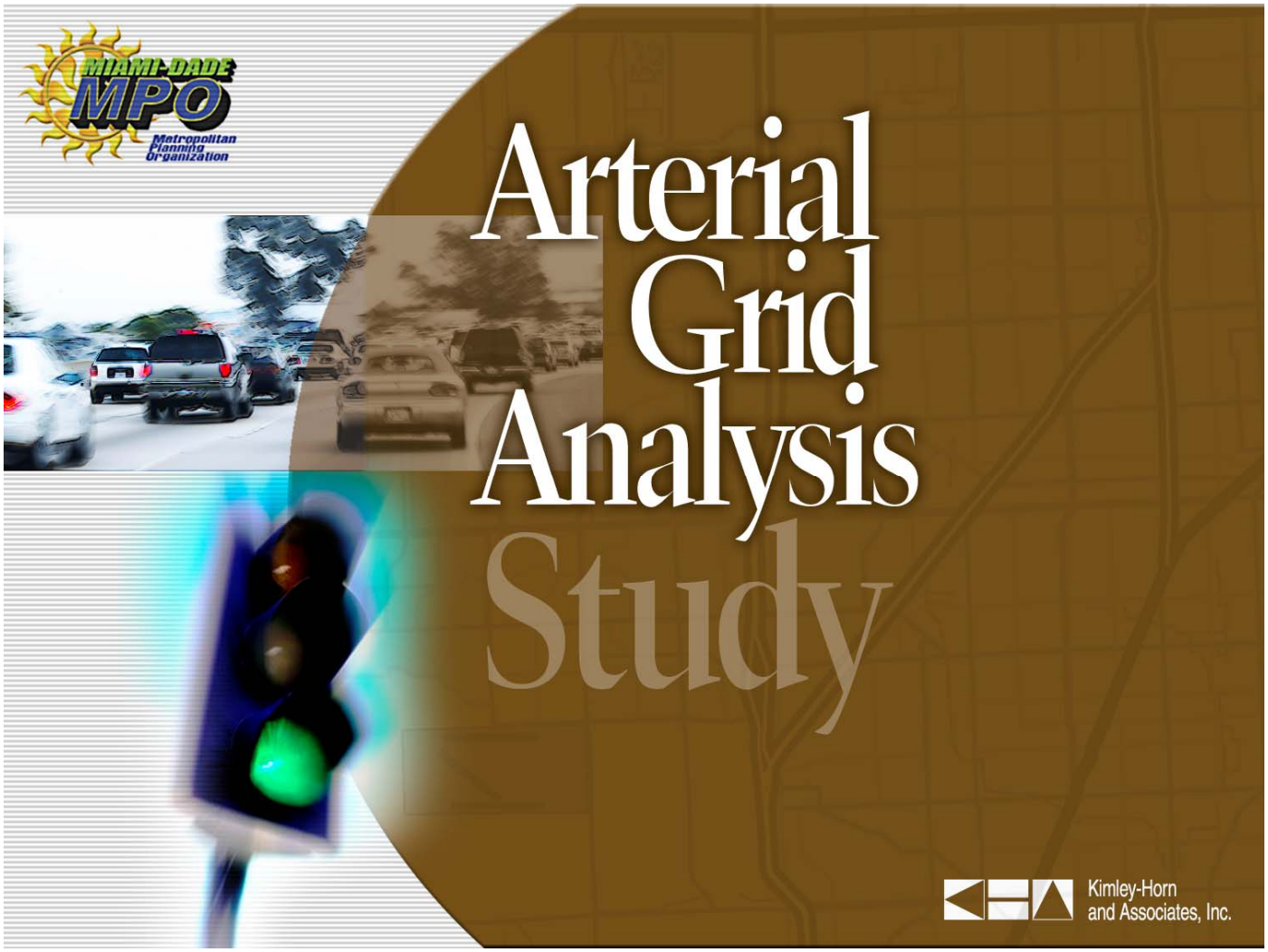


Executive Summary

Prepared for:

MIAMI-DADE MPO Metropolitan Planning Organization

Miami-Dade County
Metropolitan Planning Organization
(Miami-Dade MPO)

Prepared by:

Kimley-Horn and Associates, Inc.

Kimley-Horn and Associates, Inc.
Fort Lauderdale, Florida

EXECUTIVE SUMMARY

The roadway network throughout much of Miami-Dade County is comprised of a grid system of arterial roadways, collectors, and local streets. This grid system creates many travel benefits such as several alternative travel paths for individual trip pairs, an easily-definable functional hierarchy centered around section and half-section line roadways, and a logical naming convention that can allow visitors to quickly become familiar with local roadways.

The non-local portion of the grid system in Miami-Dade County consists of section line and half-section line roadways. In general, section line roadways in Miami-Dade County serve as the principal arterial roadway system. Section line roadways are spaced at one-mile intervals in both east-west and north-south directions. In Miami-Dade County, streets run east-west and are spaced every 1/16 of a mile. When traveling north-south through the County, one mile is approximately equal to the distance traveled between 16 streets. Avenues in Miami-Dade County run north-south and are spaced every 1/10 of a mile. When traveling east-west through the County, one mile is approximately equal to the distance traveled between 10 avenues.

Study Purpose

Despite the ostensible effectiveness of a grid system, traffic levels in Miami-Dade County have exceeded the carrying capacity of many segments of section and half-section roadways. This places pressure on other transportation network components such as the traffic signal system, non-arterial roadways, and buses operating in mixed traffic on surface roadways. The need exists to define problem areas along the arterial grid network, investigate potential causes of roadway congestion, and evaluate solutions to providing additional efficiency and travel capacity in Miami-Dade County. The objective of this study is to address arterial grid operations in Miami-Dade County and study potentially increasing the efficiency and capacity of the established grid system, principally along section line and half-section line roadways.

Study Advisory Committee

A Study Advisory Committee (SAC) consisting of select members from the following departments and divisions was formed to provide guidance for the study and to review the study deliverables for quality and content. The SAC met three times during the course of the study.

- Miami-Dade Metropolitan Planning Organization (MPO)
- Miami-Dade Public Works Design Division
- Miami-Dade Public Works Right-of-Way Division
- Miami-Dade Public Works Traffic Engineering Division
- Miami-Dade Department of Planning and Zoning
- Florida Department of Transportation (FDOT)

Benefits of a Grid Roadway System

Numerous interconnected north-south and east-west roadways characterize a grid system of roadways. Such a grid road system provides enhanced connectivity and accessibility. Travel is more direct in a grid system, thus reducing the number of vehicle miles traveled (VMT). A grid road system emphasizes accessibility by accommodating more direct travel with traffic dispersed over more roadways. Local streets tend to be longer in grid systems than in hierarchical road systems. Collectors in grid systems tend to provide continuous travel paths and are often only distinguished from arterials by having fewer travel lanes, lower design speeds, and less connectivity to superarterials or expressways.

Relatively short blocks of land that result from inter-connected grid streets can better accommodate the development of town centers, as opposed to strip commercial developments found along arterial roads with longer blocks. Therefore, grid road systems can encourage land use patterns that reduce the need for numerous commercial driveways along arterial roadways. Closely-spaced commercial driveways along arterials can lead to traffic congestion and safety concerns. In addition, because a grid system of roadways is characterized by robust connectivity, travel distances are shorter and accessibility increases. Arterial roadways in a grid system are meant to accommodate the mobility needs of long-distance trips without having to succumb to excessive land use accessibility demands.

Historical Development of a Grid Roadway System in Miami-Dade County

The grid roadway network predominant in much of Miami-Dade County results from land planning principles that were utilized throughout much of the nineteenth century and the first-half of the twentieth century. Early planners utilized the rectangular system of surveys, which was based on demarcating territory into a system of squares called sections and townships. Townships are six sections (six miles) wide by six sections long; therefore, townships are 36 square miles and contain 36 sections. Sections are the smallest primary division in this land demarcation system. Sections are one mile squares with roadways often laid out in public right-of-way established along the boundaries between sections. These roadways became known as section line roadways and often serve arterial roadway functions in modern urbanized areas. Establishing half-section and quarter-section corners through the rectangular system of surveys created subdivisions of sections. Half-section line roadways were similarly established through the center of the surveyed sections.

Data Collection

The data collection task consisted of obtaining or collecting traffic counts, functional classification of roadways, laneage data, and right-of-way information. Traffic data were obtained from existing databases and additional counts were collected to fill in key gaps in the data to determine level of service (LOS) of most section line and half-section line roadways.

The functional classification data were obtained from the Florida Department of Transportation (FDOT). Bi-directional number of travel lanes for grid system roadways were obtained from FDOT databases for State roadways and from Miami-Dade County's Concurrency Database for County roadways. Available right-of-way for grid system roadways was obtained by examining geographic information system (GIS) files provided by Miami-Dade County Public Works Right-of-Way Division. In addition, land use data were obtained from Miami-Dade County Department of Planning and Zoning. Functional classification, number of travel lanes, and right-of-way data provided by the various sources were added to the GIS database being developed for the *Arterial Grid Analysis Study* for data analysis and mapping purposes.

Map Series

The Arterial Grid Analysis Study developed an existing conditions map series (including traffic volumes, bi-directional number of travel lanes, functional classification, right-of-way widths, and level of service). The maps depict mobility conditions for most section line and half-section line roadways in Miami-Dade County. Similar maps were also developed for projected future conditions (2015) based on traffic growth rates and capacity projects expected to be implemented by 2015.

Future conditions along the arterial grid network were assessed by developing future (2015) traffic volumes for roadways in the arterial grid network consistent with the 10-year planning horizon established for this study and the end of Priority II of the 2030 Long Range Transportation Plan (LRTP). Traffic growth rates within the County were obtained from Miami-Dade County's 2030 LRTP. Traffic growth rates calculated in

the LRTP are based on increases in demographic data such as population, households, employment, and automobile availability. The established 30-year traffic growth rates were used to determine annual traffic growth rates. Then, 10-year traffic growth rates were calculated from the annual traffic growth rates. Future capacity conditions were established by incorporating roadway expansions that were identified in the TIP and LRTP to be implemented within the next ten years.

Analysis

One of the key findings of the analysis is that planned capacity improvements are not sufficient to keep pace with the anticipated growth in traffic. The future (2015) conditions analysis indicates that approximately 41 percent of roadway segments of the arterial grid network are expected to operate at LOS F. In comparison to the existing conditions, the future conditions analysis indicates a five percent increase in the number of segments that are expected to operate at LOS F, even when accounting for planned roadway expansions. Therefore, the planned capacity improvements to the arterial roadway system over the next 10 years do not appear to fully address the anticipated rate of traffic growth on the arterial roadway system. This condition represents a common trend in urban transportation planning that roadway improvements are unable to fully satisfy travel demand growth.

When functional classification of roadway segments is considered, approximately 19 percent of the collector roadway segments operate at LOS F and approximately 48 percent of arterial roadway segments operate at LOS F. Therefore, a much lower percentage of collector roadways operate at LOS F than arterial roadways. Connectivity improvements to collector roadways should be considered in cases where congestion relief could be provided to failing arterial roadways.

Areas of the County that were developed before 1960 tend to exhibit a more complete grid roadway system, due to planning principles that were adhered to at the time. These areas tend to be characterized by higher density land uses (e.g. Downtown Miami and South Beach). Despite higher densities, the well-defined grid roadway system in urban core areas is able to support these densities. However, areas of the County that were developed with lower densities (e.g. most of the western developed areas of Miami-Dade County) often exhibit worse traffic congestion levels. This paradox may partially be explained by two factors:

- The lack of a well-defined grid roadway system. Obstacles that interrupt the grid roadway system in many suburban areas of Miami-Dade County include land use barriers, expressways, and canals.
- The concentration of commercial land use along arterial roadways, rather than in mixed-use nodes that are supported by a grid roadway system. Many suburban residential areas are built as homogeneous pods without continuous roadways nor any commercial land uses, which demands that even short trips are channelized onto arterial section line roadways to access commercial destinations. Typical suburban land use patterns cause arterial roadways to serve an accessibility function for surrounding commercial land use.

Project Screening

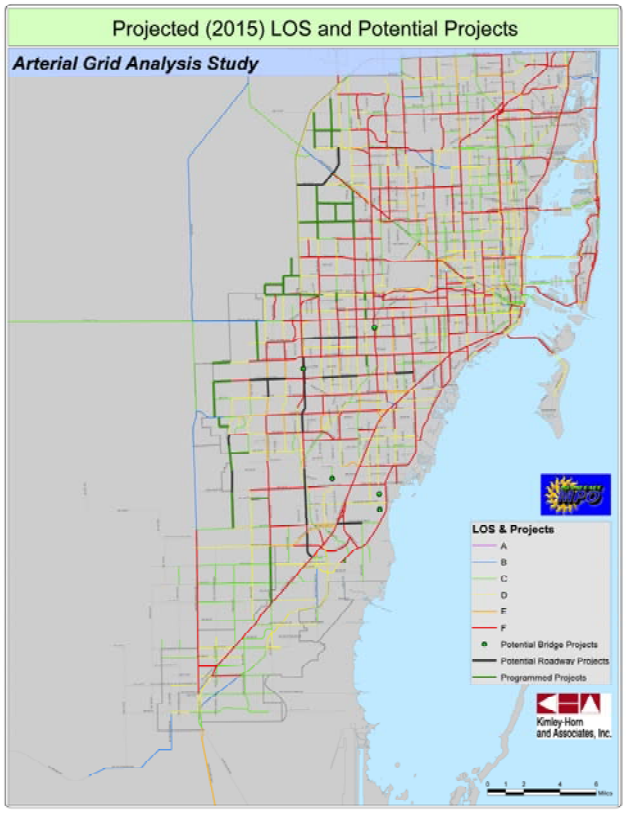
A list of potential projects was developed based on the analysis of existing and future conditions for enhancing the efficiency of the arterial grid network. Potential projects were screened using conceptual evaluation criteria such as traffic capacity, ability to relieve parallel facilities, land use compatibility, right-of-way availability, functional classification, and continuity of the grid system.

The following three types of projects were defined during the initial screening process:

- Type I projects are defined as roadway segments that are expected to operate at LOS E or F in 2015 and have sufficient right-of-way “available” to widen the road within minimum right-of-way requirements.

- Type II projects are defined as missing links that are adjacent to/parallel to LOS E or F facilities.
- Type III projects are defined as roadway segments that are expected to operate at LOS D in 2015 with right-of-way "available" to widen the road and are adjacent to/parallel to LOS E or F facilities.

Results of the project screening are displayed in a map in the report depicting potential projects. Capacity enhancing projects that are already included in Priority I or Priority II of the 2030 LRTP are considered to already be in place by 2015 for purposes of this study because of the 2015 planning horizon established for this study.



Recommendations

Based on the results of the project screening and input from the Study Advisory Committee (SAC), a list of recommendations for improving the efficiency of the arterial grid system was developed. These recommendations can be broadly categorized into two groups:

- Project recommendations include capacity modifications to existing roadways and constructing "missing links" to enhance continuity.
- Policy recommendations include the development of policies related to capacity needs along the arterial grid roadway network.

The study database was used to identify LOS E or F roadway segments with "available" room for capacity improvements within current rights-of-way based on existing laneage. The majority of the recommended capacity improvements are located along SW 24th Street, SW 56th Street, and SW 117th Avenue. Additional capacity improvements include filling in "missing links" in the grid network that would help relieve roadways with failing level of service located within one mile. Some of the capacity improvements identified in this study are listed in the current 2030 LRTP in Priority III or IV.

Table ES-1. Potential Arterial Grid Projects Identified in LRTP Priority III or IV

Road	From	To	Potential	Project Type	LRTP Priority
SW 24 Street	SW 87 Avenue	SW 107 Avenue	6L	Type I	Priority III
SW 24 Street	SW 107 Avenue	SW 117 Avenue	6L	Type I	Priority IV
SW 16 Street	SW 71 Avenue	SW 82 Avenue	Overpass across Palmetto Expwy	Type II	Priority IV
SW 47/48 Street	SW 112 Avenue	SW 122 Avenue	Overpass across HEFT	Type II	Priority IV

During the next update of the LRTP, these projects should be examined for the possibility of moving them up in the funding phases, based on their projected mobility benefits to the arterial grid network as established in this study.

A summary of potential capacity improvements identified in this study that are not identified in the LRTP is presented in Table ES-2. The capacity projects are a minimum of one mile in length and are recommended to relieve congestion of the subject roadways or of the adjacent / parallel facilities. The "missing links" projects include new roadway connections and bridges that would provide alternative travel routes to relieve congestion of the adjacent / parallel facilities.

Table ES-2. Arterial Grid Analysis Study – Recommended Capacity Projects

Road	From	To	Potential	Project Type
SW 56 Street	SW 57 Avenue	SW 67 Avenue	4L	Type I
SW 56 Street	SW 87 Avenue	SW 107 Avenue	6L	Type I
SW 56 Street	SW 127 Avenue	SW 147 Avenue	6L	Type I
SW 117 Avenue	SW 40 Street	SW 104 Street	6L	Type I
SW 117 Avenue	SW 136 Street	SW 184 Street	6L	Type I / III
SW 117 Avenue	Quail Roost Dr	US 1	4L	Type I
SW 137 Avenue	SW 56 Street	SW 72 Street	6L	Type I
NW 106 Street	HEFT	NW 116 Way	6L	Type III
NW 116 Way	NW 106 Street	US 27	6L	Type III
Hialeah Gardens Blvd	US 27	NW 138 Street	6L	Type III
SW 136 Street	Harrison Street	SW 112 Avenue	Bridge	Type II
SW 102 Avenue	Over Cutler Drain		Bridge	Type II
SW 87 Avenue	SW 163 Terrace	SW 164 Street	Bridge	Type II
SW 77 Avenue	SW 159 Terrace	SW 160 Terrace	Bridge	Type II
SW 77 Avenue	SW 173 Street	SW 174 Street	Bridge	Type II

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:

- Maintain both section line and half-section line right-of-way along existing roadways and theoretical roadways.
- Maintain at least 130 feet of ROW along section lines in rural and suburban areas.
- 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.
- Right-of-way standards identified above should be applied both within and outside of the existing urban development boundary (UDB).
- 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.