

ARTERIAL GRID ANALYSIS PHASE II

EXECUTIVE SUMMARY

In 2006, the Miami-Dade MPO conducted a systemwide study of the County's arterial grid roadway network. That study included an assessment of arterial grid roadways to identify strategies for potential increase of the efficiency and roadway capacity. There have been notable changes in travel characteristics since then. In particular, a general reduction of traffic volume can be observed on many arterial roadways, which is consistent with national statistics. Among the factors that are cited for the general decrease in traffic volume and vehicle miles travelled include economic challenges associated with the recession, an overall improvement of transit options, and higher fuel prices. These changes have given rise to the need for re-evaluating the roadway system. Therefore, the MPO initiated the Arterial Grid Analysis Phase II study.

The roadway network in Miami-Dade County is comprised of a grid system of arterial roadways, collectors, and local streets. This grid system consists of section line and half-section line roadways with section line roadways serving as the principal mobility corridors that are fed by a secondary network of half-section line roadways. Section line roadways are spaced at one-mile intervals in both east-west and north-south directions. A well-connected grid roadway system provides many transportation and community benefits such as alternative travel routes thus facilitating traffic dispersion and better incident management, direct travel paths that help to reduce emission, better management of mobility and accessibility needs through a network centered around section and half-section line roadways, and a logical naming convention that can allow users to quickly become familiar with local roadways. Despite the perceived effectiveness of the grid system and the recent reduction in traffic volumes on many arterial roadways, current traffic levels in Miami-Dade County exceed the carrying capacity of many section and half-section roadways.

Study Purpose and Approach

To develop effective and long-term strategies for addressing traffic congestion, it is important to adopt a systems approach that accounts for the intrinsic characteristics of the roadway system, traffic trends, and land use/development patterns. Improvements developed without adequate consideration of network level implications fail to yield the intended long-term benefits, sometimes shifting the problem from one location or corridor to another. The Arterial Grid Analysis Phase II study focused on the arterial grid roadway system in Miami-Dade County with the objective of identifying potential improvements for long-term traffic congestion relief. The roadway improvement recommendations were developed using two approaches:

- Evaluating the level of service (LOS) of arterial grid roadways.
- Assessing the grid roadway system to identify opportunities for enhancing the network connectivity.

Existing Conditions Analysis

An existing conditions LOS analysis was performed for the non-State section line and half-section line corridor segments of the grid network using the 2011 traffic data (supplemented by additional counts from 2012) obtained from FDOT and Miami-Dade County. The results were compared with the 2006 Arterial Grid Analysis study. Some of the key observations are summarized below.

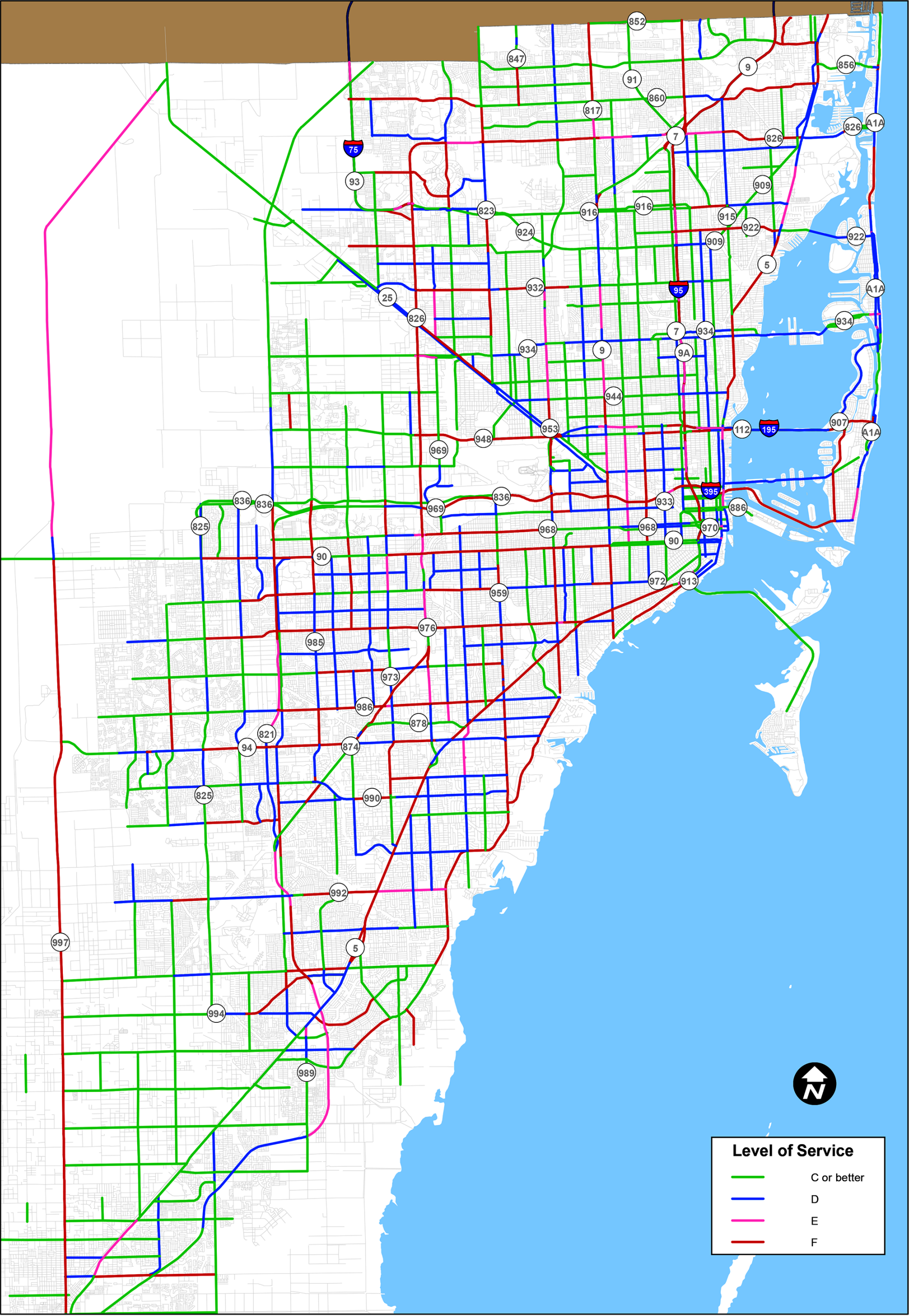
- The 2011/12 traffic data shows that 7 percent of collector roadway segments and 35 percent of arterial roadway segments operated at LOS F. During the Arterial Grid Analysis Phase I study (2004/05 traffic data), approximately 17 percent of the collector roadway segments and 42 percent of arterial roadway segments operated at LOS F.
- A higher proportion of the roadways that operate at LOS E or F are concentrated south of Flagler Street. The sub urban growth patterns, which are characterized by single-family and low/medium density housing, commercial uses concentrated along arterial roadways, and discontinuities in the grid roadway network are possible reasons for a higher proportion of LOS E and F corridors in south Miami-Dade County.
- Traffic volumes decreased on 68 percent of roadway segments in 2011/12 compared to 2004/05 (comparisons were made based on 1,040 roadway segments for which traffic data was available for both time periods). The net change of ADT on those roadway segments is -1.94 million vehicles. A further breakdown of data by functional classification shows that traffic volumes increased on freeways and expressways, but decreased on arterials and collectors.

The Phase II study also developed a map series to depict roadway and mobility conditions for section line and half-section line roadways in Miami-Dade County. A list of existing conditions maps developed as part of this study is provided below.

- Level of service
- Average daily traffic (ADT)
- Traffic volume trend comparison
- Traffic count availability
- Maximum posted speed limit
- Right-of-way (ROW)
- Laneage
- Functional classification

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Figure ES1: Existing Conditions Level of Service (2011/12)



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Priority Corridors

The existing conditions LOS map (see Figure ES1) was used to identify grid roadways that currently operate at LOS E or F. The cost feasible projects included in the 2035 LRTP were reviewed to determine if roadway capacity improvements have been identified to address LOS deficiencies. In general, the planned roadway capacity improvements do not fully address current LOS deficiencies. Based on the systemwide LOS analysis, section line roadways currently operating at LOS E or F were identified as “priority corridors” if those segments did not have a planned capacity enhancement project in the 2035 LRTP. The identification of priority corridors is intended to direct the efforts of identifying improvement strategies to the corridors of greatest need. Table ES1 summarizes priority corridors and lists preliminary improvement strategies.

Table ES1: Priority Corridors and Preliminary Improvement Strategies

Corridor	Segment	Improvement Strategies
SW 8 Street	SW 137 Avenue to SW 27 Avenue	Grade separation, congestion management, premium transit
SW 40 Street	SW 137 Avenue to US 1	Widening, grade separation, congestion management
SW 56 Street	SW 117 Avenue to SW 87 Avenue	Widening, interchange, congestion management
SW 72 Street	SW 117 Avenue to US 1	Interchange, congestion management
SW 88 Street	SW 137 Avenue to US 1	Grade separation, congestion management, park and ride facilities
SW 120 Street	SW 137 Avenue to SW 117 Avenue	Widening, congestion management
SW 152 Street	SW 117 Avenue to US 1	Widening, premium transit
NE 163 Street	I-95 to US 1	Grade separation, congestion management, transit hub
NW 103 Street	SR 826 to E 10 Avenue	Congestion management
NW 36 Street	SR 826 to SR 25	Grade separation, congestion management
US 1/S Dixie Highway	I-95 to SW 88 Street	Grade separation, congestion management
US 1/S Dixie Highway	SW 104 Street to SW 184 Street	Transit signal priority, managed lanes
SW 117 Avenue	SW 104 Street to SW 136 Street	Continuous flow lanes at select T-intersections
US 1/Biscayne Boulevard	Flagler Street to Broward County Line	Grade separation, premium transit, transit hub
NW 27 Avenue	Flagler Street to Broward County Line	Premium transit, congestion management

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Roadway System Connectivity

A connected grid roadway system provides the user alternatives paths whereby longer trips are expected to utilize arterial roadways and shorter trips can utilize collector streets. This type of roadway network is better equipped to handle congestion and incidents by re-routing traffic to alternative routes. Therefore, improving the connectivity of the roadway system can be an effective approach to address congestion and increase capacity. There could be a variety of reasons for the existing discontinuities in the grid roadway system: to accommodate large scale facilities such as Miami International Airport and expressways; canals; public opposition; environmental impacts; and roadway construction cost in comparison to the benefits. However, with current congested road conditions and limited opportunities for widening existing roadways, an assessment of improving network connectivity deserves attention. Further, advancement in construction methods and technology could help to lessen the perceived impacts that prevented some of these roadway system connectivity projects from happening in the past. Based on the review of arterial grid roadway network, a total of 12 potential connectivity improvement projects were identified. These projects are listed in the next section.

The level of connectivity of section line roadways at the Broward County Line was assessed to identify the potential for future connections. It is important to note that there are no arterial connections into Miami-Dade County from Broward County between US 27 and NW 67 Avenue, which is a 7.5-mile stretch. The potential connection of NW 87 Avenue, which lines up with SW 148 Avenue in Broward County was assessed. However, significant challenges exist to establish connections between discontinuous roadway segments at the county line, including ROW encroachment, vacation of public ROW, canals, expressways, and inconsistency with Broward County’s Trafficways Plan. Therefore, potential new arterial connectors between Miami-Dade and Broward County were not identified.

Recommended Improvements

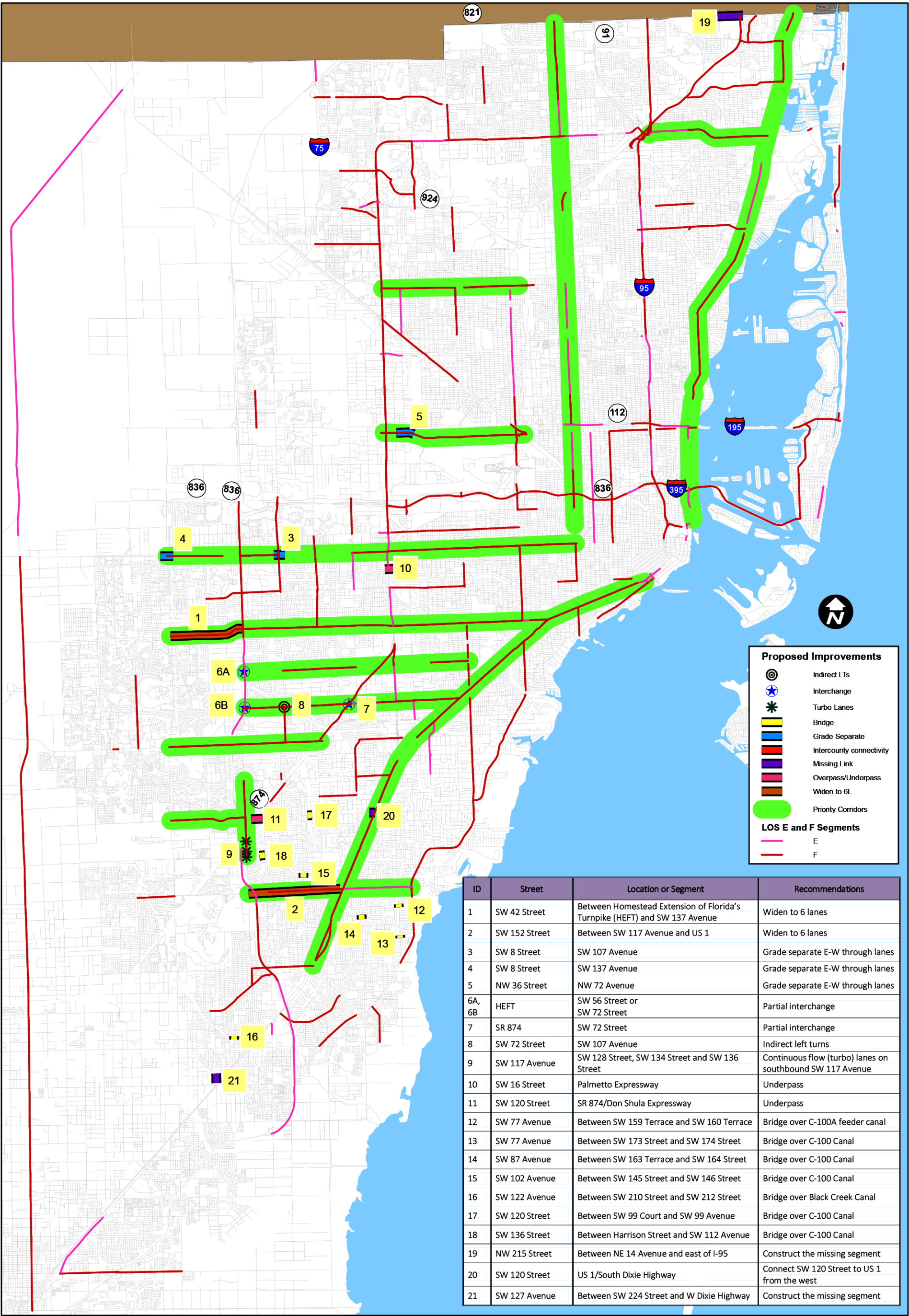
After the identification of broad improvement strategies (Table ES1), specific roadway improvements were assessed for the priority corridors. As part of this effort, several prior planning studies conducted by the Miami-Dade MPO were reviewed. The purpose of this review was to identify prior study recommendations that could help to address capacity issues within the priority corridors. A total of 30 draft improvements were presented to the MPO’s Transportation Planning Technical Advisory Committee (TPTAC), which served as the Study Advisory Committee (SAC) by reviewing the study deliverables and providing input. Some draft improvements were revised or eliminated from further consideration based on the SAC input. A total of 21 projects out of the preliminary list of 30 concepts are recommended for further consideration. The recommended improvements and the approximate project locations are shown in Figure ES2. A breakdown of recommendations by type of projects is provided below.

- Arterial roadway widening – two projects
- Arterial grade separation – three projects
- Expressway interchanges – two projects
- Intersection improvements – two projects
- Network connectivity improvements (missing links) – 12 projects

Nineteen projects are located in south Miami-Dade County (south of Flagler Street) where the proportion of deficient roadway segments is higher. For each recommended project, a summary sheet was prepared outlining the improvement, information used to justify the recommendation, potential issues, project location and jurisdiction, and next steps. A sample summary sheet is provided as Project ES1.

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Figure ES2: Priority Corridors and Recommended Improvements



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Project ES1: SW 42 Street/Bird Road from HEFT TO SW 137 Avenue

Corridor	Segment
Improvement Concept	Widen SW 42 Street from 4L to 6L between west of HEFT and SW 137 Avenue
ADT (2011)	34,000 – 52,500
LOS	LOS F
Laneage	4 lanes
ROW	Between HEFT and SW 127 Avenue: 80-100 feet Between SW 127 Avenue and SW 137 Avenue: 120 feet
Potential Issues	Impacts on developments on the north side Canal on the south side
2035 LRTP Status	Not included
Prior Studies	None
Next Steps	Include in the 2040 LRTP Needs Assessment Coordinate with Miami-Dade County
Location	Unincorporated Miami-Dade County
Jurisdiction	Miami-Dade County

Policy Recommendations

In addition to the capacity improvements, policy recommendations are made to support and develop continued efforts to increase the efficiency of the arterial grid system. To meet challenges presented by rapid urbanization and stringent roadway design standards, the following policy recommendations are made for consideration:

- Maintain both section line and half-section line ROW along existing roadways and theoretical roadways. Public ROW along section line and half-section line roadways should not be vacated unless the landowner is required to construct a roadway to serve as a continuous section line or half-section line roadway.
- Miami-Dade County should consider adopting the following minimum ROW standards to provide 4- or 6-lane roadway capacity while allowing adequate space for other transportation mobility features such as bike lanes, sidewalks, and bus stops.
 - Maintain at least 130 feet of ROW along section lines in rural and suburban areas. This ROW is based upon the FDOT typical section for a 6-lane divided arterial with bike lanes and a design speed of 45 mph or less.
 - Maintain at least 86 feet of ROW along section lines in urban centers where the roadway is not planned to have more than four through lanes.
 - Maintain at least 80 feet of ROW along half-section lines.
- ROW standards identified above should be applied both within and outside of the existing urban development boundary (UDB).
- Recommend the evaluation of re-establishing section line and half-section line connectivity as part of future expressway reconstruction projects.
- Improve connectivity and capacity of collector roadways to relieve failing parallel arterials.
- Encourage mixed-use nodes supported by a grid roadway system to relieve arterials from their commercial accessibility function. Mixed-use nodes should be encouraged for new development and for urban infill re-development.



Aerial view of SW 42 Street near SW 127 Avenue

Source: Miami-Dade Property Appraiser