM Peak				VISSIM AM Peak				Synchro PM Peak				VISSIM PM Peak			
NW 28th St &	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	43.2	41.0	7.0	7.3	20	20	23	21	35.6	46.2	10.4	9.4	26.6	25.3	21.1	21
LOS	D	D	A	A	B	B	C	C	D	D	B	A	C	C	C	C
	Overall: 18.6 B				Overall: 21 C				Overall: 20.1 C				Overall: 23.8 C			
NW 29th ST & NW 17th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	63.7	28.6	13.6	14.3	20	20	23	21	47.9	31.8	11.5	10.7	26.6	25.3	21.1	21
LOS	E	C	B	B	B	B	C	C	D	C	B	B	C	C	C	C
	Overall: 27.2 C				Overall: 21 C				Overall: 19.2 B				Overall: 23.8 C			
NW 29th ST & NW 7th Ave	EB	WBL	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	28.3	48.8	10.6	12.8	20	20	23	21	25.8	27.7	7.6	5.3	26.6	25.3	21.1	21
LOS	C	D	B	B	B	B	C	C	C	C	A	A	C	C	C	C
	Overall: 20.2 C				Overall: 21 C				Overall: 13.3 B				Overall: 23.8 C			
WB Off Ramp & NW 27th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	0.0	96.6	9.4	13.5	20	20	23	21	0.0	38.6	9.6	13.6	26.6	25.3	21.1	21
LOS	A	F	A	B	B	B	C	C	A	D	A	B	C	C	C	C
	Overall: 30.7 C				Overall: 21 C				Overall: 17.7 B				Overall: 23.8 C			
EB On Ramp & NW 27th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	55.5	0.0	1.6	1.4	20	20	23	21	55.5	0.0	1.6	1.3	26.6	25.3	21.1	21
LOS	E	A	A	A	B	B	C	C	E	A	A	A	C	C	C	C
	Overall: 2.1 A				Overall: 21 C				Overall: 2.2 A				Overall: 23.8 C			
EB Off Ramp & NW 27th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	35.3	55.1	11.6	11.0	20	20	23	21	38.2	52.3	10.1	9.2	26.6	25.3	21.1	21
LOS	D	E	B	B	B	B	C	C	D	D	B	A	C	C	C	C
	Overall: 16.4 B				Overall: 21 C				Overall: 16.9 B				Overall: 23.8 C			
NW North River Dr & NW 13th Ter	EBL	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	134.9	15.2	18.3	10.0	20	20	23	21	8.1	15.1	19.2	11.6	26.6	25.3	21.1	21
LOS	F	B	B	B	B	B	C	C	A	B	B	B	C	C	C	C
	Overall: 56.8 E				Overall: 21 C				Overall: 11.5 B				Overall: 23.8 C			
NW 22nd Ave & NW 41 ST	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	23.4	27.0	6.1	7.5	20	20	23	21	27.1	21.8	7.5	6.7	26.6	25.3	21.1	21
LOS	C	C	A	A	B	B	C	C	C	C	A	A	C	C	C	C
	Overall: 11.5 B				Overall: 21 C				Overall: 10.7 B				Overall: 23.8 C			

The preliminary deficiency results from the Synchro micro-simulation traffic model are:

Existing 2008 AM Peak Deficiencies

Intersection Deficiencies

- NW 14th St/NW 12th Ave LOS F

Approach Deficiencies

- NW 17th St/NW 7th Ave Westbound LOS F
- NW 14th St/NW 27th Ave Westbound LOS F
- NW 14th St/NW 12th Ave Westbound and Northbound
- WB 836 Off Ramp/NW 12th Ave Southbound LOS F
- WB 112 Off Ramp/NW 27th Ave Westbound LOS F
- NW North River Dr/NW 13th Terrace Eastbound LOS F

Specific Movement Deficiencies

- NW 36th St/NW 7th Ave Westbound Left-turn LOS F
- NW 14th St/NW 12th Ave Eastbound Left-turn LOS F
- WB 836 Off Ramp/NW 12th Ave Northbound Left-turn LOS F
- NW 20th St/NW 14th Ave Westbound Left-turn LOS F
- NW 29th St/NW 7th Ave Westbound Left-turn LOS F

Existing 2008 PM Peak Deficiencies

Intersection Deficiencies

- None

Approach Deficiencies

- NW 14th St/NW 12th Ave Westbound LOS F
- NW 14th St/NW 7th Ave Eastbound LOS F
- NW 7th St/NW 7th Ave Southbound LOS F
- EB Off Ramp 112/NW 22nd Ave Eastbound LOS F

Specific Movement Deficiencies

- NW 20th St/NW 27th Ave Northbound Left-turn LOS F
- NW 20th St/NW 7th Ave Eastbound Left-turn LOS F
- NW 14th St/NW 12th Ave Eastbound/Westbound/Northbound Left-turn LOS F
- NW 7th St/NW 27th Ave Northbound Left-turn LOS F
- NW 7th St/NW 22nd Ave Eastbound Left-turn LOS F
- WB 836 Off Ramp/NW 12th Ave Northbound Left-turn LOS F
- NW 11th St/NW 27th Ave Northbound Left-turn LOS F
- NW 20th St/NW 14th Ave Westbound Left-turn LOS F

Figures depicting the existing AM and PM peak hour deficiencies are shown in Figures 41 and 42.

Approach deficiencies were shown as straight lines and specific movement deficiencies were shown as two angled lines to depict the actual movement having operational difficulties.

For 2015 the existing and committed project on 11th Street was added to the network and the traffic was grown by 11 percent in the morning and afternoon peaks. The traffic microsimulation results were rerun and analyzed according to HCM methodologies. The tables below indicated the future year conditions (2015)

Intersection	2015				2015			
	Synchro AM Peak				VISSIM AM Peak			
NW36 th St/ 22 nd Ave	EB	WB	NB	SB	EB	WB	NB	SB
Delay	34.5	30.3	25.3	28.2	29	26	21	22
LOS	C	C	C	C	C	C	C	C
Overall	29.4 C				24 C			
NW36 th St/ 27 th Ave	EB	WB	NB	SB	EB	WB	NB	SB
Delay	45.1	52.5	22.2	22.2	35	32	17	17
LOS	D	D	C	C	C	C	B	B
Overall	30.9 C				22 C			
NW 36 th St/ 12 th Ave	EB	WB	NB	SB	EB	WB	NB	SB
Delay	30.7	37.2	13.0	24.0	32	30	16	17
LOS	C	D	B	C	C	C	B	B
Overall	23.7 C				22 C			
NW 36 th St/ 7 th Ave	EB	WB	NB	SB	EB	WB	NB	SB
Delay	65.5	73.6	14.4	32.3	35	35	12	18
LOS	E	E	B	C	D	D	B	B
Overall	43.1 D				23 C			
NW 34 th St/ 17 th Ave	EB	WB	NB	SB	EB	WB	NB	SB
Delay	13.8	36	1.3	0.3	4	5	2	0.3
LOS	B	E	A	A	A	A	A	A
Overall								
NW 29 th St/ 14 th Ave	EB	WB	NB	SB	EB	WB	NB	SB
Delay	0.2	1.3	16.4	20.8	0.2	0.4	6.5	8.2
LOS	A	A	C	C	A	A	A	A
Overall								
NW 25 th St/ 12 th Ave	EB	WB	NB	SB	EB	WB	NB	SB
Delay	19.7	19.1	11.7	7.4	18	15	10	9
LOS	B	B	B	A	B	B	A	A
Overall	12.2 B				11 B			
NW 28 th St/ 17 th Ave	EB	WB	NB	SB	EB	WB	NB	SB
Delay	41	32.5	8.8	11.3	42	28	12	7
LOS	D	C	A	B	D	C	B	A
Overall	22.1 C				21 C			
NW20 th St/ 27 th Ave	EB	WB	NBL	SBL	EB	WB	NBL	SB
Delay	53.9	47.6	46.3	40.7	36	42	41	29
LOS	D	D	D	D	D	D	D	C
Overall	46.8 D				37 D			
NW20 th St/ 22 nd Ave	EB	WB	NB	SB	EB	WB	NB	SB
Delay	102.8	29.5	29.3	29.6	32	27	22	24
LOS	F	C	C	C	C	C	C	C
Overall	57.8 E				27 C			

	2015								2015							
Intersection	Synchro AM Peak				VISSIM AM Peak				Synchro PM Peak				VISSIM PM Peak			
NW20 th St/ 17 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	37.9	26.7	44.8	39.4	27	76	30	28	33.5	41.2	44.7	47.8	28.1	44.4	26.7	41
LOS	D	C	D	D	C	E	C	C	C	D	D	D	C	D	C	D
	Overall: 36.9 D				Overall: 38 D				Overall: 41.1 D				Overall: 35.6 D			
NW20 th St/ 12 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EBL	WB	NBL	SB	EB	WB	NB	SB
Delay	33	37.7	34.9	42.9	24	29	26	37	48.4	38.4	48.1	134.3	27.4	33	29.6	55.7
LOS	C	D	C	D	C	C	C	D	D	D	D	F	C	C	C	E
	Overall: 37.4 D				Overall: 29 C				Overall: 72.8 E				Overall: 38.1 D			
NW20 th St/ 7 th Ave	EB	WB	NB	SBT	EB	WB	NB	SB	EBL	WB	NB	SB	EB	WB	NB	SB
Delay	30.8	31.7	26.3	125.5	22	24	20	45	75.7	35.2	19.1	17.5	26.2	26.5	14.3	13.9
LOS	C	C	C	F	C	C	B	D	E	D	B	B	C	C	B	B
	Overall: 72.1 E				Overall: 31 C				Overall: 34.2 C				Overall: 19.1 B			
NW17 th St/ 7 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	33.6	210.0	8.1	13.7	32	103	8	11	371.0	72.1	11.5	9.7	131.5	62.7	9.1	8.8
LOS	C	F	A	B	C	F	A	B	F	E	B	A	F	E	A	A
	Overall: 55 D				Overall: 29 C				Overall: 89.8 F				Overall: 37.4 D			
NW14 th St/27 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	53.9	163.2	22.0	20.0	40	100	15	18	48.2	51.3	26.1	23.2	41	41.7	14.3	13.6
LOS	D	F	C	B	D	F	B	B	D	D	C	C	D	D	B	B
	Overall: 46.7 D				Overall: 30 C				Overall: 29.1 C				Overall: 18.4 B			
NW14 th St/ 22 nd Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	44.4	35.6	5.8	9.3	31	36	8	9	34.9	28.4	6.9	11.2	23.7	30	6.7	9.2
LOS	D	D	A	A	C	D	A	A	C	C	A	B	C	C	A	A
	Overall: 16.6 B				Overall: 15 B				Overall: 13.8 B				Overall: 10.7 B			
NW14 th St/ 14 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	28	32.9	31.2	28.9	14	24	9	21	34.2	39.4	22.7	24.0	30.3	33.3	11.4	16.7
LOS	C	C	C	D	B	C	A	C	C	D	C	C	C	C	B	B
	Overall: 30.3 D				Overall: 20 C				Overall: 31.2 C				Overall: 24.2 C			
NW14 th St/ 12 th Ave	EB	WB	NB	SBL	EB	WB	NB	SB	EBL	WBL	NBL	SB	EB	WB	NB	SB
Delay	97.9	202.4	158.1	35.2	50	91	48	26	71.1	267.0	41.5	33.9	45.5	59.2	24.8	30.3
LOS	F	F	F	D	D	F	D	C	E	F	D	C	D	E	C	C
	Overall: 125.3 F				Overall: 52 D				Overall: 93.7 F				Overall: 37.7 D			
NW14 th St/ 10 th Ave	EB	WB	NBT	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	23.7	25.0	71.3	44.7	18	29	49	42	20.6	17.2	127.2	72.6	23.3	21.5	131.2	30.2
LOS	C	C	E	D	B	C	D	D	C	B	F	E	C	C	F	C
	Overall: 34.5 C				Overall: 31 C				Overall: 55.3 E				Overall: 45.3 D			

	2015								2015							
Intersection	Synchro AM Peak				VISSIM AM Peak				Synchro PM Peak				VISSIM PM Peak			
NW14 th St/ 7 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	38.6	37.7	5.7	7.4	32	31	7	11	40.9	26.6	9.4	8.2	33.2	27.2	10.6	12.7
LOS	D	D	A	A	C	C	A	B	D	C	A	A	C	C	B	B
	Overall: 15.7				Overall: 16				Overall: 16.5				Overall: 17.7			
NW11 th St/ 12 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	39.6	47.3	60.4	17.2	30	36	19	12	54.9	61.3	34.7	38.0	33.5	59.8	24.1	26.5
LOS	D	D	E	B	C	D	B	B	D	E	C	D	C	E	C	C
	Overall: 43.0				Overall: 20				Overall: 45				Overall: 33.9			
N River Dr/ 17 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	37.0	29.2	8.7	12.3	21	21	6	8	82.5	31.1	17.6	19.6	22.6	30.2	12.5	13.4
LOS	D	C	A	B	C	C	A	A	F	C	B	B	C	C	B	B
	Overall: 18.7				Overall: 12				Overall: 35.8				Overall: 17.3			
N River Dr/ 14 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	8.6	9.5	33.9	30.1	4	6	22	20	11.6	22.1	24.0	29.6	7.9	11.7	27.5	22.7
LOS	A	A	C	C	A	A	C	B	B	C	C	C	A	B	C	C
	Overall: 18.6				Overall: 12				Overall: 21.0				Overall: 15.7			
NW11 th St/ 7 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	0.0	37.6	1.8	2.4	NA	22	1.5	3.1	0.0	111.8	5.7	5.7	0	41.6	4.9	5.1
LOS	A	D	A	A	NA	C	A	A	A	F	A	A		D	A	A
	Overall: 5.2				Overall: 4.2				Overall: 33.8				Overall: 14.3			
NW7 th St/ 27 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NBL	SB	EB	WB	NB	SB
Delay	50.7	42.5	38.5	57.2	34	30	22	26	54.4	64.2	48.7	47.3	39.7	52.9	25.5	33.9
LOS	D	D	D	E	C	C	C	C	D	E	D	D	D	D	C	C
	Overall: 48.4				Overall: 26				Overall: 51.8				Overall: 36.2			
NW7 th St/ 22 nd Ave	EB	WB	NB	SB	EB	WB	NB	SB	EBL	WB	NB	SB	EB	WB	NB	SB
Delay	37.2	34.7	30.3	31.7	31	32	21	20	61.2	45.7	27.1	27.5	34.8	42.2	23.1	21.5
LOS	D	C	C	C	C	C	C	C	E	D	C	C	C	D	C	C
	Overall: 33.4				Overall: 26				Overall: 40.2				Overall: 30.4			
NW7 th St/ 17 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	26.4	28.4	35.7	29.1	20	20	23	21	36.7	33.4	30.6	30.8	26.6	25.3	21.1	21
LOS	C	C	D	C	B	B	C	C	D	C	C	C	C	C	C	C
	Overall: 30.2				Overall: 21				Overall: 33.0				Overall: 23.8			
NW7 th St/ 12 th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SBR	EB	WB	NB	SB
Delay	31.5	35.3	30.1	101.8	25	32	20	22	39.2	49.1	24.8	114.1	35.8	44.5	17.3	60.3
LOS	C	D	C	F	C	C	B	C	D	D	C	F	D	D	B	E
	Overall: 57.5				Overall: 23				Overall: 74.2				Overall: 44.2			

	2015								2015							
Additional Intersections (AM)	Synchro AM Peak				VISSIM AM Peak				Synchro PM Peak				VISSIM PM Peak			
NW 12th Ave & WB 836 Off-Ramp	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NBL	SB	EB	WB	NB	SB
Delay	0	166.1	89.2	199.9	25	32	20	22	0.0	62.7	87.4	15.7	35.8	44.5	17.3	60.3
LOS	A	F	F	F	C	C	B	C	A	E	F	B	D	D	B	E
	Overall: 160.2				Overall: 23				Overall: 44.3				Overall: 44.2			
NW 40th St & 12th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	0.0	13.5	6.3	8.0	20	20	23	21	0.0	30	7.9	5.4	26.6	25.3	21.1	21
LOS	A	B	A	A	B	B	C	C	A	C	A	A	C	C	C	C
	Overall: 8.4				Overall: 21				Overall: 9.9				Overall: 23.8			
NW 39th St & 12th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	16.5	0.0	9.0	5.1	20	20	23	21	31.8	0.0	9.9	4.1	26.6	25.3	21.1	21
LOS	B	A	A	A	B	B	C	C	C	A	A	A	C	C	C	C
	Overall: 7.4				Overall: 21				Overall: 8.9				Overall: 23.8			
NW 11th St & NW 27th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WBT	NBL	SB	EB	WB	NB	SB
Delay	20.9	23.2	22.2	13.7	20	20	23	21	62.8	67.0	25.9	12.4	26.6	25.3	21.1	21
LOS	C	C	C	B	B	B	C	C	E	E	C	B	C	C	C	C
	Overall: 17.6				Overall: 21				Overall: 25.7				Overall: 23.8			
NW 22nd Ave & EB Ramp	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SBL	EB	WB	NB	SB
Delay	44.6	0.0	9.6	9.7	20	20	23	21	113.4	0.0	11.2	65.6	26.6	25.3	21.1	21
LOS	D	A	A	A	B	B	C	C	F	A	B	E	C	C	C	C
	Overall: 22.5				Overall: 21				Overall: 64.7				Overall: 23.8			
NW 17th Ave & Ramp from EB 836	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	8.3	15.1	10.8	12.9	20	20	23	21	8.9	10.5	7.3	12.1	26.6	25.3	21.1	21
LOS	A	B	B	B	B	B	C	C	A	B	A	B	C	C	C	C
	Overall: 12.9				Overall: 21				Overall: 11.2				Overall: 23.8			
NW 36th Street & NW 17th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	29.4	40.5	28.8	27.7	20	20	23	21	26.6	51.7	23.9	28.6	26.6	25.3	21.1	21
LOS	C	D	C	C	B	B	C	C	C	D	C	C	C	C	C	C
	Overall: 31.6				Overall: 21				Overall: 33.9				Overall: 23.8			
NW 20th St & NW 14th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WBL	NB	SB	EB	WB	NB	SB
Delay	15.1	29.9	24.9	27.3	20	20	23	21	18.1	27.2	16.1	19.7	26.6	25.3	21.1	21
LOS	B	C	C	C	B	B	C	C	B	C	B	B	C	C	C	C
	Overall: 22.5				Overall: 21				Overall: 21.4				Overall: 23.8			
NW 20th St & NW 10th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Delay	30.8	30.6	27.2	25.3	20	20	23	21	38.6	33.0	14.6	18.3	26.6	25.3	21.1	21

	2015								2015											
Additional Intersections (AM)	Synchro AM Peak				VISSIM AM Peak				Synchro PM Peak				VISSIM PM Peak							
NW 28th St &	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB				
Delay	44.0	46.5	8.2	8.6	20	20	23	21	37.4	48.4	12.3	11.2	26.6	25.3	21.1	21				
LOS	D	D	A	A	B	B	C	C	D	D	B	B	C	C	C	C				
	Overall:			20.4	C	Overall:			21	C	Overall:			22	C	Overall:			23.8	C
NW 29th ST & NW 17th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB				
Delay	74.1	28.2	15.5	16.5	20	20	23	21	49.1	31.7	13.4	12.3	26.6	25.3	21.1	21				
LOS	E	C	B	B	B	B	C	C	D	C	B	B	C	C	C	C				
	Overall:			30.8	C	Overall:			21	C	Overall:			20.5	C	Overall:			23.8	C
NW 29th ST & NW 7th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB				
Delay	26.9	48.9	14.3	17.8	20	20	23	21	25.5	28.2	9.6	6.8	26.6	25.3	21.1	21				
LOS	C	D	B	B	B	B	C	C	C	C	A	A	C	C	C	C				
	Overall:			23.0	C	Overall:			21	C	Overall:			14.6	B	Overall:			23.8	C
WB Off Ramp & NW 27th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB				
Delay	0	129	10.3	14.3	20	20	23	21	0.0	38.6	12.7	16.7	26.6	25.3	21.1	21				
LOS	A	F	B	B	B	B	C	C	A	D	B	B	C	C	C	C				
	Overall:			38.8	D	Overall:			21	C	Overall:			20.0	C	Overall:			23.8	C
EB On ramp & NW 27th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB				
Delay	55.4	0.0	1.9	1.6	20	20	23	21	55.5	0	1.7	1.5	26.6	25.3	21.1	21				
LOS	E	A	A	A	B	B	C	C	E	A	A	A	C	C	C	C				
	Overall:			2.4	A	Overall:			21	C	Overall:			2.3	A	Overall:			23.8	C
EB Off ramp & NW 27th Ave	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB				
Delay	36.4	60	12.8	12.1	20	20	23	21	36.6	57.8	12.7	11.5	26.6	25.3	21.1	21				
LOS	D	E	B	B	B	B	C	C	D	E	B	B	C	C	C	C				
	Overall:			17.5	B	Overall:			21	C	Overall:			18.6	B	Overall:			23.8	C
NW North River Dr & NW 13th Ter	EBL	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB				
Delay	207.5	16.3	17.1	10.2	20	20	23	21	9.4	16.1	19.6	12.4	26.6	25.3	21.1	21				
LOS	F	B	B	B	B	B	C	C	A	B	B	B	C	C	C	C				
	Overall:			83.5	F	Overall:			21	C	Overall:			12.5	B	Overall:			23.8	C
NW 22nd Ave & NW 41 ST	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB				
Delay	27.1	33.6	6.7	8.7	20	20	23	21	32	22.9	9	9.3	26.6	25.3	21.1	21				
LOS	C	C	A	A	B	B	C	C	C	C	A	A	C	C	C	C				
	Overall:			13.6	B	Overall:			21	C	Overall:			12.8	B	Overall:			23.8	C

Future 2015 AM Peak Deficiencies

Intersection Deficiencies

- NW 14th St/NW 12th Ave LOS F
- WB 836 Off Ramp/NW 12th Ave LOS F
- NW North River Dr/NW 13th Terrace LOS F

Approach Deficiencies

- NW 20th St/NW 22nd Ave Eastbound LOS F
- NW 20th St/NW 7th Ave Southbound LOS F
- NW 17th St/NW 7th Ave Westbound LOS F
- NW 14th St/NW 27th Ave Westbound LOS F
- NW 14th St/NW 12th Ave Eastbound, Westbound and Northbound LOS F
- NW 7th St/NW 12th Ave Southbound LOS F
- WB 836 Off Ramp/NW 12th Ave Westbound, Northbound and Southbound LOS F
- WB 112 Off Ramp/NW 27th Ave Westbound LOS F
- NW North River Dr/NW 13th Terrace Eastbound LOS F

Specific Movement Deficiencies

- NW 36th St/NW 7th Ave Westbound Left-turn LOS F
- NW 20th St/NW 27th Ave Northbound and Southbound Left-turn LOS F
- NW 14th St/NW 12th Ave Southbound Left-turn LOS F

Future 2015 PM Peak Deficiencies

• Intersection Deficiencies

- NW 17th St/NW 7th Ave LOS F
- NW 14th St/NW 12th Ave LOS F
-

• Approach Deficiencies

- NW 20th St/NW 12th Ave Southbound LOS F
- NW 17th St/NW 7th Ave Eastbound LOS F
- NW 14th St/NW 12th Ave Westbound LOS F
- NW 14th St/NW 10th Ave Northbound LOS F
- NW North River Dr/NW 7th Ave Eastbound LOS F
- NW 11th St/NW 7th Ave Westbound LOS F
- NW 7th St/NW 12th Ave Southbound LOS F
- WB 836 Off Ramp/NW 12th Ave Northbound LOS F
- EB Off Ramp 112/NW 22nd Ave Eastbound LOS F
-

• Specific Movement Deficiencies

- NW 36th St/NW 27th Ave Westbound Left-turn LOS F
- NW 36th St/NW 12th Ave Eastbound Left-turn LOS F
- NW 20th St/NW 27th Ave Northbound Left-turn LOS F
- NW 20th St/NW 12th Ave Eastbound and Northbound Left-turn LOS F

- NW 20th St/NW 7th Ave Eastbound Left-turn LOS F
- NW 14th St/NW 12th Ave Eastbound/Northbound Left-turn LOS F
- NW 7th St/NW 27th Ave Northbound Left-turn LOS F
- NW 7th St/NW 22nd Ave Eastbound Left-turn LOS F
- NW 11th St/NW 27th Ave Westbound Thru and Northbound Left-turn LOS F
- EB Off Ramp 112/NW 22nd Ave Southbound Left-turn LOS F
- NW 20th St/NW 14th Ave Westbound Left-turn LOS F

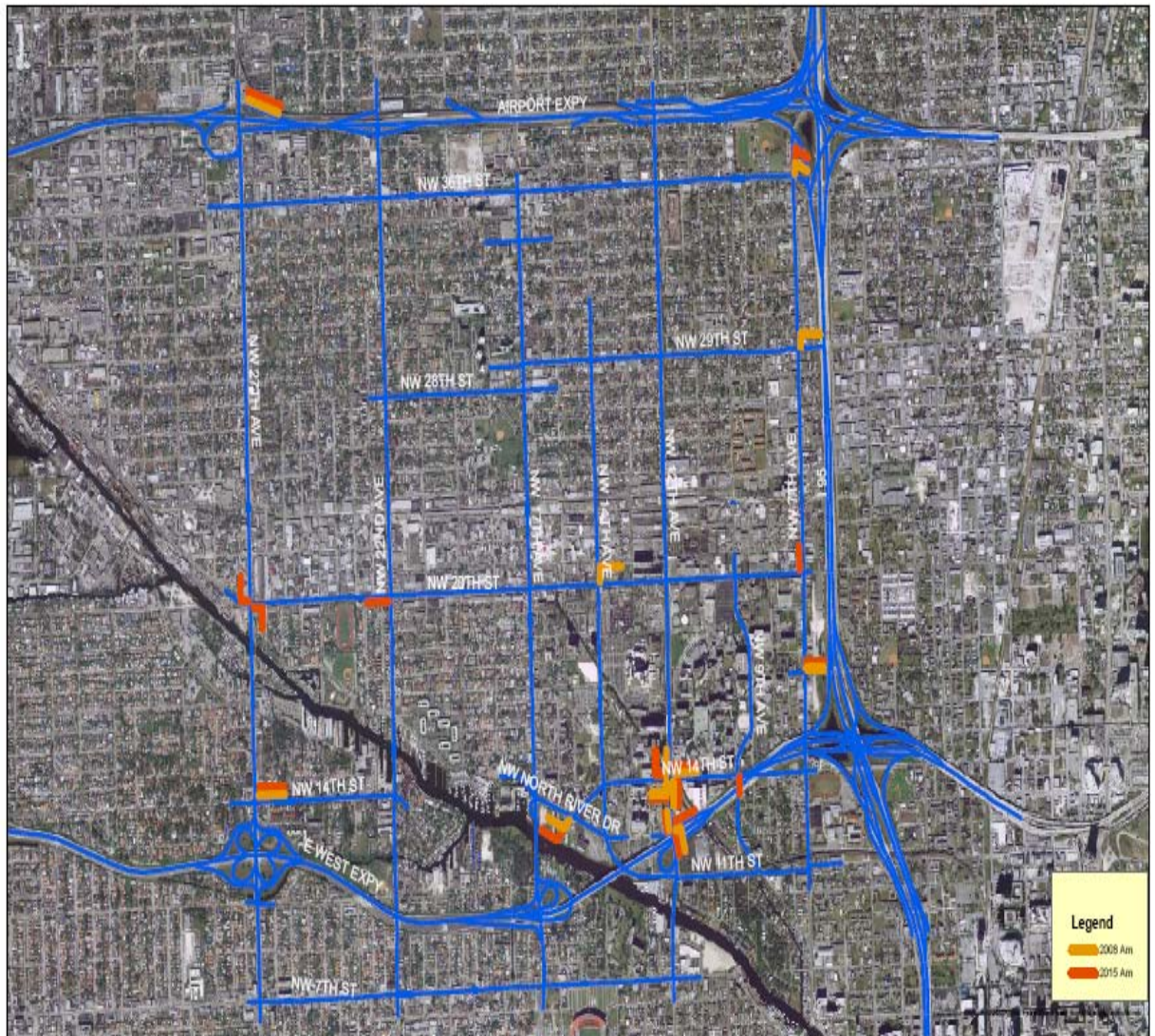


Figure 41: 2015 AM Deficiencies

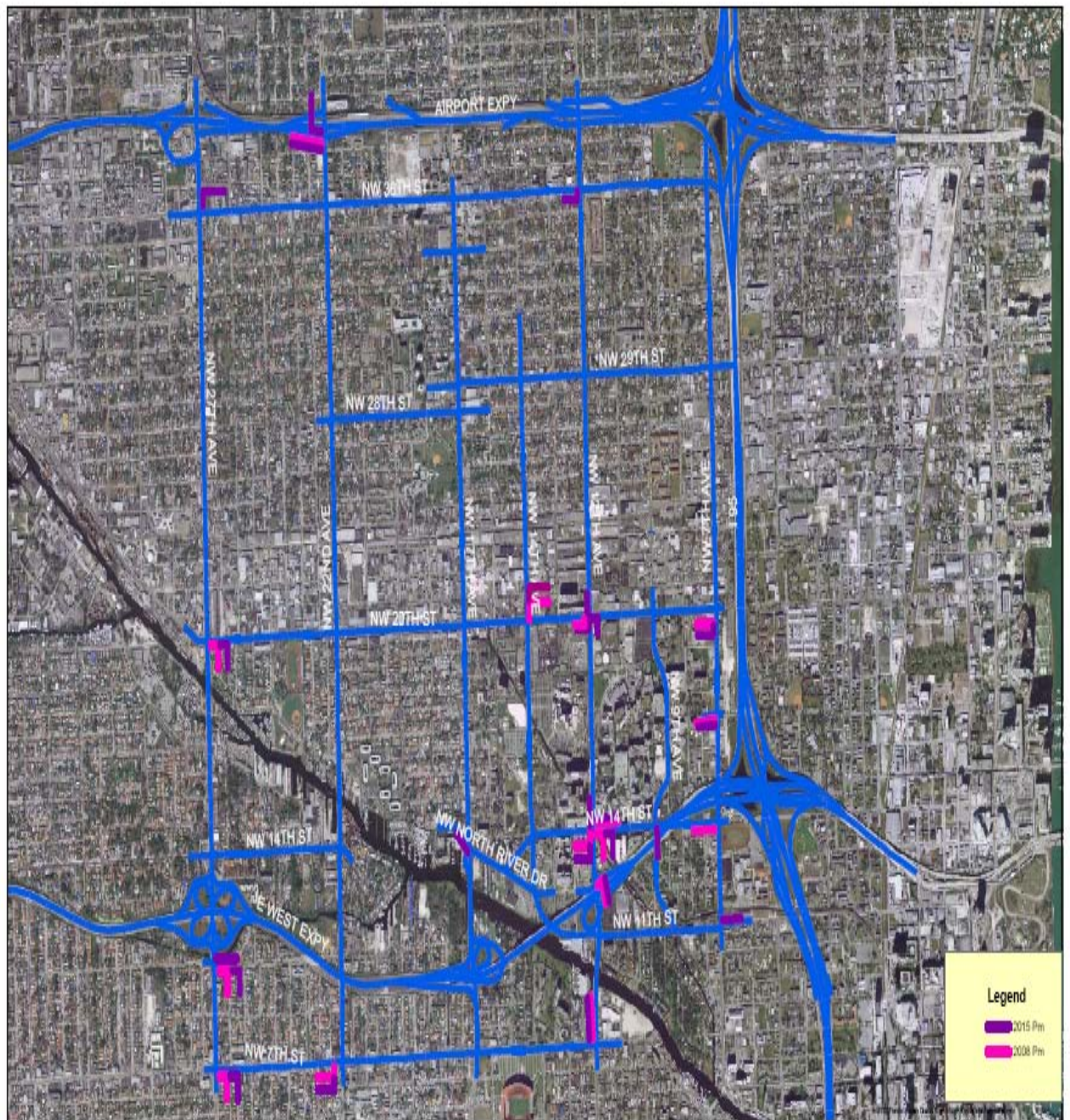


Figure 42: Year 2015 PM Peak Hour Deficiencies

Table 25: Network Statistics/Measures of Effectiveness (MOE)

Synchro Total Network Statistics	2008 AM	2015 AM	2008 PM	2015 PM	2015 AM Mitigated	2015 PM Mitigated
Travel Time (hrs)	4055.9	5480.2	3810.9	4933.1	4433.8	4666.9
Total Delay (hrs)	2706.6	4016.2	2420.2	3483.8	2910.4	3133.2
Delay/Veh (s)	348.5	485.6	324.1	439.5	333.9	357.9
Total Stops	92904	120188	90534	98620	111751	117891
Stops/Veh	3.32	4.04	3.37	3.46	3.56	3.74
Average Speed (mph)	13	12	15	13	14	13

- Total travel time is an hourly summary of delays and travel time.
- Delays per vehicle are the control delay plus the queue delay.
- Total delay is the delay per vehicle multiplied by the number of vehicles in the network/zone in one hour.
- Stops are the number of stops in one hour.
- Average speed is the link distance divided by the travel time including delays.

6.4 Needs Assessment

The previous sections have identified the deficiencies in the study area in terms of roadway links and intersections. This will aid in identifying the required improvements to mitigate the deficiencies and improve the safety and operations in the study area.

During the development of this study, the project management team has worked with the Study Advisory Committee to ensure that the needs of Miami-Dade County Public Works, Miami-Dade Transit, Health District stakeholders, FDOT, Miami-Dade Expressway Authority and the Transportation Local Disadvantaged Community are considered.

During the development of this study it was recommended that the streets or roadways that are adjacent to the major land uses including parking and Metrorail stations have a well interconnected system of sidewalks. Additionally a signage program needs to be developed to direct motorists coming to the Health District from the highway system.

Additionally, there is a need for improved bike path system between the residential areas located in the west side of the study area.

The analysis of level of service for existing and future conditions indicates there is a need to improve the transportation network within the study area. However, a closer look at the intersections reveals operational improvements that are short term and relatively low in cost and therefore will improve the efficiency of the network. These improvements, such as signal timing optimization, additional turn lanes, additional storage capacity for turn lanes, etc., will be recommended specifically by location in the following chapter.

Additional improvements to the freeway system are being studied by the Florida Department of Transportation, and a Project, Development and Environment Study (P&E) is currently underway

along SR 836. Improvements along I-95 such as the High Occupancy Toll (HOT) lanes that are currently being implemented have been taken into consideration. The following chapter includes the proposed recommendations within the study area.

7. Recommendations

Based on the needs assessment completed in Chapter 6 of this report, a series of recommendations have been prepared to address the identified transportation deficiencies and improve the study area in terms of safety and operations. The series of improvements are multimodal in character to ensure that all users of the system will be provided an adequate level of service.

The recommendations are based on two traffic models of the study area with future projects included from the Transportation Improvement Program of Design Report TIP, the LRTP, and the BODR. These have already been justified by the LRTP and come from an analysis of needs and recognized as needed and cost feasible. The additional capacity projects at intersections and links resulting from the model are the newly needed projects. Because of the nature of the basis of design report, BODR projects were not included in the models because they are non-capacity increasing, however, they are part of the recommendations because it is anticipated that their implementation would have positive impacts on traffic in the area, and will make the area more pedestrian friendly, which may remove trips from the study area. Projects have been prioritized by the Project Advisory Committee and have been ranked in the following time frames:

- Short Term -- 1-2 Years
- Mid Term - - 3-5 Years
- Long Term -- +5 Years

Recommendations were made in six categories which include:

- Currently Planned and Recommended Projects n the LRTP, TIP and City of Miami BODR
- Creation of a Transporation Management Organization
- Intersection Modifications
- Pedestrian and Transit Improvements
- Signage and wayfinding improvements
- Additional Capacity Improvements
- New Facilities

Each of the new projects has been cross referenced and mapped (where appropriate) with the existing projects to assure that conflicting recommendations were eliminated.

In general, the future transportation system will consist of existing roadways with several capital improvements to widen roadways, provide additional bike lanes, sidewalk improvements, transit improvements, and operational improvements throughout the network. The series of improvements are the result of the collection of several studies in the area, the recommendations of the Study Advisory Committee and the current analysis performed for the study area with VISSIM, Synchro and the Micro Simulation Model.

Additionally, the projects included in Miami-Dade County's 2030 Long Range Transportation Plan (LRTP) were considered as part of this exercise. Projects that are included as Priority I, were included in the committed network for 2015. It is suggested that each of the recommendations be placed in the appropriate long or short range plan in order to expedite their planning, design and construction by the appropriate body.

7.1 Currently Planned and Recommended Transportation Projects

Currently Planned and Recommended Improvements as defined as collection of projects suggested in other studies for the study area. This includes projects already in the TIP and LRTP, as well as those in the City of Miami Basis of Design Report, (BODR), which are not yet part of a formal capital improvement plan. As seen in the table below, the projects highlighted in yellow are those that are either in the current year of the TIP or the first priority of the LRTP, and as such are funded. Those not highlighted are not funded. These projects have been cross checked with all other projects suggested in this report. None of the projects in this report conflict with one another. This means, as an example, that if a street was suggested in one document to be pedestrian-oriented, it was not suggested in this plan to have its sidewalks narrowed.

There are 62 Currently Planned and Recommended Transportation Improvements.

Of these, 25 are funded as part of the TIP or the Priority 1 LRTP. Twenty- one projects are from the TIP, 12 projects are from the LRTP, and 33 of these projects are suggested in the City of Miami BODR. Specific categories of projects include:

- ITS projects
- Capacity projects
- Studies
- Operational projects
- Resurfacing /Landscaping / Maintenance projects
- Transit Projects
- Signage and Street Furniture projects

Most projects come from the Resurfacing, Landscaping, and Maintenance category, with the vast majority of those projects coming from the BODR. ITS projects are mainly relegated to the expressway system and are being implemented to better use the capacity of the system, particularly for open road tolling projects on SR 112 and SR 826. It is projected that efforts like this, while not immediately affecting the Health District itself, will have an impact on the travel time and travel behavior of those wishing to access the area. Of these projects, all but two are funded in the 2009 TIP and Priority 1 LRTP. Similarly four of the 8 capacity projects are directly linked to the I-95 Express project. Only five of these projects are currently funded. One study, of the five suggested, is currently being funded. This is the 836/I-95/I-395 PD&E study which indirectly will impact the study area. Seven area wide signage and street furniture projects are suggested which come from the BODR and recommend various signage programs in the form of gateway and directional signage from the expressway system. To implement these signage programs they should be brought to FDOT and MDX for funding and

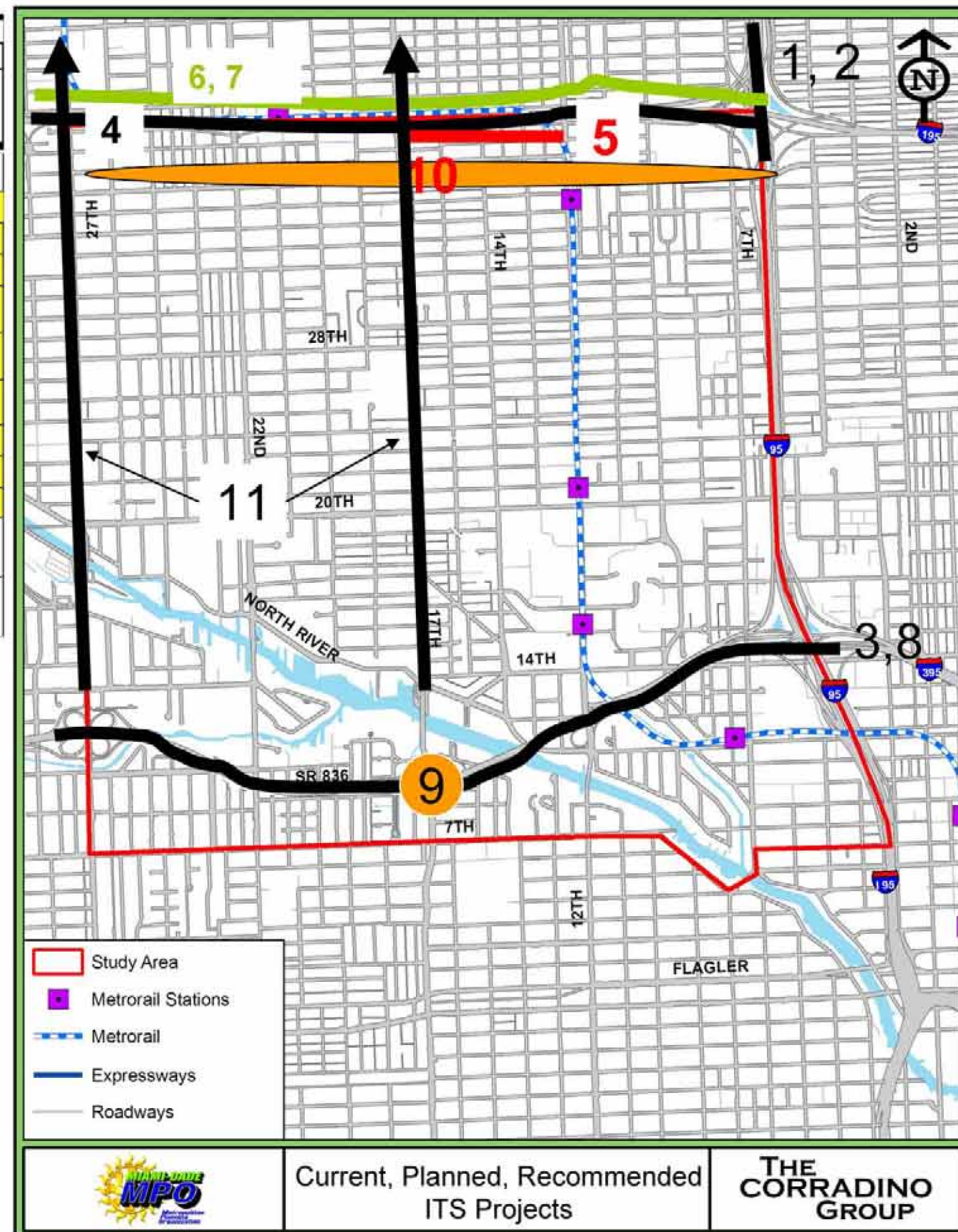
prioritization, a formal scope developed, and the project bid and let. Because of the minimal cost of such an improvement this may be best accomplished through one of the FDOT existing “push button” contracts.

Health District Traffic Study

Current, Planned/Recommended Improvements

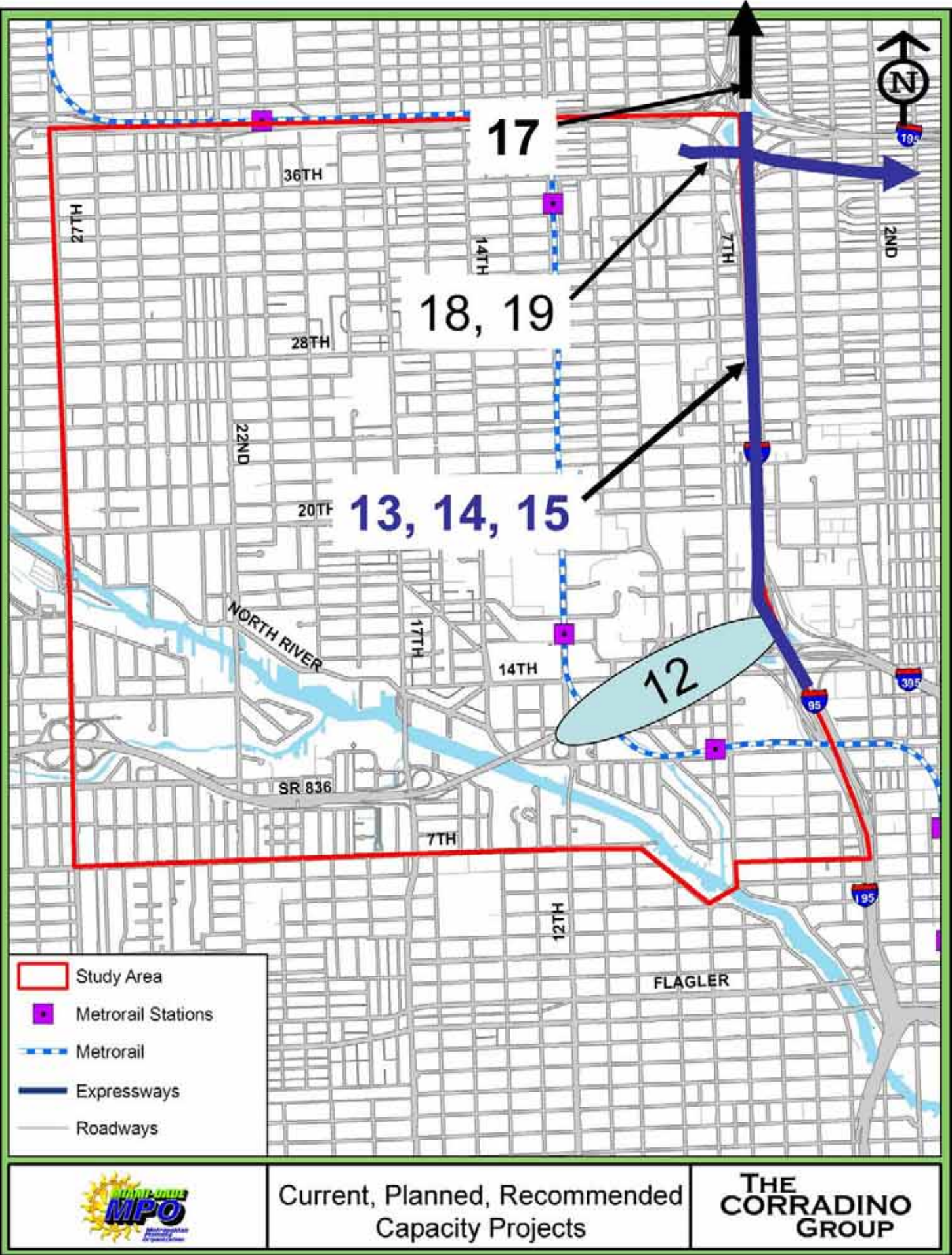
#	Facility	From	To	Project Description	Source	Cost (000's)	Priority Short Term (1-2 Yrs) Mid Term (3-5 Yrs) Long Term (>5 Yrs)	Notes
ITS Projects								
CPR 1	MDTA - I-95 Express	Downtown MIA Along I-95	Sheridan St & Broward BLVD	Urban Corridor Improvements	2009 TIP	5,787	Short Term	Ongoing project with FDOT
CPR 2	MDTA - I-95 Express	South Florida Commuter Services		Urban Corridor Improvements	2009 TIP	865	Short Term	Ongoing project with FDOT
CPR 3	SR 836 Open Road Tolling Signage	NW 137th Ave	I-95	Open Road Tolling Signage	2009 TIP	6,360	Short Term	Coordinate with MDX
CPR 4	SR 112 Communications and Incident Mgmt/Surveillance	Miami International Airport	I-95	Installation of communication equipment	2009 TIP	4,770	Short Term	Coordinate with MDX
CPR 5	SR 112 Infrastructure Modifications for Open Road Tolling	NW 17th Ave	NW 12 Ave	SR 112 Infrastructure Modifications for Open Road Tolling	2009 TIP	2,414	Short Term	Coordinate with MDX
CPR 6	SR 112 Open Road Tolling Signage	LeJune Rd	I-95	Open Road Tolling Signage	2009 TIP	1,911	Short Term	Coordinate with MDX
CPR 7	SR 112 Toll System Conversion	LeJune Rd	I-95	Toll System Conversion	2009 TIP	11,107	Short Term	Coordinate with MDX
CPR 8	SR 836 Toll System Conversion	NW 137th Ave	I-95	Toll System Conversion	2009 TIP	26,446	Short Term	Coordinate with MDX
CPR 9	SR 836 EB Toll Plaza	NW 27 Ave	NW 17 Ave	New Toll Plaza on EB Ramp to NW 17 Ave	P-1 LRTP		Short Term	Coordinate with MDX
CPR 10	NWINE 38 St Corridor	SR 826	US-1	ITS (Includes CCTV, Roadway Sensors, Arterial Dynamic Message Signs, Wireless Communication)	P-2 LRTP	NA	Long Term	
CPR 11	US 441 / NW 17 Ave / 27 Ave Corridor	US-1	Broward County Line	ITS (Includes CCTV, Roadway Sensors, Arterial Dynamic Message Signs, Wireless Communication)	P-2 LRTP	NA	Long Term	

Yellow highlights mean project is funded



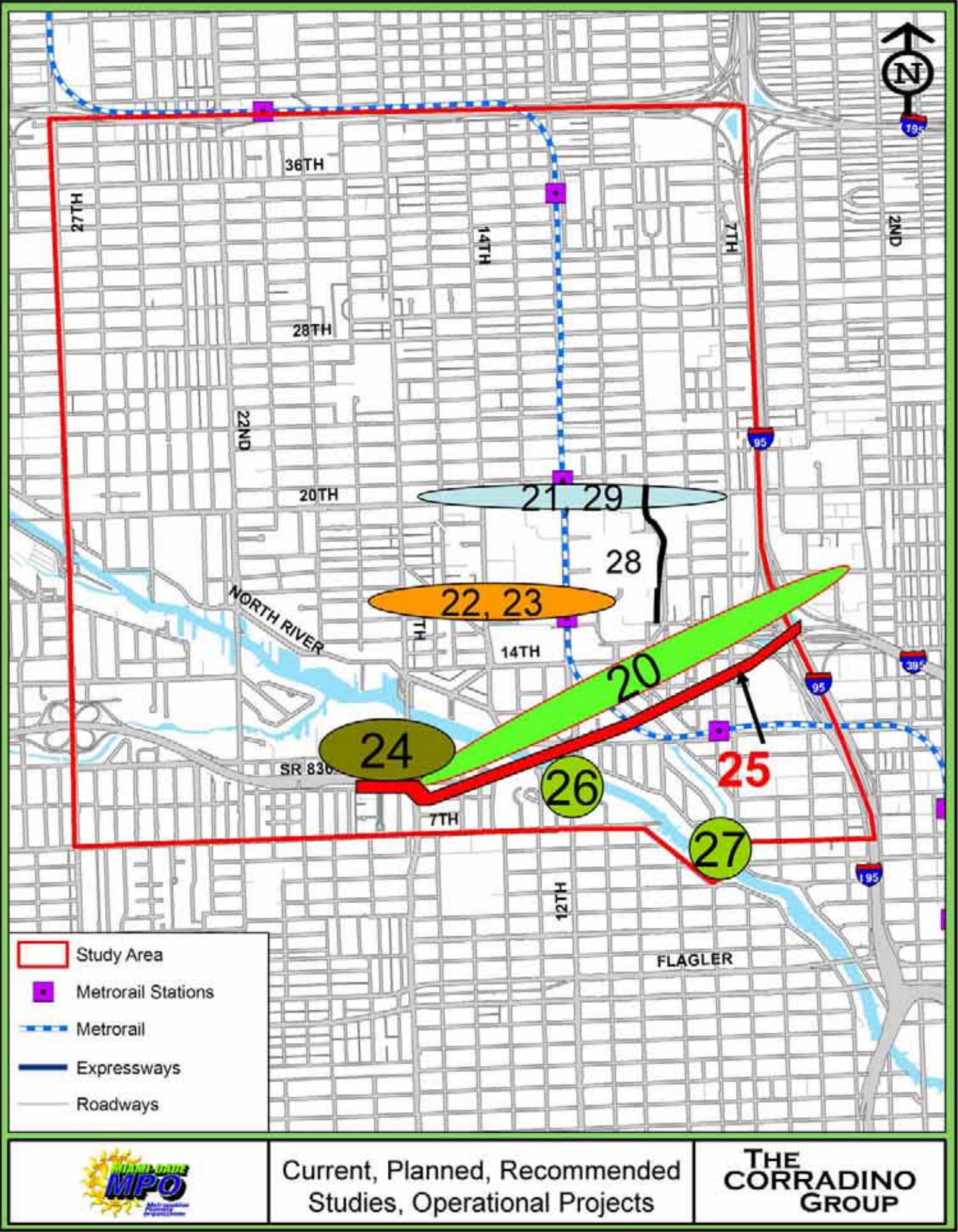
Health District Traffic Study								
Current, Planned/Recommended Improvements								
#	Facility	From	To	Project Description	Source	Cost (000's)	Priority Short Term (1-2 Yrs) Mid Term (3-5 Yrs) Long Term (+5 Yrs)	Notes
Capacity Projects								
CPR 12	SR 836 / I-95	NW 12 Ave	I-95	Intersection (Modify)	2009 TIP	34,851	Short Term	Coordinate with FDOT
CPR 13	SR 9A / I-95	S of SR 836/I-395	Golden Glades Interchange	Add Special Use Lane	2009 TIP	13,035	Short Term	Coordinate with FDOT
CPR 14	SR 9A / I-95 Express	Operations & Maintenance		Add Special Use Lane	2009 TIP	15,174	Short Term	Ongoing project with FDOT
CPR 15	SR 9A / I-95 Express	N of SR 836 / I-395	Golden Glades Interchange	Add Special Use Lane	2009 TIP	69,090	Short Term	Ongoing project with FDOT
CPR 16	SR25 / NW 36 St	NW 17 Ave	NW 22 Ave	Intersection (Modify)	2009 TIP	419	Short Term	Coordinate with FDOT
CPR 17	I-95	South of I-395	North of SR 112	Add Reversible Managed Lanes	P-2 LRTP	N/A	Long Term	Coordinate with FDOT
CPR 18	SR 112 / I-95	I-95 (NW 10 Ave)	Biscayne	Interchange/Ramp Improvements and Auxiliary Lanes	P-2 LRTP	N/A	Long Term	Coordinate with MDX / FDOT
CPR 19	SR 112 / I-95	I-95 (NW 10 Ave)	Biscayne	Interchange/Ramp Improvements and Auxiliary Lanes	P-4 LRTP	N/A	Long Term	Coordinate with MDX / FDOT

Yellow highlights mean project is funded

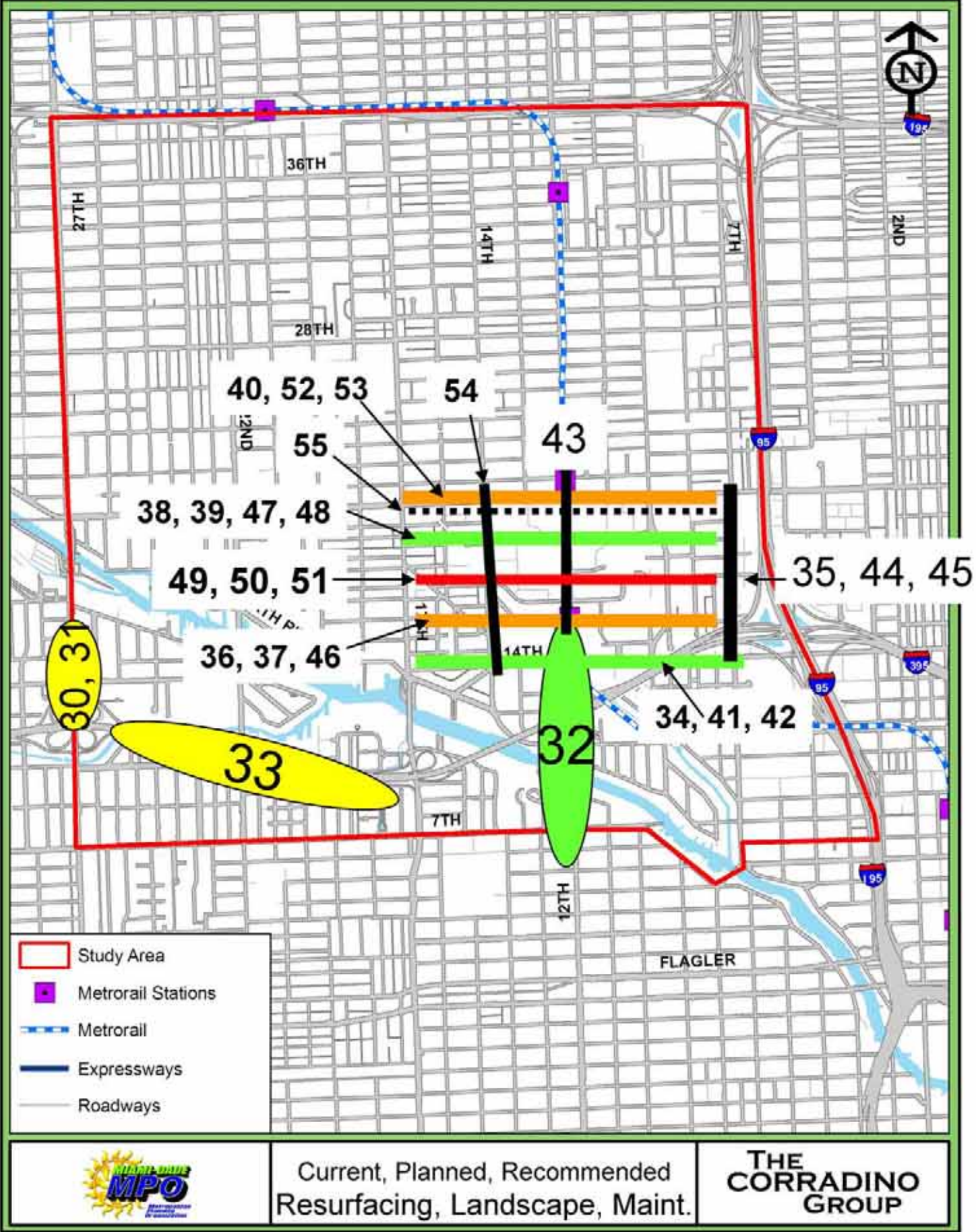


Health District Traffic Study								
Current, Planned/Recommended Improvements								
#	Facility	From	To	Project Description	Source	Cost (000's)	Priority Short Term (1-2 Yrs) Mid Term (3-5 Yrs) Long Term (+5 Yrs)	Notes
Studies								
CPR 20	SR 836 / I-395 / I-95	NW 17th Ave	Macarthur Cswy Bridge	PD&E / EMD Study	2009 TIP	511	Short Term	
CPR 21	NW 19 St	NW 7 Ave	NW 17 Ave	Study reduction of travel lanes	MHD-BODR	50	Short Term	City should initiate Study in cooperation with
CPR 22	NW 14 Av	NW 14 St	NW 20 St	Study reduction of travel lanes	MHD-BODR	50	Short Term	City should initiate Study in cooperation with
CPR 23	NW 14 Av	NW 14 St	NW 20 St	Study ecological and aesthetic enhancement of Wagner Creek	MHD-BODR	30	Short Term	City should initiate Study in cooperation with MDCPW
CPR 24	SR 836 / I-395	West of NW 17 Ave	I-95	Corridor Improvement: C-R Road	P-3 LRTP	NA	Long Term	Coordinate with FDOT
Operational Projects								
CPR 25	SR 836 / I-95 Interchange Environmental Impact Study	NW 17th Ave	I-95	Coordination of Operational Improvements	2009 TIP	188	Short Term	Ongoing project.
CPR 26	SR 933 / NW 12 Ave	Over Miami River	BR # 870662	Replace Movable Span Bridge	2009 TIP	3,600	Short Term	Coordinate with FDOT
CPR 27	SR 7 / NW 8th St	Bridge From NW 3 St	NW 8th St	Replace Movable Span Bridge	2009 TIP	3,600	Short Term	Coordinate with FDOT
CPR 28	NW 9/10 Aves	NW 14 St	NW 20 St	Eliminate center turn lane in order to add shade tree planter areas and widened sidewalk - will need to be designed to address emergency access issues	MHD-BODR	TBD	Long Term	Work to have placed on LRTP or TIP, with FDOT and MDCPW
CPR 29	NW 19 St	NW 7 Ave	NW 17 Ave	Establish parking zones	MHD-BODR	30	Mid Term	City undertake analysis

Yellow highlights mean project is funded



Current, Planned/Recommended Improvements								
#	Facility	From	To	Project Description	Source	Cost		Notes
Resurfacing / Landscaping / Maintenance								
CPR 30	SR 9 / NW 27 Ave	100' S of NW 11 St	220' S of NW 43 Ter	Resurfacing	2009 TIP	5,552	Short Term	Coordinate with FDOT
CPR 31	SR 9 / NW 27 Ave	SW 8 St	NW 11 St	Resurfacing	2009 TIP	3,188	Short Term	Coordinate with FDOT
CPR 32	SR 933 / NW 12 Ave	NW 7 St	NW 16 St	Landscaping	2009 TIP	320	Short Term	Coordinate with FDOT
CPR 33	SR 836 / NW 27 Ave Interchange	NW 27 Ave	NW 17 Ave	Reconstruct SR 836	P-3 LRTP	NA	Long Term	Coordinate with FDOT
CPR 34	NW 14 St	NW 7 Ave	NW 17 Ave	Acquire additional ROW or easements as adjacent properties are redeveloped	MHD-BODR	TBD	Long Term	City should evaluate potential for ROW acquisition
CPR 35	NW 7 Av	NW 14 St	NW 20 St	Obtain 12 feet of additional ROW on each side of street for use as widened sidewalks and canopy tree planting	MHD-BODR	TBD	Long Term	City should evaluate potential for ROW acquisition
CPR 36	NW 15 St	NW 7 Ave	NW 17 Ave	Narrow travel lanes	MHD-BODR	50	Long Term	City should initiate Study in cooperation with MDCPW
CPR 37	NW 15 St	NW 7 Ave	NW 17 Ave	Create continuous parallel parking on one side of street	MHD-BODR	TBD	Long Term	City should initiate Study in cooperation with MDCPW
CPR 38	NW 18 St	NW 7 Ave	NW 17 Ave	Narrow travel lanes	MHD-BODR	50	Long Term	City should initiate Study in cooperation with MDCPW
CPR 39	NW 18 St	NW 7 Ave	NW 17 Ave	Remove limited parallel parking on one side of street	MHD-BODR	TBD	Mid Term	City should initiate Study in cooperation with MDCPW
CPR 40	NW 20 St	NW 7 Ave	NW 17 Ave	Acquire additional ROW or easements as properties redevelop	MHD-BODR	TBD	Long Term	City should evaluate potential for ROW acquisition
CPR 41	NW 14 St	NW 7 Ave	NW 17 Ave	Construct landscaped median where turn lane is not warranted	MHD-BODR	TBD	Long Term	City should initiate Study in cooperation with MDCPW
CPR 42	NW 14 St	NW 7 Ave	NW 17 Ave	Plant canopy trees on adjacent landscaped areas	MHD-BODR	TBD	Long Term	City should initiate Study in cooperation with MDCPW
CPR 43	NW 12 Av	NW 14 St	NW 20 St	Improve hardscape and landscape at Metrorail Station	MHD-BODR	TBD	Long Term	City should initiate study in cooperation with MDT
CPR 44	NW 7 Av	NW 14 St	NW 20 St	Add landscaped median where turn lane is not warranted	MHD-BODR	TBD	Long Term	City should initiate study in cooperation with MDCPW
CPR 45	NW 7 Av	NW 14 St	NW 20 St	Create continuous 8 feet wide tree planting strip	MHD-BODR	15	Long Term	City should initiate study in cooperation with MDCPW
CPR 46	NW 15 St	NW 7 Ave	NW 17 Ave	Plant shade trees	MHD-BODR	350	Mid Term	City should initiate Study in cooperation with
CPR 47	NW 18 St	NW 7 Ave	NW 17 Ave	Add canopy shade trees	MHD-BODR	350	Mid Term	City led initiative
CPR 48	NW 18 St	NW 7 Ave	NW 17 Ave	Add bulb-outs as needed to define parking and provide planting space for street trees	MHD-BODR	TBD	Mid Term	Coordinate with MDCPW
CPR 49	NW 17 Av	NW 14 St	NW 20 St	Improve street tree canopy	MHD-BODR	TBD	Mid Term	City led initiative
CPR 50	NW 17 Av	NW 14 St	NW 20 St	Additional landscape for unused islands	MHD-BODR	TBD	Mid Term	Coordinate with MDCPW
CPR 51	NW 17 Av	NW 14 St	NW 20 St	Upgrade street furniture	MHD-BODR	50	Short Term	City led initiative
CPR 52	NW 20 St	NW 7 Ave	NW 17 Ave	Incorporate median landscaping where turn lane not warranted	MHD-BODR	TBD	Mid Term	Coordinate MDCPW
CPR 53	NW 20 St	NW 7 Ave	NW 17 Ave	Encourage planting canopy trees on adjacent private landscape areas	MHD-BODR	TBD	Short Term	City to work with private land owners
CPR 54	NW 14 Av	NW 14 St	NW 20 St	Encourage planting on adjacent private landscaped areas	MHD-BODR	TBD	Short Term	City to work with private land owners
CPR 55	NW 19 St	NW 7 Ave	NW 17 Ave	Establish tree planting	MHD-BODR	TBD	Short Term	City led initiative



Yellow highlights mean project is funded

7.2 Transportation Management Organization

This study recommends the creation of a TMO in the Health District area to develop, coordinate, and implement Transportation Demand strategies, mainly due to the concentration of employees. This chapter describes programs or initiatives that can be included in TMOs such as Transportation Demand Management (TDM) strategies and benefits of a partnership with South Florida Commuter Services. South Florida Commuter Services. It describes TMOs that are currently in place in the area as well as past TMOs.

A TMO is generally a non-profit, member-controlled organization that provides transportation services in a particular area, such as a commercial district, mall, medical center city center, or industrial park. They are generally public-private partnerships, consisting primarily of area businesses with local government support. Transportation Management Coordinators (TMC) are professionals who work for TMO's or individual employers.

TMO's provide an institutional framework for TDM Programs and services. They are usually more cost effective than programs managed by individual businesses. TMO's allow small employers to provide Commute Trip Reduction services comparable to those offered by large companies. They avoid problems that may be associated with government-run TDM programs, since they are controlled by members.

The goal of a TMO is synergy in that, individual employers will be able to create more effective TDM programs by pooling their resources with other employers, than they would be able to alone. TMO's are especially beneficial to their smaller members who are able to offer their employees more transportation options than they would be able to in isolation. The concept is used in many arenas. Many chambers of commerce, for instance, offer group insurance rates. Pooling resources reduces the cost of the program.

Transportation Management Organizations can provide a variety of services that encourage more efficient use of transportation and parking resources. Miami Beach utilized its TMO to operate its Electrowave, the first circulator in Miami Dade County. South Florida Commuter Services acts as a large TMO for our region. Among the services provided by TMO's are:

- Access Management
- Commute Trip Reduction
- Commuter Financial Incentives
- Flextime Support
- Freight Transport Management
- Guaranteed Ride Home Services
- Marketing and Promotion
- Parking Management and Brokerage
- Pedestrian and Bicycle Planning
- Rideshare Matching and Vanpool Coordination
- Shared Parking Coordination
- Shuttle Services
- Special Event Transport Management

- Telework Support
- Tourist Transport Management
- Transit Improvements
- Transportation Access Guides

Transportation Management Organizations can support Smart Growth efforts to create more accessible and efficient land use patterns. A TMO can provide parking management and brokerage services that result in more efficient use of parking resources. This can reduce the need to expand parking capacity, and promote more efficient use of parking resources. For example, a business may allow its parking spaces to be used by a nearby restaurant on Friday and Saturday nights in exchange for use of the restaurant's parking on weekday afternoons. This may allow employers with successful Commute Trip Reduction programs to recoup their costs by leasing excess parking spaces.

Regional or local governments, chambers of commerce, or managers of a major facility (such as a mall or hospital) can help create a TMO and provide seed funding. TMO's are typically funded through dues paid by member businesses and government grants.

A TMO provides an institutional structure to deliver various TDM strategies. One study, by the TDM Resource Center, estimates that a TMO can reduce 6-7 percent of total commute trips if implemented alone, and significantly more if implemented with other TDM strategies.

A TMO's is appropriate for any geographic area like the Health District where there are multiple employers or businesses clustered together, which can benefit from cooperative transportation management or parking brokerage services. It is recommended that one be developed for the Health District, using the basic framework of the one that is operated regionally by the state, (South Florida Commuter Services SFCS).

Recommendations and Guidelines for the Health District TMO

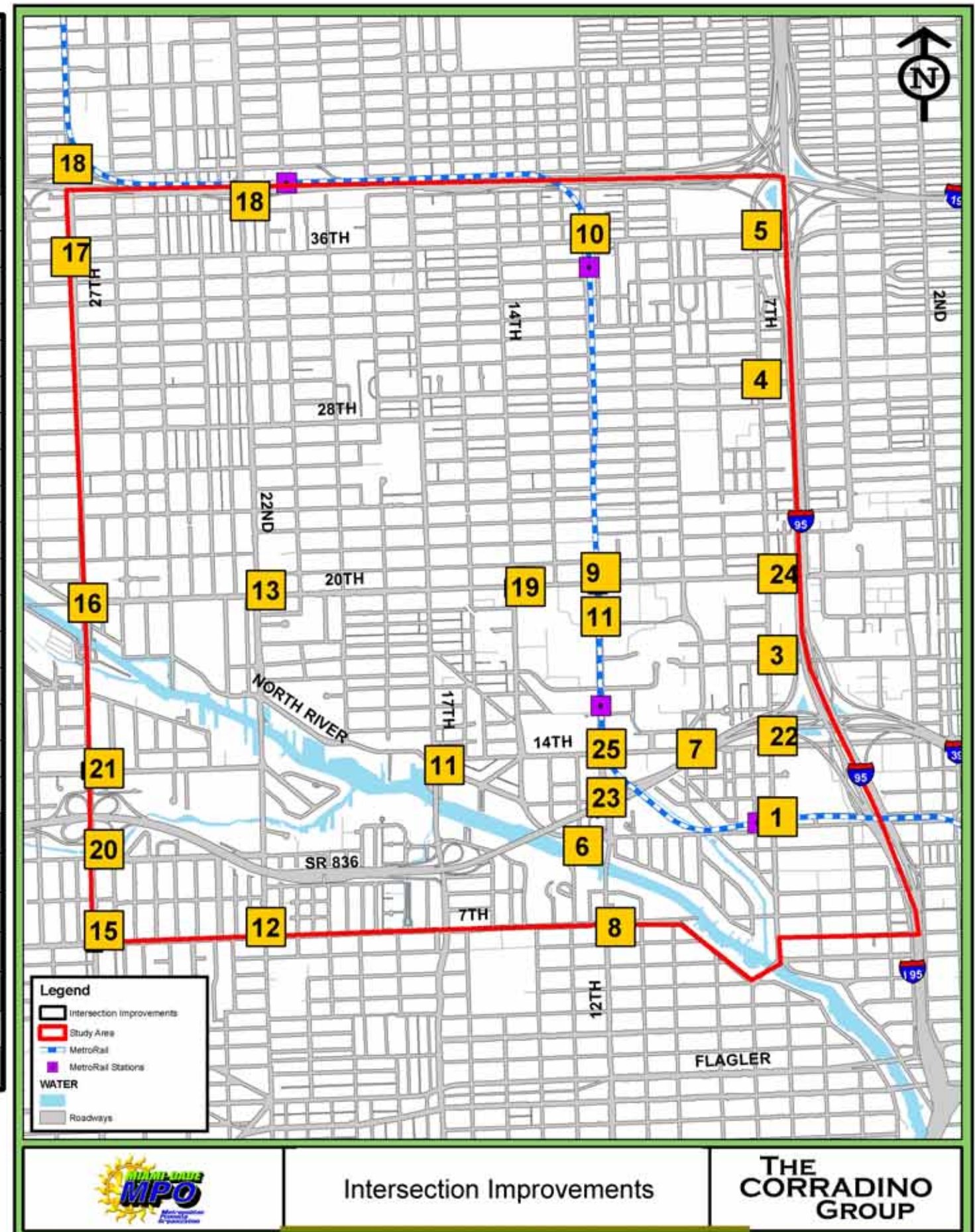
It is recommended that the Health District stakeholders jointly fund a position as TMO director, from the SFCS. The SFCS staff should be provided office space in the Health District. Staff would consist of a director and administrative assistant. The job would entail organizing the aforementioned TDM measures as provided by SFCS.

Health District Traffic Study					
Transportation Management Organization					
#	Project Description	Source	Cost	Priority Term (1-2 Yrs) Mid Term (3-5 Yrs) Long Term (+5Yrs)	Notes
TMO 1	Coordinate TMO Liaison with SFCS	Study	\$40,000	Short Term	
TMO 2	Study and Initiate TDM Initiatives	Study	\$20,000	Short Term	City undertake evaluation of what initiatives are practical. Can be done by coordinating with Miami Partnership

7.3 Intersection Modifications

Intersection modifications are one of two primary categories where new projects, ones that do not appear in any previous studies, have been added to the recommendations for the area. These have been cross referenced with all previous suggested projects and it was found that there are no conflicts. These projects are seen generally as efficient ways of enhancing the operations and capacity of the roadway network by enhancing traffic flow. There are 25 projects recommended in total. These are mainly on the 7th Avenue, 12th Avenue, and 27th Avenue Corridors. Eighteen of these projects deal with signal optimization. It is recommended that the optimization projects be forwarded immediately with the signal warrant analysis of 20th Ave and 19th St to Miami Dade County Public Works, Traffic Division for consideration and prioritization. The remaining six projects contain recommendations to implement various right turn or left turn lanes, and should be considered by MDCPW as well.

Health District Traffic Study Intersection Modifications						
#	Facility	Project Description	Source	Cost (\$,000's)	Priority Short Term (1-2 Yrs) Mid Term (3-5 Yrs) Long Term (>5Yrs)	Notes
IM 1	NW 7 th Ave and 11 th St	Optimize Signal (PM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 2	NW 12 th Ave and 19 th St	Signal Warrant Analysis	Macro Model	\$ 4,000	Short Term	Refer to FDOT in December of 2008
IM 3	NW 7 th Ave and 17 th St.	Optimize Signal (AM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 4	NW 7 th Ave and 29 th St.	Optimize Signal (AM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 5	NW 7 th Ave and 36 th St.	Optimize Signal (AM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 6	North River Drive and 13 th Ter	Optimize Signal (AM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 7	NW 10 th Ave and 14 th St.	Optimize Signal (PM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 8	NW 12 th Ave and 7 th St	Optimize Signal (PM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 9	NW 12 th Ave and 20 th St	Optimize Signal (PM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 10	NW 12 th Ave and NW 36 th St	Optimize Signal (PM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 11	NW 17 th Ave and N. River Dr.	Optimize Signal (PM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 12	NW 22 nd Ave and 7 th St	Optimize Signal (PM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 13	NW 22 nd Ave and 20 th St	Optimize Signal (AM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 14	NW 22 nd Ave and EB 112 Ramp	Optimize Signal (PM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 15	NW 27 th Ave and 7 th St	Optimize Signal (PM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 16	NW 27 th Ave and 20 th St	Optimize Signal (AM) (PM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 17	NW 27 th Ave and NW 36 th St	Optimize Signal (PM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 18	NW 27 th Ave and WB 112 Off-ramp	Optimize Signal (AM)	Macro Model	\$ 4,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 19	NW 14 th Ave and 20 th St	Add Left Turn Lane Signal Phase EB+WB Approaches (AM) (PM)	Macro Model	\$ 4,000	Short Term	Initiate traffic operations analysis to determine ultimate opportunities and constraints
IM 20	NW 27 th Ave and 11 th St	Add Left Turn Lane Signal Phase EB Approach (PM)	Macro Model	\$ 4,000	Short Term	Initiate traffic operations analysis to determine ultimate opportunities and constraints
IM 21	NW 27 th Ave and 14 th St	Allow Two WB Movements in Signal (AM) (PM)	Macro Model	\$ 4,000	Short Term	Initiate traffic operations analysis to determine ultimate opportunities and constraints
IM 22	NW 7 th Ave and 14 th St.	New Right Turn Lanes (SB Approach) (PM)	Macro Model	\$ 66,000	Long Term	Initiate traffic operations analysis to determine ultimate opportunities and constraints
IM 23	NW 12 th Ave and WB 836	Dual Right Turn Lanes (WB Approach) (AM) (PM)	Macro Model	\$ 66,000	Long Term	Initiate traffic operations analysis to determine ultimate opportunities and constraints
IM 24	NW 7 th Ave and 20 th St.	Optimize Signal (AM) / New Right Turn Lanes (SB Approach) (PM)	Macro Model	\$ 66,000	Short Term	Refer all optimizations to MDCPW for immediate initiation
IM 25	NW 14 th St. and 12 th Ave.	NB and WB New Dual Left Turn Lanes (AM) (PM)	Macro Model	\$ 78,000	Long Term	Initiate traffic operations analysis to determine ultimate opportunities and constraints

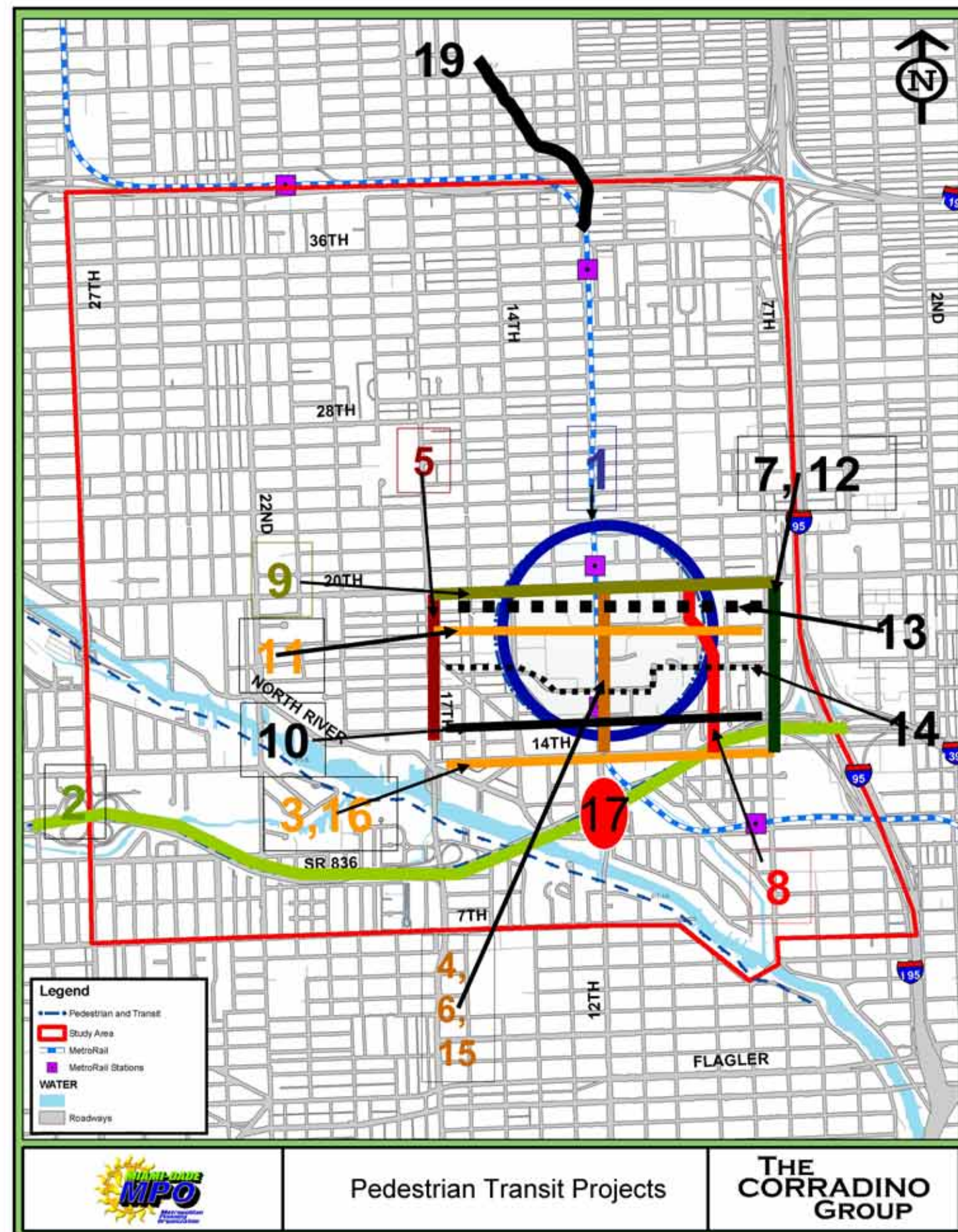


7.4 Pedestrian and Transit Improvements

Pedestrian and Transit Improvements include previously recommended studies coming again from the TIP, LRTP and BODR. There are 18 projects in this category. Only two are funded in the 2009 TIP, and these include the Health District Circulator, and the 836 Express Bus service Study. Five more projects are in the LRTP but remain unfunded, including the Miami Street Car, the Metrorail Feeder, and the Miami River Greenway projects. Thirteen more projects in the Health District come from the BODR, and a final recommendation of a pedestrian barrier along 12th Avenue to prevent jaywalking results from the current analysis.

Health District Traffic Study Pedestrian and Transit							
#	Facility	From	To	Project Description	Source	Cost (000's)	Priority Short Term (1-2 Yrs) Mid Term (3-5 Yrs) Long Term (+5 Yrs)
PT 1	City of Miami	Health Center Circulator Civic Center Metrorail Station		Transit Service Demonstration	2009 TIP	748	Short Term
PT 2	SR 836 Express Bus Service Study	NW 137th Ave	I-95	Express Bus Service Study	2009 TIP	8	Short Term
PT 3	NW 14 St	NW 7 Av	NW 17 Av	Provide special crosswalk paving to accommodate pedestrian activity and reinforce urban character of street	MHD- BODR		Short Term
PT 4	NW 12 Av	NW 14 St	NW 20 St	Improve crosswalk at NW 14 th , NW 15 th , and NW 16 th Streets with decorative surface	MHD- BODR		Short Term
PT 5	NW 17 Av	NW 14 St	NW 20 St	Alternate paving material at key crosswalks	MHD- BODR		Short Term
PT 6	NW 12th Avenue			Pedestrian Barrier	SAC		Short Term
PT 7	NW 7 Av	NW 14 St	NW 20 St	Install wide crosswalks at NW 14 th , NW 16 th , and NW 20 th Streets	MHD- BODR		Short Term
PT 8	NW 9/10 Av	NW 14 St	NW 20 St	Enhance key crosswalks at NW 16 th Street	MHD- BODR		Short Term
PT 9	NW 20 St	NW 7 Av	NW 17 Av	Study tie-in with Wagner pedestrian link	MHD- BODR		Short Term
PT 10	NW 15 St	NW 7 Av	NW 17 Av	Install continuous 7 feet sidewalk	MHD- BODR		Short Term
PT 11	NW 18 St	NW 7 Av	NW 17 Av	Widen sidewalks	MHD- BODR		Mid Term
PT 12	NW 7 Av	NW 14 St	NW 20 St	Widen sidewalks to 8 feet	MHD- BODR		Mid Term
PT 13	NW 19 St	NW 7 Av	NW 17 Av	Create shaded walkable streets	MHD- BODR		Mid Term
PT 14	Healthwalk/NW 16 St/17 St	NW 7 Av	NW 17 Av	widen sidewalks to achieve 8 feet on at least one side of the streets	MHD- BODR		Long Term
PT 15	NW 12 Av	NW 14 St	NW 20 St	Coordinate with adjacent landowners north of NW 16 th Street to widen sidewalks and add street trees on private property or easements	MHD- BODR		Long Term
PT 16	NW 14 St	NW 7 Av	NW 17 Av	Widen sidewalks to 6 feet minimum	MHD- BODR		Long Term
PT 17	Miami River Greenway	SW 12 Ave	SR 836	New paved path along the south side of the Miami River	G&T LRTP		Long Term
PT 18	BRT/LRT Metrorail Feeder	NW 12 Ave/NW 36 St (Allapattah Metrorail Station)	Miami- Dade/Browa rd County Line	Premium Transit	P-4 LRTP		Long Term

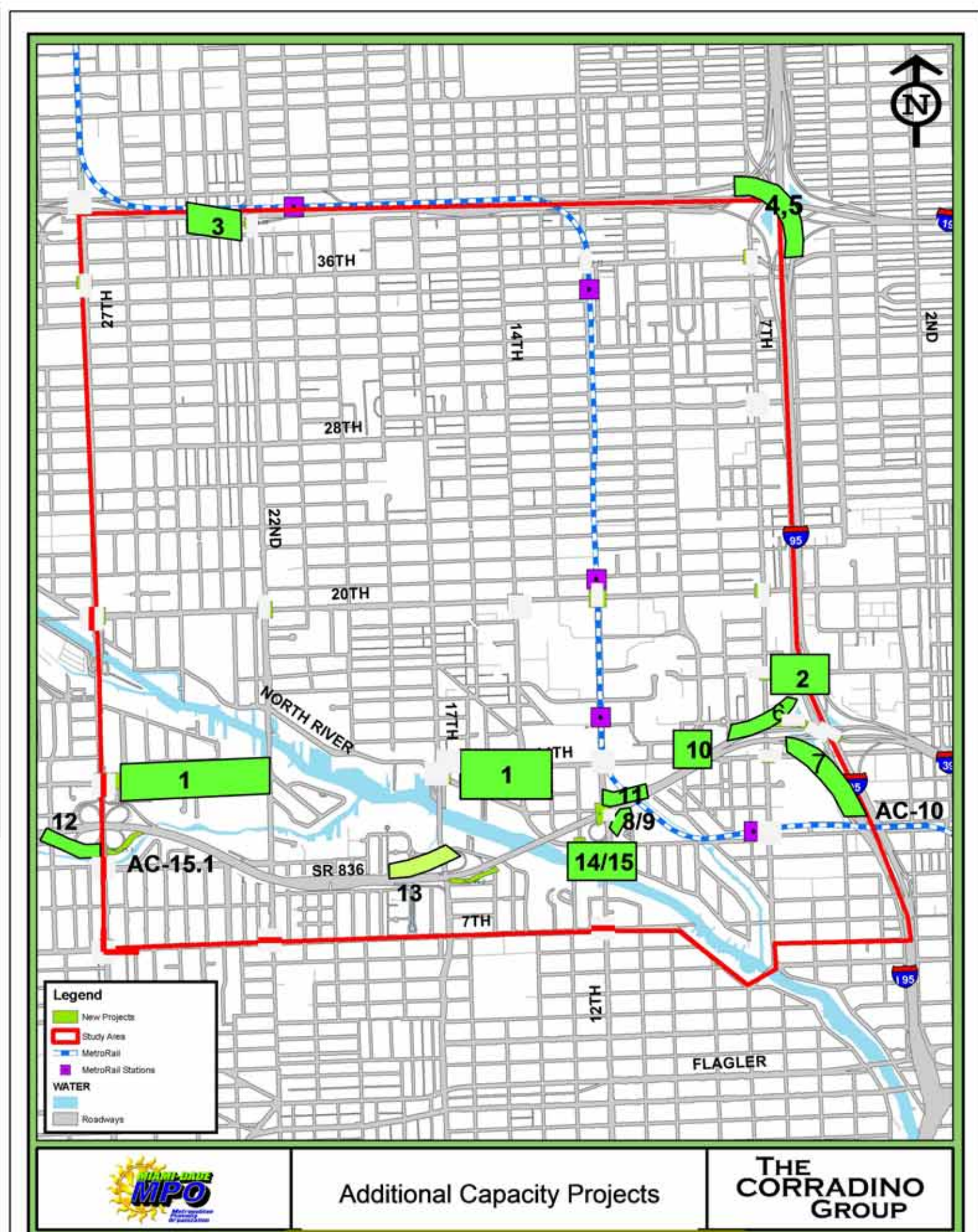
Yellow highlights mean project is funded



7.5 Additional Capacity

Additional capacity improvements is another category of projects which are recommended based on the detailed analysis provided as a part of this study. There are 15 projects recommended in this study, mainly dealing with the expressway system or ramps connecting it to the study area, except for two projects: one on 14th Street between 27th Avenue and 14th Avenue, and one on 17th Street between 7th Avenue and 6th Court. The model did recommend significant lane additions on SR 112, I-95 and SR -836, but these are not solely caused by the Health District, and are much more regional in nature. After cross referencing these with existing or previously suggested recommendations, it was determined that none of these projects conflicts with any other.

Health District Traffic Study								
Additional Capacity Improvements								
#	Facility	From	To	Project Description	Source	Cost	Priority Short Term (1-2 Yrs) Mid Term (3-5 Yrs) Long Term (+5Yrs)	Notes
AC 1	NW 14th Street	NW 27th Ave	NW 14th Ave	Add 1 Lane	Macro Model	\$ 495,000	Long Term	Coordinate with MDC
AC 2	NW 17th St	NW 7th Ave	NW 6th Ct	Add 1 Lane	Macro Model	\$ 31,000	Long Term	Coordinate with MDC
AC 3	EB Airport Expwy Off Ramp onto NW 22nd Ave	Airport Expwy	NW 22nd Ave	Add 1 Lane	Macro Model	\$ 106,200	Long Term	Coordinate with MDX
AC 4	NB I-95 Off Ramp	I-95	EB Airport Expwy	Add 1 Lane	Macro Model	\$ 148,800	Long Term	Coordinate with FDOT
AC 5		I-95	WB Airport Expwy	Add 1 Lane	Macro Model	\$ 361,300	Long Term	Coordinate with FDOT / MDX
AC 6	SB I-95 Off Ramp	I-95	Dolphin Expwy	Add 2 Lanes	Macro Model	\$ 496,000	Long Term	Coordinate with FDOT
AC 7	SB I-95 On Ramp	Dolphin Expwy	I-95	Add 1 Lane	Macro Model	\$ 319,000	Long Term	Coordinate with FDOT / MDX
AC 8	EB Dolphin Expwy Off Ramp	Dolphin Expwy	NW 27th Ave SB	Add 1 Lane	Macro Model	\$ 162,900	Long Term	Coordinate with MDX
AC 9		Dolphin Expwy	NW 27th Ave NB	Add 1 Lane	Macro Model	\$ 99,200	Long Term	Coordinate with MDX
AC 10	Dolphin Expressway Off Ramp	10th Ave	14th Street	Widen	City of Miami	\$ 141,700	Long Term	On Going Coordination With MDX / FDOT
AC 11	WB Dolphin Expwy Off Ramp	Dolphin Expwy	NW 12th Ave	Add 1 Lane	Macro Model	\$ 106,300	Long Term	Coordinate with MDX
AC 12	EB Dolphin Expwy On Ramp	NW 27th Ave NB	WB Dolphin Expy	1 Lane	Macro Model	\$ 134,600	Long Term	Coordinate with MDX
AC 13		NW 17th Ave NB	WB Dolphin Expy	1 Lane	Macro Model	\$ 177,100	Long Term	Coordinate with MDX
AC 14		NW 12th Ave NB	EB Dolphin Expy	1 Lane	Macro Model	\$ 99,200	Long Term	Coordinate with MDX
AC 15		NW 12th Ave SB	EB Dolphin Expy	1 Lane	Macro Model	\$ 170,000	Long Term	Coordinate with MDX



7.6 New Facilities

Finally, new facilities were considered. These include the SR 112/I-95 Interchange Ramp Improvements and Auxiliary lanes, and an interchange justification study, which would examine the implications of creating a new interchange, or partial interchange on I-95 between SR 112 and SR-836.

		Health District Traffic Study						
		New Facilities						
#	Facility	From	To	Project Description	Source Cost(000's)	Cost (000's)	Priority Short Term (1-2 Yrs) Mid Term 3-5 Yrs) Long Term (+5 Yrs)	Notes
	I-95	SR 112	SR 836	Interchange justification				Need to put on FDOT work program
NF 3	SR 112	SR 926	TBD	TBD	SAC	1,500	Short Term	Need to put of FDOT Work Program
NF 2	SR 112/I-95	I-95 (NW 10 th Ave)	Biscayne	Interchange/Ramp Improvements and Auxiliary Lanes	P-2 LRTP		Long Term	Coordinate with FDOT/MDX

8. Conclusion

The Health District is the second largest employment center in the county outside of Downtown Miami. This area is growing rapidly and many of the freeways accessing the area are over capacity. It lies in the Urban Infill Area and is governed by certain growth management rules. Over time the multiple stakeholders in the area have developed many recommendations to mitigate the traffic situation. This study was designed to evaluate the study area in light of each of these existing plans, so that the implementing agencies could have the confidence to move forward with the understanding that the area has been examined comprehensively, and that conflicting projects are not programmed.

A Study Advisory Committee was developed consisting of multiple stakeholders from each agency and the local institutions in the Study Area. This group developed the methodology and examined the work product of each task. They identified available data and provided policy guidance as the study progressed.

The second task focused on project development, which reviewed existing conditions, previous reports and studies, and collected needed traffic counts by which to base the analysis.

Traffic Model Development was undertaken in the third task. Methodologies for two levels of analysis were developed. These included an examination of the regional Long Range Transportation Plan Model as well as a micro simulation of the specific study area. Once agreed upon, an analysis of transportation needs was undertaken, which examined level of service on freeways, ramps, roadways and intersections. These were done for the existing year of 2008 and the future year of 2015. From the deficiencies, project needs were determined. Subsequently a host of multi-modal recommendations were made focused on:

- Currently Planned and Recommended Projects in the LRTP, TIP and City of Miami BODR
- Creation of a Transportation Management Organization
- Intersection Modifications
- Pedestrian and Transit Improvements
- Signage and wayfinding improvements
- Additional Capacity Improvements
- New Facilities

It is now incumbent upon the various stakeholders to work with FDOT, MDX, the City of Miami and Miami Dade County Public Works to have the projects placed on the appropriate work programs. The analysis and recommendations provided in this report should provide sufficient information to the various agencies to enable the projects to be implemented.



THE CORRADINO GROUP, INC.