Complete Streets Manual







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HNTB in association with CALTRAN ENGINEERING GROUP

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Glossary of Terms

AADT - Average Annual Daily Traffic

ADT - Average Daily Traffic

FDOT - Florida Department of Transportation

FHWA - Federal Highway Administration

LOS - Level of Service

MDT - Miami-Dade Transit

MPO - Miami-Dade Metropolitan Planning Organization

ROW - Right-of-way

UC - Urban Collector

UMA - Urban Major Arterial

UPA - Urban Primary Arterial

1.0 Introduction

1.1 Study Coordination

This project was directed by a Study Advisory Committee (SAC) headed by the Miami-Dade Metropolitan Planning Organization (MPO) Project Manager. A list of study advisory committee members is included below.

Table 1: List of SAC Members

Miami-Dade Metropolitan Planning Organization (MPO)
Miami-Dade Parks and Recreation
Miami-Dade Regulatory and Economic Resources (RER)
Miami-Dade Transit (MDT)
Florida Department of Transportation (FDOT)
Miami-Dade Publics Works and Waste Management (PWWM)
Miami-Dade Health Department
Miami Downtown Development Authority (DDA)
City of Miami
City of North Miami

1.2 Definition of a Complete Street

Traditionally, the development of a typical street has been designed to serve multiple purposes including mobility, economic and social functions. Retail and social transactions have long been a part of most urban streets throughout their history. However, in the 20th century, street designs have separated the mobility function from the economic and social functions a 'traditional street'.

This manual is intended to provide guidance for the implementation of a complete street and will aim to help integrate the diverse functions of a typical roadway into a complete street. A 'complete street', as defined by the National Complete Streets Coalition (NCSC), is a street where the entire right-of-way is planned, designed, and operated for all modes of transportation and all users, regardless of age or ability. This results in a well-balanced transportation system providing various choices for mode by all individuals who utilize the complete street. Complete streets provide mobility, support livability, and spur economic development objectives, while providing more mode choices.

A typical complete street contains the elements including, but not limited to, improved accessible sidewalks with frequent and safe crossing opportunities, the addition of bicycle lanes, defined pedestrian and bicycles spaces including bicycle parking, street trees and benches, pedestrian scaled lighting and accessible pedestrian signals, special bus lanes, comfortable and accessible public transportation stops, median refuges, landscaped curb extensions, roundabouts, on-street parking, among others. Pedestrians, bicyclists, transit riders, and motorists of all ages and abilities should be able to safely cross the street, walk to shops, board a bus, bicycle to work, and enjoy many other healthy activities.

Complete streets employ site-specific planning decisions that help to reconfigure existing road space in a manner that better accommodates the needs of all of the users within the area. There is a current misconception that the development of a complete street will always need and consume large amounts of rights-of-way. This is typically not the case. A complete street can usually be developed within the existing right of way. An example may include simply moving the road striping to create more space on the shoulder. The adjustment of a longer crosswalk signal time to allow a pedestrian with disabilities to cross the road is another example.

The methodology and implementation of a complete street as opposed to a typical arterial challenges the traditional separation of highways, transit, biking and walking, and instead focuses on the connections and the development of a transportation system that supports all modes of travel, safe use of the roadway, and a desired outcome that will satisfy all users of the street system.

As described by the NCSC, there is no one singular design prescription for a complete street – each one is unique and responds to its community context. A complete street in a suburban area may look different than a complete street in the urban core, but both are designed with the same principles in mind – to balance safety and convenience for everyone using the road.

Traditional streets, typically designed for the car mode only, limit transportation choices by making walking, bicycling, and taking public transportation inconvenient and unattractive. Conventional street designs that solely move motor vehicle traffic should be modified to conform to the goals of complete streets. A typical traditional street may either directly or indirectly cause a number of problems for communities, such as:

- A lack of viable transportation modes and choices
- Walkability; senior citizens being geographically limited because they cannot cross streets
- Unnecessary driving for short trips
- Overconsumption of energy and unnecessary emission of greenhouse gases
- Economic hardship and recession when energy prices rise
- Streets that do not support neighborhood retail
- Neighborhoods that lack livability
- Polluted waterways and underground water aquifers drying up
- Uplifted sidewalks

1.3 Guiding Vision and Goals

Establishing a vision and goals that guide the development of our Miami Dade County communities is necessary so that the development will be as efficient, equitable, safe, livable, and sustainable as possible for future generations. Complete streets can reverse the auto-centric development trends of the 20th century. For the future and sustainable growth of Miami-Dade County, the development and implementation of complete streets and the added value and benefits they bring to communities should be highly considered. These benefits should form the basis for the goals and objectives desired from implementing complete streets.

- **Efficiency:** Complete streets move more people in the same amount of road space, thus improving the efficiency and capacity of existing roads. Congestion can be reduced by increasing productivity out of the existing road and public transportation system. Complete streets can maintain volume, reduce speeds, and conveniently accommodate bicyclists and pedestrians.

- **Public Well-being**: Complete streets promote more active forms of transportation such as walking, bicycling, and public transit. There is a strong correlation between planning and the investments made in infrastructure with some of the most serious health concerns facing the United States, including heart disease, obesity, and diabetes. Promoting active transportation and complete streets can provide some relief to ameliorate these ongoing public health issues.

- **Social Fairness:** Complete streets provide more equitable options for making essential trips to work, school, retail and recreational places. People of all ages, abilities, and incomes will have more feasible options when making these trips. Walking, bicycling, and taking public transportation are less expensive forms of personal transportation than relying on automobiles.

- **Safety:** Often times, complete street treatments include traffic-calming techniques which typically reduce vehicular speeds and alerts drivers to the presence of other road users such as pedestrians and bicyclists. Complete street improvements that have reduced the annual toll of injuries and fatalities to pedestrians and bicyclists are well documented. Adding complete street elements to existing roadways improves safety for all users.

- **Synergy:** Collaboration and partnerships between different interests are teaming together for safer, healthier streets. American Association of Retired Persons (AARP), American Public Health Association (APHA), Safe Routes to School National Partnership, Smart Growth America, Institute of Transportation Engineers (ITE), American Planning Association (APA), American Society of Civil Engineers (ASCE), and many other national organizations have committed to being a strong supporter of complete streets. Many cities and counties, including Broward County, have adopted complete streets policies.

New and existing residents and employees often have an expectation for a high quality of life, which often includes a walkable, bikeable and vibrant community. Incorporating complete streets into a community can assist in achieving this vision of a high quality of life.

Many policies applicable to Miami-Dade County already incorporate complete street concepts as a part of their visions including the Florida Statutes and Regulations, the Comprehensive Development Master Plan (CDMP), and the Florida Green Book. These policies aim to provide guidance and minimum standards so public streets serve more functions and expand travel choices beyond that of just automobiles. It is vital for more agencies to adopt proactive policies that encourage the implementation and expansion of complete streets. Some examples of current policies include:

- Bicycle and pedestrian ways shall be given full consideration in the planning and development of transportation facilities, including the incorporation of such ways into state, regional, and local transportation plans and programs. (The Florida Statutes and Regulations- 2012)

- Promotes walkable and connected communities and provides for compact development and a mix of uses at densities and intensities that will support a range of housing choices and a multimodal transportation system, including pedestrian, bicycle, and transit, if available. (The Florida Statutes and Regulations- 2012)

- In furtherance of pedestrianism as a mode of transportation encouraged in the planned urban area, Miami-Dade County shall enhance its transportation plans, programs and development regulations as necessary to accommodate the safe and convenient movement of pedestrians and non-motorized vehicles, in addition to automobiles and other motorized vehicles. (CDMP: Transportation Element - Objective TE-2)

- Provide convenient, accessible and affordable mass transit services and facilities. (CDMP: Transportation Element - Objective MT-4)

- Encourage ease of transfer between mass transit and all other modes, where it improves the functioning of the transportation network. (CDMP: Transportation Element - Objective MT-8)

For the best results, the vision for implementing complete streets should be coordinated with other smart growth-oriented goals including:

- More compact and focused growth with higher densities
- Protection of environmentally sensitive areas
- Mix of land uses that integrate Miami-Dade County's live-work-play-shop options
- Viable and healthy economy
- Continued maintenance of existing infrastructure and facilities
- Revitalization and infill of underutilized parcels
- Variety of housing choices and costs
- Empowered, informed and engaged citizenry

2.0 Planning Background

2.1 Regulations Impacting the Development of Complete Streets

An increasing number of local governments are looking to modify the way they design their streets, however standards and guidelines that prevent them from making the changes they seek often exist. Modifications to the current standards and manuals are difficult either because local governments don't know how, or don't have the resources. This manual presents an opportunity for Miami-Dade County to design their streets for smart growth, health, safety, livability, sustainability, and more.

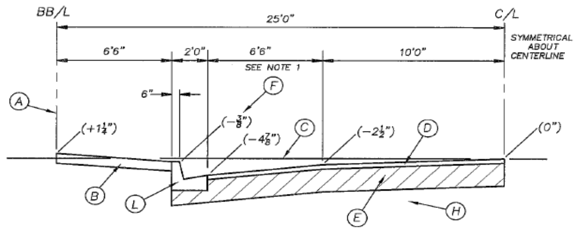
The intent of this section is to identify standards, requirements, and regulations that impact the implementation of complete streets here in Miami-Dade County. It is important that current standards, whether federal, state, or county reflect the existing practices and standards referenced in the complete streets toolkit. Various manuals and guidelines were reviewed at the local, county, state, and federal levels to determine if any impediments for complete streets could be found. The following documents were reviewed, and their standards were categorized based on the type of requirements related to complete streets.

- Comprehensive Development Master Plan: Transportation Element
- The Florida Statutes and Regulations
- City of Miami: Engineering Standards for Design and Construction
- FDOT: Plans Preparation Manual Chapter 21 – Transportation Design for Livable Communities
- FDOT: The Green Book
- Accessing Transit: Design Handbook for Florida Bus Passenger Facilities
- The Florida Pedestrian Planning and Design Handbook
- Miami-Dade County Right-of-Way Landscape Ordinance
- Miami-Dade County Public Works Manual: Standard Details
- Manual on Uniform Traffic Control Devices
- Chapter 33 of the Code of Miami-Dade County and Public Works Manual
- Florida Highway Landscape Guide
- FDOT: Design Standards
- AASHTO Roadside Design Guide
- Miami 21 Code

2.1.1 Right-of-Way Widths

- Chapter 33 of the Code of Miami-Dade County and Public Works Manual specifically identifies the ROW widths for various arterials in the county. They range from 50-180’ in the urban area.
- The minimum ROW should be at least 50’ for all two-lane roads. If existing ROW is less than

50', efforts should be made to acquire more ROW. (FDOT: Green Book)



Source: City of Miami Engineering Standards for Design and Construction

2.1.2 Sidewalk Widths

- The minimum width of a sidewalk is 5' if there is a 2' buffer from the back of curb. Sidewalks located adjacent to the back of curb require a minimum of 6'. (FDOT: Plans Preparation Manual; FDOT: Green Book)

- Allows adequate ROW space for placement of pedestrian, bicycle and transit facilities. (FDOT: Green Book)

- Bus benches and shelters should be set back at least 10' from the travel lane in curbed sections while meeting ADA requirements, with shelters requiring a minimum of 8'. (FDOT: Green Book)

- Exceptions to these standards are included in the ADA manual – which must be justified for each specific location/instance.

2.1.3 Lane Widths

- Traffic lanes should be 12' in width, but shall not be less than 10' in width. Streets and highways with significant truck/bus traffic should have 12' wide traffic lanes (FDOT: Green Book)

MINIMUM LANE WIDTHS

	Minimum Lane Width (FEET)
Freeways	12
Major Arterials	11
Minor Arterials	11
Collectors (Major and Minor)	11
Local Roads *	10
Auxiliary Lanes	10

Source: FDOT- Green Book

- Wide curb lanes of 14' should be considered where bicyclists are expected to share the roadway. (FDOT: Plans Preparation Manual)

Lane Types	Width (feet)
Through Lanes	11[1]
Turn Lanes	11[1]
Parking Lanes (parallel)	8[2]
Bicycle Lanes	4[3]

1. May be reduced to 10 feet in highly restricted areas with design speeds ≤ 35 mph. having little or no truck traffic.
2. May be reduced to 7 feet (measured from face of curb) in residential areas.
3. 5 feet adjacent to on-street parking.

Source: FDOT- Plans Preparation Manual

- Bicycle lanes shall have a minimum width of 4', or when combined with a travel lane shall have a combined width of 14'. At least 1' additional width is needed when the bicycle lane is adjacent to a curb or other barrier, on-street parking is present, there is substantial truck traffic (>10%), or posted speeds exceed 50 mph. (FDOT: Green Book)

2.1.4 Median Requirements

- Median separation is required on all streets with 4 or more travel lanes and with a design speed of 40 mph or greater to enhance pedestrian crossings. (FDOT: Green Book)

- Pedestrian islands should be a minimum of 6' wide by 8' long and should be well illuminated by curb-side street lighting and/or reflective paint or markers. (Accessing Transit)
- Medians are recommended wherever the crossing distance exceeds 60'. (The Florida Pedestrian Planning and Design Handbook)
- Pedestrian refuge islands should be a minimum of 8'. Larger, continuous islands are more visible to motorists, making drivers less likely to drive onto the island. (The Florida Pedestrian Planning and Design Handbook)

Median Type	Minimum Width	Recommended Width
Median for access control	4 feet	6 feet
Median for pedestrian refuge	6 feet	8 feet
Median for trees and lighting	6 feet [1]	10 feet [2]
Median for single left turn lane	10 feet [3]	14 feet [4]

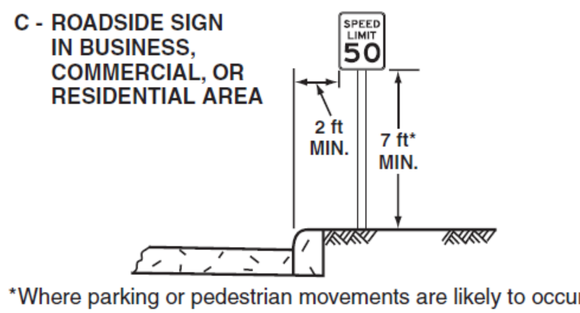
Source: FDOT- Green Book

2.1.5 Parking Lanes

- Minimum recommended width is 6'6'' as measured from the edge of the travel lane to the edge of pavement. Minimum width could be 8' if the 1'6'' from the gutter is also considered, which would include up to the face of curb. (City of Miami Engineering Standards)

2.1.6 Sign and Utility Placement

- MUTCD requires a minimum of 2' from face of curb to the edge of the sign.
- It is recommended to offset rigid fixed obstacles 6' from the face of the curb, with a minimum of 4'.
- Utility poles should be located outside the clear zone and as practically close to the edge of right-of-way. Placement shall allow a minimum of 32" of unobstructed sidewalks space. (FDOT: Green Book)
- Placement guidelines can be prohibitive due to available ROW.



Source: MUTCD

2.1.7 Placement of Landscaping

- Use landscape material, specifically street trees, to visually define the hierarchy of roadways, and to provide shade and a visual edge along roadways. (Miami-Dade County ROW Landscape Ordinance)
- Tree spacing is 22' on center to match parallel parking or 25' on center to match Lot Line spacing. (Miami 21 Code)
- The landscape should be designed to permit sufficiently wide, clear, and safe pedestrian

walkways, bicycle ways, and transit waiting areas. Care should be exercised to ensure that requirements for sight distances and clearance to obstructions are observed, especially at intersections. (FDOT: Plan Preparation Manual)

2.1.8 Summary

The major impediment for the implementation of a complete street is right-of-way. A deficiency of available right-of-way throughout most of Miami-Dade County exists, and placement options for complete street treatments are limited and competitive, making it more difficult to include all elements of the recommended toolkit. It may not be appropriate to incorporate all of the complete street elements based on the needs and characteristics of each roadway; therefore, carefully selecting the elements most needed for each roadway is important for utilizing the available right-of-way as efficiently as possible.

Some elements may complement each other; one example includes a bulb-out with on-street parking. The bulb-out only utilizes approximately one parking spot, while accommodating pedestrian safety needs. Other elements such as bicycle lanes and on-street parking may compete for the same space in situations of limited right-of-way. Nevertheless, most of the leftover right-of-way that currently exists outside the pavement leaves 5-6’ of space, which isn’t wide enough to accommodate transit, pedestrian, and utility/sign amenities. This limited area must be developed wisely to serve as many functions as possible while adhering to the many standards mentioned previously. In most situations, repurposing the existing right-of-way efficiently is the key to successfully implementing complete streets.

2.2 Local Impacts of Complete Streets

The movement from typical arterial streets to complete streets is powered by the synergy of diverse alliances as mentioned previously, bringing together advocates for older Americans, public health agencies, transportation practitioners, bicycling and walking advocates to name a few. Policies have been adopted as part of public health campaigns to create friendly environments for healthy physical activity as a way to address pressing safety and health concerns, which is one approach to create more environmentally and economically sustainable communities.

2.2.1 Non-motorized Transportation

A traditional approach to street design may define the needs of pedestrians as simply a sidewalk and the ability to safely cross the street. These are, indeed, crucial to creating a safe walking environment. However, pedestrians expect and need more than just walking space to feel safe and comfortable.

If the mode of walking is to be supported and encouraged as an attractive and viable travel mode, our street designs should reflect that pedestrians also value features that shorten walking distances, separate or buffer pedestrians from moving traffic, create aesthetically pleasing surroundings and amenities, and protect pedestrians from the elements.

Multiple design elements can provide for the general pedestrian expectations described above. However, effectively encouraging more pedestrian travel typically requires a combination of several design elements, considering how a pedestrian reacts to their overall walking environment. For example, the combination of safe crossings, pedestrian-scaled lighting, and wide sidewalks may not encourage walking if people feel they don't have anywhere to walk to. For walking trips with other purposes than recreation, a walkable environment should include a mix of land uses in close enough proximity to walk comfortably between them.

Source: Planetizen.com

Similar attention should be given to bicyclists, including exclusive buffered lanes for bicycles, adequate parking facilities, and safe, direct travel routes. Providing these amenities helps to reduce conflicts between bicyclists, pedestrians, and motorists. A dedicated bicycle network that connects neighborhoods, schools, parks, and other activity centers should be further analyzed and developed for bicycling to become a viable travel mode in Miami-Dade County.

2.2.2 ADA

Populations with special needs should also be considered when developing a complete street. For example, safe crossings for pedestrians with blindness who require a different set of design features than a typical pedestrian should be implemented. Another example includes transit shelters capable of accommodating transit users with wheelchairs. These considerations are required by ADA law and should be included in the implementation of any improvement to the street network.

Source: Lvcil.org

2.2.3 Health and Safety

Public health officials have become increasingly aware of our nation's declining physical health and the resulting increase in diseases such as diabetes and obesity. A considerable amount of research has been conducted to identify a link between auto-dependent sprawl, and an increase in sedentary lifestyle diseases. Research indicates that countries that invest in a greater multi-modal transportation system (including biking, walking, and transit) have higher rates of bicycling and walking as a primary mode, as well as lower rates of obesity. (*Oja et al. 1998).* Public health agencies are coordinating with planning organizations, public works, and city officials to work towards implementing more complete streets as a result of the positive impact on public health.

Walking and bicycling is the most practical and effective way to improve public fitness and decrease the risk of diseases related to inactivity. In addition to their health benefits for individuals, walking and biking decrease automobile dependence, in turn improving air quality and the overall health of the environment we live in.

Complete streets also enable seniors in our communities to 'age in place'; seniors can maintain their mobility and freedom without the need to drive a car. They are able to utilize the connected street network and transit system to move throughout their neighborhoods, all while keeping their independence.

A generation ago, walking and bicycling to school or work was a common practice. Today, however, the number of people walking and bicycling to local destinations has declined. A major factor in this trend is a concern for safety and the design of the roadway. Providing well-defined pedestrian and bicycle facilities, coupled with an educational program, would help to address the safety concerns often raised.

Source: Saferoutesnj.org

2.2.4 Public Transit

Public transportation needs to be discussed from two different types of perspectives – (1) from a transit driver's perspective, and (2) from a transit rider's perspective (mode of bus). The design of a street network and a complete street should consider both to help ensure transit's viability as an attractive mode of transportation.

Transit drivers are generally interested in and prefer the same street design elements as drivers of similarly larger vehicles. Transit drivers need enough space to operate and maneuver their vehicles with minimal conflicts along other users of the roadway, and with minimal delays to help keep their route operating on time. Some complete street design elements that help provide space for the operation of buses include wide travel lanes, wide corner turning radii, adequate merging distances, safe locations for bus stops, and providing signal priority for transit vehicles.

Transit riders are essentially pedestrians who are also interested in the placement and/or design features of bus stops and shelters. Transit stops should provide riders with comfort and security while waiting for the bus, and should be located relatively near pedestrian-oriented or clustered land uses as to minimize walking distances. Improved accessibility is also very important to a transit rider who makes transfers to other routes or changes modes of transit. Design elements, such as an extensive pedestrian sidewalk, bicycle racks, and direct connections to other routes are imperative to attract riders.

Source: Transitmiami.com

Some design elements have positive impacts on both the driver and the rider, while others can have unintended negative consequences for one or the other of these two groups. For example, wide travel lanes and wide corner turning radii are good for the driver to maneuver the vehicle, but create less than comfortable streets for the transit rider. There are inherent tradeoffs in many of the design decisions that must be considered when implementing complete street improvements.

2.2.5 Sustainability, Livability, and Climate Change

Complete streets contribute to walkable, livable neighborhoods, which can create a sense of community pride and improved quality of life. The creation of a true multimodal transportation network should be a top priority of the County, and one of the most effective ways to achieve this goal is to require streets, where appropriate, to be designed as a complete street.

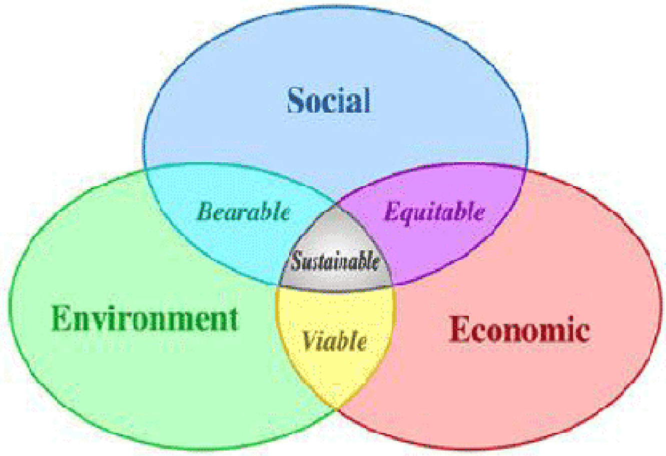
Complete streets support a more sustainable transportation vision, and address climate change and oil dependence by allowing people making short trips throughout the day to walk or bicycle instead of using a car. The FHWA's 2001 National Household Transportation Survey found that 50% of all trips in metropolitan areas are three miles or less and 28% of all metropolitan trips are one mile or less – which are distances easy to walk, bicycle, or hop a bus or train. Yet, 65% of the shortest trips are now made by automobiles, in part because of streets that are incomplete and separated land uses that make it dangerous or unpleasant for other modes of travel.

Increased greenhouse gas levels are negatively impacting the earth. Transportation emissions account for 34% of greenhouse gases. Sea level rise and climate change are a fact for this coastal community. With the increase in severe weather, and the continuing rise of sea levels, it is critical to reduce greenhouse gases and storm water runoff that has impacts to the transportation system. Miami-Dade County's sub-tropical climate necessitates the need for canopy trees to help lower temperatures and reduce the heat island effect allowing walking and biking as a more viable convenient option.

The auto-centric manner in which our communities have grown is a critical reason for the support of the consumption of carbon-based fuels in the United States and Miami-Dade County. Implementing complete streets and supporting policies can have a positive impact on our environment by reducing the community's reliance on automobiles, and encourages the use of viable transportation modes including walking, bicycling and public transit.

Integrating land use and transportation is critical to the livability of a community and region. In a highly competitive global economy, regions and communities must learn to address land use and transportation in a balanced manner to maintain a high quality of life for existing and future residents, businesses and visitors. Maintaining a healthy and attractive living environment is essential to building a strong, sustainable community for the future.

This manual will help achieve the emerging vision for Miami-Dade County by supporting the goal of a more compact and focused growth, and by offering additional transportation modes for the residents of Miami-Dade County. These are complementary goals because compact development makes providing transportation choices easier and providing more transportation choices makes compact development more livable and viable.



Source: 3quarksdaily.com

2.2.6 Economic Revitalization

Miami-Dade County and the surrounding region is expected to continue to grow at an ever increasing rate. According to the US Census, the County's population has grown by 13% since 2000, from roughly 2.2 million to 2.5 million residents. The ability to accommodate the growth in the future using the same development and transportation approaches used during previous decades is questionable at best. Our ability to do so while also maintaining a high quality of life for South Florida residents is even less likely. The quality of life for an individual is a major key to South Florida's continued economic development.

In today's overall economic landscape, retail and commercial development is often accessible only by automobile along roads that have become congested. Potential shoppers are left with no choice but to just fill up their tank and drive. For many, that can mean staying at home. This is particularly true for seniors. Research shows that half of all non-drivers age 65 and over – 3.6 million Americans – stay home on a given day because they lack transportation. (*Bailey, 2004*). The economy cannot reach its maximum potential when buyers are unable to reach retail destinations.

The lack of a network of complete streets in and around activity centers makes it difficult to attract and retain customers and employees alike. Streets that are exclusively designed for the throughput of vehicles are not conducive for business, because most drivers will quickly pass through without stopping, and pedestrians will not feel comfortable to walk, which may potentially lead to vacant storefronts. Creating infrastructure for non-motorized transportation and lowering automobile speeds by changing road conditions can improve economic conditions for both business owners and residents.

Complete streets provide better access to businesses, promote greater street activity, and can lead to an enhanced sense of community. Many studies such as the New York Department of Transportation's study *The Economic Benefits of Sustainable Streets (2012)* have analyzed retail sales for commercial areas near complete street projects consistently show an increase in sales and patron activity, which also means an increase in sales tax revenue. More pedestrians typically correlate to more potential customers as they walk by storefronts. The investment that communities make in implementing Complete Streets policies can stimulate more private investment, especially in retail districts and downtowns where pedestrians and cyclists feel unwelcome.

Making it easier for residents and visitors to take transit, walk, or bicycle to their destinations can help them save money and stimulate the local economy. This extra savings means that residents can spend money in other ways including housing, restaurants, and entertainment, which keeps their money circulating in the local economy. Complete streets can also boost the economy by increasing property values, including residential properties. Homeowners are generally willing to pay more to live in walkable communities.

Implementing Complete Streets policies can have economic benefits even before the projects are finished. Road improvement projects that include bicycle and pedestrian facilities create more jobs during construction than those that are only designed for vehicles, per dollar spent. Adding or improving transit facilities is good for jobs, too. According to Smart Growth America and data from the U.S. House of Representatives Transportation and Infrastructure Committee, each stimulus dollar invested in a public transportation project during the recent economic downturn created twice as many jobs as highway projects.

A network of complete streets can be considered safer, more appealing to residents, business owners and visitors, which in turn is good for retail and commercial development. Street design that is inclusive of all modes of transportation, where appropriate, not only improves conditions for existing businesses, but also is a proven method for revitalizing an area and attracting new development.

2.3 Case Studies

This section summarizes a variety of existing road diet projects that have been implemented around the country and their impacts on roadway volumes, flow, safety, businesses, and overall neighborhood quality of life from the Project for Public Spaces – Rightsizing Projects.

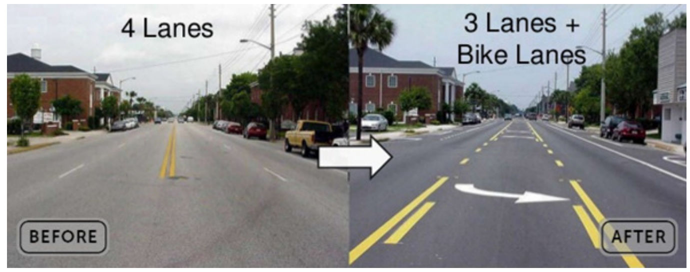
2.3.1 Road Diet on Selwyn Avenue: Charlotte, NC

Selwyn Avenue was a predominately residential four lane road with some commercial land uses. It was converted to three lanes including a one through lane in each direction and a two-way center left turn lane with dedicated left-turn lanes at side streets including 3.5 foot wide outside shoulders.

Charlotte identifies streets scheduled for resurfacing as candidates for road diets and Selwyn Avenue was included.

Unfamiliarity with the new lane markings and striping of Selwyn Avenue initially posed some safety issues for motorists and other road users.

2.3.2 Main Street Conversion on Edgewater Drive: Orlando, FL



Locals of Edgewater Drive wanted to see the street design support its main street status instead of serving as a drive-through street for commuters.

To help enable the 1.5 mile lane reconfiguration, the street was transferred from State (FDOT) to City jurisdiction. Edgewater Drive was converted from two travel lanes in each direction to one, a two-way left turn lane, and bicycle lanes. As a result, the redesign reduced speeding and accidents (34% reduction in crashes), increased pedestrian and bicycle volumes (up 23% and 30% respectively), increased on-street parking use rates, and improved overall community vibrancy. A number of new businesses also opened on the street following implementation.

2.3.3 Nebraska Avenue Conversion: Tampa, FL

Nebraska Avenue is a 3.2 mile lane conversion from 4 lanes to 3 lanes that incorporated many various complete street treatments including vehicle, pedestrian, bicycle, and transit improvements. Nebraska Avenue is an urban/residential arterial that had a relatively high motor vehicle crash rate before the road conversion. The new road design decreased crash rates significantly for all road users. Traffic volumes also decreased from 17,900 to 14,600 AADV (Average Annual Daily Traffic), while volumes on parallel roads remained approximately the same.

Improvements included bus bays which improved bus loading and unloading, while maintaining previous traffic movement. Midblock crossings were added due to the large spacing between signalized intersections. Traffic signals were optimized and coordinated to improve traffic flow. All of the improvements adhered to ADA standards. The total cost of the project was $11.1 million.

2.3.4 Improving the Gaines Street Corridor: Tallahassee, FL

An innovative aspect of this road diet is its funding source. Voters approved a sales tax extension that would fund the majority of this project in an effort to beautify the corridor. Electric lines were removed from the street and deteriorating underground utility lines were replaced as part of the Gaines Street redesign.

2.3.5 Road Diet on East Boulevard: Charlotte, NC

Similar to the Selwyn Avenue Road diet, East Boulevard was a corridor scheduled for a resurfacing. The corridor is just under a mile long and was implemented in three phases or segments of the roadway based on the characteristics of the existing roadway and treatments used.

Phase 1 converted two travel lanes in each direction to one with a two-way left turn lane that included multiple mid-block pedestrian refuge islands. The implementation of Phase 2 was similar to Phase 1, with the difference being a five-lane section was converted to four, and included more mid-block crossings. Phase 3 implementation was again similar to Phase 1, with the difference being a four-lane section was converted to three and also did not include any pedestrian refuge islands. Implementation of all phases included bulb outs, on-street parking, and bicycle lanes.

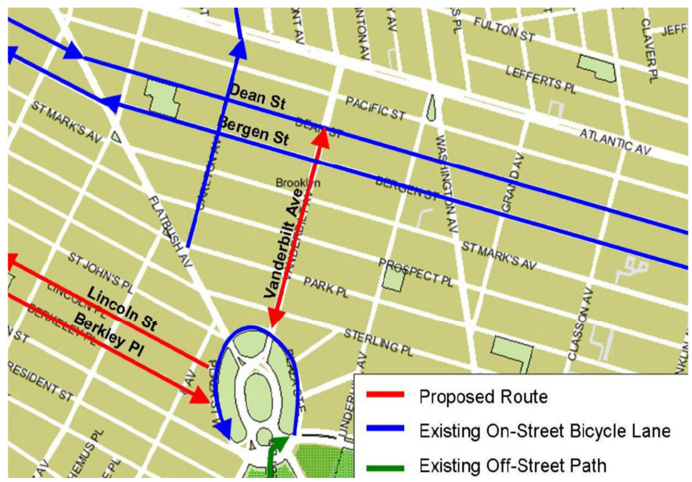
The project was introduced to the community as a way to achieve their goals of improving safety and accommodating more bicycle and pedestrian activity. Average speeds in the corridor declined from 43 to 40 miles per hour (speed limit is 35). ADT declined from 20,500 to 17,500 in Phase 1, and Phase 2 saw a slight increase from 18,600 to 19,700.

The redesign of the corridor improved pedestrian and bicycle infrastructure connections, transit connections including bus routes and light rail, which in turn improved the overall community vibrancy by aiding in the reconnection of neighborhood land uses. Retail businesses along the corridor saw a significant increase in activity.

2.3.6 Prospect Park West: Brooklyn, NY

Prospect Park West was a one-way street that was reduced from three lanes to two, and included the addition of a two-way bikeway protected by on-street parking. The nearby traffic signal timing was altered to improve through movements. Pedestrian islands were installed in place of on-street parking between the bicycle lanes and through lanes to reduce bicycle-pedestrian conflicts. Vehicle and bicycle volumes have increased, with peak travel times remaining stable, mostly due to the alteration of the traffic signal timing. Bicycle volumes have since tripled along the corridor. Average vehicular speeds have reduced from 33.8 to 26.6, which have helped to reduce crash incidents.

2.3.7 Vanderbilt Avenue: Brooklyn, NY



The Vanderbilt Avenue community prioritized the implementation of dedicated cycling space that served as a key connection to the nearby bicycle network, while accommodating active pedestrian activity with improved design. Vanderbilt Avenue's corridor includes many restaurants, bars, and other services that provides for a large pedestrian-oriented district.

The four lane corridor was redesigned to have one travel lane in each direction with on-street parking and bicycle lanes on each side. Bicyclists now have a safe route to Prospect Park from the existing bicycle network. The on-street parking has also favored local restaurants and businesses with increased patronage and sales.

2.3.8 Broadway Boulevard: Manhattan, NY

Broadway Boulevard has been one of the most discussed and well documented corridors in the United States in recent years regarding multiple right-sizing projects.

Broadway Boulevard has utilized some innovative techniques for re-orienting the streets to include more non-motorized uses. A massive overhaul of the transportation network involved reconfiguring the street network to allow for more pedestrian access including connectivity and safety, which in turn has helped local business activity. Reconfiguration of the street network has allowed for better traffic flows with lower average vehicle speeds and lower crash occurrences.

The reconfiguration of the street network involved eliminating specific segments of the roadway and rededicating them to pedestrian-oriented uses including cafes or large walkways. The images above detail the before and after of two busy intersections along the Broadway Boulevard corridor. Once considered close to impossible by traffic engineers based on traffic volumes and right-of-way availability, a redesign was accomplished. Changes to the roadway network included allowable turn movements, traffic signal optimization, and landscaping. Traffic flow has improved with fewer vehicular conflicts between pedestrians and bicyclists.

2.3.9 Raymond Avenue: Poughkeepsie, NY

Raymond Avenue was a four lane minor arterial converted to one travel lane in each direction. One of the more innovative aspects of this road conversion was the implementation of three roundabouts that replaced each traffic signal.

Other treatments focused on pedestrian improvements including improved sidewalks, the addition of pedestrian refuges islands where necessary, and better street striping for improved visibility. On-street parking was also incorporated, which serves as a safety buffer between vehicles and pedestrians.

The road conversion has helped to reduce accidents and vehicular conflicts with non-motorized modes by reducing speeds. The roundabouts have helped to reduce traffic delays and congestion, which in turn also reduces the amount of emissions.

Additional businesses have opened or expanded nearby since the completion of the project.

2.3.10 Abbott Road: East Lansing, MI

The conversion of Abbot Road utilized a safe and inexpensive approach to implementing complete street treatments. This road segment previously had an AADT of approximately 23,000, which is typically the upper limit for street volumes when implementing a road diet. The conversion took place in two phases to account for fewer travel lanes during implementation.

Phase 1 converted the four travel lanes into one travel lane in each direction with a two-way left turn lane in the center. Testing of the conversion for Phase 1 was completed for traffic analysis and was considered a success. Phase 2 was then initiated to implement bicycle lanes by repainting lanes and make some minor infrastructure and drainage improvements.

Additionally, the speed limit was decreased. Potential conflicts that existed between transit riders, bicyclists, and pedestrians with automobiles were reduced. Property owners were very satisfied with the reduction in speed, noise, and an easier time of entering and exiting driveways. This corridor now serves as a safe, multimodal connector to nearby Michigan State University to the south, and nearby local restaurants and parks.

2.3.11 Euclid Avenue: Lexington, KY

The corridor of Euclid Avenue serves local traffic and regional commuters alike, and contains a mix of retail and housing land uses. The corridor carries a significant traffic volume of 20,000 ADT. It functions as a major connecter between the University of Kentucky and residential areas to the south, which features high volumes of pedestrians and bicyclist traffic.

The complete street treatments used were resurfacing and restriping of the existing four-lane road into a three-lane roadway with bicycle lanes.

Public involvement meetings were held to recommend design alternatives and to solicit input from the public for Euclid Avenue. Neighborhood and special interest groups were in heavy support of the implemented road diet. Simulation techniques were used during meetings to illustrate and evaluate possible alternative designs. This approach documented the relative gains from each alternative over the existing conditions, and helped the public understand how each alternative would look and function.

2.3.12 Humboldt Boulevard: Chicago, IL

The plan for Humboldt Boulevard was to convert the four-lane roadway into a three-lane roadway with two-way left turn lanes and bicycle lanes on either side of the travel lanes. There are numerous examples of protected bicycle lanes in Chicago which take various forms. Before implementing any permanent changes to Humboldt Boulevard, CDOT (Chicago Department of Transportation) wanted to pilot their road diet to see it in action.

CDOT utilized orange traffic barrels to try and mimic the planned road diet. This experimental strategy however turned out to be defective; bicycle lanes were not separated from the (smaller) travel lanes, making this stretch of Humboldt Blvd. more unsafe for bicyclists than previously. The vast majority of observations concluded that the strategy was faulty and should be corrected in future 'pilots' to better resemble the projected road diet.

The piloting of a new road diet should incorporate multiple alternatives, both for vehicle and for bicyclists.

2.3.13 San Antonio, TX

According to the 2011 San Antonio Bicycle Plan, San Antonio and Bexar County could potentially add 350 miles of bicycle lanes by restriping pavement without impeding traffic or widening roads. Bicycle lanes are considered an important part to the development of a sustainable city.

Any efforts to reduce motor vehicle traffic, including the implementation of complete streets, help communities significantly. A paradigm shift in bicycle policy has helped incorporate a more bicycle-friendly approach to roadway design. San Antonio crafted a new policy that states: "Bicycle facilities must be considered a part of all roadway-related projects that are not further along than 40 percent design approval stage." Instead of bicycle facilities being viewed as something that should be added when budgets allow, engineers now have to get approval not to include them.

2.3.14 Stone Way: Seattle, WA

Stone Way is a 1.2 mile corridor with eight schools, two libraries, and five parks. The Stone Way road diet complemented an existing repaving plan and the adopted 2007 Bicycle Master Plan, making it relatively easy and inexpensive to implement. The redesign resulted in dramatic safety gains, reduced speeding and collisions, increased bicycle volumes (35%), and negligible impacts to motorized vehicle mobility. Additionally, the street has witnessed significant new developments, and as result a more vibrant community.

Seattle has installed 34 right-sizing road projects. Thirteen of these projects have been installed since 2007. Seattle's planners note the importance of right-sizing their streets to help the 16% of the city's households that lack a car, and to improve safety and access for seniors, youth, transit riders, and all other road users.

SDOT (Seattle Department of Transportation) identifies corridors based on the Bicycle/Pedestrian Master Plans, planned road capital projects, and community requests related to neighborhood plans. Projects are designed based on traffic operations, safety/collisions, livability, accommodation for freight and transit, parking, pedestrian infrastructure, pavement conditions, and traffic signals.

2.4 Lessons Learned

Public Involvement is Important

- Consider community requests to evaluate and implement road diet projects. Technical evaluations and community involvement with stakeholder groups help road diet projects to be more successful.

- A road diet project alongside a public education campaign needs to emphasize the notion that this is a safety enhancement project and that it may require trade-offs in capacity and speed. An increase in public education regarding the use of two-way left turn lanes may also be necessary.

- Manage community expectations with clear communication and documentation. Identify project goals, performance measures, expectations, and conduct follow-up evaluations.

Plan and Implement Incrementally

- Large road segments planned for complete streets are best implemented in phases.

- By implementing a road diet as a pilot project study, the effects on safety and operations can be measured before deciding whether to keep it permanently and/or whether to fund enhanced design features and a more permanent solution. A temporary solution may not provide all of the benefits that a permanent solution would provide, but useful insight can be gained.

Consider the Appropriate Features and Land Uses

- Include access management plans with appropriate spacing and/or elimination of driveways to reduce conflict points.
- Improve stormwater grates across catch basins to improve bicycle operations.
- Repair sidewalks, ramps, and driveways in poor condition.
- Road diets can be enhanced by adding landscaping, signal timing improvements, sidewalk connectivity, improved pedestrian crossings, and other enhanced design features.
- Complete streets are most useful and appropriate for pedestrian-oriented areas near retail including restaurants, shops, and entertainment. Complete streets help to improve pedestrian access and safety, which in turn support local business and economic activity.

Coordination Makes for Better Implementation

- Coordinate with other corridor capital improvements, road diet projects, and with concurrent pavement overlay or reconstruction projects, if possible.

Safety

- A road diet striping plan on new pavement results in less driver confusion if completed immediately after constructing the new roadway. Any delay with striping will result in safety issues.
- Increase police enforcement of speeds.
- Enforce proper use of the center turn lane.

Funding

- Consideration for funding complete streets can come from Tax Increment Financing (TIF) or Business Improvement District (BID) districts, or through sales tax increases approved through referendums or initiatives.

3.0 Complete Streets Toolkit

This section includes a comprehensive complete streets toolkit that utilizes five specific improvements for complete street treatments within the right-of-way:

Pedestrian Improvements

Bicycle Improvements

Mixed Motor Vehicle and Parking Improvements

Green Improvements

Transit Improvements

3.1 Pedestrian Improvements

3.1.1 Amenity Improvements

Source: Rte50.com

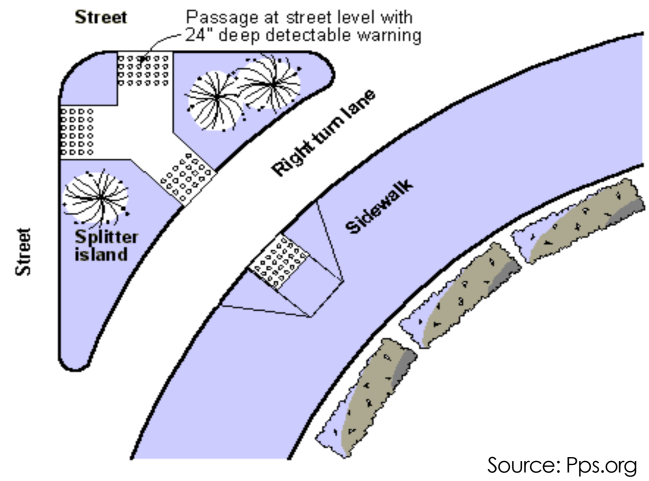
A hardscaped extension of the sidewalk to the back-of-curb, typically used instead of, or alternating with a planting strip. Provides space for street furnishings (benches, trash cans, bus shelters, etc.) and street trees outside of the unobstructed walking space for pedestrians.

Purpose and Benefits
In areas with on-street parking, the amenity zone provides a hard surface for passengers exiting parked cars.
Street furnishings help to create a more active pedestrian environment in dense areas.

Design Considerations
Higher intensity pedestrian-oriented uses including retail, office, high-density residential, and mixed uses are more likely to require the amenity zone; this is a more "urban" treatment than is a planting strip.
The amenity zone can help to extend the sidewalk area when there are right-of way constraints to the preferred sidewalk width; in most cases, however, the amenity zone should not be considered part of the unobstructed pedestrian pathway.
The amenity zone should include intermittent landscaping and street trees using appropriate planting techniques (ex. in grates or planters).
Shading from street trees, awnings, shelters, or other structures should be considered for a more comfortable and hospitable public space.

3.1.2 Corner Island

A raised triangular or semi-triangular island used to direct traffic in a particular direction or to separate a right-turn lane from the through lanes at an intersection; also referred to as a 'Channelization Island'.



Source: Pps.org

Purpose and Benefits
Helps to separate the turning traffic from the through traffic; potentially enhances flow.
A corner island can be used for pedestrian refuge at large intersections.

Design Considerations
Consider the use of well-designed corner islands to 'break up' distances and conflicting turning movements that must be traversed by pedestrians at wide intersections.
The safest design for pedestrians is when the corner island is designed to bring the turn lane into the receiving lane at an angle rather than as a sweeping curve; if not designed properly the turning driver is likely to look over their left shoulder at oncoming traffic rather than at pedestrians crossing the turn lane.
The use of corner islands and their design should be based upon intersection volumes, surrounding land use and design characteristics; the potential 'pedestrian refuge' benefit should also be weighed against the additional right-of-way requirements and overall dimensions of the intersection.

3.1.3 Crosswalks/Enhanced Pavements

A crosswalk generally refers to the most direct pedestrian pathway across a given leg of an intersection, and may or may not be marked. For the purposes of this toolkit, the term 'crosswalk' will refer to the marked portion of a street that is specifically designated for pedestrian crossings, whether at an intersection or a mid-block crossing.

Source: Redmond.gov

Purpose and Benefits
Crosswalks clearly define the pedestrian space and enhances safety and comfort for all users.
Crosswalks are an important part of the pedestrian network. They form a continuation of the pedestrian's travel path and enhance pedestrian connectivity, as well as enhance and define public spaces.
Crosswalks support the overall transportation system. Motorists, bicyclists and transit users will become pedestrians at some point during their trip and potentially will cross the street.

Design Considerations
Can be installed at intersections or designated mid-block crossing locations.
A crosswalk location should be highly visible so that a pedestrian can see and be seen by oncoming traffic while crossing.
Signalized intersections should typically have crosswalks on all approaches.
Installation at unsignalized intersections and mid-block locations may be affected by a number of factors including street classification, width of street, traffic speed and volume, use of traffic control devices including stop signs, and surrounding land uses.
Can be used in conjunction with a speed table which helps to calm traffic by slowing vehicular speeds and providing a safer pedestrian environment.
Pedestrian crossing distances should be minimized; on some streets this may require the use of additional street design elements including curb extensions and/or pedestrian refuge islands.

3.1.4 Curb Extension

A traffic calming feature that extends from the sidewalk into the pavement at an intersection or at a mid-block crossing (also referred to as a 'curb bulb' or 'bulb-out'). A curb extension can be hardscape, landscaped, or a mix of both.

Source: Contextsensitivesolutions.org

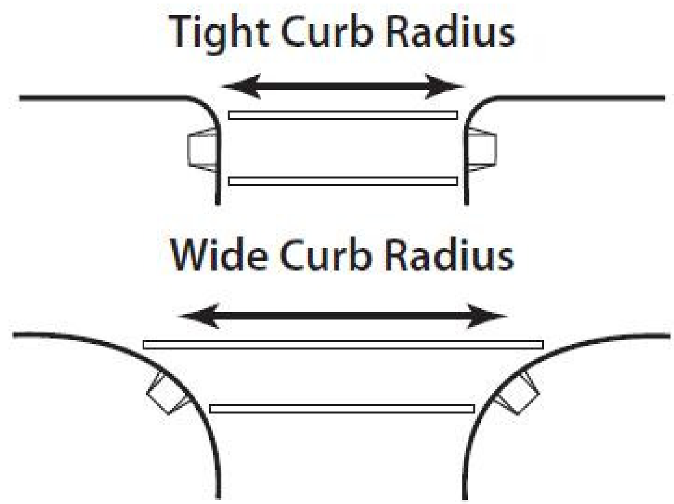
Purpose and Benefits
Reduces street width both physically and visually, shortens a pedestrian's crossing distance at crosswalks and potentially reduces traffic speeds.
Provides increased visibility for pedestrians and motoris.
Moves parked vehicles away from street corners improving visibility.

Design Considerations
Should be used when possible in pedestrian-oriented areas.
Should be used for transit stops where full-time on-street parking exists.
Should be used where a permanent parking lane exists.
Should not encroach into the bike lane.
Street furniture or plants on curb extensions should not impede motorist or pedestrian sightlines.
Can be fully or partially vegetation where storm water runoff is stored and can be expended by plants.

3.1.5 Curb Radius

The curved section of a curb connecting the curb lines of two intersecting streets. The curb radius measurement is taken from the back of the curb.

Purpose and Benefits
Defines the space for (and helps direct) vehicle turning movements at intersections.
The curb radius dimension can affect ease and speeds of vehicular turning movements, which provides more comfortable conditions for pedestrians and bicyclists.



Source: Fabb-bikes.org

Design Considerations
Radii should be minimized to allow the necessary dimensions for traffic while minimizing impacts on pedestrians, cyclists, and the adjacent land uses.
Smaller curb radii narrow the overall dimensions of an intersection which may shorten pedestrian crossing distances and reduce right-of-way requirements.
A smaller curb radius provides a more visible pedestrian waiting space at the intersection.
Smaller radii help reduce the turning speeds of vehicles.
A smaller radius allows for more flexibility in placement of curb ramps; with a larger radius, the ramp(s) may need to be located in the radius or its location will be to far from the corner for good visibility.
Larger radii may be required on streets that carry a high percentage of truck traffic; they allow easier turning movements for large vehicles.
The presence of a bike lane or parking lane creates an effective radius that allows a smaller curb radius than might otherwise be required for motor vehicles; they provide extra maneuvering space for the turning

3.1.6 In-pavement Lighting

Lights that are used in crosswalks to alert motorists to the presence of a pedestrian crossing or preparing to cross the street. The lights face oncoming traffic and are activated by either push-button or through an automated detection system.

Source: Greensocal.net

Purpose and Benefits
Increases the distance at which a motorist becomes aware of the crosswalk.
Crossing intervals can be extended. Lights can continue to flash and allow slower pedestrians to safely cross.
Reduces the mean speed at which vehicles approach the crosswalk.
Reduces the mean number of vehicles that pass over the crosswalk while a pedestrian is waiting.

Design Considerations
Should be considered in areas with high pedestrian activity and vehicular conflicts.
The amount of time lights flash should be based on crossing distance, vehicle speeds and volumes, and pedestrian characteristics (ex. age).
Manual or automatic triggers for lights should be considered.
Consider combining in-pavement lighting with an advanced flashing amber beacon to alert motorist at an earlier time or using a speed table which acts as a traffic calming device that provides for a safer pedestrian environment.

3.1.7 Pedestrian Refuge

A protected area between traffic lanes that separates a pedestrian crossing into segments and allows pedestrians to wait safely for gaps in traffic (also called a 'median refuge', 'refuge island' or 'pedestrian refuge island').

Source: Fhwa.dot.gov

Purpose and Benefits
Reduces pedestrian and vehicular conflicts.
Shortens the distance a pedestrian must cross at one time.
Allows the pedestrian to consider traffic coming from one direction at a time only; potentially reduces confusion and increases crossing opportunities.
Can reduce the time a pedestrian must wait to cross by increasing the number of gaps in traffic.

Design Considerations
Typically provided on wider multi-lane roads to reduce the effective crossing width.
Should be signed and illuminated to identify purpose.
Should be a minimum of 6' wide to provide sufficient space for refuge; large width is preferable, particularly on higher-speed streets or in areas where large pedestrian crossings exist at one time (ex. 8 - 10').
Might be used at signalized or unsignalized crosswalks, intersections, and midblock crossings.
Landscaping on pedestrian refuges should not impede visibility of pedestrians or drivers.
The crosswalk should pass through the refuge at grade for accessibility by all travelers.
A key tradeoff when providing pedestrian refuge islands is the additional width required; consideration should take into account adjacent land uses and the existing width of the roadway.
Should typically include a vertical element (ex. landscaping or signage so that drivers can clearly see and avoid running into the refuge).

3.1.8 Planting Strip

(see Green Improvements section)

3.1.9 Road Diets

(see Mixed Motor Vehicle and Parking Improvements section)

3.1.10 Wayfinding Signage

Wayfinding signage can range from standard roadway network signage to custom identity signing plans for neighborhoods and districts.

Purpose and Benefits
Provide direction, destination, and/or location information for motorists, pedestrians, and bicyclists.
Helps to caution road users of roadway conflicts.
Can provide a sense of community and vibrancy to a community or corridor.
Helps to promote interaction and engagement between the public and streetscape environment.

Source: Changelabsolutions.org

Design Considerations
Most appropriate for downtown, commercial, tourist-oriented locations, or large institutions.
Signage should include destination, distance, and direction.
Maps and real-time information depending on the need and purpose of the signage is possible.

3.1.11 Street Lighting

Illumination of a street's travel lanes; other portions of the street right-of-way may also be illuminated by the street lighting and/or by pedestrian-scale lighting, which specifically illuminates the sidewalk or other pedestrian areas.

Purpose and Benefits
Street lighting enhances safety for all by illuminating hazards, curves, and others in the street.
Lighting can improve safety and security around buildings and in parking areas.
A mix of street and pedestrian-scale lighting may be best depending on context and land uses.

Source: Parkwaymuseumdistrictphiladelphia.org

Design Considerations
Optimal type and number of street lights varies depending on street classification, configuration, and adjacent land uses.
Street lighting that reduces glare should be considered to ease localized light pollution.
Cobra lights should be avoided.
Consider whether pedestrian-scale lighting can be used to illuminate or define a curve or other feature and help to reduce the need for additional streetlights in some locations.
For proper illumination and to avoid glare, pedestrian-scale lighting should typically be no more than 12' in height. In parking areas, pedestrian-scale lighting can better define and enhance pedestrian space.
Areas of high pedestrian activity or primary pedestrian routes should have pedestrian-scale lighting specifically intended to illuminate the sidewalk as opposed to the travel way.

3.2 Bicycle Improvements

3.2.1 Bicycle Lanes

Segment of the street specifically designated for use by bicyclists; utilizes pavement markings or other means of delineation on the street.

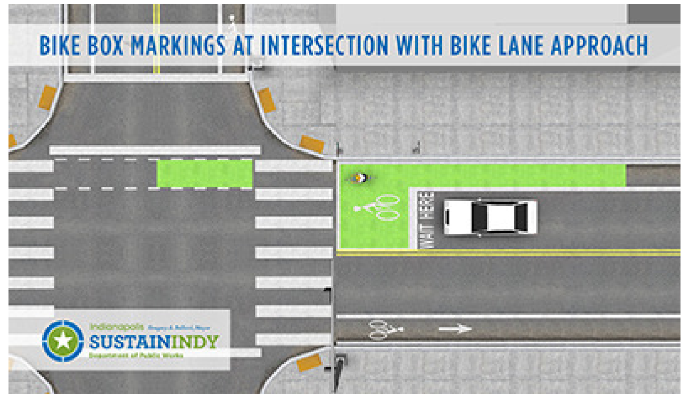
Source: change.org

Purpose and Benefits
Provides a clearly marked area of the street for bicycle travel and separates cyclists from motor vehicles.
Help reduce conflicts between motor vehicles and bicycles.
Provides an additional buffer between pedestrians and motor vehicles.
Gives motorists more confidence about passing cyclists; uncertainty about passing in the absence of bike lanes can create unnecessary backups or dangerous passing conditions.

Design Considerations
Placement and width of bicycle lanes is dependent on right-of-way width, traffic speed and volume, signalization, turn lanes and parking.
A marked bicycle lane should be a minimum of 4' wide (not including gutter) with 5' generally preferred.
Wider lanes are preferred next to on-street parking (to avoid opening car doors) and on steep hills (to allow room for weaving caused by pedaling uphill).
At an intersection with a right turn lane, the bicycle lane should be placed to the left of the right turn lane to clearly separate the bicycle's through movement from the motor vehicles' turning movements.
If right-of-way to include a 4' wide bike lane does not exist, sharrows (pavement markings for motorists to share the roadway with bicyclists) should be included where bicycle traffic is expected.

3.2.2 Bicycle Box

A designated and marked area of a signalized intersection that places bicyclists in the front of the traffic queue when the traffic signal is red.



Source: Arlingtontransportationplanners.com

Purpose and Benefits
Places bicyclists at the head of the queue where heavy bicycle traffic exists; allows bicyclists to enter and clear an intersection before motor vehicles.
Bicyclists are more visible to motorists at the front of the queue.
Provides a storage area for bikes at an intersection where heavy left turn movements exist.
Stores vehicles further back from the crosswalk providing a better crossing environment for pedestrians.

Design Considerations
Should only be used at signalized intersections where no right turn on red exists.
May require additional signage to inform motorists and cyclists how to correctly use the bike box.
Must be accessed via a bike lane which allows cyclists to safely move ahead of motor vehicles in the intersection.

3.2.3 Road Diets

(see Mixed Motor Vehicle and Parking Improvements section)

3.2.4 Street Furniture

(see Green Improvements section)

3.2.5 Wide Outside Lanes

(see Mixed Motor Vehicle and Parking Improvements section)

3.3 Mixed Motor Vehicle and Parking Improvements

3.3.1 Bicycle Lanes

(see Bicycle Improvements section)

3.3.2 Bicycle Box

(see Bicycle Improvements section)

3.3.3 Corner Island

(see Pedestrian Improvements section)

3.3.4 Curb Extension

(see Pedestrian Improvements section)

3.3.5 Curb Radius

(see Pedestrian Improvements section)

3.3.6 Median

A raised barrier that separates traffic flows; generally used to control access and reduce vehicular turning movements.

Source: Depts.washington.edu

Purpose and Benefits
Separates opposing traffic flows; reduces or eliminates vehicular conflicts.
Can be used for access management by restricting turning movements into driveways or side streets.
If properly designed can provide a pedestrian and bicycle refuge on wider streets.
If properly designed can provide a landscaped element to the streetscape that increases storm water retention, CO2 absorption, mitigates traffic noise, and adds beauty.

Design Considerations
Design and installation of a median varies according to street type and right-of-way width.
It is recommended that if a median is used it should be wide enough for landscaping and a pedestrian refuge island.
In the absence of other design elements including landscaping, street trees, and on-street parking, a median may encourage higher traffic speeds; this unintended consequence should be carefully considered when designing streets in residential areas or near pedestrians.
Spacing between openings in the median depends on the street type and land use context; spacing should be longer in areas with higher speeds, fewer driveways, and larger setbacks; spacing should be more frequent in areas where smaller block lengths exist and more access is desired.

3.3.7 On-Street Parking

Segment within the street's right-of-way (between the curbs) and roadway for vehicle parking.

Source: Google Streetview - Washington Ave, Miami Beach

Purpose and Benefits
Provides improved access to nearby land uses, especially in higher density neighborhoods and commercial areas.
Reduces the need for large off-street parking area.
Provides a buffer between moving vehicles and pedestrians on the sidewalk.
On-street parking can narrow the perceived right-of-way width and help reduce traffic speed.

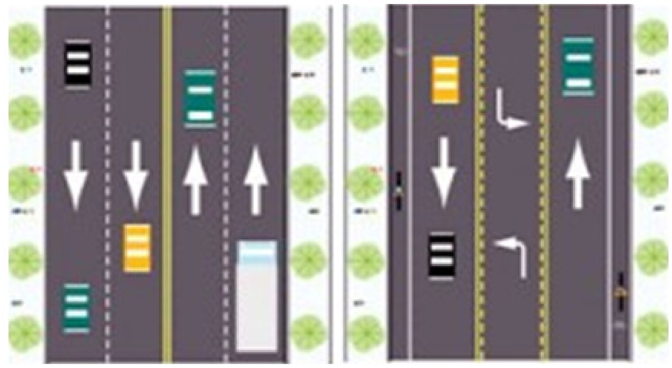
Design Considerations
On-street parking is allowed on many local streets but is not necessarily designated with marked spaces.
High-speed street types are not suitable for on-street parking.
On-street parking spaces should be located carefully relative to intersections and crosswalks; cars parked within on-street parking spaces should not impede visibility for pedestrians, bicyclists and other vehicles.
The provision of on-street parking depends on street width as well as traffic speed; angled or reverse angled parking requires more roadway space than parallel parking but can accommodate more vehicles per block.
On-street parking can be allowed during certain times of the day and disallowed at peak traffic times; this can allow for more efficient use of lane capacity when needed.
Curb extensions can make pedestrians more visible at crossing points as well as clearly define and separate parked cars from travel lanes where dedicated full time on-street parking is provided.

3.3.8 Pedestrian Refuge

(see Pedestrian Improvements section)

3.3.9 Road Diet

A physical conversion of a street, wherein one or more travel lanes is converted for another use, often to support the use of other modes; a 'narrowing' of the motor vehicle travel way.



Before After
Source: Harrisondaily.com

Purpose and Benefits
Converts excess vehicle capacity on a street into useable space for other modes. (e.g. a four-lane street might be narrowed to two lanes, with bike lanes and a median/two-way left turn lane).
When a street is dieted to two lanes this helps to calm traffic in part by eliminating the opportunity for passing.
Can enhance aesthetics and livability of adjacent land uses.

Design Considerations
Very high volume streets are not good candidates for road diets. Consider street classification, function, and traffic volumes when identifying potential locations.
Right-of-way width, adjacent land uses and the existing and planned street network should be considered. In some cases benefits can be gained for other modes without the road diet. In a well-connected network it may be possible to save right-of-way by using the road diet.
Consider proper integration of pedestrian, transit and bicycle circulation and related facilities.
The decision to use a road diet solution should carefully weigh the advantages and disadvantages to all stakeholders including representatives of the adjacent land uses.

3.3.10 Roundabout

A circular island located at the convergence of two or more roadways that takes the place of traffic signals or stop signs; traffic circulates around the island rather than through the intersection.

Source: Fruitville210.org

Purpose and Benefits
Can be used to improve traffic flow by eliminating the need make a complete stop when the intersection is clear and/or reducing the delay if other vehicles are in the intersection.
May be used as a gateway feature to a neighborhood or commercial area; this usually entails the use of landscaping or public art in the island.
Small roundabouts known as traffic circles, mini circles or mini roundabouts can also be used for traffic calming purposes. Free flow is maintained while requiring motorists to slow entering the traffic circle.

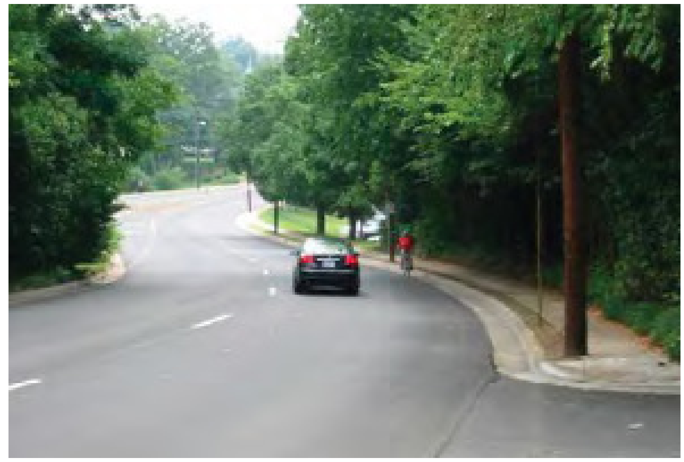
Design Considerations
Single-lane roundabouts are relatively pedestrian friendly. Multi-lane roundabouts can be difficult for pedestrians and cyclists to traverse and should typically be avoided where pedestrians are likely.
Consider proper integration of pedestrian and bicycle facilities and emergency vehicle access in roundabout design. Special care should be taken with providing a safe entry and exit for cyclists.
Roundabouts should typically be landscaped. The landscaping can help make the roundabout more visible to motorists as well as enhancing its role as a gateway feature.
Roundabouts should be designed to be a major focal point of a streetscape or area.
Turning movements of larger vehicles can be accommodated by utilizing a paved area with a mountable curb on the inside curb of the roundabout.

3.3.11 Street Furniture

(see Green Improvements section)

3.3.12 Wide Outside Lane

An extra wide traffic lane that provides enough space for motor vehicles and bicycles to use the same lane (also called a shared lane) is typically used where there is not enough space for a separate, marked bicycle lane.



Source: Charmeck.org

Purpose and Benefits
Provides an increase in safety and comfort for both cyclists and motorists in the absence of a bicycle lane (which is the preferred treatment for bicycle safety).

Design Considerations
Should be wide enough to allow a motor vehicle to pass a cyclist without crossing into the next lane (minimum 14' width).
Extra width is required if the wide outside lane is to be used with on-street parking (to reduce the risk of cyclists being hit from opening car doors).
Wide outside lanes can potentially lead to increased speeds and should be utilized carefully; marked bicycle lanes are the preferred option.

3.4 Green Improvements

3.4.1 Amenity Improvements

(see Pedestrian Improvements section)

3.4.2 Median

(see Mixed Motor Vehicle and Parking Improvements section)

3.4.3 Planting Strip

An unpaved area within the right-of-way that separates the street from the sidewalk.

Source: Charmeck.org

Purpose and Benefits
Serves as a buffer between vehicles and pedestrians.
Trees in the planting strip provide shade and additional buffering for pedestrians.
This unpaved area can enhance the storm water drainage system by helping to reduce run-off.
If properly designed the planting strip can soften the appearance of the streetscape, enhance aesthetics, and contribute to an increased sense of safety and identity along the street.

Design Considerations
Width of the planting strip will dictate the size and type of landscape materials to be installed.
Generally the wider the planting strip the better the functionality and aesthetic value.
The planting strip might be replaced or alternated with a 'hardscaped amenity zone' in more urban higher-density contexts.
The planting strip and its width may need to be considered against the need for other design elements if right-of-way is limited (ex. retrofitting).
Landscaping and trees in a planting strip should be located to assure an acceptable sight distance.
Consider increasing the width of the planting strip as travel speeds increase.

3.4.4 Street Furnishings/Furniture

Physical features included as part of the streetscape including benches, bicycle racks, lighting, trash receptacles, bus shelters and banners.

Source: Tripadvisor.in

Purpose and Benefits
Can improve aesthetics and provide a sense of identity for a neighborhood/commercial area.
Enhances the functionality of the street for users other than motorists.
Can enhance safety and protection from vehicular traffic.
Can provide focal points for street activities.

Design Considerations
Street furnishings should be carefully located so as to not obstruct the sidewalk. In high pedestrian volume areas they should be placed in an amenity zone. In no case should street furnishings be placed in the minimal unobstructed walking area.
Placement should be strategic for each type of furnishing's purpose with appropriate furnishings well-located relative to bus stops and major pedestrian focal points.
The design and placement of street furnishings should not contribute to visual clutter along the street.
Street furnishings should be carefully located relative to other features including street trees, landscaping, adjacent land uses, and signage. The necessity for shade within the pedestrian zone should also be considered.

3.5 Transit Improvements

3.5.1 Bus Shelters

A convenient amenity that protects transit riders from the elements while waiting for transit service.

Source: Transformca.org

Purpose and Benefits
Can improve aesthetics and provide a sense of identity for a neighborhood/commercial area.
Provides a comfortable waiting location for transit users to avoid harsh weather conditions. Comfortable bus shelters are more attractive to transit users and thus increase the potential for greater ridership while stops without shelters may deter transit users.

Design Considerations
Bus shelters should be carefully located so as to not obstruct the sidewalk. In high pedestrian volume areas they should be located in the amenity zone or green zone.
Off-board fare collection at or near a bus shelter should be considered to expedite the boarding process and improve travel times.
Providing passenger and route information at a transit shelter including maps, kiosks, and real-time passenger information systems should be considered.

3.5.2 Bus Lanes

Bus lanes are travel lanes designated for exclusive use by buses only; they can vary in form from rush-hour only lanes to physically separated transit ways.

Purpose and Benefits
Offers a competitive transit alternative to the automobile by reducing travel times and increasing speeds.
Helps to increase the modal share for bus ridership, thereby helping to reduce congestion.

Source: Streetsblog.org

Design Considerations
When adding a bus lane to an existing street the conversion from an automobile travel lane should be utilized. Widening the roadway or removing parking is not recommended.
Bus lanes should be shared with bicyclists especially if there are a low volume of buses. Bus and bike lanes do require some special accommodation to reduce potential conflicts at bus stops including on streets without dedicated bicycle facilities and at right most lane locations.
Consider including transit signal priority (TSP) a technology that reduces the dwell time at traffic signals for transit vehicles by either holding a green light longer or shortening a red light as a way to improve on-time performance and reduce overall travel time. TSP also helps to attract new riders with a more competitive and faster service and can be utilized at select intersections or throughout a corridor.

3.5.3 Curb Extensions

(see Pedestrian Improvements section)

3.5.4 Street Furniture

(see Pedestrian Improvements section)

4.0 Context for Design

4.1.1 Urban Collector (UC)

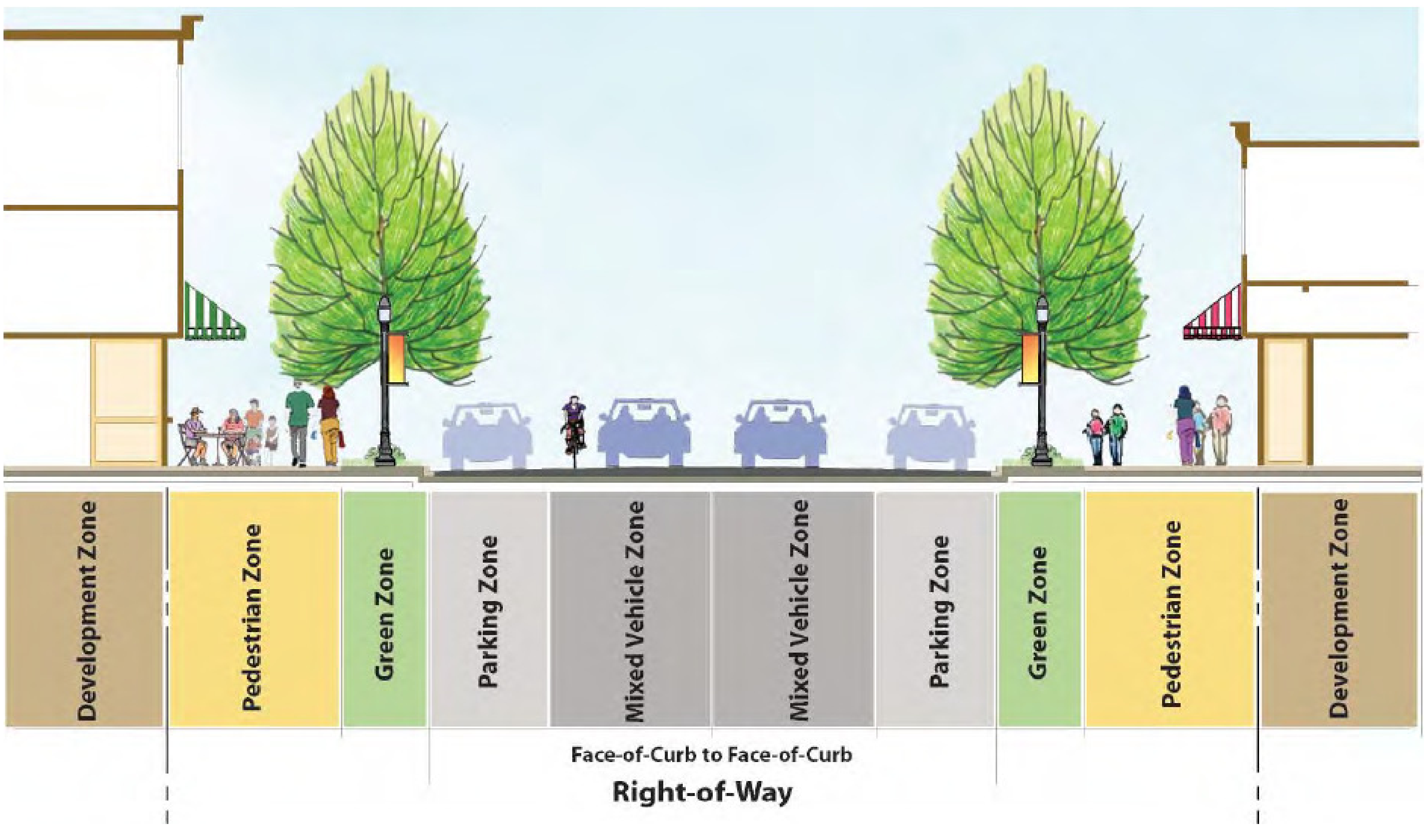
Urban collectors are destination locations that provide access and function as centers of civic, social, and commercial activity. UC's may currently exist as older neighborhood centers or potentially refurbished business areas. New UC's may be developed in mixed-use developments or as part of pedestrian-oriented developments.

Miracle Mile located in Coral Gables, FL is an example of an Urban Collector (UC)

The various zones located in an Urban Collector are shown in the following table and figure.

4.1.1.1 Urban Collector Zones

Zone	Description
Development Zone	Development should include pedestrian-oriented land use and design with narrow setbacks, buildings facing onto the sidewalk, and first floor active spaces.
Pedestrian Zone	The pedestrian zone is crucial because of high pedestrian volumes. This zone should be spacious with unobstructed sidewalks and pedestrian-scaled lighting.
Green Zone	This zone includes street trees or other landscaping elements that provides extra buffering between pedestrians and vehicles
Parking Zone	Parking is important to provide parking for businesses, calming traffic, and acts as an added buffer for pedestrians from vehicles.
Mixed Vehicle Zone	The mixed-vehicle zone serves cars, trucks, buses, and bicycles in a limited number of travel lanes operating at low speeds, with relatively low traffic volumes.



Elements that should be considered or excluded in an Urban Collector are shown in the following tables.

4.1.1.2 Elements to Consider for an Urban Collector

Lane Width	Allow 12-13’ for lanes next to parking. In 3-lane situations, 10’ per lane is sufficient.
Sidewalk Width	Allowing 10’ unobstructed is most desirable, but should not be less than 6’ in the most constrained situations.
Green Zone/Buffer Width	Provides space for trees, lights, benches, transit amenities, etc. Should be 8’ wide (not including the sidewalk). In more constrained ROW situations, this area can share space with the sidewalk if necessary.
On-street parking	Should allow 7’ from the face-of-curb to the next travel lane.
Curb extensions	Can be provided for mid-block crossings, landscaping, or for street furniture. Should match the width of the existing on-street parking.
Utilities	Consider placing underground to preserve sidewalk capacity for pedestrians, maintain a clear zone per ADA requirements and allow larger trees and other aesthetic treatments.

4.1.1.3 Elements to Exclude for an Urban Collector

Bike Lanes	Excluded to minimize street widths and conflicts with parked cars. Bicyclists can operate in mixed traffic due to the low vehicle speeds and the wider outside lanes. Sharrows - or shared laned - are typical for urban collectors.
Planting Strips	Could be excluded to allow for more sidewalk space for pedestrians. Not as important as a buffer since travel speeds are much lower.
Driveways	Should be minimized to lower conflicts between pedestrians and vehicles. Service access should be at the rear of the commercial properties. Shared driveways are encouraged.
Pedestrian Refuge Islands/Medians	(Depends on the number of lanes) unnecessary because of lower travel speeds. A median without on-street parking for instance could stimulate faster travel speeds.

4.1.2 Urban Major Arterial (UMA)

Urban major arterials serve a diverse set of functions in a wide variety of land use contexts. UMA's provide access from neighborhoods to commercial areas, between various areas in the county and, in some cases, through neighborhoods. UMA's serve an important function in providing transportation choices because they are designed to provide a balance of service for all modes of transport.

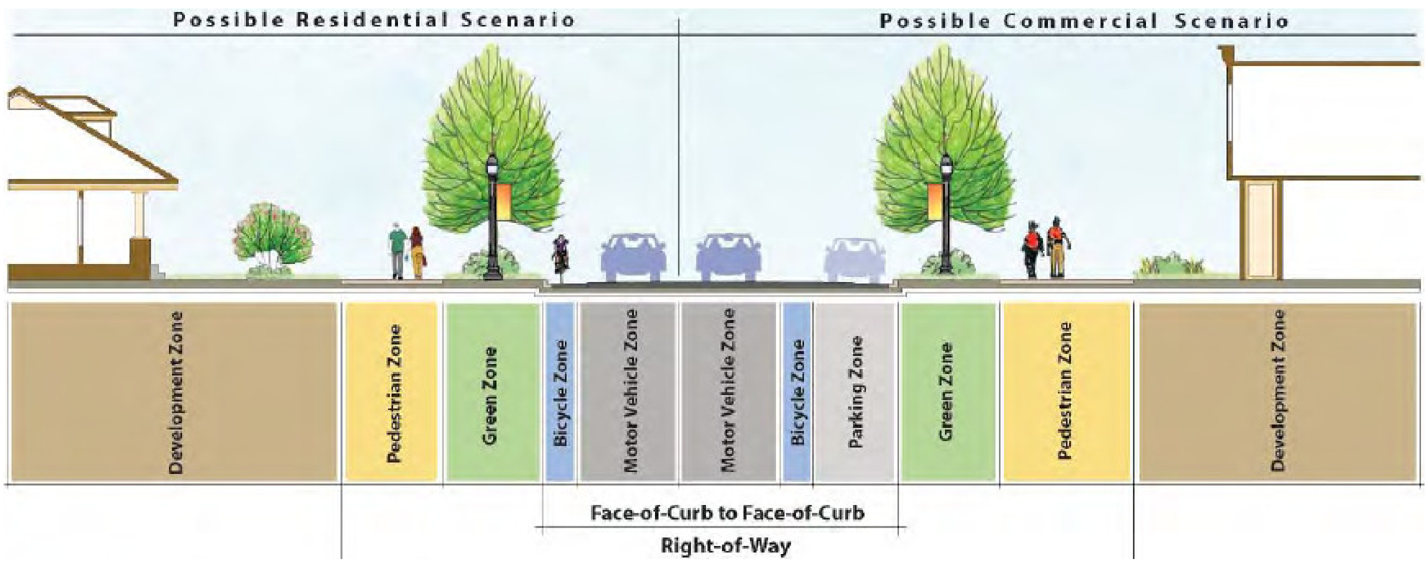
Rendering of a typical Urban Major Arterial (UMA)

They include high-quality pedestrian access, high levels of transit accessibility, and bicycle accommodations such as bicycle lanes, yet they also may carry high volumes of traffic. Most thoroughfares in our street network would be classified as UMA's. Some collectors and connectors would also be classified as an UMA. Since they serve many functions and contexts, there are a number of alternative UMA cross-sections, and design teams should carefully review the information on design elements provided.

The various zones located in an Urban Major Arterial are shown in the following table and figure.

4.1.2.1 Urban Major Arterial Zones

Zone	Description
Development Zone	Setback, design, and land uses will vary, but the basic intent is for development oriented toward the street.
Pedestrian Zone	Should allow for comfortable travel with appropriate widths for adjacent and surrounding land uses.
Green Zone	Very important to provide a comfortable buffer for pedestrian travel, although some configurations could include a median or on-street parking with intermittent landscaping.
Parking Zone	Although not necessary in all situations, on-street parking provides buffering and a layer of traffic calming appropriate for certain land uses.
Bicycle Zone	Due to higher average speeds, in order to provide comfort and safety for bicyclists, a dedicated lane would be needed. This zone would also add to the buffer between travel lanes and the pedestrian zone.
Motor Vehicle Zone	Can be configured in a variety of ways (number of lanes and traffic volumes) while accommodating modal balance.



Elements that should be considered and excluded in an Urban Major Arterial are shown in the following tables.

4.1.2.2 Elements to Consider for an Urban Major Arterial

Lane Width	Minimum of 10' lanes, with wider lanes (up to 12-14') that are next to on-street parking/bike lanes/gutter.
Sidewalk Width	Should allow 5' with sufficient buffers, but additional space may be needed for other elements such as street furniture, opening car doors, and other obstructions. In highly urban conditions, a sidewalk amenity zone can replace the planting strip, which includes street furniture and other amenities
Green Zone/Buffer Width	Should be provided on UMA's to separate pedestrians from vehicles, provide a better walking environment, and enhance the streetscape. Planting strips should ideally be 8' minimum between curb and sidewalk to allow for grass and large maturing trees. If planting strip is less than 5', shrubbery or groundcover may be more acceptable. Planting strips should never be less than 3'. Spacing of trees should be considered as to not constrain sight distances.
Bus Stops	Most UMA's will have local and/or express bus service. A minimum 8' setback from the curb is an ADA requirement for bus shelters, which can be accommodated with a large enough sidewalk/amenity zone. Bus stops can must include curb extensions where there is full-time on-street parking.
Medians	If a median is provided, it should never be less than 6' wide. Medians over 8' can be landscaped including trees or shrubbery. Pedestrian refuge islands with different paving material can be incorporated at crosswalks or at mid-block crossings.
On-street parking	Desirable in areas with front facing (retail) development. In very constrained situations, cut-outs could be used to create parking, preferably 7' wide.
Curb extensions	can be provided for mid-block crossings, landscaping, or for street furniture. Must be provided where there is on-street parking to shorten the crossing distances for pedestrians.
Utilities	Consider placing underground to preserve sidewalk capacity for pedestrians, maintain a clear zone per ADA requirements, and allow larger trees and other aesthetic treatments.

4.1.2.3 Elements to Exclude for an Urban Major Arterial

Driveways	Should be minimized to lower conflicts between pedestrians and vehicles. Distances between driveways should be maximized. Service access should be at the rear of the commercial properties; shared driveways are encouraged.

4.1.3 Urban Primary Arterial (UPA)

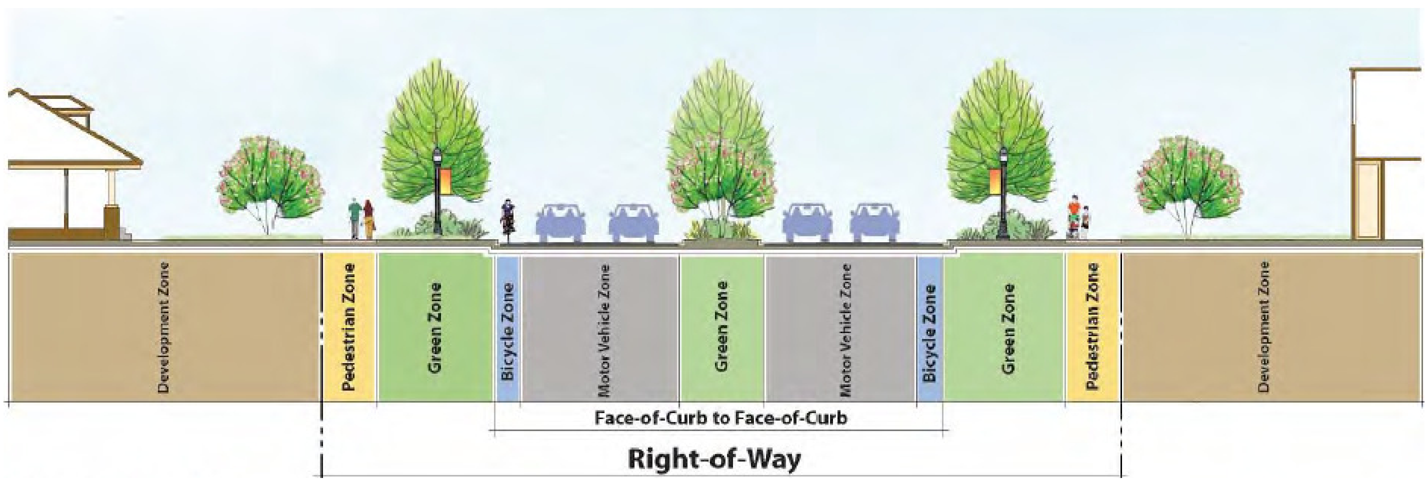
Urban primary arterials are intended to move large numbers of vehicles, often as "through traffic", from one part of the city to another and to other lower level streets in the network. As a result, the modal priority on UPAs shifts somewhat towards motor vehicles, while accommodating pedestrians and cyclists as safely and comfortably as possible. Many major thoroughfares will be classified as UPAs.

Portions of US 1 can be considered an Urban Primary Arterial (UPA)

The various zones located in an Urban Primary Arterial are shown in the following table and figure.

4.1.3.1 Urban Primary Arterial Zones

Zone	Description
Development Zone	Land uses and design will vary, but setbacks will likely be deeper and buildings may not front streets as frequently as on UPA's.
Pedestrian Zone	Should allow for comfortable travel with appropriate widths for adjacent and surrounding land uses.
Green Zone	Higher speeds and volumes require significant space with adequate landscaping for a comfortable buffer between pedestrians and vehicles.
Parking Zone	Although not necessary in all situations, on-street parking provides buffering and a layer of traffic calming appropriate for certain land uses.
Motor Vehicle Zone	A very important zone, since UPA's are more auto-oriented. The number of travel lanes will vary based on capacity needs, but typically two travel lanes in each direction.
Bicycle Zone	Due to higher speeds and volumes, bicycle lanes need a lot of consideration to provide enough comfort and safety for bicyclists. This zone would also add to the buffer between travel lanes and the pedestrian zone.



Elements that should be considered and excluded in an Urban Primary Arterial are shown in the following tables.

4.1.3.2 Elements to Consider for an Urban Primary Arterial

Lane Width	Minimum of 10' lanes, with wider lanes (up to 12-14') next to the gutter/bike (shared) lanes are present.
Sidewalk Width	Should allow 5-6' with sufficient buffers, but additional space may be needed for other elements such as street furniture and other obstructions.
Green Zone/Buffer Width	Since UPA's typically have higher speeds, higher volumes, and wider cross-sections, adequate separation between vehicular and pedestrian traffic is desirable. Planting strips should be at least 8' between curb and sidewalk, to allow for grass and large maturing trees. Sight distance should be considered in the location and spacing of trees within the planting strip.
Bus Stops	Preferred locations are generally at cross streets and high traffic generators; pedestrian enhancements which meet ADA standards should also be included.
Medians	All medians should be landscaped including trees, where possible given sight distances. Pedestrian refuge islands can be provided at specified mid-block crossings or at intersections.
Bike Lanes	A minimum of 4' with a preferred width of 5-6' is suggested for bike lanes due to the higher speeds and volumes of the vehicular traffic. Wider outside travel lanes may also be considered under constrained conditions.
Utilities	Consider placing underground to preserve sidewalk capacity for pedestrians, maintain a clear zone per ADA requirements, and to allow larger trees and other aesthetic treatments.

4.1.3.3 Elements to Exclude for an Urban Primary Arterial

Curb Extensions	Inappropriate because they present a safety issue on higher speed/volume streets. Curb extensions are also used in conjunction with on-street parking, which is usually not allowed on UPA's.
On-street parking	Should be completely separated from travel lanes and provided along a separate, parallel facility.
Mid-block Pedestrian Crossings	Should be avoided due to higher speeds, but may be allowable in rare situations where the nearest signalized intersection is 600' or more from high pedestrian and/or bus stop volumes.

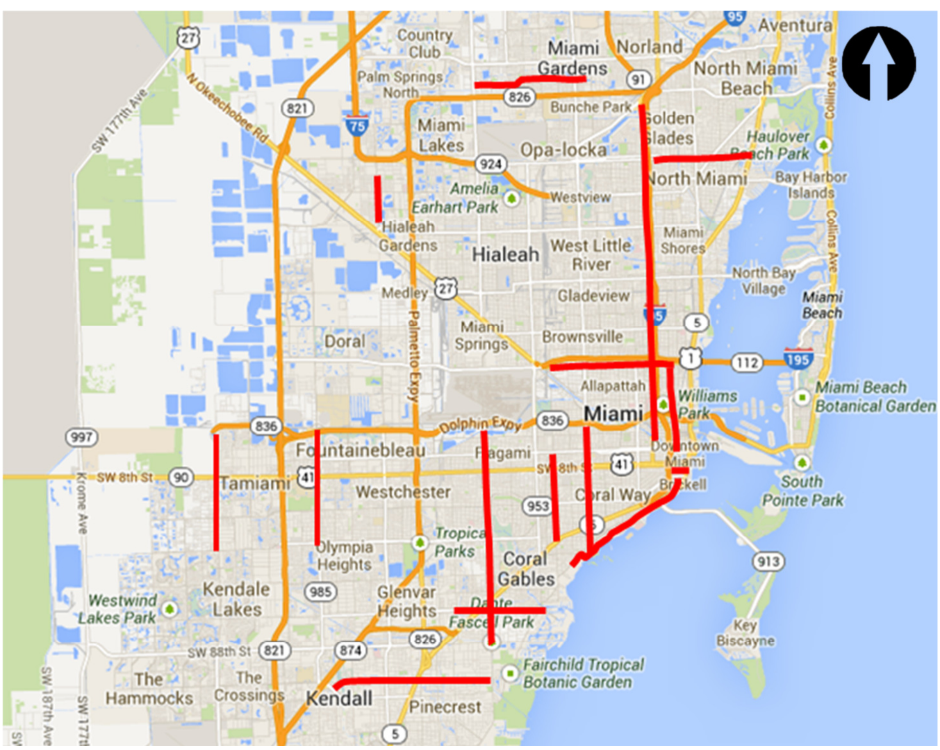
5.0 Complete Street Corridors

5.1 Recommended Corridors

Three corridors were chosen as test cases and pilots for implementing complete street concepts and improvements. With input from the Study Advisory Committee, a total of 15 corridors were identified as potential candidates. Some basic considerations for selecting the initial candidates were incorporation of varied geographic options, roadway classifications, and roadway jurisdictions. The figure below illustrates the corridors considered as preliminary candidates.

Table 2: Potential and Selected Corridors

Corridor	
NW 36th St (Airport to Midtown)	W 28th Ave (W 52nd St to W 76th St)
107th Ave (SR 836 to SW 24th St)	SW 13th St (SW 3rd Ave to US 1)
Sunset Dr (Ludlam to South Miami)	**NW 7th Ave (62nd St to County Line)**
SW 27th Ave (SW 8th St to US 1)	NW 175th St (NW 22nd Ave to NW 57th Ave)
NE 135th St (I-95 to US 1)	Douglas Rd (Flagler to US 1)
SW 104th St (Killian Pkwy to 57th Ave)	S Miami Ave (Rickenbacker to Coconut Grove)
SW 57th Ave (US 1 to 88th St)	S 137th Ave
N Miami Ave (Downtown to Midtown)	



5.2 Corridor Evaluation Criteria

The following criteria were used by the Study Advisory Committee to vote and select the three corridors from the 15 proposed corridors for further analysis.

- Low potential for complete street corridor consideration
- Average score for complete street corridor consideration
- Ideal for complete street corridor consideration

5.2.1 Transit Level of Service

Improving access to public transit is important for increasing ridership and promoting a multi-modal approach to transportation. The more transit service that is provided throughout a corridor, the more imperative it is to include the necessary amenities and infrastructure to provide better access to the service. Complete streets are meant to accommodate all potential users of the roadway including pedestrians, bicyclists, motorists and transit users. Initial complete street projects should include transit corridors with frequent service and/or adequate levels of service.

- 0 – 2 bus trips during the peak hour
- 3 – 5 bus trips during the peak hour
- 6+ bus trips during the peak hour

5.2.2 Transit Ridership

Corridors with higher levels of transit ridership constitute a greater demand for adequate, complete street infrastructure that improves access to transit. That is not to say that corridors with low levels of transit ridership do not need complete streets, but priority should be given to corridors that incorporate a wide range of road users. Invariably, every transit trip has a pedestrian link (and potentially others), which is why higher ridership corridors should be considered first.

- < 1,000 average weekday riders
- 1,000 – 5,000 average weekday riders
- 5,000+ average weekday riders

5.2.3 Street Volumes

Research suggests that the comfortable range for roadway volumes when repurposing through-lanes is 8,000 – 15,000. Although there are some examples where road volumes of 23,000 – 25,000 were successfully converted, these examples had adjacent, parallel streets that were able to accommodate any overflow traffic from the nearby completed street. Analyzing the overall street network near the complete street would be recommended for heavier traffic volumes.

- 25,000+ ADT
- 15 – 25,000 ADT or < 8,000 ADT
- 8 – 15,000 ADT

5.2.4 Right-of-Way

Complete streets rely heavily on actively looking for opportunities to repurpose rights-of-way (ROW) to enhance connectivity for all users. Corridors that lack additional ROW constrain the possibilities for including the necessary elements of a complete street. In most circumstances, the ROW will be considered the space allocated for sidewalks and planting strips (Amenity Zones). This space is the distance between the back of curb and nearest development.

- Less than 5 feet of right-of-way
- 5 feet of right-of-way
- More than 5 feet of right-of-way

5.2.5 Activity Center Access

Complete streets can support economic vitality by augmenting multimodal access to major activity centers. These activity centers can range from commercial nodes, mixed-use centers, institutional uses, to transit stations. The influence and importance of particular activity centers can be calculated based on the amount of trips attracted. Accommodating corridors with complete streets to activity centers typically helps to spur economic development, promotes denser developments, and brings more overall activity these areas. Corridors connecting to major activity centers are of highest priority.

- No connection to any activity centers
- Connection to minor activity center(s) or close to connecting to major activity center(s)
- Connection to major activity center(s)

5.2.6 Connecting Gaps in the Network(s)

Identifying deficiencies in the pedestrian, transit, and bicycle networks is imperative for creating a comprehensive, integrated and connected transportation network for all users. Understanding how the selected corridors fit within the surrounding network and how they support adjacent land uses are important to improving the level of mobility and connectivity. Bridging gaps in existing networks will improve mobility by extending the overall range for various modes.

- Does not connect gaps in the network
- Links to an existing bicycle/pedestrian facility
- Connects bicycle/pedestrian facilities to another network or activity center

5.2.7 Existing Pedestrian and Bicycle Infrastructure

The ultimate vision for complete streets is to provide a visually attractive and functional environment that provides convenient and safe movement for all users of the roadway, which includes heavy emphasis on pedestrians and bicyclists. Corridors with existing bicycle lanes and wide sidewalks require fewer roadway improvements than those corridors lacking in these characteristics. Therefore, priority for complete streets will be suggested for roadways lacking bicycle lanes and/or sufficiently wide enough sidewalks.

- Adequate bicycle/pedestrian facilities present
- Inadequate bicycle/pedestrian facilities present
- No bicycle lanes or wide sidewalks present

5.2.8 Accident Rates

Roadway segments or intersections within a corridor with high crash rates, whether for automobiles, bicycles, or pedestrians, need improvements to reduce the instances of crashes. Complete streets help to increase the safety of the transportation network for motorized and non-motorized users by using traffic calming techniques and slowing vehicular speeds. Therefore, priority for complete streets will be suggested for roadways with high occurrences of roadway crashes, so that safety can be improved where it is needed most.

- Not listed on the FDOT High Crash Spots or Segments AND mostly a residential roadway
- Not listed on the FDOT High Crash Spots or Segments AND mostly an urban roadway
- Listed on the FDOT High Crash Spots or Segments

5.2.9 Economic Revitalization

Creating infrastructure for non-motorized transportation and lowering automobile speeds by changing road conditions can improve economic conditions for both business owners and residents. Street design that is inclusive of all modes of transportation has proven to be an easy method for revitalizing an area and attracting new development. Complete streets also help to boost the economy by increasing property values, because people are generally willing to pay more to live in walkable communities.

- Economically vibrant area
- Economically mixed area
- Needs economic revitalization

5.3 Corridor Evaluation Matrix

Table 3: Corridor Evaluation Matrix

Corridor	Transit Level of Service	Transit Ridership	Street Volumes (ADT)	Right of Way	Activity Center Access	Connecting Gaps in the Network	Existing Bike/Ped Infrastructure	Accident Rates	Economic Revitalization
NW 36th St (Airport to Midtown)	Green	Green	Yellow	Green	Green	Red	Yellow	Green	Green
107th Ave (SR 836 to SW 24th St)	Green	Green	Red	Green	Green	Yellow	Green	Yellow	Red
Sunset Dr (Ludlam to South Miami)	Red	Yellow	Green	Green	Green	Green	Yellow	Yellow	Red
SW 27th Ave (SW 8th St to US 1)	Yellow	Green	Red	Yellow	Yellow	Yellow	Green	Green	Yellow
NE 135th St (I-95 to US 1)	Red	Yellow	Yellow, Red	Green	Yellow	Green	Yellow	Green	Yellow
SW 104th St (Killian Pkwy to 57th Ave)	Red	Yellow	Green	Green	Red	Green	Green	Red	Yellow
SW 57th Ave (US 1 to 88th St)	Red	Red	Yellow	Green	Green	Green	Green	Yellow	Red
N Miami Ave (Downtown to Midtown)	Red	Red	Yellow	Green	Green	Red	Green	Yellow	Green
W 28th Ave (W 52nd St to W 76th St)	Yellow	Yellow	Green	Green	Red	Red	Green	Yellow	Yellow
SW 13th St (SW 3rd Ave to US 1)	Red	Red	Green	Green	Green	Green	Yellow	Yellow	Red
NW 7th Ave (62nd St to County Line)	Green	Green	Yellow, Red	Yellow	Red	Red	Yellow	Yellow	Green
NW 175th St (NW 22nd Ave to NW 57th Ave)	Red	Yellow	Yellow	Green	Red	Yellow	Green	Red	Green
Douglas Rd (Flagler to US 1)	Red	Yellow	Green, Yellow, Red	Yellow	Yellow	Yellow	Green	Yellow	Yellow
S Miami Ave (Rickenbacker to Coconut Grove)	Red	Red	Yellow	Green	Green	Yellow	Red	Red	Red
S 137th Ave	Red	Yellow	Red	Yellow	Red	Yellow	Yellow	Yellow	Red

Sources:

Miami-Dade Transit: Routes and Schedules
Miami-Dade Transit: March 2013 Ridership Technical Report
FDOT Traffic Counts
Miami-Dade County Code of Ordinances
Miami-Dade MPO: Interactive Transportation Planning Tool
FDOT High Crash Spots and Segments

6.0 Selected Corridors with Existing Conditions

6.1 SW 27 Avenue

The portion of SW 27 Avenue chosen for complete street improvements is from US 1 to W Flagler Street. Complete street treatments have already been planned and partially implemented that include bicycle infrastructure, landscaped medians, and on-street parking on SW 27 Avenue from US 1 to S Bayshore Drive. Originally, the corridor was three lanes in both directions with protected left turn lanes. Recently, the Miami-Dade Public Works Department implemented a road diet south of SW 8 Street including on-street parking and landscaped bulbouts, creating the foundation for the recommended improvements.

At US 1 and SW 27 Avenue is the Coconut Grove Metrorail Station which features the Metrorail and various connecting bus routes as well as the M-Path. The convergence of so many modes at this node creates the opportunity for transit-oriented development (TOD). TOD relies on a multimodal transportation network and supporting infrastructure to accommodate the transportation needs and demands of local residents and commuters. This corridor features some of the highest transit ridership of any corridor throughout the County, which presents an opportunity to improve transit and pedestrian amenities.

SW 27 Avenue has higher travel speeds compared to the other two corridors, which presents its own challenges. There is also limited right-of-way curb-to-curb which makes it difficult to fit bicycle lanes. There are also some concerns about the safety for pedestrians crossing the road, mostly due to the high traffic speeds, but also due to the lack of crosswalks and crossing distances.

6.1.1 SW 27 Avenue Roadway

The entire length of the 2.3 mile corridor is under FDOT's jurisdiction. The right of way is consistent in the corridor with 100' throughout. See Appendix A for a more detailed right-of-way map for the corridor. There are nine signalized intersections within the corridor. The portion of the corridor between W Flagler Street and SW 8 Street is a six lane divided major arterial with left turn bays. The remainder of the corridor from SW 8 Street to US 1 is a four lane divided major arterial with left turn bays along with on-street parking and bus pullouts on both sides of the street. The only existing bicycle infrastructure is the M-Path at the southern end of the corridor near the Metrorail station.

6.1.1.1 SW 27 Avenue Right-of-Way

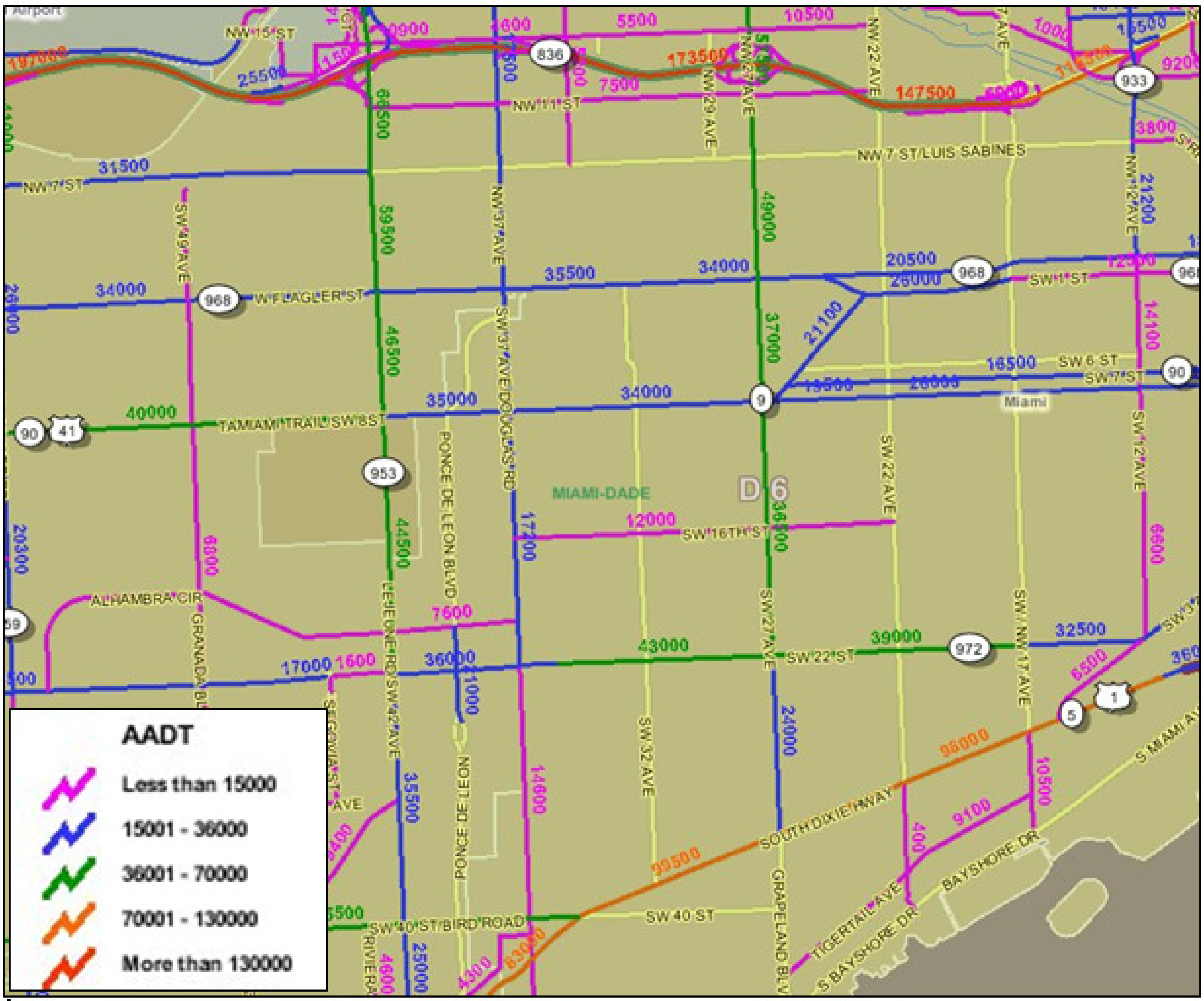
Table 4: SW 27 Avenue Right-of-Way

From	To	ROW
Flagler St	US 1	100'

6.1.1.2 SW 27 Avenue Traffic Volume

The map below shows the AADT for SW 27 Avenue and adjacent areas.

Figure 1: SW 27 Avenue Annual Average Daily Traffic: 2012



Source: Florida Department of Transportation Online Traffic information and Data

6.1.1.3 SW 27 Avenue Existing Level of Service (LOS)

SW 27 Avenue throughout the entire corridor has an existing level service of C. Volumes are 60% or less of the roadway capacity.

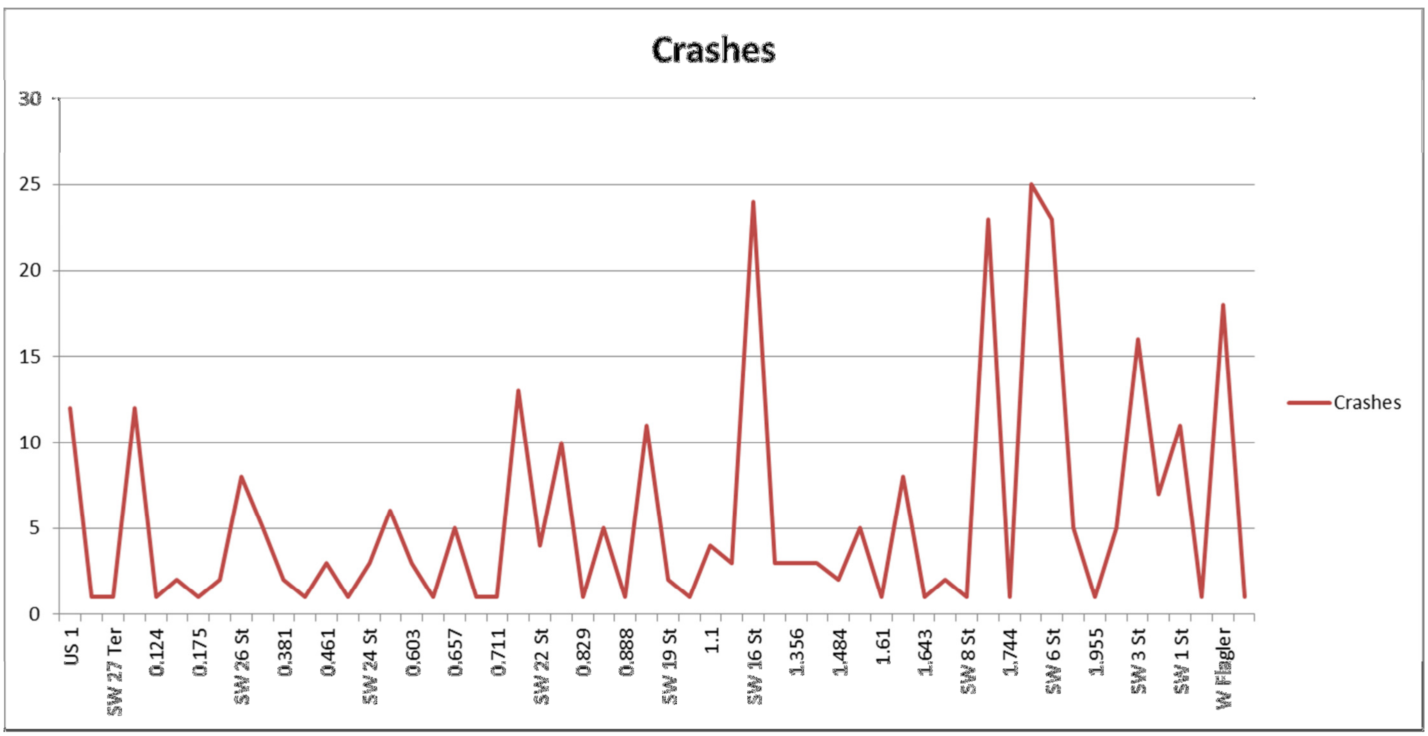
Table 5: SW 27 Avenue Existing Level of Service

LOS: W Flagler Street- US 1					
Segment	**Station No.**	**AADT**	**V/C**	**Average Speed (mi/h)**	**LOS**
US-1-SW 22 ST	875120	24000	**0.368**	21.5	**C**
SW 22 ST- SW 8 ST	875125	36500	**0.55**	20.5	**C**
SW 8 - Flagler ST	875126	37000	**0.557**	20.7	**C**

6.1.1.4 SW 27 Avenue Crash Data: 2009-2011

Within the corridor, the high crash rates fall at high volume east-west arterials between W Flagler Street and SW 8 Street.

Figure 2: SW 27 Avenue Crashes – 2009-2011



Source: Florida Department of Transportation

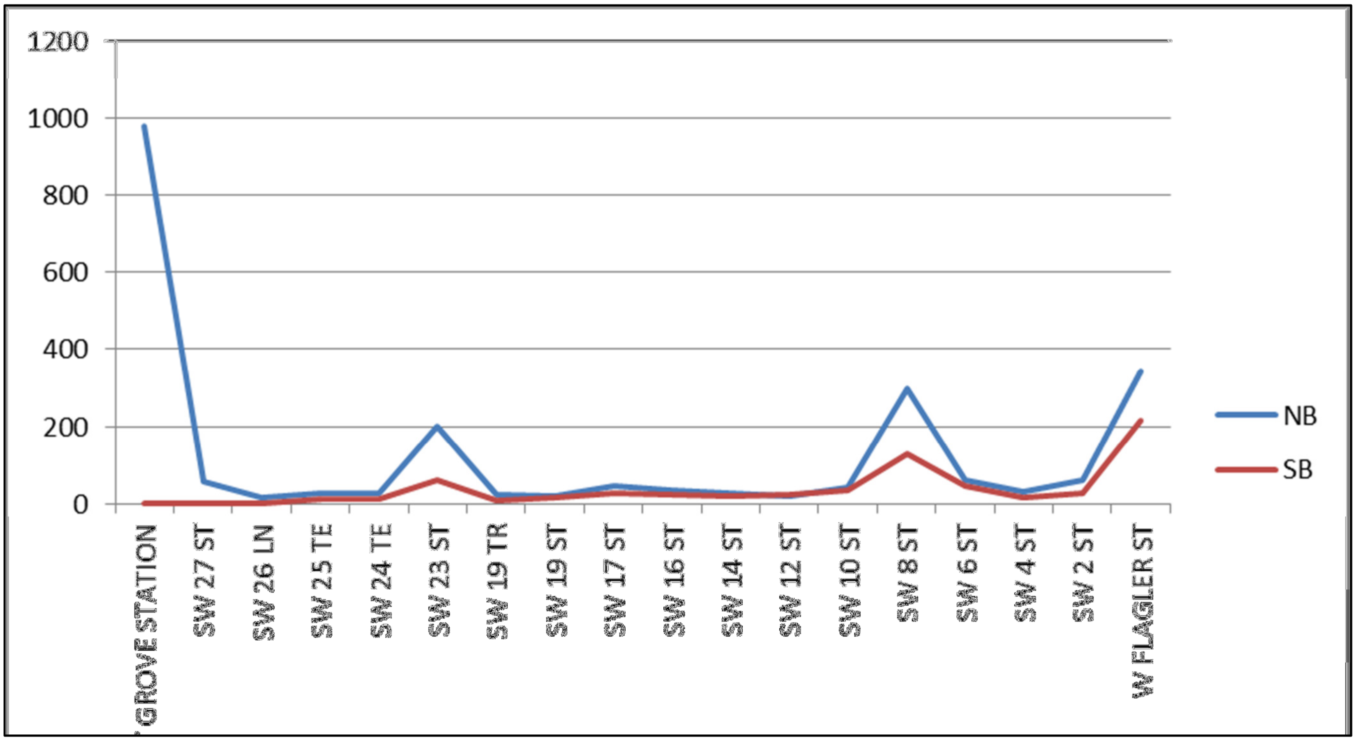
6.1.2 SW 27 Avenue Transit

Table 6: SW 27 Avenue Transit Service

MDT Routes	Corridor Location	Daily		Peak Hour Headway	Operating Hours	Service Hours	# Bus Stops
		Boardings	Alightings				
6	SW 28th Ln to US 1	SB - 0; NB - 979	SB - 686; NB - 0	60 min	8:30a - 6:46p	10.25	1
7	NW 7 St	no direct bus stop		29 min	4:50a - 11:00p	18.16	-
8	SW 8 St	SB - 128; NB - 299	SB - 242; NB - 124	10 min	4:39a - 11:58p	19.33	2
11	W Flagler St	SB - 217; NB - 345	SB - 324; NB - 144	8 min	all day	24	2
22	SW 28th Ln to US 1	SB - 0; NB - 979	SB - 686; NB - 0	12 min	5:11a - 12:38p	19.45	1
24	SW 22 St	no direct bus stop		20 min	5:01a - 12:04a	19	-
27	W Flagler St to US 1	SB - 2,056; NB - 2,622	SB - 2,246; NB - 1,132	12 min	all day	24	46
51	W Flagler St	SB - 217; NB - 345	SB - 324; NB - 144	9 min	5:01a - 8:13p	15.2	2
208	SW 7 St to SW 8 St	SB - 128; NB - 299	SB - 242; NB - 124	15 min	6:03a - 8:43p	14.67	2
249	SW 28th Ln to US 1	SB - 0; NB - 979	SB - 686; NB - 0	18 min	5:27a - 12:33a	19.1	1
500	SW 22 St to US 1	SB - 91; NB - 1,312	SB - 1,007; NB - 135	60 min	12:30a - 5:30a	5	14
Coconut Grove Metrorail Station	US 1	2,011		5 mins	5:28a - 12:11a	18.72	1

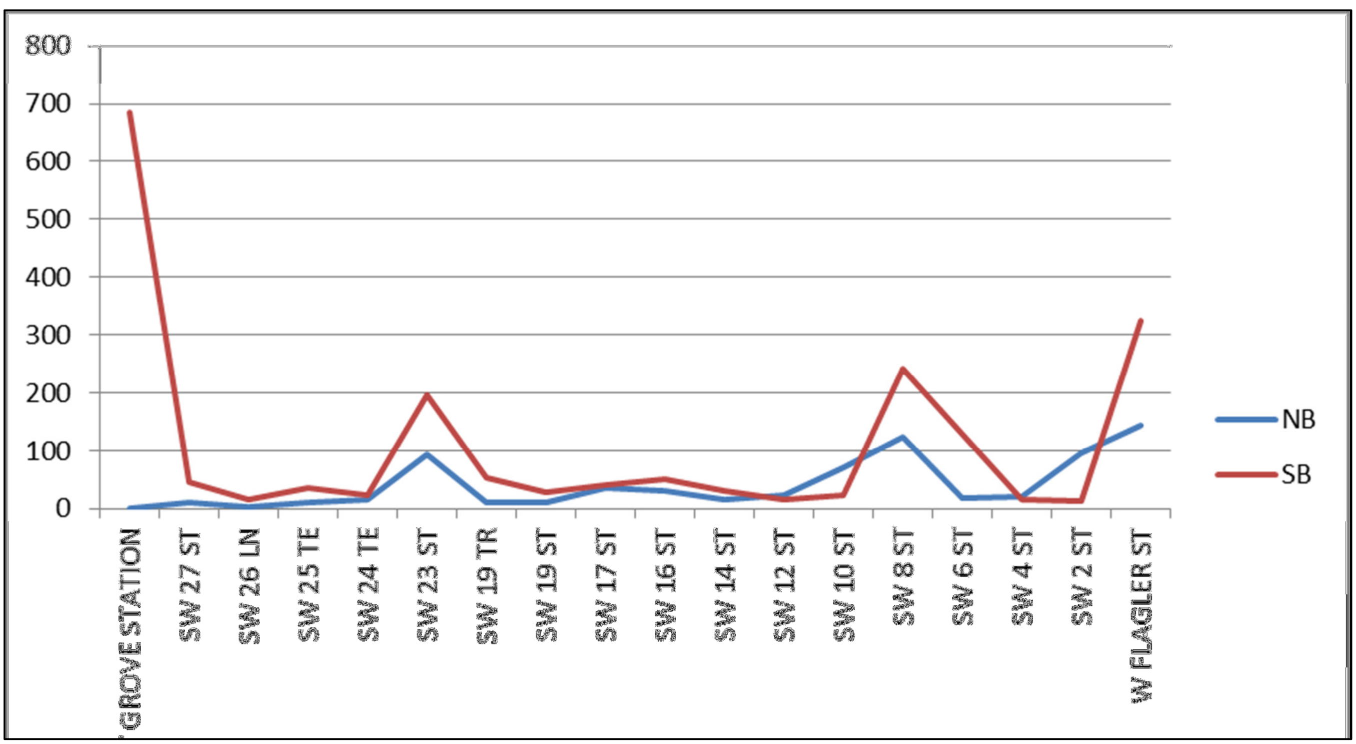
Source: Miami-Dade Transit

Figure 3: SW 27 Avenue MDT Route 27 Average Daily Boardings



Source: Miami-Dade Transit

Figure 4: SW 27 Avenue MDT Route 27 Average Daily Alightings



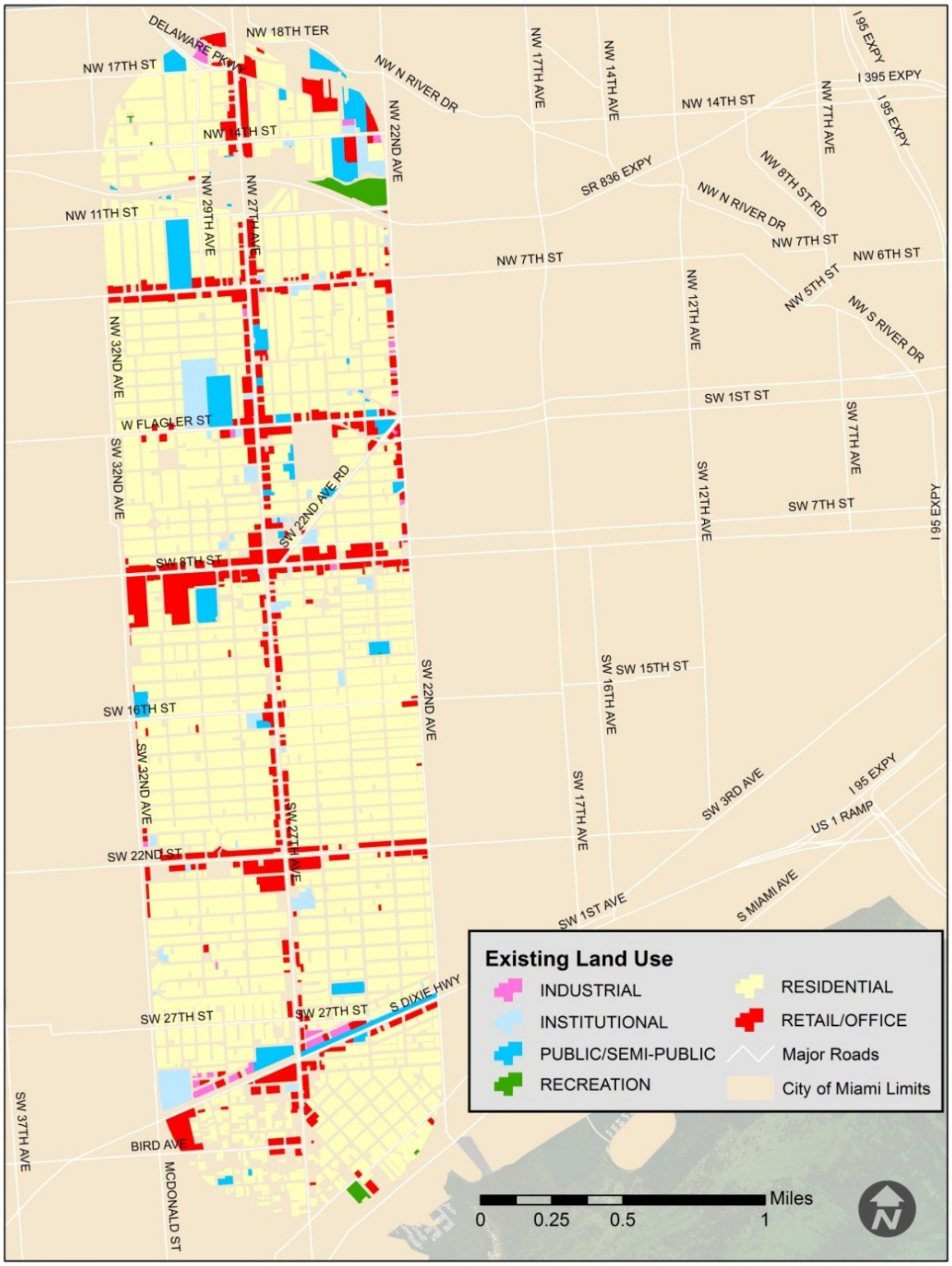
Source: Miami-Dade Transit

MDT Route 27 is the only bus service along the entire NW/SW 27 Avenue corridor. There are 46 combined bus stops along NW/SW 27 Avenue between W Flagler Street and US 1 in both directions. Of these stops, 19 of them have bus shelters. There are ten other MDT bus routes that provide service to the corridor, as well as the Coconut Grove Metrorail Station at the southern terminus. The major transfer opportunities are near W Flagler Street, SW 8 Street, and US 1 around the Metrorail Station. There are two bus routes that don't have direct bus stops along SW 27 Avenue, but have stops close enough in proximity to offer a transfer to or from SW 27 Avenue.

6.1.3 SW 27 Avenue Land Use

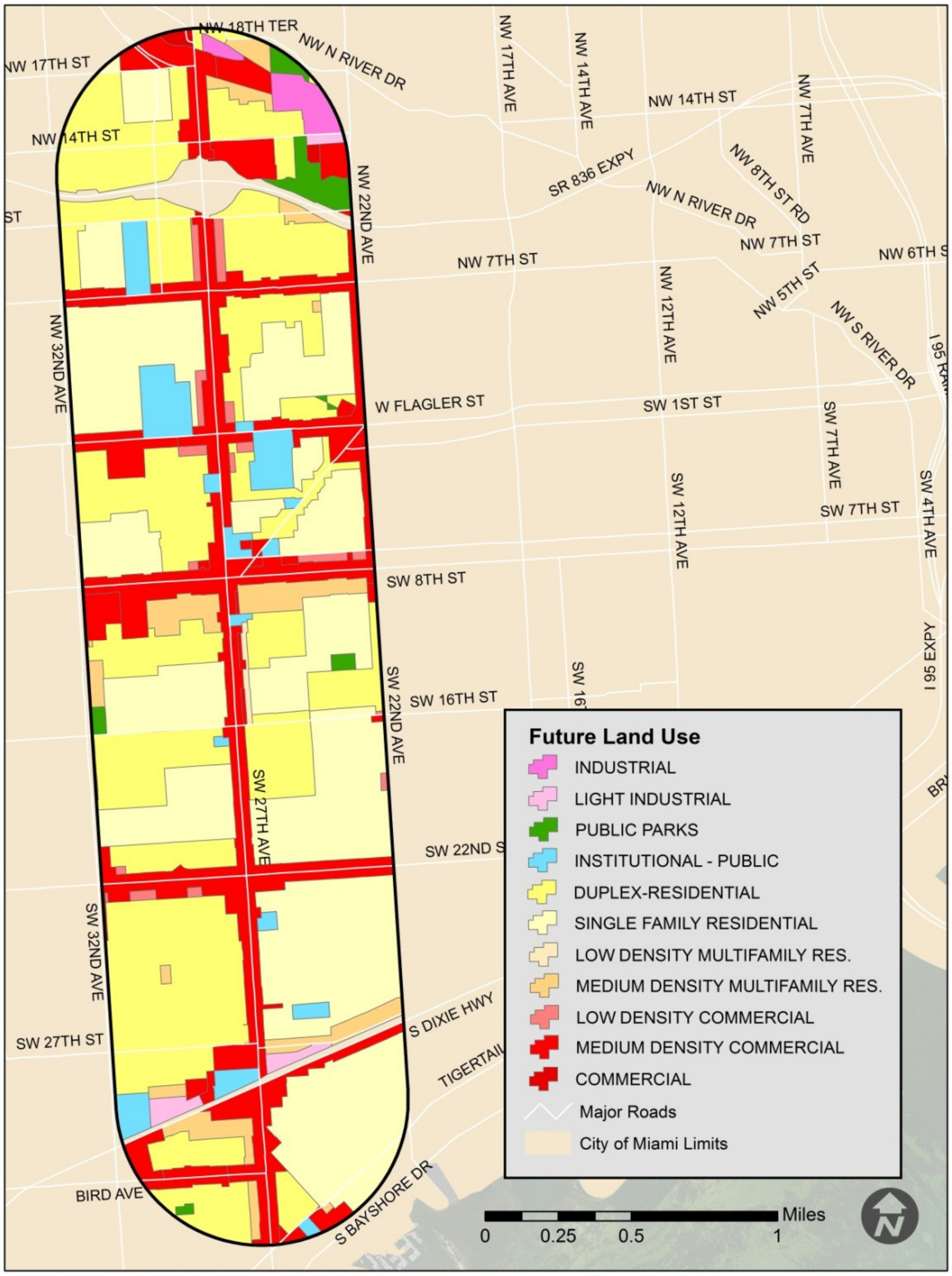
The following maps display the land uses within a half mile (the average transit rider catchment area) from the corridor.

Figure 5: SW 27 Avenue Existing Land Use



Source: gisweb.miamidade.gov

Figure 6: SW 27 Avenue Future Land Use



Source: gisweb.miamidade.gov

6.2 N Miami Avenue

The portion of N Miami Avenue chosen for complete street improvements is from NE/NW 42 Street to Flagler Street. This corridor helps connect two major activity centers – Midtown and Downtown. Some portions of N Miami Avenue have recently been redeveloped bringing new activity to the corridor. Future development in this corridor will rely heavily on and influence the local transportation network. Most of the corridor has on-street parking, while the Midtown area features some landscaped medians as well. Miami-Dade Public Works has plans for implementing a road diet from NE/NW 17 Street to NE/NW 23 Street due to the lower traffic volumes seen here as compared to parallel streets.

This corridor has very limited transit service and low ridership. There are also few crosswalks, especially at popular mid-block locations, which cause safety issues for pedestrian. FEC tracks cross this corridor which should also be accounted for when implementing any road diet concepts. Another obstacle for this corridor is the Federal Buildings between 3rd and 5th Streets and the security associated with them. Any road diet and accompanying treatments should put more emphasis on improving bicycle and pedestrian amenities while transit-related improvements are of secondary importance. N Miami Avenue can be envisioned as a north-south bicycle corridor connecting downtown to Midtown and beyond.

6.2.1 N Miami Avenue Roadway

The entire length of the nearly three mile corridor is under Miami-Dade County's jurisdiction. The right of way is 70' throughout most of the corridor with about ten blocks varying between 82-86' as seen in the table below. See Appendix A for a more detailed right-of-way map for the corridor. There are 20 signalized intersections within the corridor. The portion of the corridor south of NE/NW 17 Street is a one-way southbound urban collector with three lanes from NE/NW 17 Street to NE/NW 5 Street and two lanes from NE/NW 5 Street to Flagler Street. There is on-street parking on both sides of the street for the majority of the one-way sections. The segment from NE/NW 17 Street to NE/NW 29 Street is a four lane undivided urban collector with on-street parking available for on the western side of the street. From NE/NW 29 to NE/NW 36 Street is a 4 lane divided urban collector with on-street parking on the eastern side of the street. The remaining portion of the corridor north of NE/NW 36 Street is a 4 lane undivided urban collector. The only existing bicycle infrastructure are the sharrows from NE/NW 3 Street to Flagler Street.

6.2.1.1 N Miami Avenue Right-of-Way

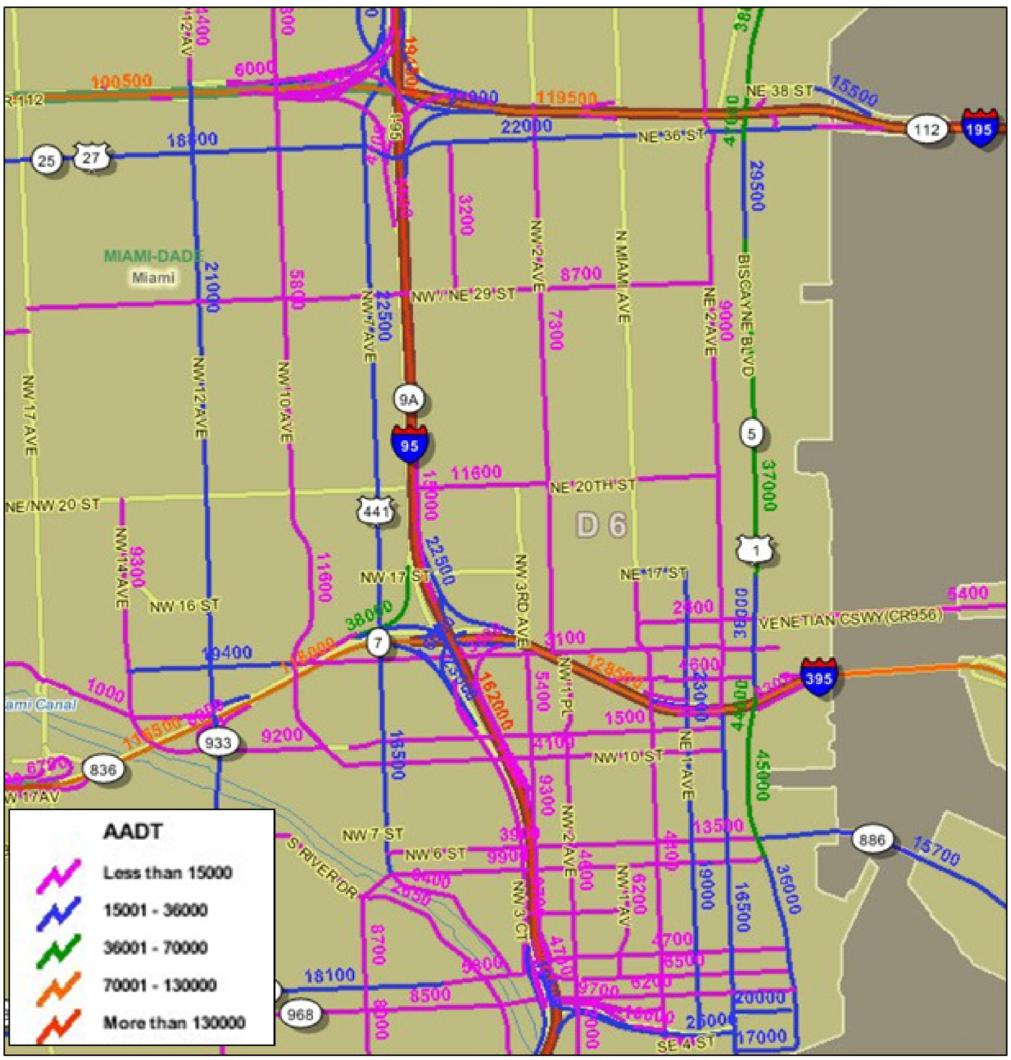
Table 7: N Miami Avenue Right-of-Way

From	To	ROW
Flagler St	NE/NW 31st St	70'
NE/NW 31st St	NE/NW 34th Ter	82'
NE/NW 34th Ter	NE/NW 41st St	86'

6.2.1.2 N Miami Avenue Traffic Volume

The following map shows the AADT for N Miami Avenue and adjacent areas. A detailed table of AADTs is located in the Appendix.

Figure 7: N Miami Avenue Annual Average Daily Traffic: 2012



Source: Florida Department of Transportation Online Traffic Information and Data

6.2.1.3 N Miami Avenue Existing Level of Service (LOS)

N Miami Avenue from Flagler Street to NW 17 Street has an existing LOS of D with volumes less than 15% of the roadway capacity. The LOS D is due to the lower travel speeds caused by the higher density of signalized intersections. The LOS from NW 17 Street to NW 46 Street is C because of the relatively high travel speeds.

Table 8: N Miami Avenue Existing Level of Service

Southbound LOS: Flagler Street- NW 17th Street					
Segment	**Station No.**	**AADT**	**V/C**	**Average Speed (mi/h)**	**LOS**
NW 17 ST-NW 15 ST	878598	4400	**0.137**	16.70	**D**
NW 15 ST- NW 8 ST	878598	4400	**0.137**	16.70	**D**
NW 8 ST- NW 5 ST	878598	4400	**0.137**	16.70	**D**
NW 5 ST- Flagler ST	878598	4400	**0.137**	16.70	**D**
LOS: NW 17th Street -I95 Off-Ramp					
Segment	**Station No.**	**AADT**	**V/C**	**Average Speed (mi/h)**	**LOS**
NW 17 ST- NW 20 ST	878268	31500	**0.713**	20.8	**C**
NW 20 ST-NW 29 ST	878268	31500	**0.713**	20.8	**C**
NW 29 ST-NW 34 ST	878268	31500	**0.678**	21.1	**C**
NW 34 ST- I-195 Ramp	878268	31500	**0.678**	20.9	**C**
LOS: I-195 Off Ramp - NW 46th Street					
Segment	**Station No.**	**AADT**	**V/C**	**Average Speed (mi/h)**	**LOS**
I-195 Off Ramp-NW 39 ST	878269	12200	0.19	18.40	**C**
NW 39 ST-NW 46 ST	878269	12200	0.19	18.40	**C**

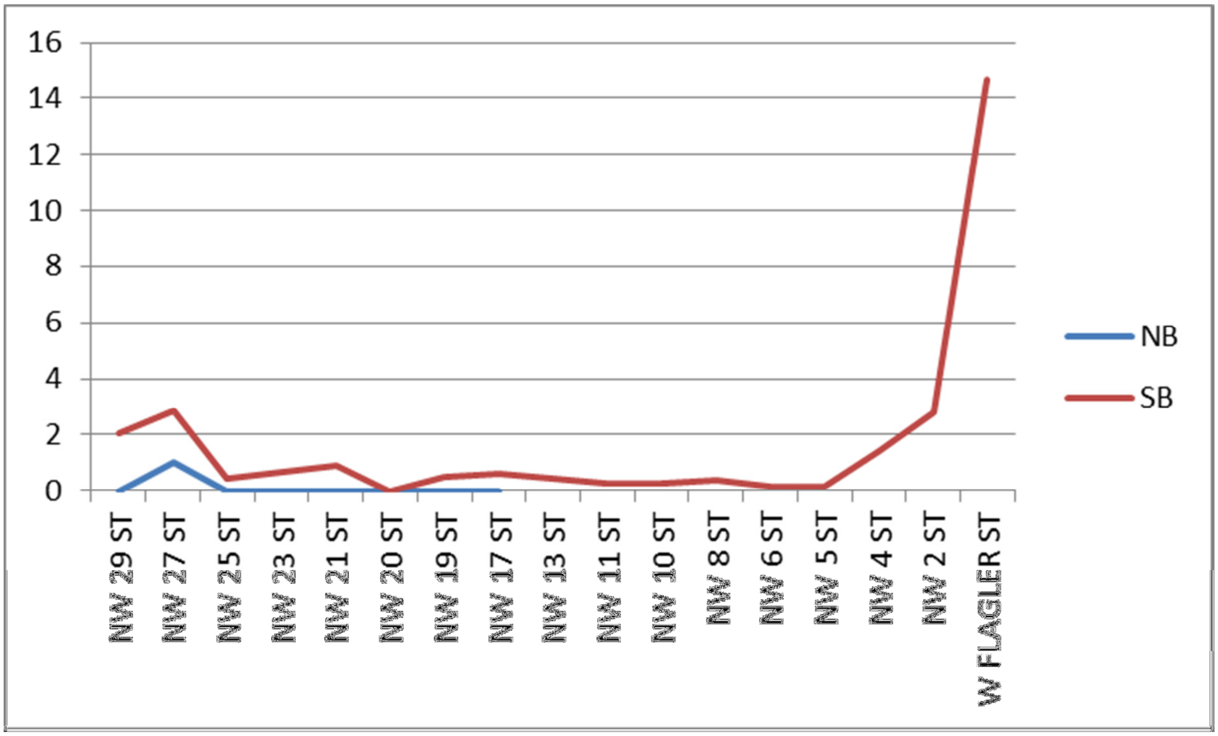
6.2.2 N Miami Avenue Transit

Table 9: N Miami Avenue Transit Service

MDT Routes	Location in Corridor	Daily Boardings	Daily Alightings	Peak Hour Headway	Operating Hours	Service Hours	# Bus Stops
2	N 6 St	N/A	N/A	20 mins	5:30a - 11:39p	17.1	2
3	N 3 St	N/A	N/A	18 mins	all day	24	2
6	Flagler St to N 29 St	N/A	N/A	60 min	8:30a - 6:46p	10.25	23
7	N 6 St	N/A	N/A	29 min	4:50a - 11:00p	18.16	2
8	N 6 St to Flagler St	N/A	N/A	10 mins	4:39a - 11:58p	19.3	2
9	N 1 St	N/A	N/A	12 mins	4:58a - 12:18a	19.33	2
11	N 1 St	N/A	N/A	8 min	all day	24	2
32	N 20 St	N/A	N/A	24 mins	5:27a - 12:26a	19	2
36	N 36 St	N/A	N/A	20 mins	5:35a - 9:54p	16.33	2
77	N 1 St	N/A	N/A	8 mins	5:25a - 4:59a	23.55	2
93	N 3 St	N/A	N/A	18 mins	5:45a - 8:17p	17.5	2
95	N 1 St	N/A	N/A	11 mins	6:17a - 8:28a; 3:35p - 7:52p	6.5	2
120	N 1 St	N/A	N/A	12 mins	5:00a - 10:27p	17.5	2
202	N 39 St to N 36 St	N/A	N/A	45 mins	8:30a - 6:12p	9.75	1
243	N 8 St; N 6 St	N/A	N/A	30 mins	6:34a - 9:12a; 3:04p - 6:16p	5.86	1
C	N 1 St	N/A	N/A	20 mins	4:59a - 12:54a	20	2
J	N 36 St	N/A	N/A	20 mins	4:29a - 12:50p	20.33	2
M	N 14 St	N/A	N/A	45 mins	5:42a - 10:42p	17	0
S	N 1 St	N/A	N/A	12 mins	all day	24	2

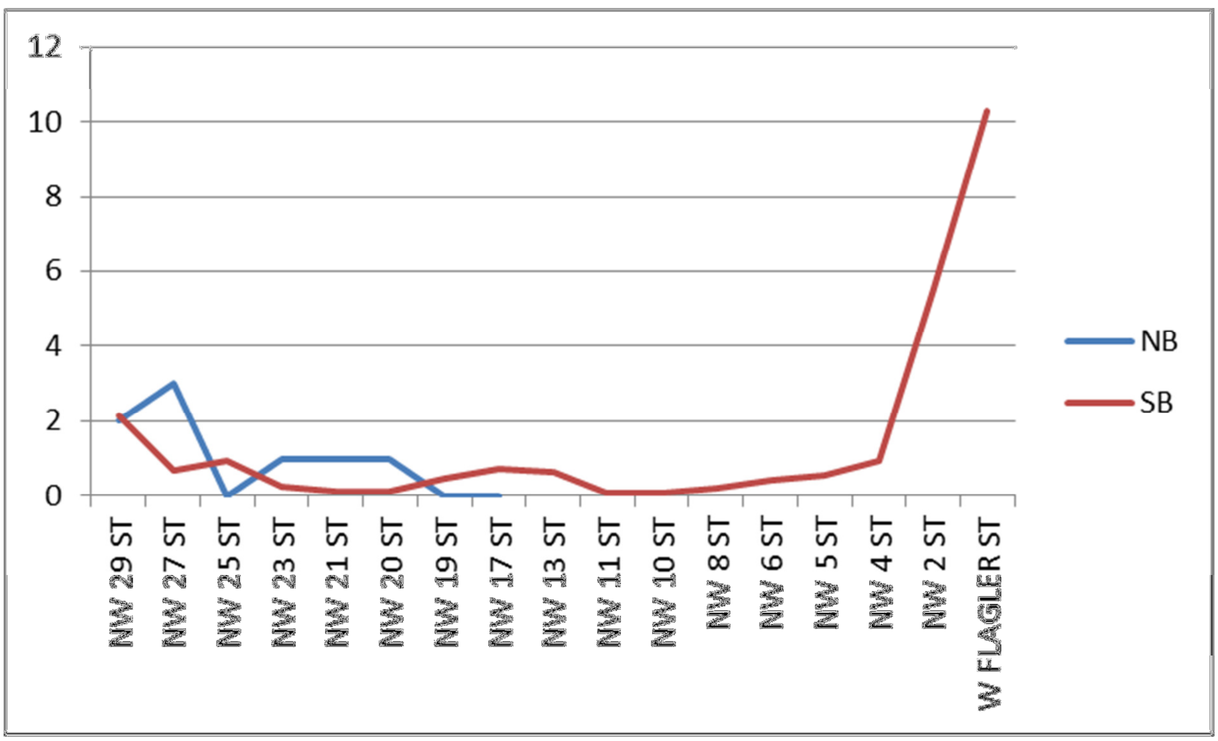
Source: Miami-Dade Transit

Figure 8: N Miami Avenue MDT Route 6 Average Daily Boardings



Source: Miami-Dade Transit

Figure 9: N Miami Avenue MDT Route 6 Average Daily Alightings



Source: Miami-Dade Transit

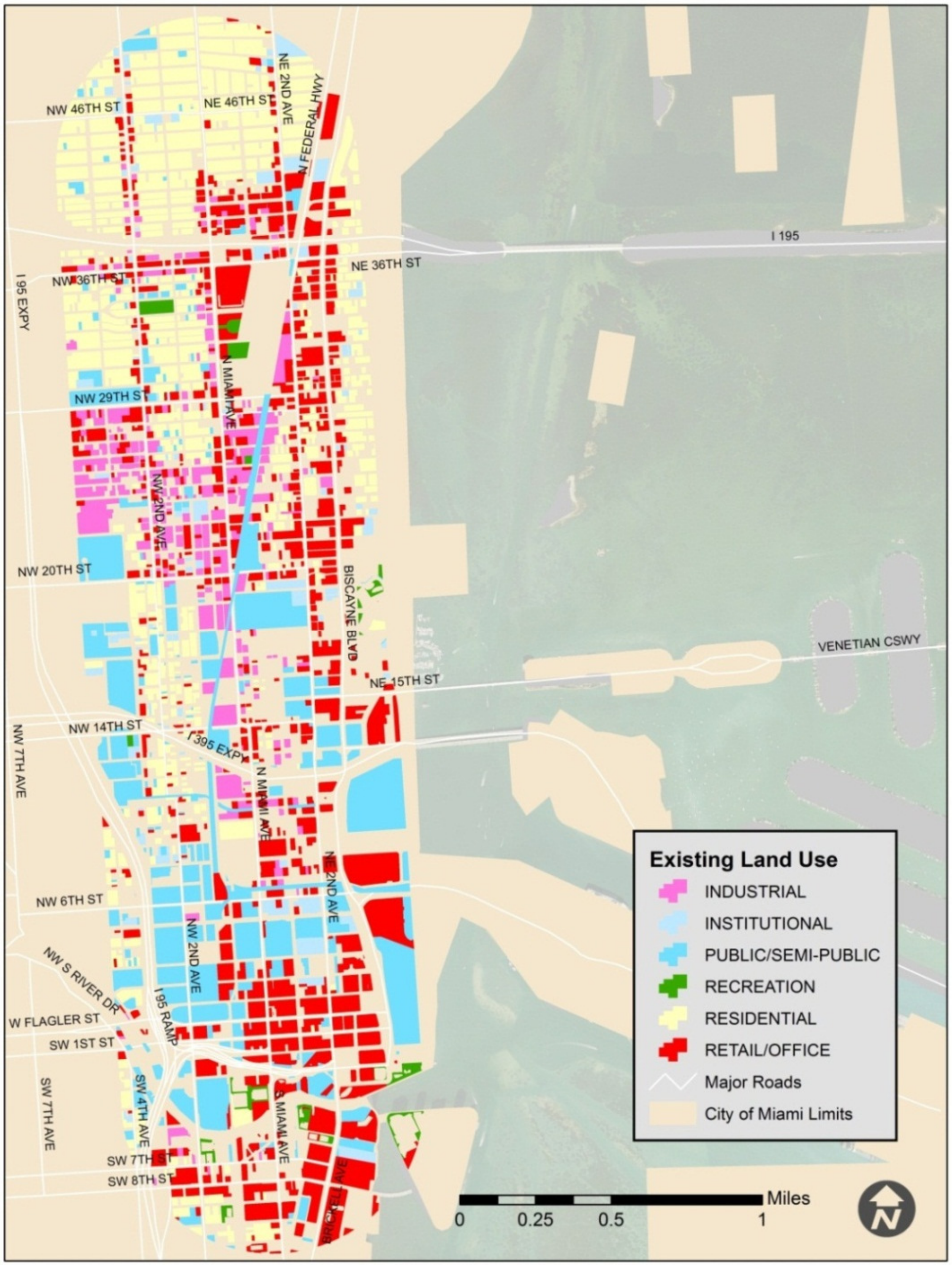
Of the three corridors being analyzed, N Miami Avenue has the lowest ridership and bus service. N Miami Avenue is a southbound, one-way street from NE/NW 17 Street to south of the Miami River, which limits the amount of bus service. The only MDT Bus Route that serves the N Miami Avenue corridor is Route 6, which runs southbound from NE/NW 29 Street to the Miami River and northbound from NE/NW 17 Street to NE/NW 29 Street. Route 8 services N Miami Avenue from NE/NW 6 Street south. There are 17 other MDT Bus Routes that intersect N Miami Avenue and provide transfer opportunities, most of which circulate downtown near SE/SW 1 Street and NE/NW 1 Street before radiating out from the Central Business District (CBD).

There are 25 bus stops along N Miami Avenue within the selected corridor, none of which have bus shelters. The Route 6 bus stop with the most ridership activity is at S Miami Avenue and W Flagler Street where there are an average of 15 daily boardings and ten daily alightings. These riders are likely transferring to one of the many other transit options in the CBD. The next most active bus stop in terms of ridership is at NW 27 Street with three southbound boardings and one alighting. Most of the connecting bus services that intersect N Miami Avenue have a bus stop for potential transfers from Route 6, but the Route 6 ridership counts are either zero or one until arriving in the CBD.

6.2.3 N Miami Avenue Land Use

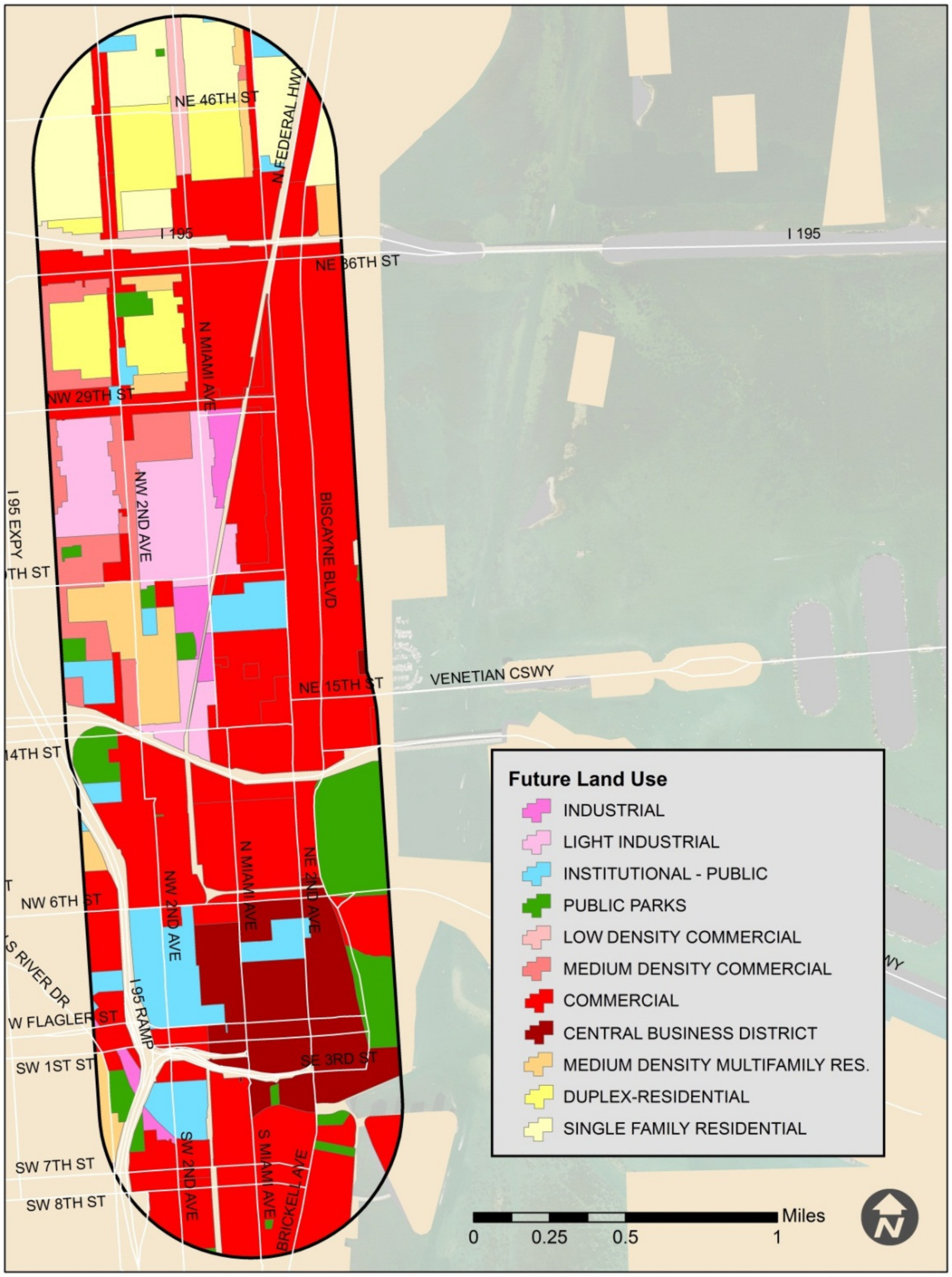
The following maps display the land uses within a half mile (the average transit rider catchment area) from the corridor.

Figure 10: N Miami Avenue Existing Land Use



Source: gisweb.miamidade.gov

Figure 11: N Miami Avenue Future Land Use



Source: gisweb.miamidade.gov

6.3 NW 7 Avenue

The extent of this corridor stretches from NW 14 Street to NW 119 Street, which includes a variety of activity centers throughout with the Health District at the southern end of the corridor being the largest destination. The Health District has placed emphasis on mobility and livability by improving the local street network to accommodate for all modes of travel. Connecting this major destination with other activity centers within the corridor is vital to creating a connected community. Portions of the corridor have recently been rezoned to Urban Centers with future high-density development anticipated to compliment the nodes of existing activity, which would be better supported with complete streets. There is existing off-peak on-street parking for most of the corridor, which is important for local residents and business owners. Much of this corridor has excess capacity, which would be an opportunity for road dieting. Similarly to SW 27 Avenue, NW 7 Avenue features some of the highest ridership in the County with a proposed transit center at NW 62 Street.

Some of this on-street parking is used during restricted hours (peak period) and presents a congestion problem for the corridor. The segment of NW 7 Avenue south of SR-112 is currently operating at capacity, which can be an issue with any proposed reconfiguration of the roadway. Because NW 7 Avenue runs parallel to I-95, any closures on the highway result in the overflow traffic coming onto NW 7 Avenue. Although this happens rarely, major road diets to NW 7 Avenue would impact the overflow traffic from I-95.

6.3.1 NW 7 Avenue Roadway

The entire length of the corridor is under FDOT’s jurisdiction. The right of way varies considerably throughout the corridor, as seen in Table 10. The segment with the least amount of right of way is the bridge stretching between NW 37 and NW 43 streets at 60’. See Appendix A for a more detailed right-of-way map for the corridor. The entire corridor north of NW 80 Street has 100’ of right of way and is a six lane undivided primary arterial with a two way left turn lane. The corridor south of NW 80 Street is a four lane undivided primary arterial with a two way left turn lane. There are 33 signalized intersections in the nearly seven mile corridor. There is no existing bicycle infrastructure in the corridor.

6.3.1.1 NW 7 Avenue Right-of-Way

Table 10: NW 7 Avenue Right-of-Way

From	To	ROW
NW 14th St	NW 17th St	Varies from 65.6' - 80'
NW 17th St	NW 19th St	Varies from 80' - 66.7'
NW 19th St	NW 20th St	Varies from 65.9' - 72.5'
NW 20th St	NW 21st St	Varies from 72.5' - 65'
NW 21st St	NW 22nd St	Varies from 65' - 67.5'
NW 22nd St	NW 27th St	Varies from 67' - 65'
NW 27th St	NW 29th St	Varies from 70' - 67.5'
NW 29th St	NW 31st Ter	Varies from 67.5' - 65'
NW 31st Ter	NW 34th St	Varies from 65' - 67.5'
NW 34th St	NW 36th St	Varies from 67.5' - 80'
NW 36th St	NW 37th St	Varies from 80' - 70'
NW 37th St	NW 43rd St	60'
NW 43rd St	NW 51st St	Varies from 75' - 70'
NW 51st St	NW 52nd St	Varies from 70' - 75'
NW 52nd St	NW 56th St	Varies from 70' - 75'
NW 56th St	NW 58th St	Varies from 70' - 80'
NW 58th St	NW 60th St	Varies from 80' - 70'
NW 60th St	NW 65th St	Varies from 70' - 75'
NW 65th St	NW 70th St	Varies from 70' - 75'
NW 70th St	NW 75th St	70'
NW 75th St	NW 78th St	Varies from 70' - 79.5'
NW 78th St	NW 80th St	Varies from 79.5' - 70'
NW 80th St	NW 119th St	100'

6.3.1.2 NW 7 Avenue Traffic Volume

The following map shows the AADT for NW 7 Avenue and adjacent areas. A detailed table of AADTs is located in the Appendix.

Figure 12: NW 7 Avenue Annual Average Daily Traffic: 2012

Source: Florida Department of Transportation Online Traffic Information and Data

6.3.1.3 NW 7 Avenue Existing Level of Service (LOS)

NW 7 Avenue throughout the entire corridor has an existing LOS of C. Volumes vary throughout the corridor from just over 50% to about 25% of the roadway capacity. Average speeds are fairly consistent throughout the corridor.

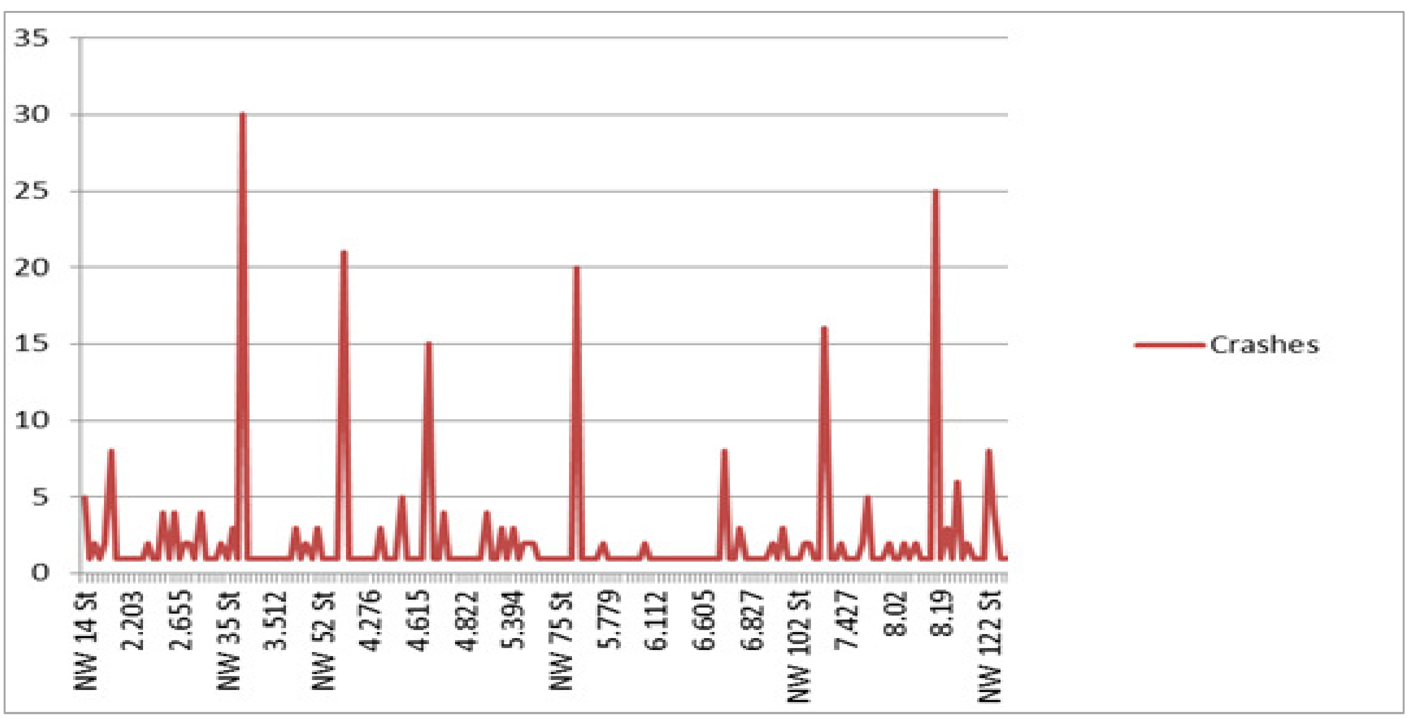
Table 11: NW 7 Avenue Existing Level of Service

LOS: NW 12 Street- NW 119 Street					
Segment	**Station No.**	**AADT**	**V/C**	**Average Speed (mi/h)**	**LOS**
NW 12 ST-NW 20 ST	875003	16500	**0.257**	19.9	**C**
NW 20 ST-NW 36 ST	875005	22500	**0.347**	19.4	**C**
NW 36 ST-NW 54 ST	879030	22000	**0.34**	19.5	**C**
NW 54 ST-NW 62 ST	875141	25500	**0.392**	19.2	**C**
NW 62 ST-NW 79 ST	875144	23000	**0.355**	19.4	**C**
NW 79 ST- Little River Dr	870529	34500	**0.523**	18.5	**C**
Little River Dr-NW 103 ST	870235	29500	**0.451**	18.9	**C**
NW 103 ST-NW 119 ST	875014	33500	**0.509**	18.6	**C**

6.3.1.4 NW 7 Avenue Crash Data: 2009-2011

Within the corridor, the high crash rates occur at major east-west arterials with high volumes.

Figure 13: NW 7 Avenue Crashes – 2009-2011



Source: Florida Department of Transportation

6.3.2 NW 7 Avenue Transit

Table 12: NW 7 Avenue Transit Service

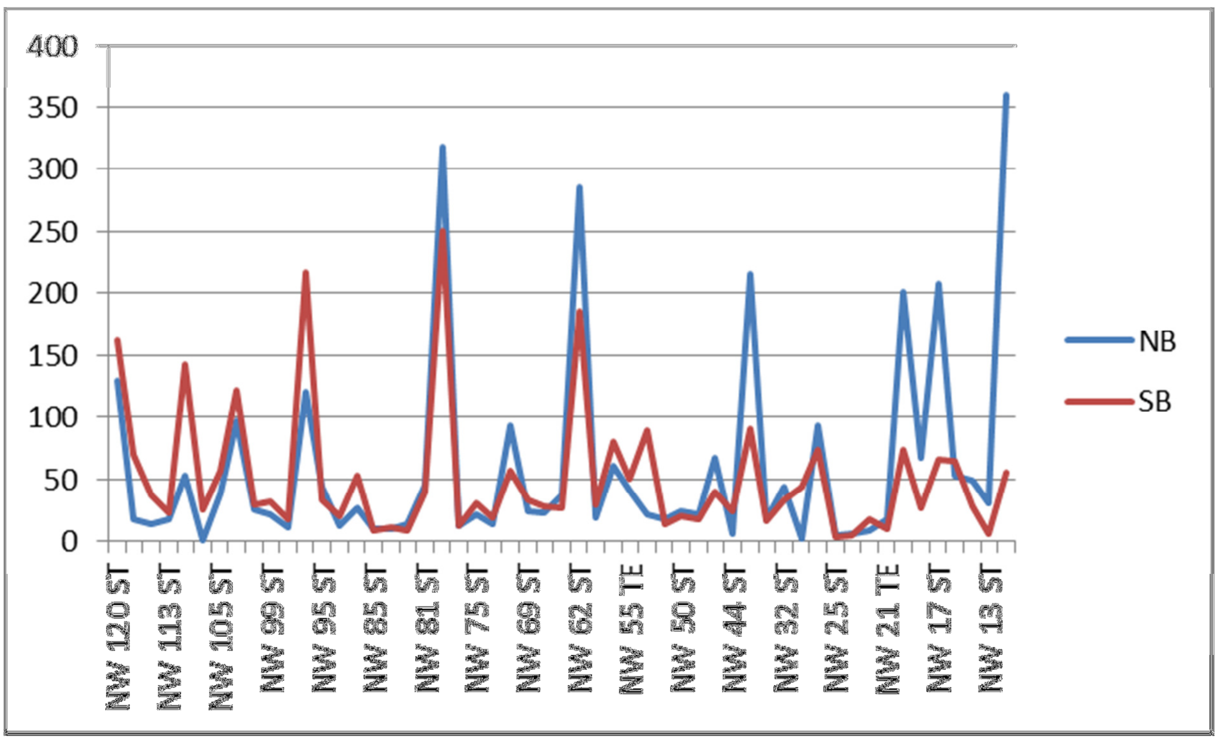
MDT Routes	Location in Corridor	Daily		Peak Hour Headway	Operating Hours	Service Hours	# Bus Stops
		Boardings	Alightings				
6	NW 29 St	SB - 44; NB - 93	SB - 65; NB - 83	60 min	8:30a - 6:46p	10.25	2
17	NW 103 St to NW 107 St	SB - 204; NB - 136	SB - 128; NB - 136	15 mins	4:48a - 12:53a	20.1	4
19	NW 119 St	SB - 162; NB - 130	SB - 136; NB - 110	20 mins	5:28a - 10:41p	17.25	2
21	NW 17 St	SB - 66; NB - 208	SB - 193; NB - 53	30 mins	5:35a - 12:17a	18.75	3
32	NW 20 St	SB - 74; NB - 201	SB - 222; NB - 69	24 mins	5:27a - 12:26a	19	2
33	NW 95 St	SB - 217; NB - 120	SB - 126; NB - 61	15 mins	5:30a - 10:56p	17.43	2
36	NW 36 St	SB - 90; NB - 215	SB - 213; NB - 78	20 mins	5:35a - 9:54p	16.33	1
46	NW 69 St to NW 62 St	SB - 273; NB - 370	SB - 344; NB - 230	45 mins	6:23a - 7:16p	12.88	8
54	NW 54 St	SB - 89; NB - 150	SB - 81; NB - 68	22 mins	4:50a - 12:32a	19.75	2
62	NW 62 St	SB - 185; NB - 286	SB - 248; NB - 163	12 mins	5:10a - 12:00a	18.85	2
77	NW 119 St to NW 11 St	SB - 2,723; NB - 3,358	SB - 3,240; NB - 2,388	8 mins	5:25a - 4:59a	23.55	107
79	NW 79 St	SB - 251; NB - 318	SB - 309; NB - 213	24 mins	5:45a - 6:08p	12.38	1
202	NW 81 St to NW 71 St	SB - 408; NB - 503	SB - 462; NB - 355	45 mins	8:30a - 6:12p	9.75	10
211	NW 11 St to NW 8 St	SB - 55; NB - 360	SB - 452; NB -46	45 mins	10:00a - 5:31p	7.5	4
246	NW 17 St	SB - 66; NB - 208	SB - 193; NB - 53	60 mins	12:00a - 5:06a	5.1	3
277	NW 119 St to NW 11 St	SB - 318; NB - 376	SB - 430; NB - 268	18 mins	5:42a - 7:29p	18.75	13
J	NW 36 St	SB - 90; NB - 215	SB - 213; NB - 78	20 mins	4:29a - 12:50p	20.33	1
L	NW 79 St	SB - 251; NB - 318	SB - 309; NB - 213	10 mins	all day	24	1
M	NW 17 St	SB - 66; NB - 208	SB - 193; NB - 53	45 mins	5:42a - 10:42p	17	3
Culmer Metrorail Station	NW 11 St	1,351		5 mins	5:17a - 12:22a	19.1	1

Source: Miami-Dade Transit

NW 7 Avenue has two different MDT bus routes serving the corridor – Route 77 and Route 277. There are 107 combined bus stops along NW 7 Avenue between NW 14 Street and NW 119 Street in both directions. Of these stops, 49 of them have bus shelters. There are 17 other MDT bus routes that provide service to this NW 7 Avenue corridor, as well as the Culmer Metrorail Station just south of the corridor. With these other MDT bus routes, there are many locations along the corridor that offer transfer opportunities and have higher boardings and alightings such as NW 79 Street, NW 17 Street, NW 62 Street and NW 36 Street.

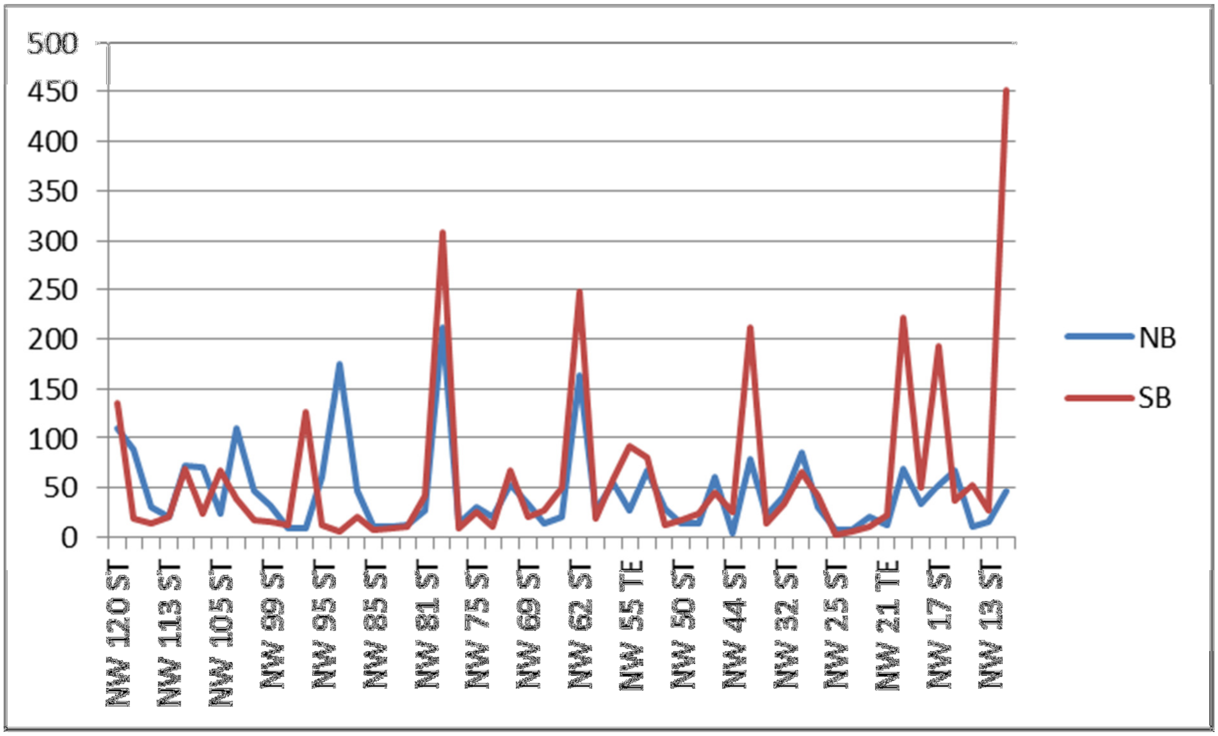
MDT Routes with shorter headways and longer operating hours tend to be routes serving the northern segments of the corridor, although there are some exceptions. Route 77, which serves the entire corridor, has the shortest headway of all the bus routes and has the most daily operating hours.

Figure 14: NW 7 Avenue MDT Route 77 Average Daily Boardings



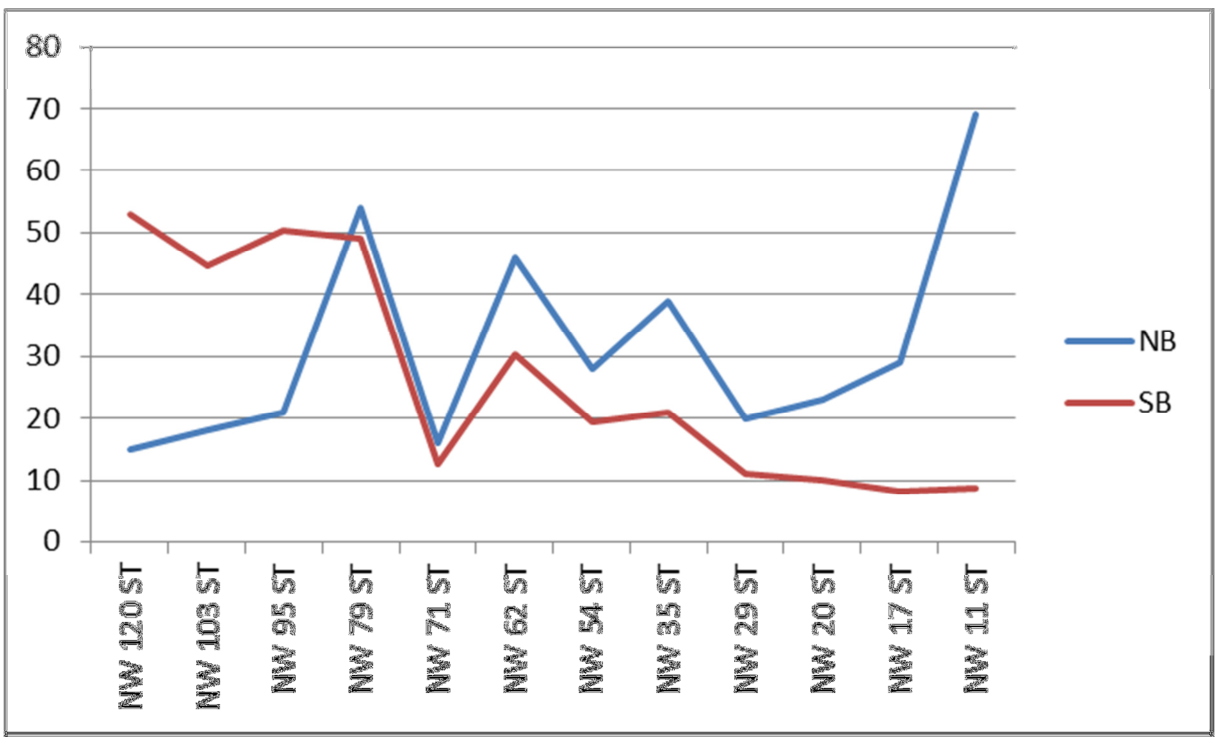
Source: Miami-Dade Transit

Figure 15: NW 7 Avenue MDT Route 77 Average Daily Alightings



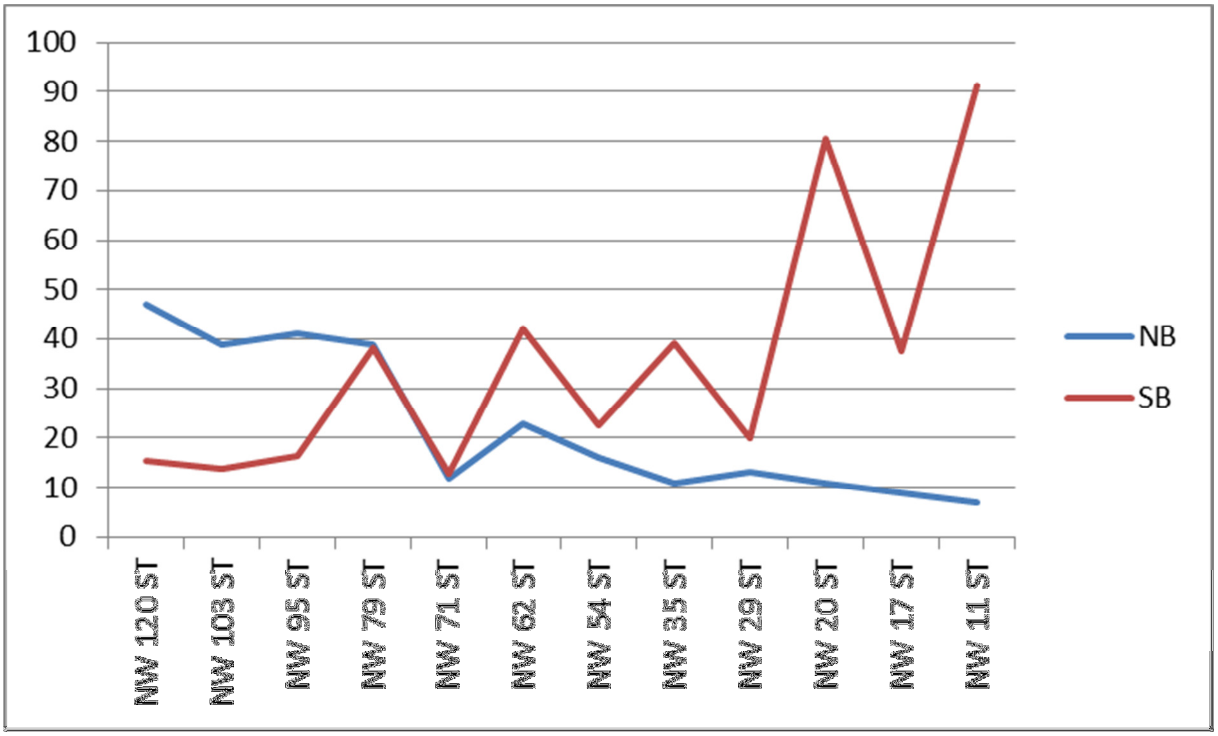
Source: Miami-Dade Transit

Figure 16: NW 7 Avenue MDT Route 277 Average Daily Boardings



Source: Miami-Dade Transit

Figure 17: NW 7 Avenue MDT Route 277 Average Daily Alightings



Source: Miami-Dade Transit

6.3.3 NW 7 Avenue Land Use

The following maps display the land uses within a half mile (the average transit rider catchment area) from the corridor.

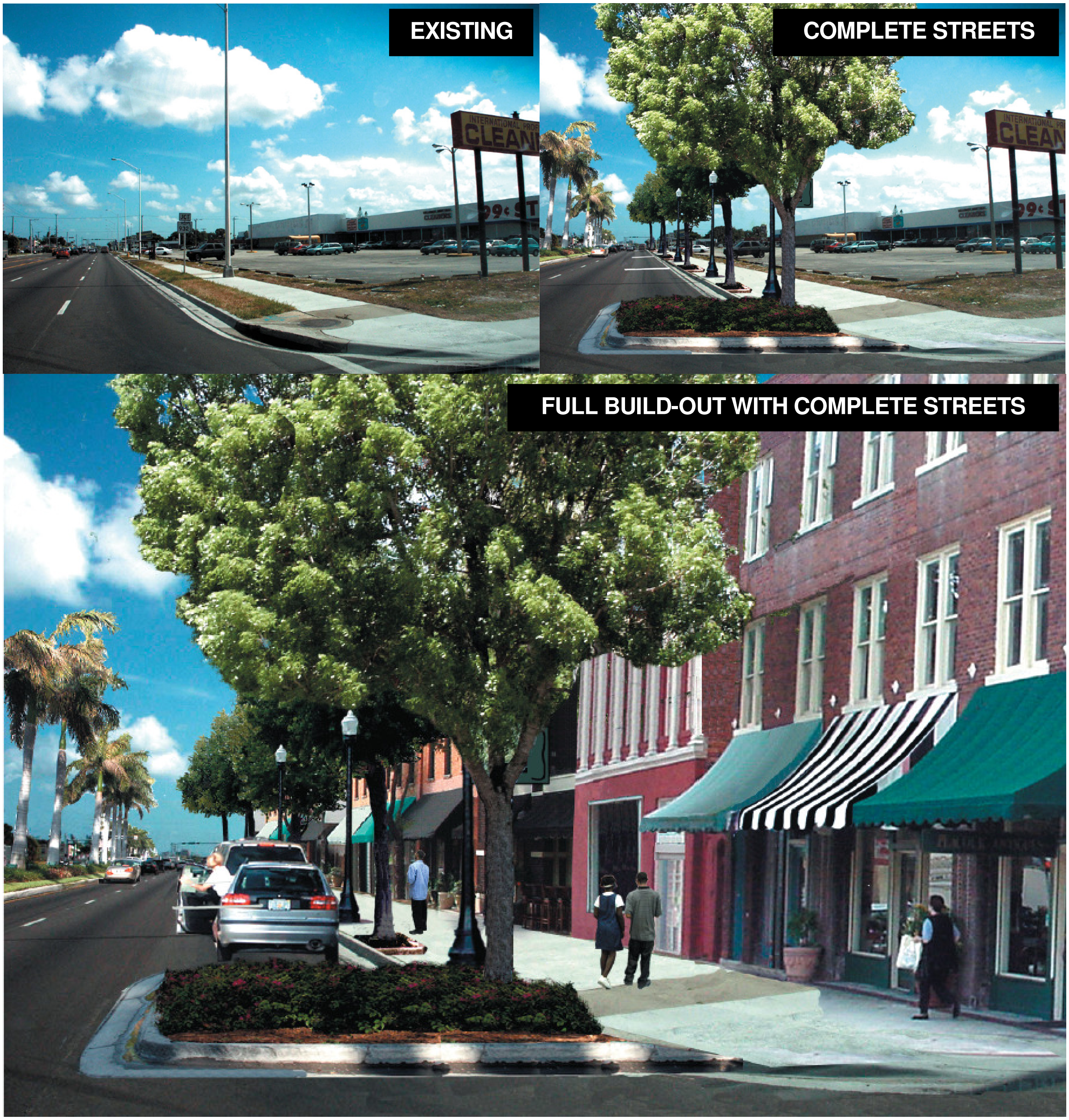
Figure 18: NW 7 Avenue Existing Land Use

Source: gisweb.miamidade.gov

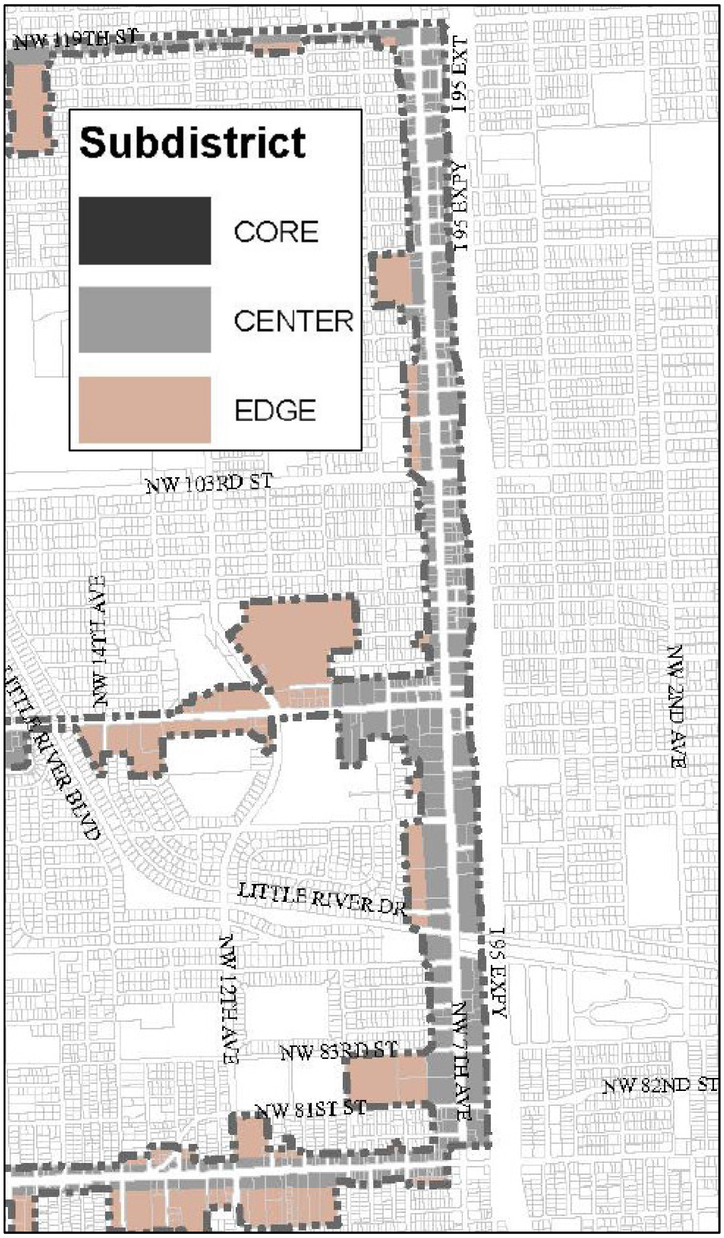
Figure 19: NW 7 Avenue Future Land Use

Source: gisweb.miamidade.gov

Miami-Dade County has conducted a charrette that includes the area of NW 7 Avenue. Higher densities and focused infill development describe the future vision of the corridor. Complete streets play a complimentary role in this revitalization process by acting as the catalyst for attracting development. Below are concepts from the North-Central Miami-Dade Charrette for the NW 7 Avenue corridor:



Source: North-Central Miami-Dade Charrette



Source: North-Central Miami-Dade Charrette

The North Central Urban Area Regulations identifies gateways along NW 7 Avenue: NW 119 Street, NW 95 Street, and NW 79 Street. These nodes will be the subject of detailed consideration during the development of the NW 7 Avenue master plan and final complete street design.

7.0 Corridor Concepts

The complete street concepts and recommendations proposed in this section are within the existing curb to curb right of way, helping to keep implementation costs low due to the relatively high cost of curb and gutter and/or drainage replacement. These recommended improvements take into account existing land uses and local activity centers, transit ridership, vehicular volumes and crash rates, and the existing bicycle and pedestrian infrastructures when implementing any of the complete street tools from the toolkit. All of the corridors' renderings were designed with the public *streetmix.net* tool.

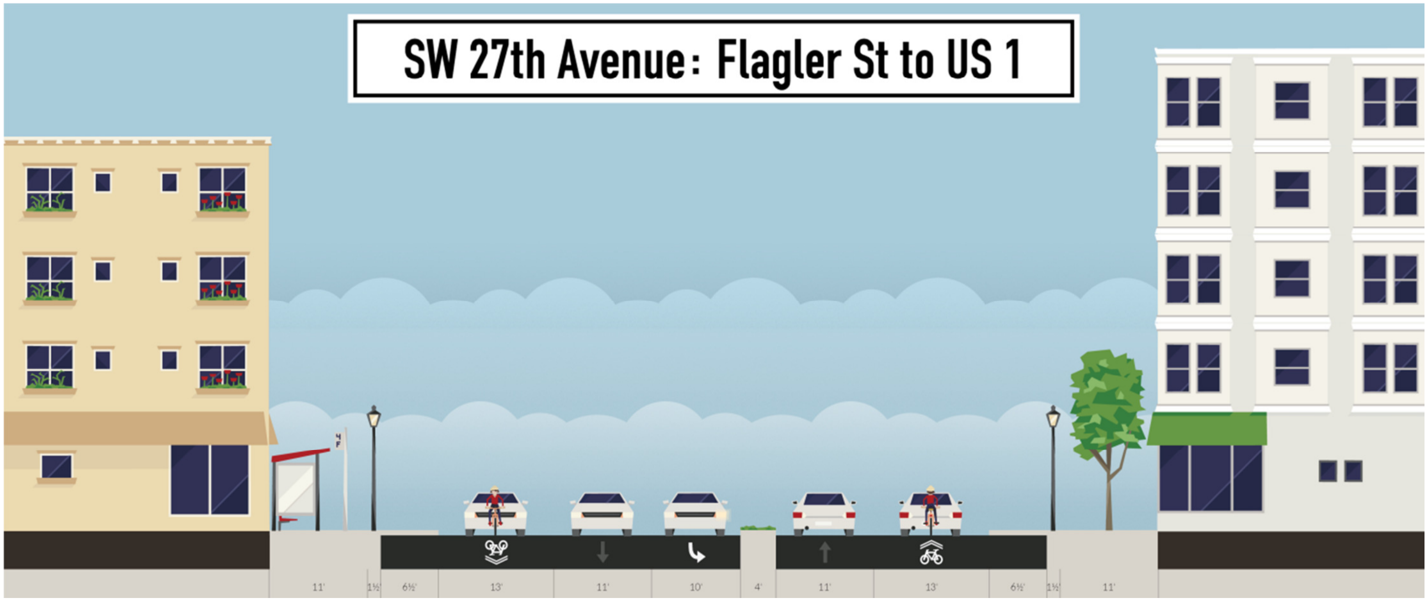
7.1 SW 27 Avenue

Treatments for this corridor should build on the work already completed and emphasize the importance of the transit users and associated transit amenities such as bus shelters with bulbouts. Improvements to pedestrian amenities should also be prioritized such as street trees, pedestrian-scaled street lighting, enhanced crosswalks, benches, and pedestrian refuge islands. Because of the lack of space, bicycles will share the outside lane with automobiles. The curb to curb distance is approximately 78' throughout the entire corridor. The improvements below are within the curb to curb distance and do not require reconstruction of the curb and gutter or drainage.

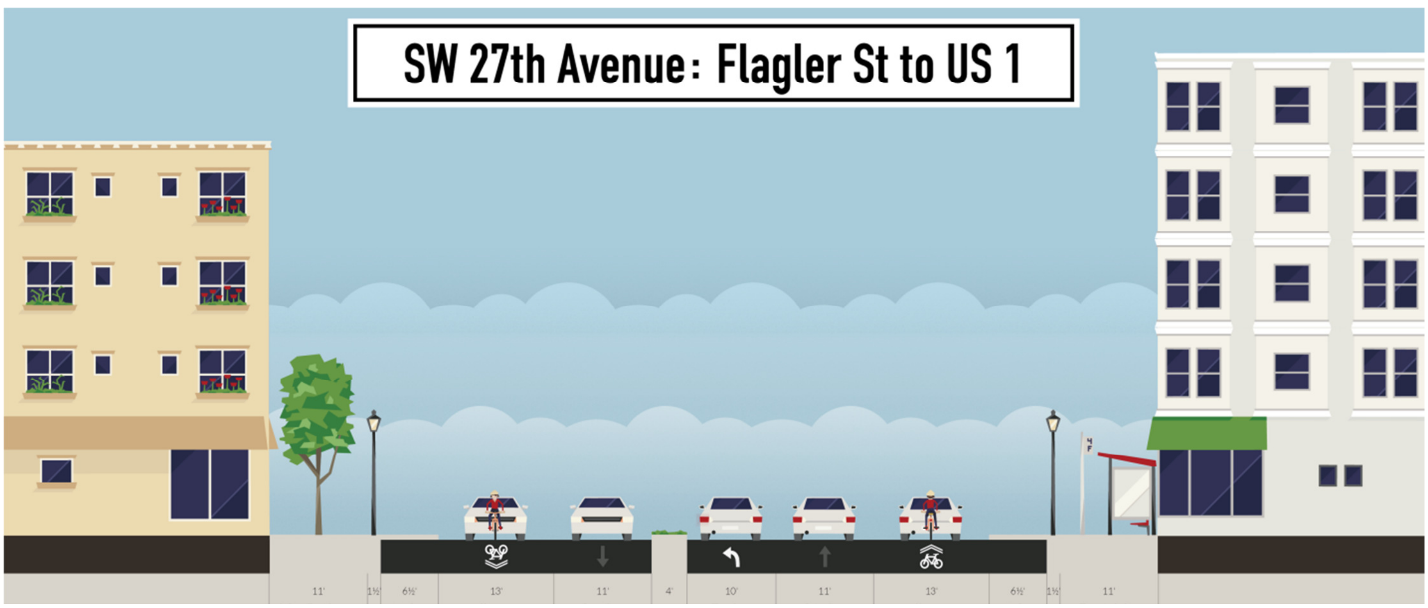
7.1.1 SW 27 Avenue from Flagler Street to US 1

The curb to curb distance is 78' throughout the corridor. The portion of the corridor south of SW 8 Street has two lanes in each direction with on-street parking with dedicated left turn lanes. The portion of the corridor between W Flagler Street and SW 8 Street has three lanes in each direction with dedicated left turn lanes. The new outside lane for the whole corridor was reconfigured to provide a wider lane to accommodate sharrows.

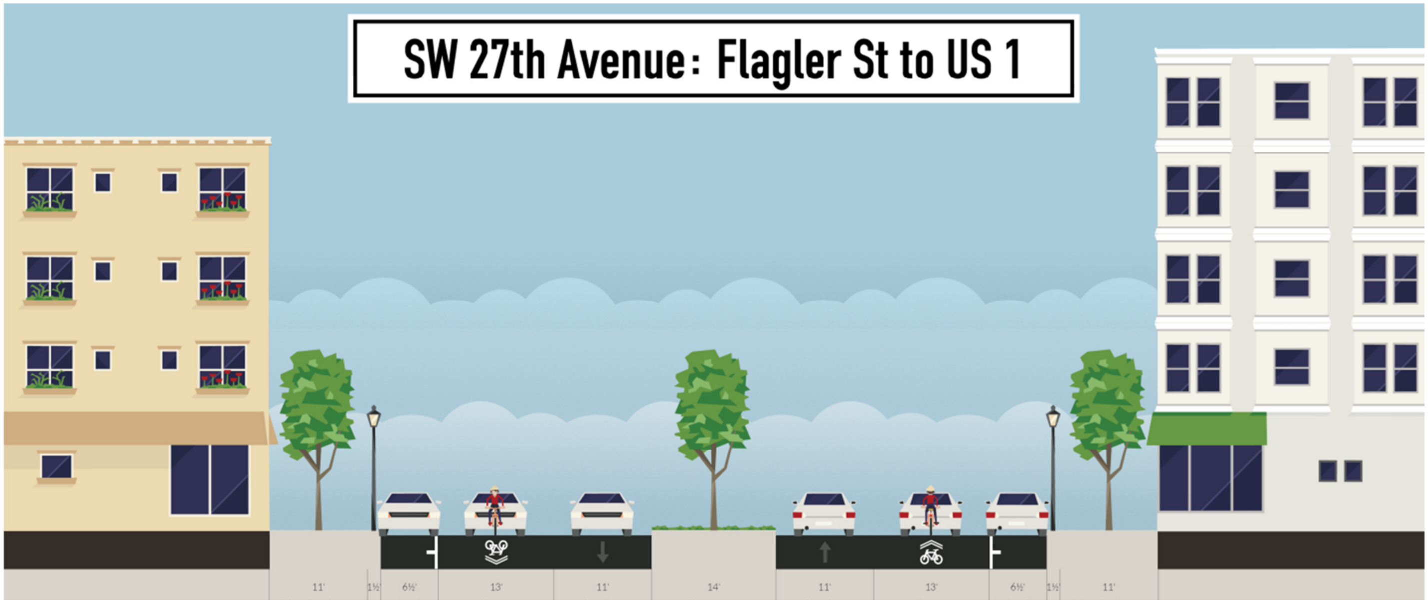
South side of Intersection



North side of Intersection



Mid-Block



Toolbox Improvements

Pedestrian Improvements
Curb extensions/bulbouts in front of transit shelters.
Pedestrian-scale lighting throughout the corridor.
Add one bench and two trash receptacles for each side of each block.
Two mid-block crossings.

Bicycle Improvements
Add one bike rack on each side of each block.
Add a sharrow to the wide outside lane in each direction.

Mixed Motor Vehicle and Parking Improvements
Add on-street parking throughout the corridor.

Green Improvements
Add landscaping/street trees throughout the corridor.
Improve landscaping/street trees in the median.

Transit Improvements
Eliminate bus bays throughout the corridor and replaced with bulbouts at all transit stops.
Replaced all stops with transit shelters.

7.1.2 SW 27 Avenue Impacts to Level of Service

The proposed complete streets improvements to the corridor do not affect the level of service (LOS) because no travel lanes were repurposed for non-motorized use. Therefore, the existing LOS is "C" throughout the corridor and is projected to remain the same after the improvements.

LOS: W Flagler Street- US 1					
Segment	**Station No.**	**AADT**	**V/C**	**Average Speed (mi/h)**	**LOS**
US-1-SW 22 ST	875120	24000	**0.367**	20.80	**C**
SW 22 ST- SW 8 ST	875125	36500	**0.501**	19.00	**C**
SW 8 - Flagler ST	875126	37000	**0.532**	19.30	**C**

7.1.3 SW 27 Avenue Rendering with Improvements

7.1.4 SW 27 Avenue Estimated Cost of Improvements

SW 27th Avenue				
Item	**Cost**	**Quantity**	**SubTotal**	**%**
Pedestrian Signals	$15,000.00	8	$120,000.00	1%
Mid-Block Crossing	$15,000.00	2	$30,000.00	0%
Street Tree (every 50')	$750.00	96	$72,000.00	1%
Pedestrian Street Lighting (every 75')	$5,000.00	316	$1,580,000.00	16%
Bike Rack (one per each side of block)	$800.00	70	$56,000.00	1%
Bench (one per each side of block)	$600.00	70	$42,000.00	0%
Trash Can (two per each side of block)	$600.00	140	$84,000.00	1%
Bus Shelter	$25,000.00	18	$450,000.00	5%
Bulbout	$50,000.00	105	$5,250,000.00	55%
Mill and Resurface - 4 lane undivided (per mile)	$857,240.00	2.25	$1,928,790.00	20%
		total	$9,612,790.00	100%

Source: Florida Department of Transportation Cost Estimation

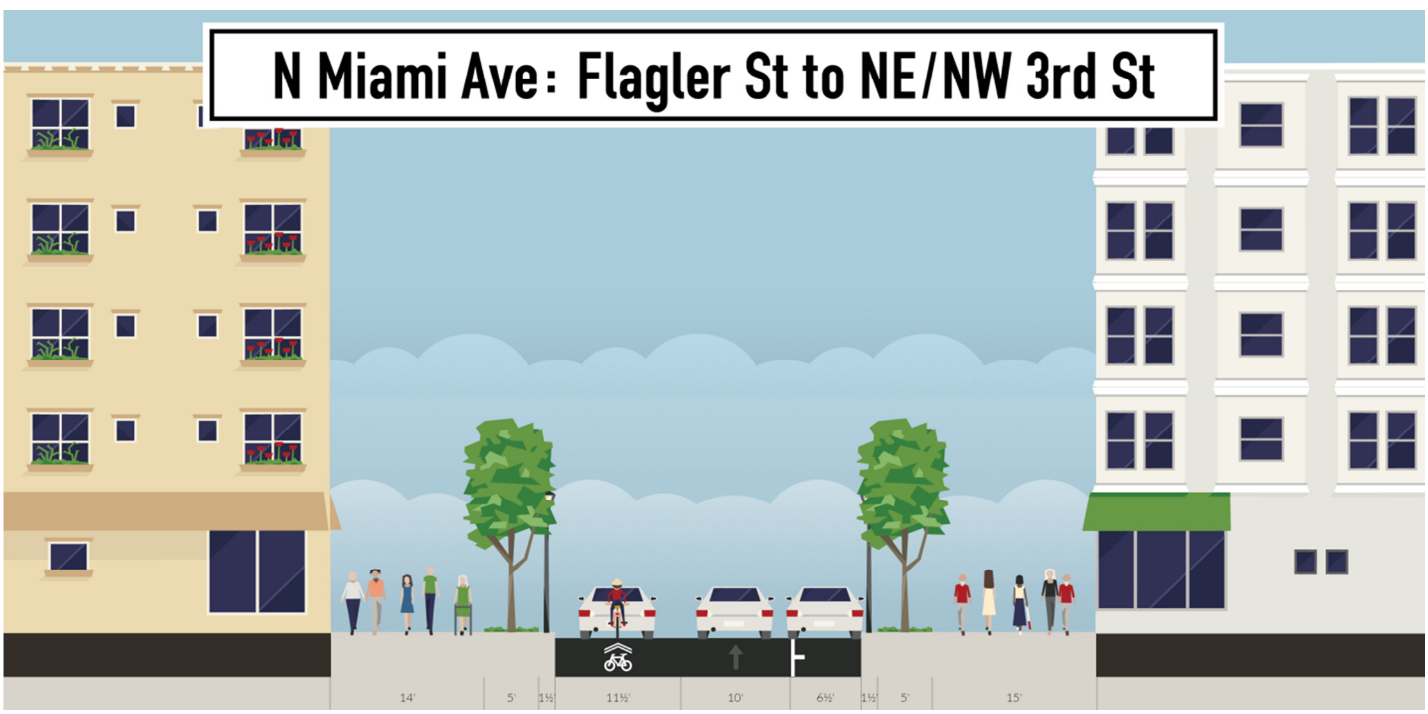
7.2 N Miami Avenue

The character of the corridor changes dramatically from Midtown and Downtown Miami. The corridor is currently designed for the throughput of vehicles, although pedestrian amenities are present in the Midtown and Downtown districts. The complete street treatments for this corridor should emphasize the importance of bicyclists and associated amenities such as exclusive bicycle lanes, sharrows, and bicycle racks. Improvements to pedestrian amenities should also be prioritized such as street trees, pedestrian-scaled street lighting, enhanced crosswalks, benches, and pedestrian refuge islands. Because of the roadway capacity available along with the current volumes of traffic, portions of the street can be repurposed and dedicated for other uses such as on-street parking or exclusive bicycle lanes. The curb to curb distance varies throughout the entire corridor from 31’ to 58’. A landscaped median was proposed if there was enough right-of-way, otherwise a two-way left turn lane was recommended. The improvements below are within the curb to curb distance and do not require reconstruction of the curb and gutter or drainage.

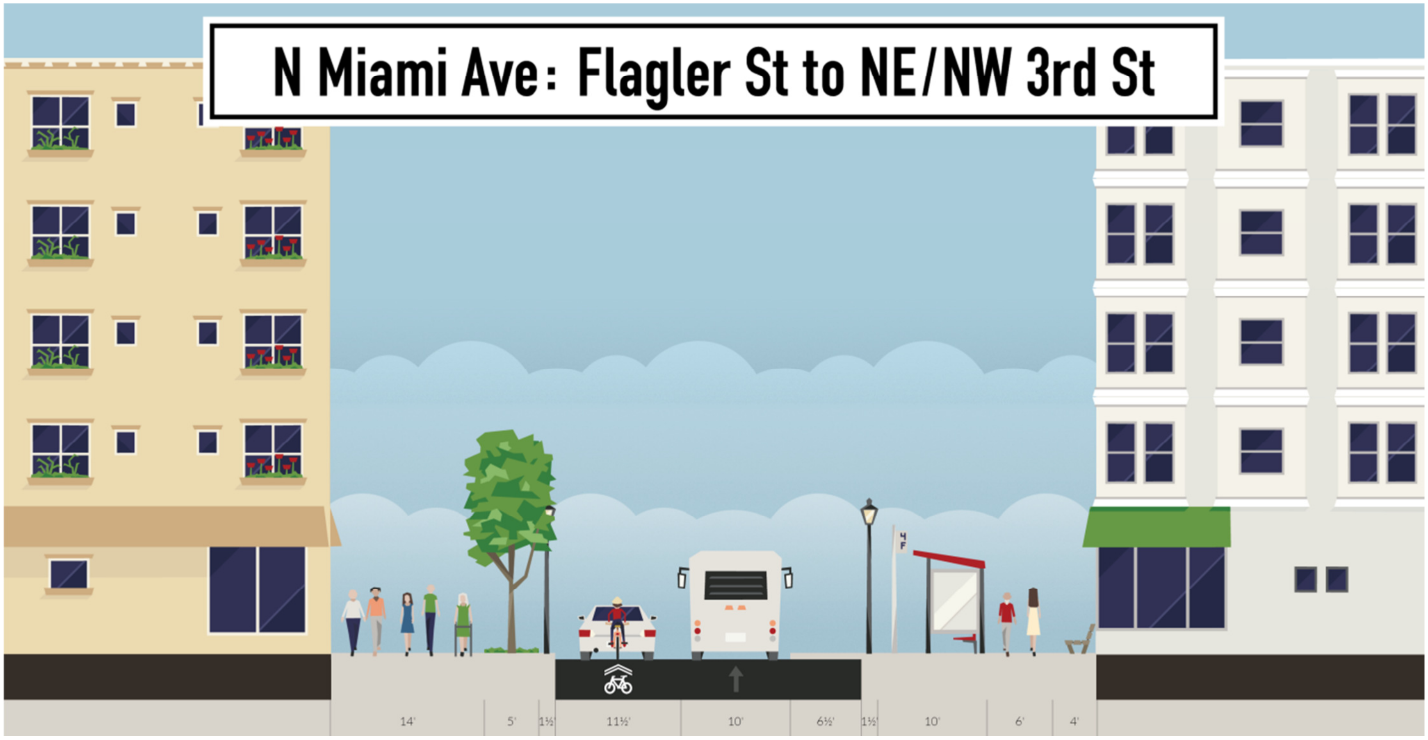
7.2.1 N Miami Avenue from Flagler Street to NE/NW 3 Street

Within this portion of the corridor, the curb to curb distance is 31’, which includes two southbound lanes and on-street parking. The sharrows are proposed for the east-side of the street to avoid conflicts with the on-street parking and the bus operations.

South side of Intersection



Mid-Block



Toolbox Improvements

Pedestrian Improvements
Curb extensions/ bulbouts in front of transit shelters.
Add one bench and two trash receptacles for each side of each block.
Pedestrian-scale lighting throughout the corridor.

Bicycle Improvements
Add one bike rack on each side of each block.
Add a sharrow to the wide outside lane in each direction.

Green Improvements
Add landscaping/street trees throughout the corridor.

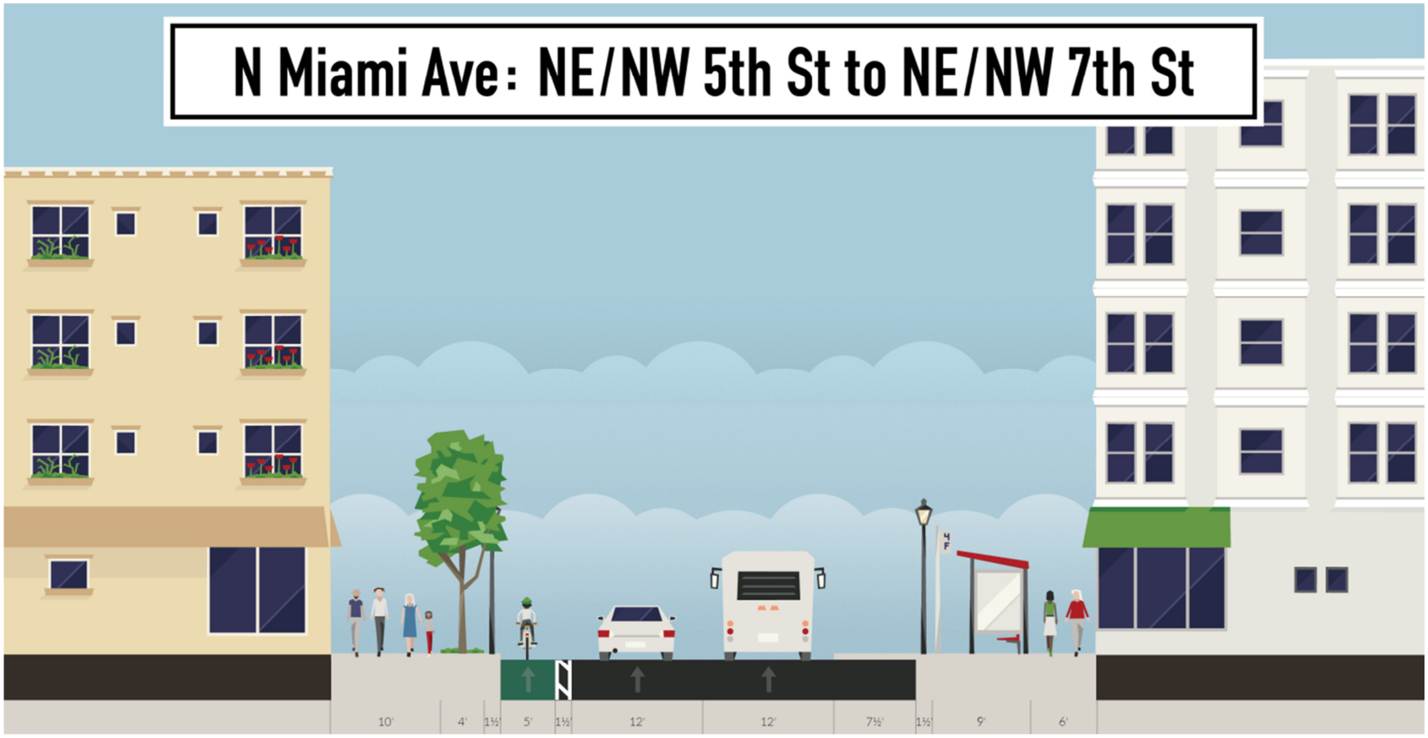
Transit Improvements
Bulbouts at all transit stops.
Replaced all stops with transit shelters.

7.2.2 N Miami Avenue from NE/NW 5 Street to NE/NW 7 Street

This portion of the corridor has a curb to curb distance of 41', which includes three southbound lanes and on-street parking. A bicycle lane is proposed for the east-side of the street to avoid conflicts with the on-street parking and the bus operations.

South side of Intersection

Mid-Block



Toolbox Improvements

Pedestrian Improvements
Curb extensions/bulbouts in front of transit shelters.
Pedestrian-scale lighting throughout the corridor.
Add one bench and two trash receptacles for each side of each block.

Bicycle Improvements
Add one bike rack on each side of each block.
Add a bike lane with a 1' buffer between vehicular traffic to the west side of the street.

Mixed Motor Vehicle and Parking Improvements
Road Dieted from three to two through lanes.

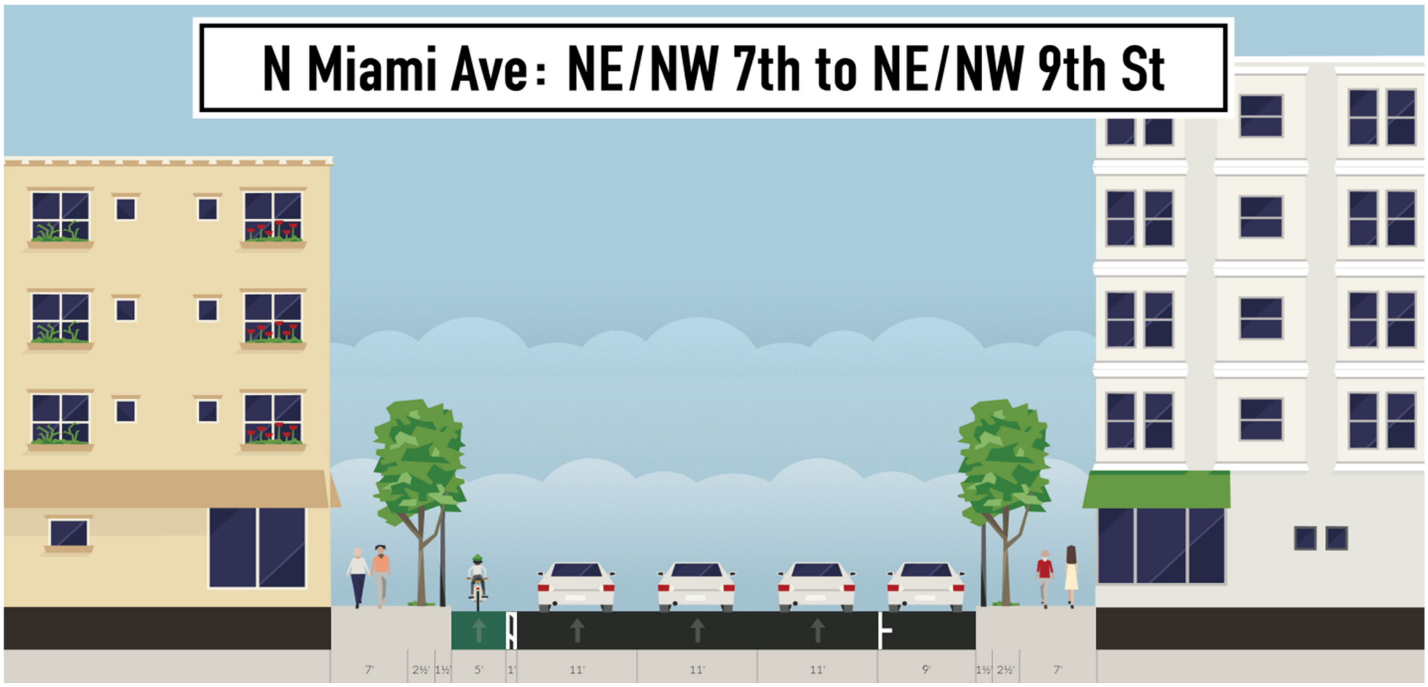
Green Improvements
Add landscaping/street trees throughout the corridor.

Transit Improvements
Bulbouts at all transit stops.
Replace all stops with transit shelters.

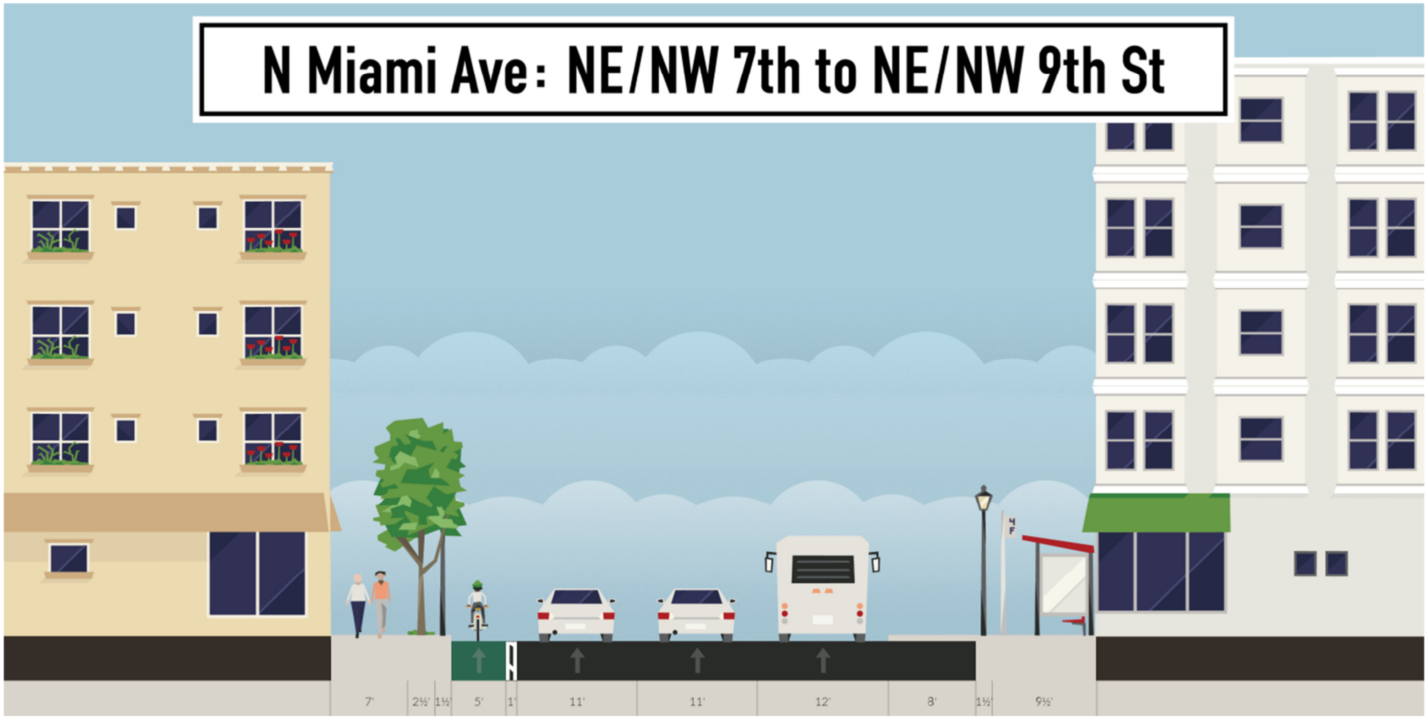
7.2.3 N Miami Avenue from NE/NW 7 Street to NE/NW 9 Street

This portion of the corridor has a curb to curb distance of 51’, which includes three southbound lanes and on-street parking. A bicycle lane is proposed for the east-side of the street to avoid conflicts with the on-street parking and the bus operations.

South side of Intersection



Mid-Block



Toolbox Improvements

Pedestrian Improvements
Curb extensions/bulbouts in front of transit shelters.
Pedestrian-scale lighting throughout the corridor.
Add one bench and two trash receptacles for each side of each block.

Bicycle Improvements
Add one bike rack on each side of each block.
Add a bike lane with a 1' buffer between vehicular traffic to the west side of the street.

Mixed Motor Vehicle and Parking Improvements
Road Dieted from three to two through lanes.

Green Improvements
Add landscaping/street trees throughout the corridor.

Transit Improvements
Bulbouts at all transit stops.
Replace all stops with transit shelters.

7.2.4 N Miami Avenue from NE/NW 9 Street to NE/NW 13 Street

This portion of the corridor has a curb to curb distance of 41', which includes three southbound lanes and on-street parking. A bicycle lane is proposed for the east-side of the street to avoid conflicts with the on-street parking and the bus operations.

South side of Intersection

Mid-Block

Toolbox Improvements

Pedestrian Improvements
Curb extensions/bulbouts in front of transit shelters.
Pedestrian-scale lighting throughout the corridor.
Add one bench and two trash receptacles for each side of each block.

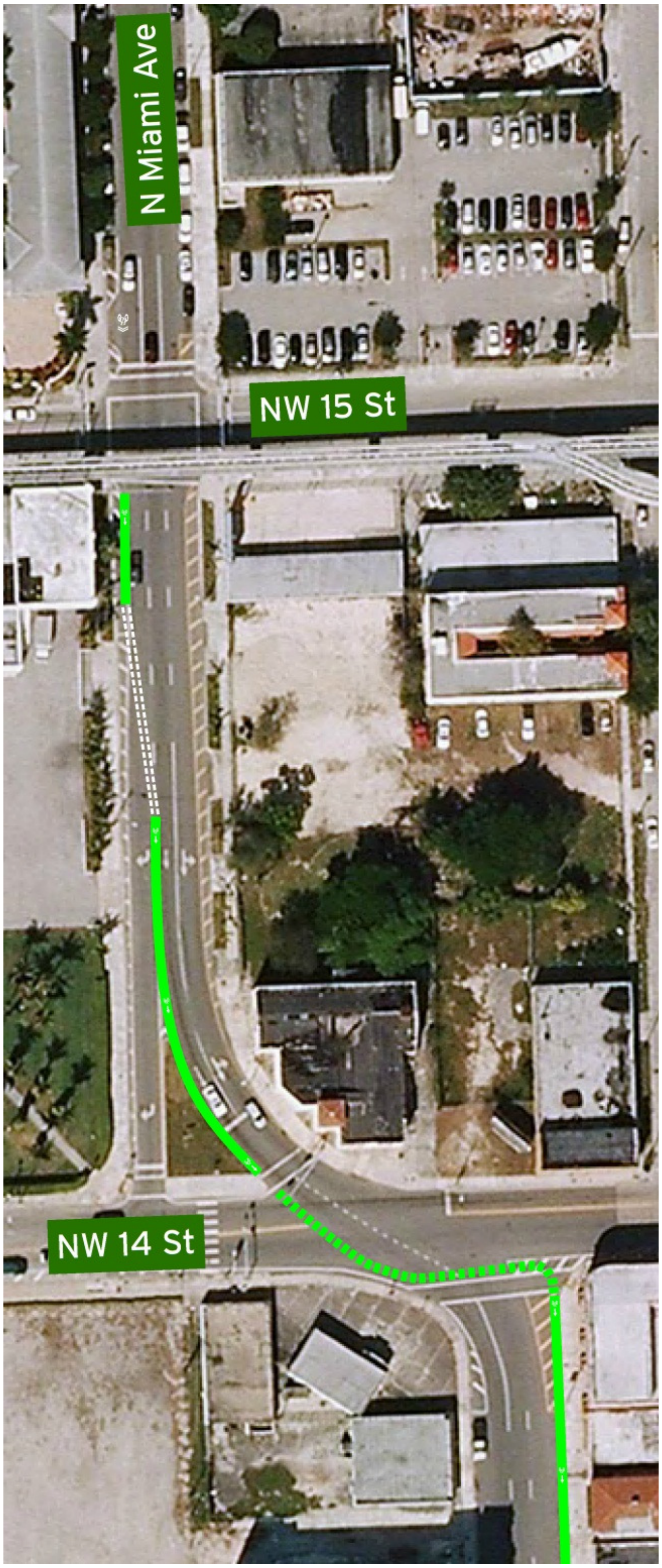
Bicycle Improvements
Add one bike rack on each side of each block.
Add a bike lane with a 1' buffer between vehicular traffic to the west side of the street.

Mixed Motor Vehicle and Parking Improvements
Road Dieted from three to two through lanes.

Green Improvements
Add landscaping/street trees throughout the corridor.

Transit Improvements
Bulbouts at all transit stops.
Replace all stops with transit shelters.

Figure 20: N Miami Avenue Bicycle Lane Configuration at NW 14 Street



At NE/NW 17 Street, N Miami Avenue changes from a two-way street to a one-way southbound street. The roadway has a major jog to the east at NE/NW 14 Street. There is right turn only lane that serves as a lane drop at NE/NE 14 Street. The bicycle lane portion of the complete street must transition through this area crossing the right turn lane drop and negotiating the jog at NE/NW 14 Street. Additionally, the bicycle lane transitions from the west side of the street to the east side of the street as shown in Figure 20.

7.2.5 N Miami Avenue from NE/NW 14 Street to NE/NW 17 Street

This portion of the corridor has a curb to curb distance of 46’, which includes three southbound lanes and on-street parking. A sharrow is proposed for the west-side of the street to continue the southbound bicycle lane from the segment immediately north of NE/NW 17 Street.

South side of Intersection

Mid-Block

Toolbox Improvements

Pedestrian Improvements
Curb extensions/bulbouts in front of transit shelters.
Pedestrian-scale lighting throughout the corridor.
Add one bench and two trash receptacles for each side of each block.

Bicycle Improvements
Add one bike rack on each side of each block.
Add a sharrow to the east side of the street.

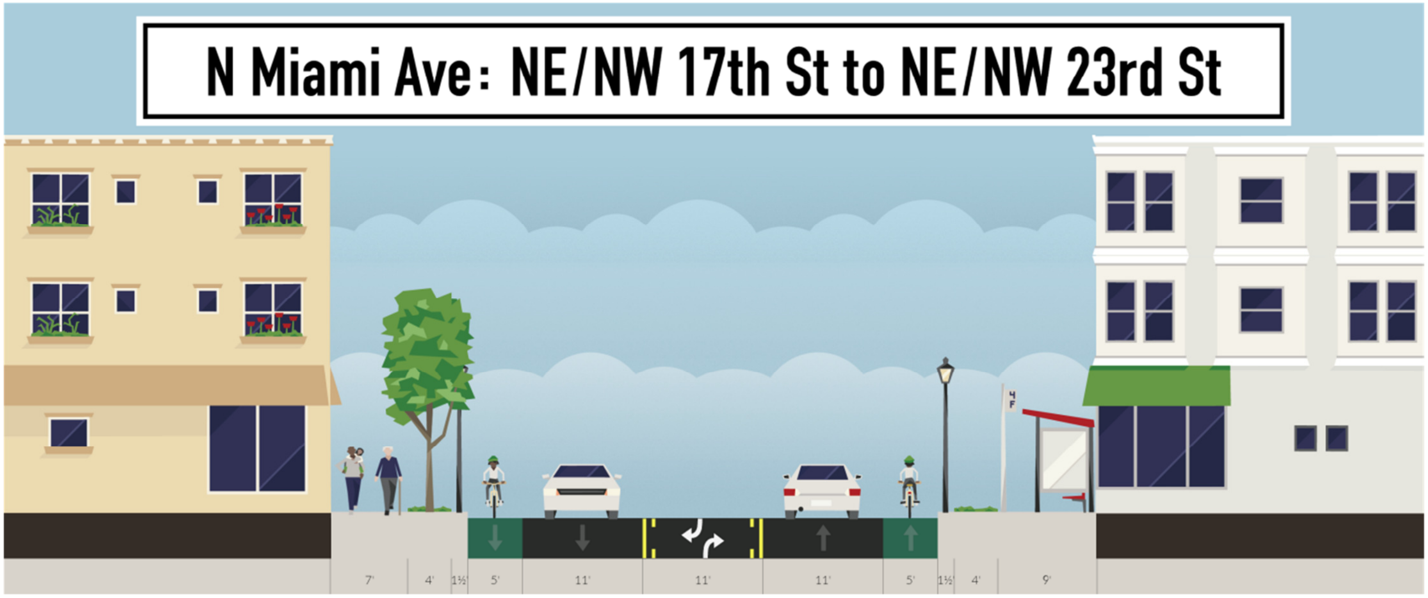
Green Improvements
Add landscaping/street trees throughout the corridor.

Transit Improvements
Bulbouts at all transit stops.
Replace all stops with transit shelters.

7.2.6 N Miami Avenue from NE/NW 17 Street to NE/NW 23 Street

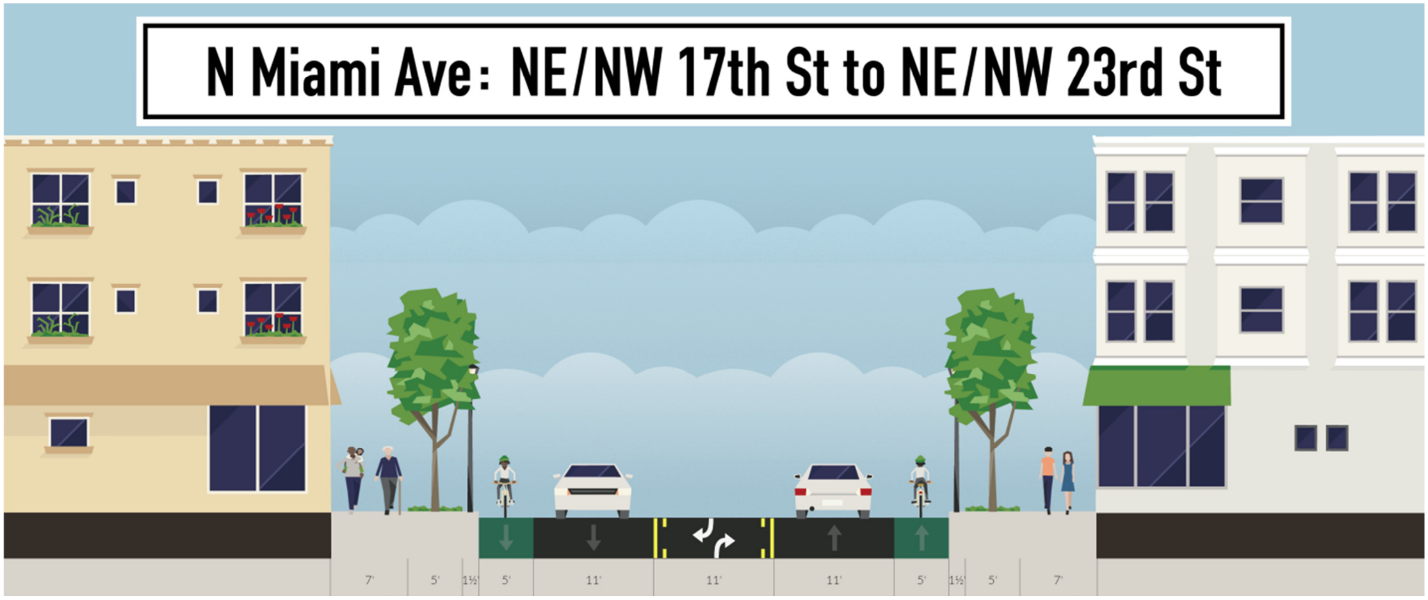
This portion of the corridor has a curb to curb distance of 46’, and is a four lane undivided roadway. Bicycle lanes are proposed for both sides of the street as well as a two-way left turn lane.

South side of Intersection



North side of Intersection

Mid-Block



Toolbox Improvements

Pedestrian Improvements
Curb extensions/bulbouts in front of transit shelters.
Pedestrian-scale lighting throughout the corridor.
Add one bench and two trash receptacles for each side of each block.

Bicycle Improvements
Add one bike rack on each side of each block.
Add a bike lane to both sides of the street.

Mixed Motor Vehicle and Parking Improvements
Road Dieted from four to two through lanes with a two-way left turn lane

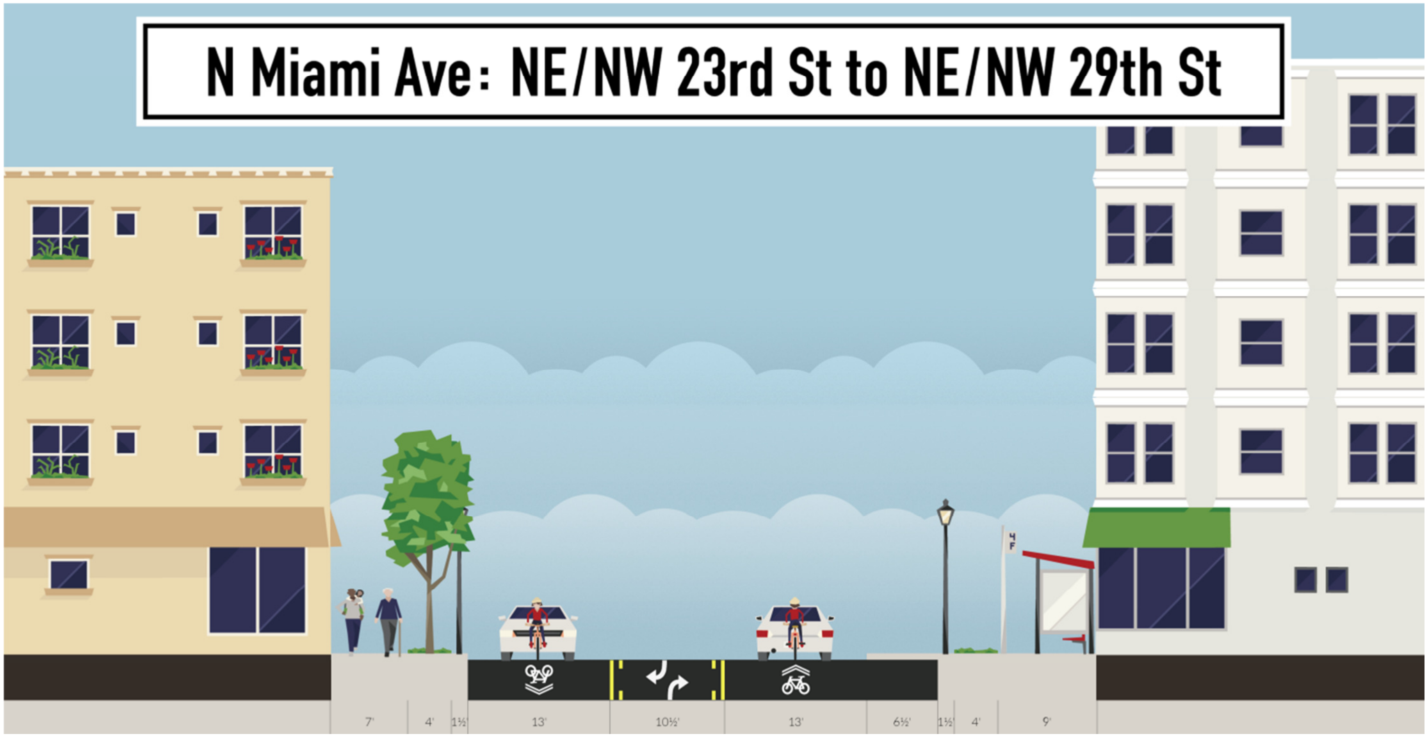
Green Improvements
Add landscaping/street trees throughout the corridor.

Transit Improvements
Bulbouts at all transit stops.
Replace all stops with transit shelters.

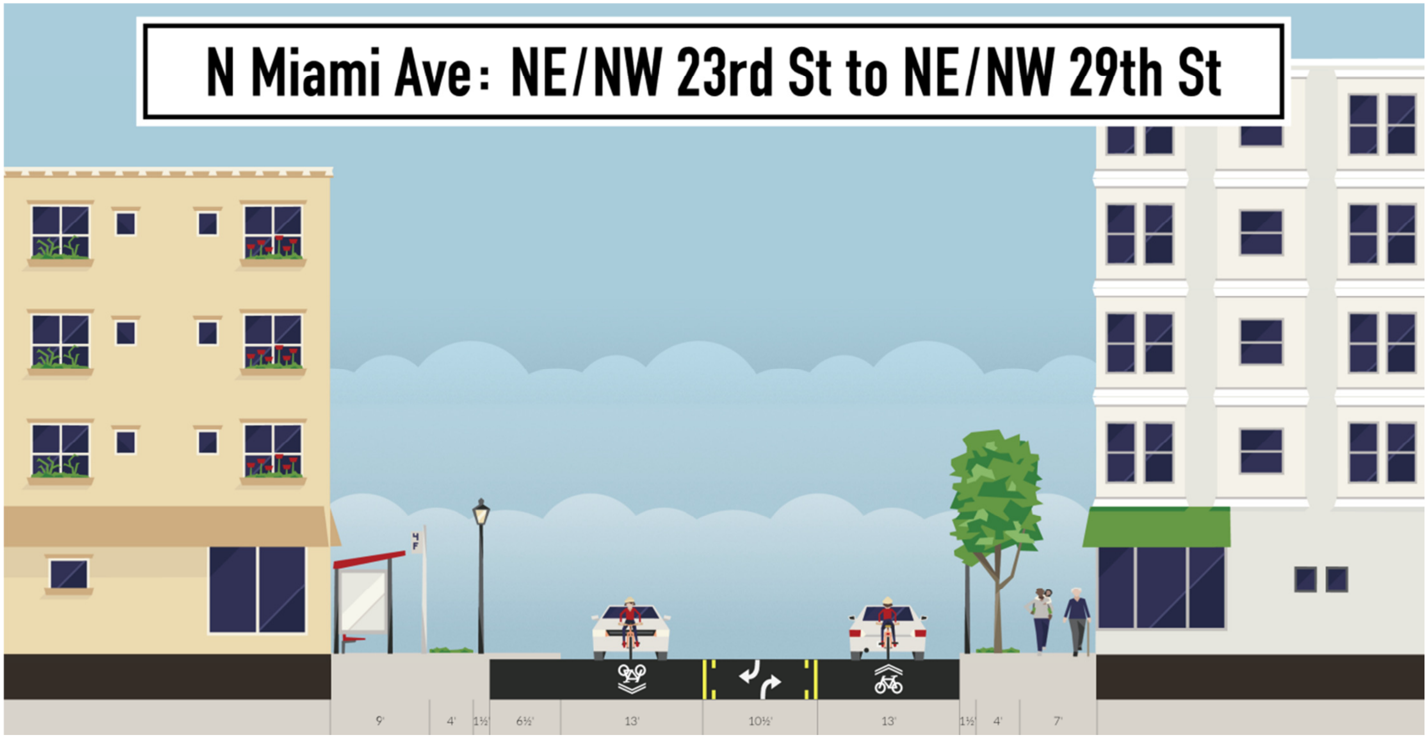
7.2.7 N Miami Avenue from NE/NW 23 Street to NE/NW 29 Street

This portion of the corridor has a curb to curb distance of 46’, and is a four lane undivided roadway. Sharrows are proposed for both sides of the street as well as a two-way left turn lane.

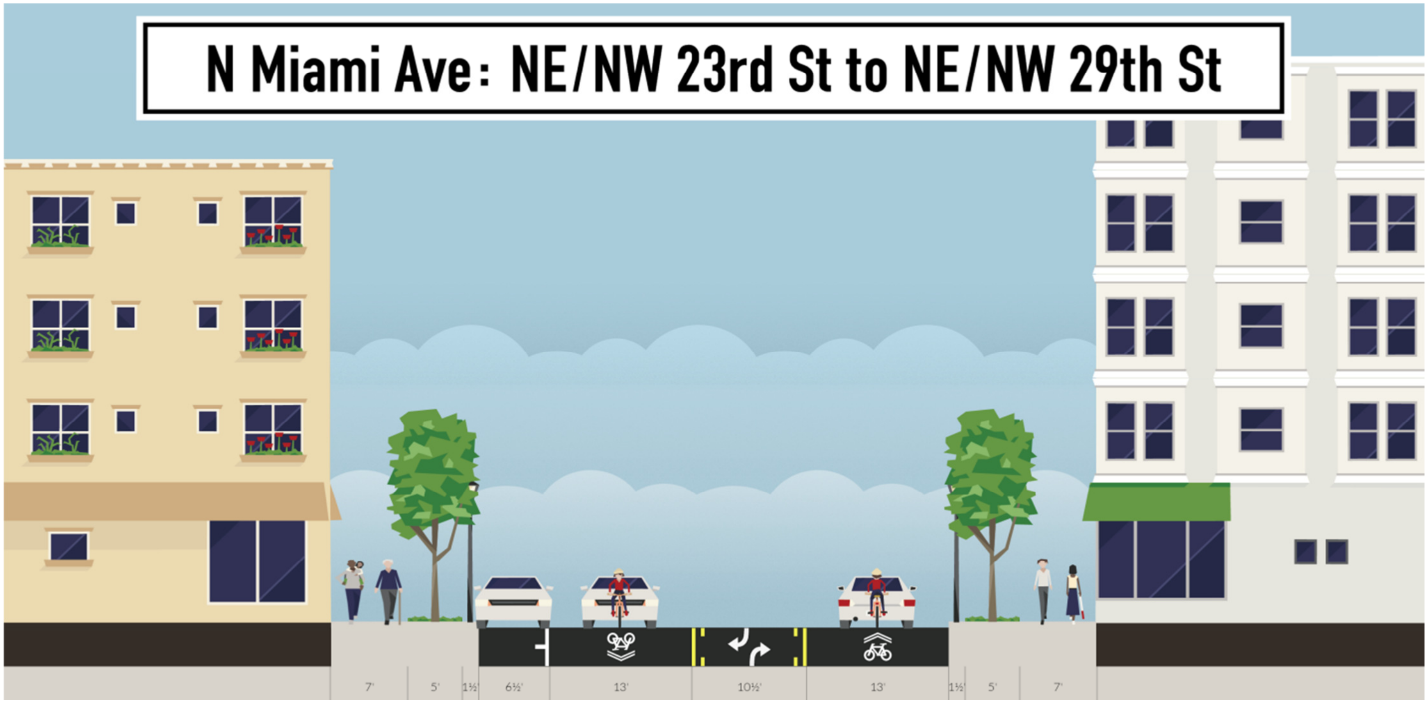
North side of Intersection



South side of Intersection



Mid-Block



Toolbox Improvements

Pedestrian Improvements
Curb extensions/bulbouts in front of transit shelters.
Pedestrian-scale lighting throughout the corridor.
Add one bench and two trash receptacles for each side of each block.

Bicycle Improvements
Add one bike rack on each side of each block.
Add a sharrow to the east side of the street.

Mixed Motor Vehicle and Parking Improvements
Road Dieted from four to two through lanes with a two-way left turn lane.
On-street parking included on the west side of the street.

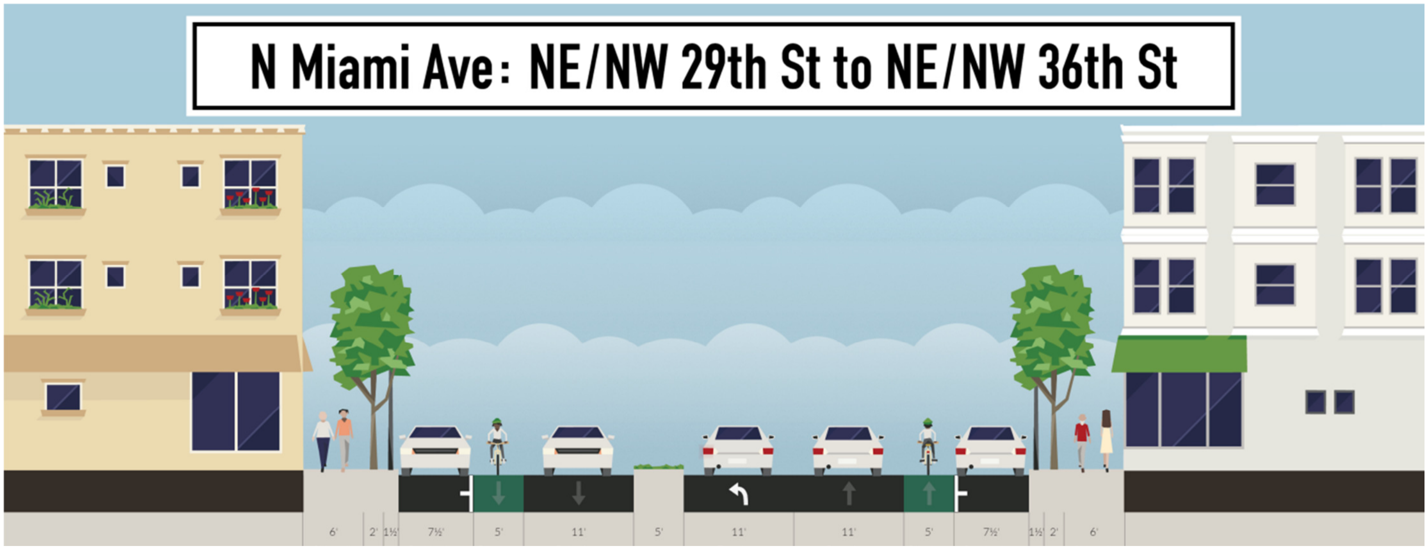
Green Improvements
Add landscaping/street trees throughout the corridor.

Transit Improvements
Bulbouts at all transit stops.
Replace all stops with transit shelters.

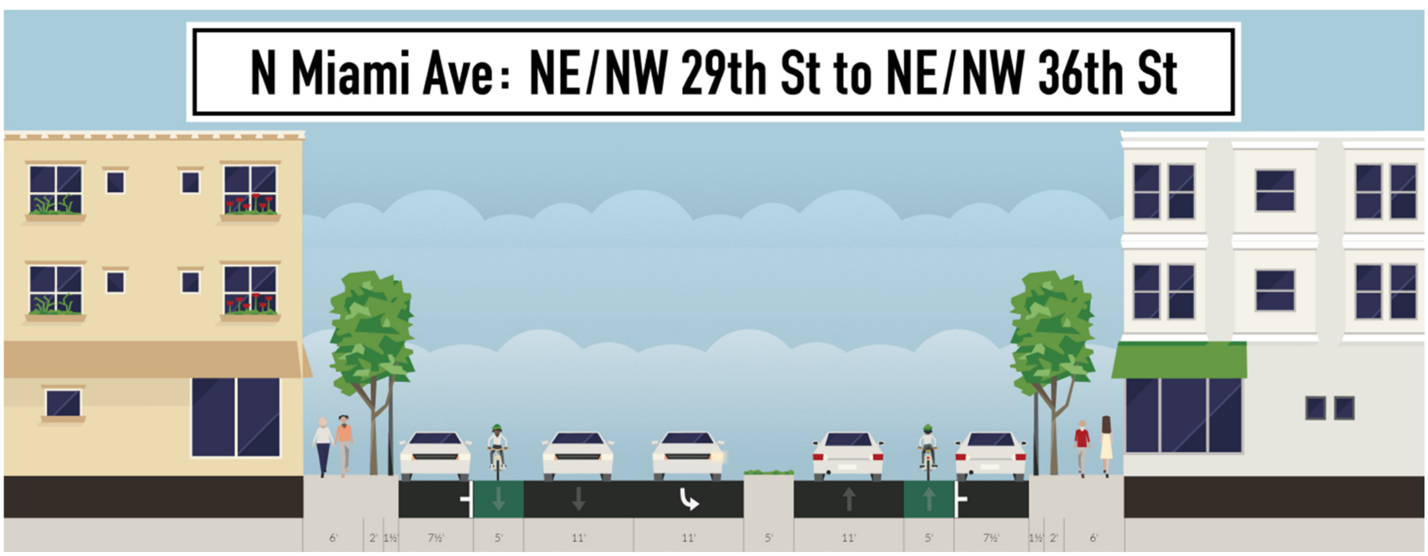
7.2.8 N Miami Avenue from NE/NW 29 Street to NE/NW 36 Street

This portion of the corridor has a curb to curb distance of 66’, and is a four lane divided roadway. Bicycle lanes are proposed for both sides of the street as well as dedicated left turn lanes.

North side of Intersection



South side of intersection



Mid-Block

Toolbox Improvements

Pedestrian Improvements
Curb extensions/bulbouts in front of transit shelters.
Pedestrian-scale lighting throughout the corridor.
Add one bench and two trash receptacles for each side of each block.
Improved crosswalks for better visibility.
Enhanced medians to provide for pedestrian refuge.

Bicycle Improvements
Add one bike rack on each side of each block.
Add a bike lane to both sides of the street.

Mixed Motor Vehicle and Parking Improvements
Road Dieted from four to two through lanes with a landscaped median with left turn lanes.
On-street parking included on both sides of the street.

Green Improvements
Add landscaping/street trees throughout the corridor.
Enhance landscaping in the median.

7.2.9 N Miami Avenue Impacts to Level of Service

The proposed complete streets improvements to the corridor do not affect the level of service (LOS), volume/capacity ratio, or average travel speeds south of NE/NW 17 Street or north of the I-195 off ramp. The LOS does not change between NE/NW 20 Street and the I-195 ramp, although the average travel speeds are reduced and the volume/capacity ratio slightly increases. The segment between NE/NW 17 Street and NE/NW 20 Street is impacted the most with LOS changing from LOS "C" to "F", average speeds reduced by more than half, and an increased volume/capacity ratio mostly due to the repurposed travel lanes.

Southbound LOS: NW 17th Street-SW 3rd Street					
Segment	**Station No.**	**AADT**	**V/C**	**Average Speed (mi/h)**	**LOS**
NW 17 ST-NW 15 ST	878598	4400	**0.137**	16.70	**D**
NW 15 ST- NW 8 ST	878598	4400	**0.137**	16.70	**D**
NW 8 ST- NW 5 ST	878598	4400	**0.137**	16.70	**D**
NW 5 ST- Flagler ST	878598	4400	**0.137**	16.70	**D**
LOS: NW 17th Street -I95 Off-Ramp					
Segment	**Station No.**	**AADT**	**V/C**	**Average Speed (mi/h)**	**LOS**
NW 17 ST- NW 20 ST	878268	31500	**1.103**	9.47	**F**
NW 20 ST-NW 29 ST	878268	31500	**0.821**	19.75	**C**
NW 29 ST-NW 34 ST	878268	31500	**0.866**	18.33	**C**
NW 34 ST- I-195 Ramp	878268	31500	**0.678**	20.48	**C**
LOS: I-195 Off Ramp - NW 46th Street					
Segment	**Station No.**	**AADT**	**V/C**	**Average Speed (mi/h)**	**LOS**
I-195 Off Ramp-NW 39 ST	878269	12200	0.269	15.6	**C**
NW 39 ST-NW 46 ST	878269	12200	0.269	15.6	**C**

7.2.10 N Miami Avenue Rendering with Improvements

7.2.11 N Miami Avenue Estimated Cost of Improvements

N Miami Avenue				
Item	**Cost**	**Quantity**	**SubTotal**	**%**
Pedestrian Signals	$15,000.00	13	$195,000.00	2%
Street Tree (every 50')	$750.00	151	$113,250.00	1%
Pedestrian Street Lighting (every 75')	$5,000.00	402	$2,010,000.00	22%
Bike Rack (one per each side of block)	$800.00	80	$64,000.00	1%
Bench (one per each side of block)	$600.00	80	$48,000.00	1%
Trash Can (two per each side of block)	$600.00	160	$96,000.00	1%
Bus Shelter	$25,000.00	17	$425,000.00	5%
Bulbout	$50,000.00	73	$3,650,000.00	41%
Landscaped Median (per linear foot)	$400.00	1562	$624,800.00	7%
Mill and Resurface - 4 lane undivided (per mile)	$857,240.00	0.74	$634,357.60	7%
Mill and Resurface - 2 lane and TWLTL (per mile)	$583,844.00	1.91	$1,115,142.04	12%
		total	$8,975,549.64	100%

Source: Florida Department of Transportation Cost Estimation

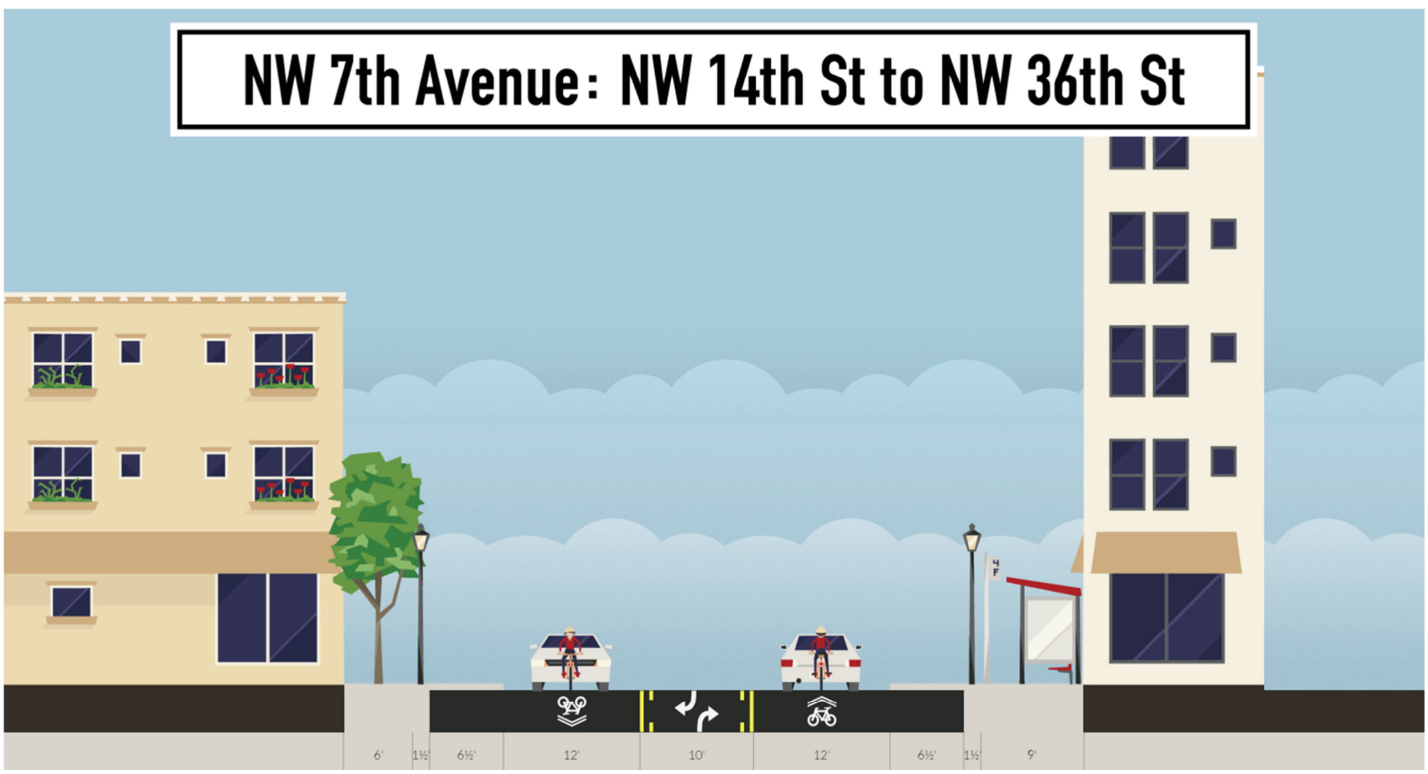
7.3 NW 7 Avenue

Treatments for this corridor should emphasize the importance of bicyclists and associated amenities such as exclusive bicycle lanes, sharrows, and bicycle racks. Improvements to pedestrian amenities should also be prioritized such as street trees, pedestrian-scaled street lighting, enhanced crosswalks, benches, and pedestrian refuge islands. Because of the roadway capacity available along with the current volumes of traffic, portions of the street can be repurposed and dedicated for other uses such as on-street parking or exclusive bicycle lanes. The curb to curb distance varies throughout the entire corridor from 50’ to 74’. A landscaped median was proposed if there was enough right-of-way, otherwise a two-way left turn lane was recommended. The improvements below are within the curb to curb distance and do not require reconstruction of the curb and gutter or drainage.

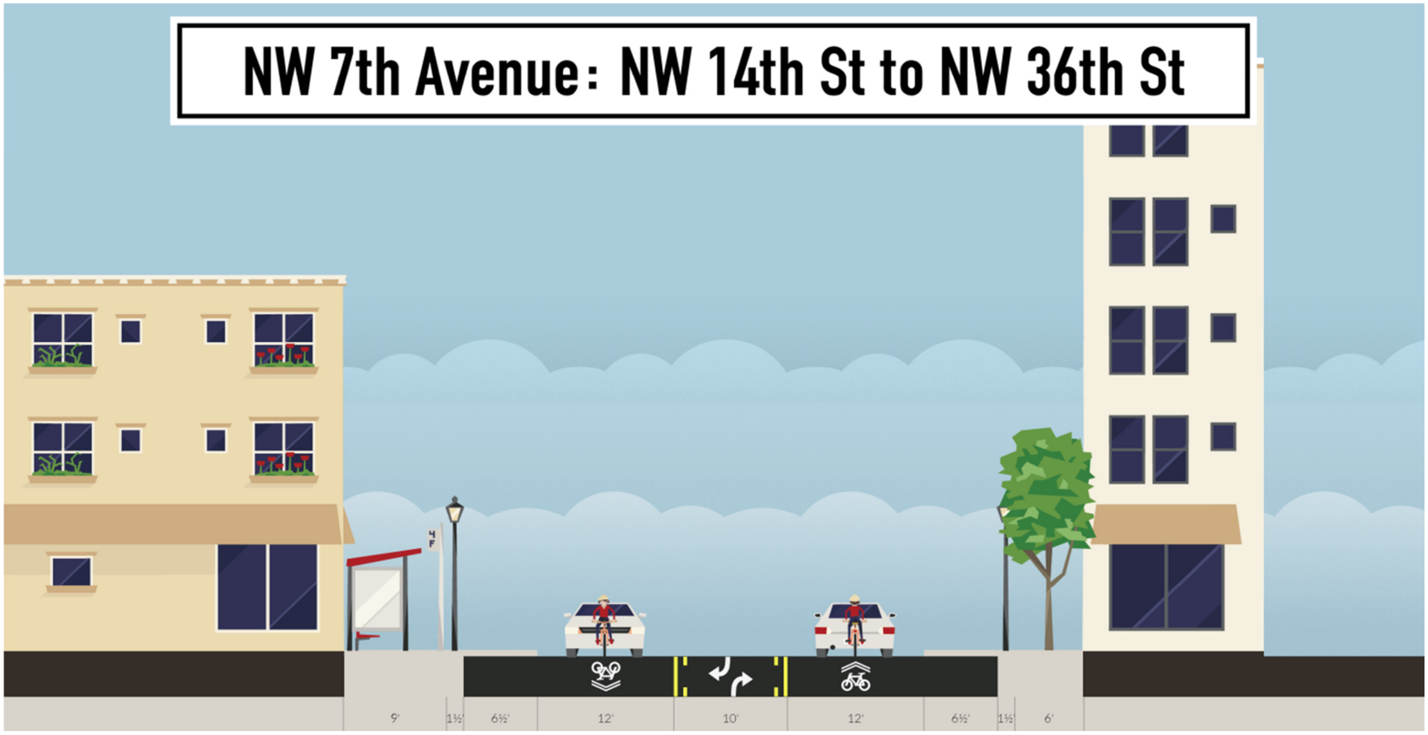
7.3.1 NW 7 Avenue from NW 14 Street to NW 36 Street

This portion of the corridor has a curb to curb distance of 50’, and is a four lane undivided roadway. Sharrows are proposed for both sides of the street as well as a two-way left turn lane.

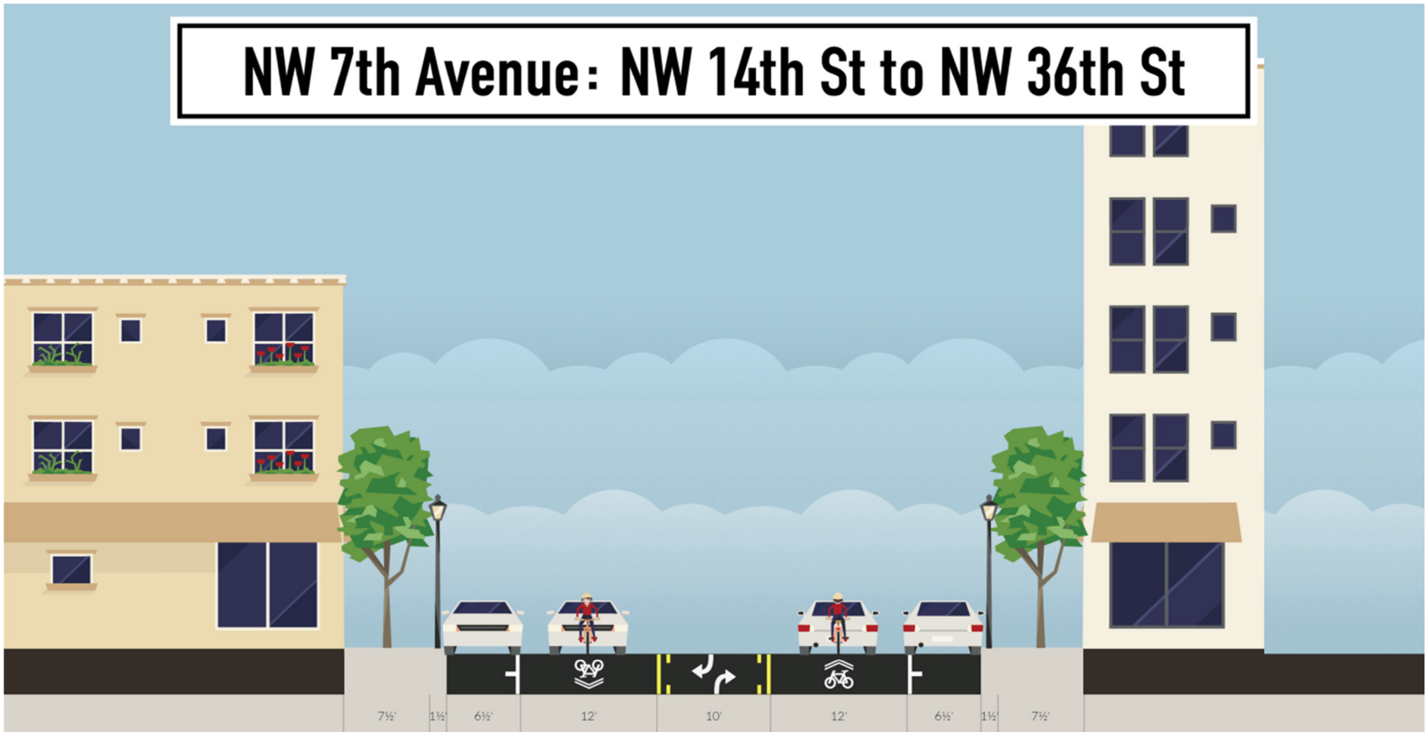
North side of Intersection



South side of Intersection



Mid-Block



Toolbox Improvements

Pedestrian Improvements
Curb extensions/bulbouts in front of transit shelters.
Pedestrian-scale lighting throughout the corridor.
Add one bench and two trash receptacles for each side of each block.
Improved crosswalks for better visibility.

Bicycle Improvements
Add one bike rack on each side of each block.
Add sharrows to both sides of the street.

Mixed Motor Vehicle and Parking Improvements
Road Dieted from four to two through lanes with a two-way left turn lane.
On-street parking included on both sides of the street.

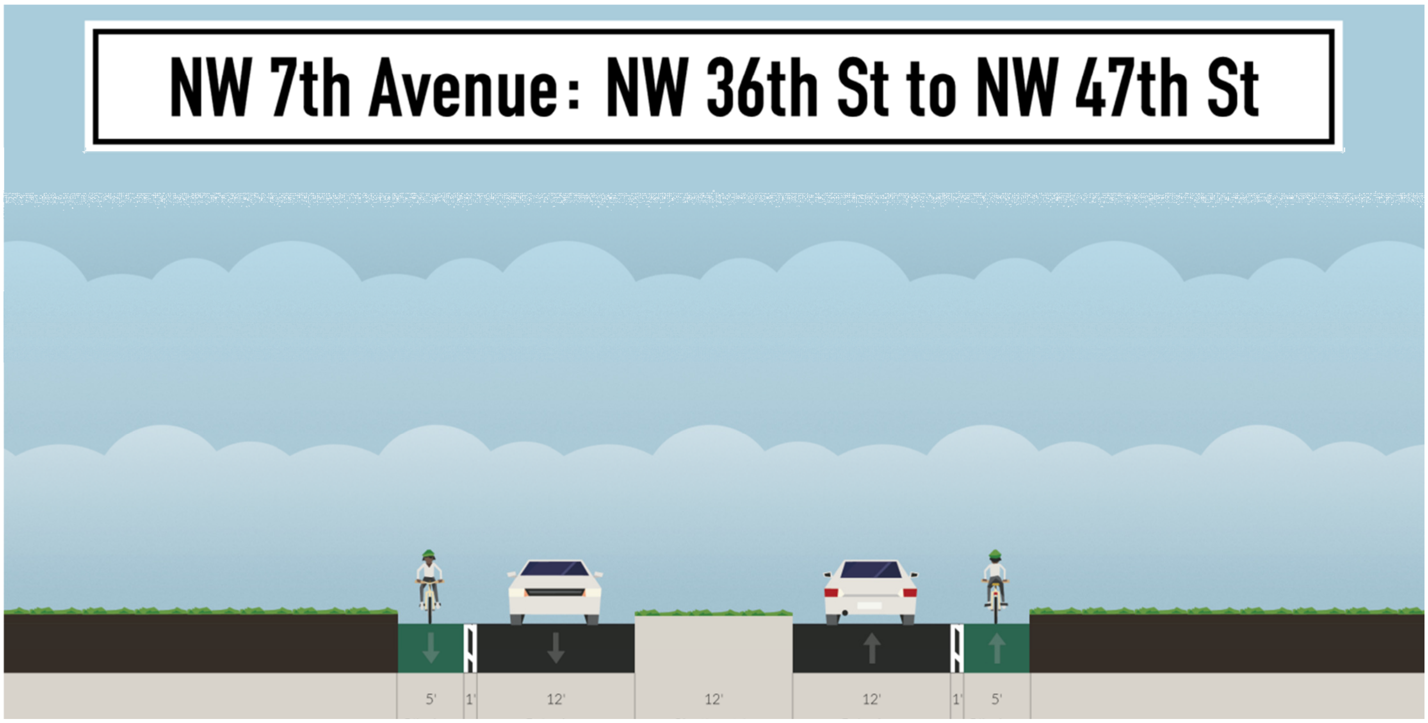
Green Improvements
Add landscaping/street trees throughout the corridor.

Transit Improvements
Bulbouts at all transit stops.
Replace all stops with transit shelters.

7.3.2 NW 7 Avenue from NW 36 Street to NW 47 Street

This portion of the corridor has a curb to curb distance of 48’, and is a four lane undivided roadway. Bicycle lanes with a one foot buffer are proposed for both sides of the street as well as a landscaped median.

Bridge



Toolbox Improvements

Bicycle Improvements
Add a bike lane to both sides of the street with a 1' buffer between vehicular traffic.

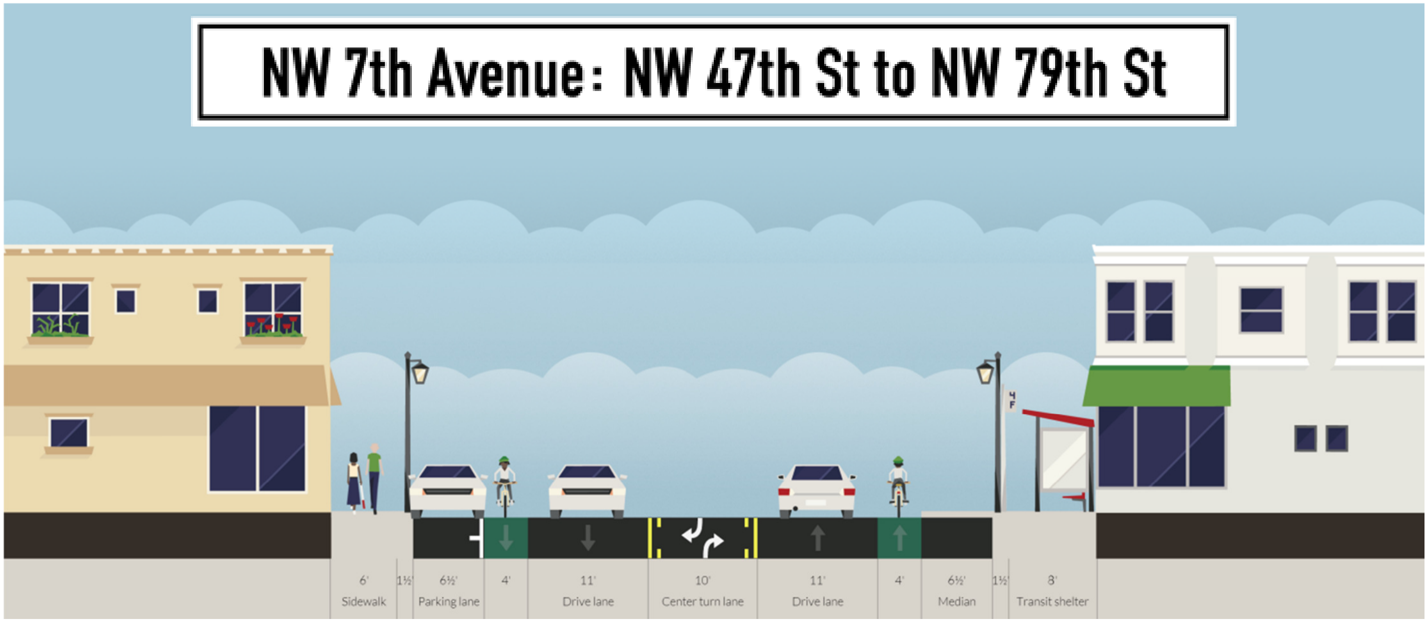
Mixed Motor Vehicle and Parking Improvements
Road Dieted from four to two through lanes with a landscaped median.

Green Improvements
Enhance landscaping in the median.

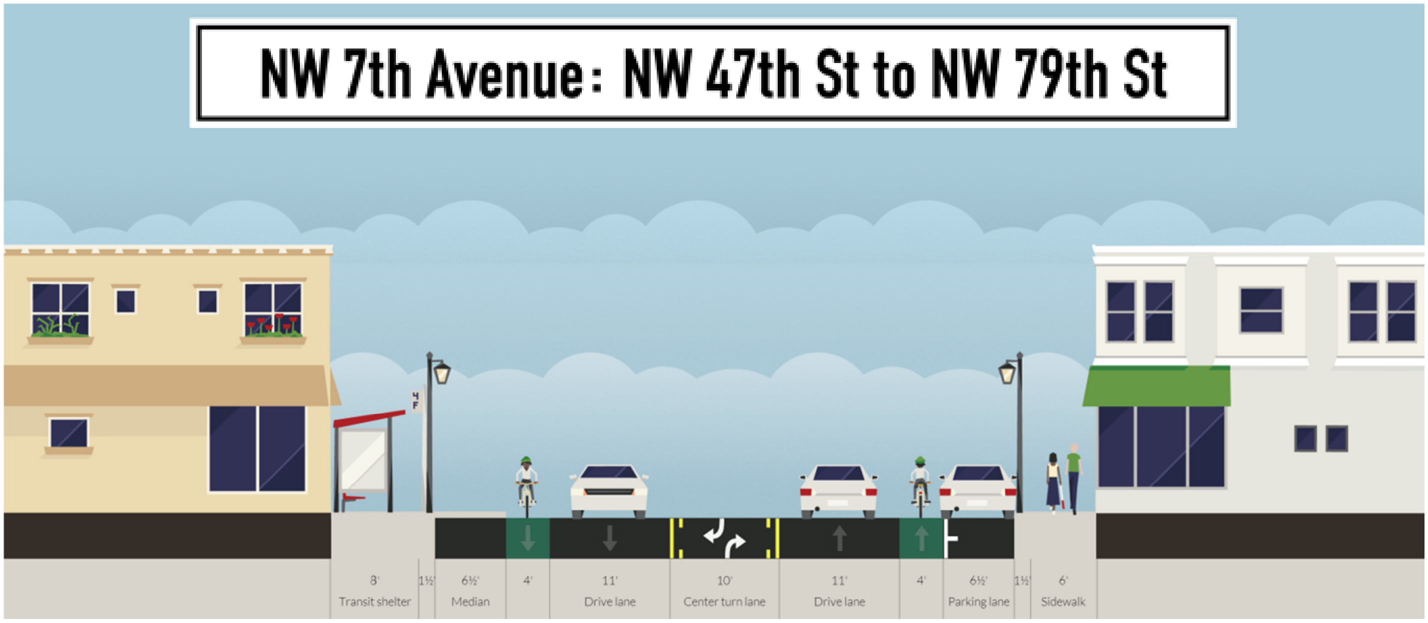
7.3.3 NW 7 Avenue from NW 47 Street to NW 79 Street

This portion of the corridor has a curb to curb distance of 56’, and is a four lane undivided roadway. Bicycle lanes are proposed for both sides of the street as well as a two-way left turn lane.

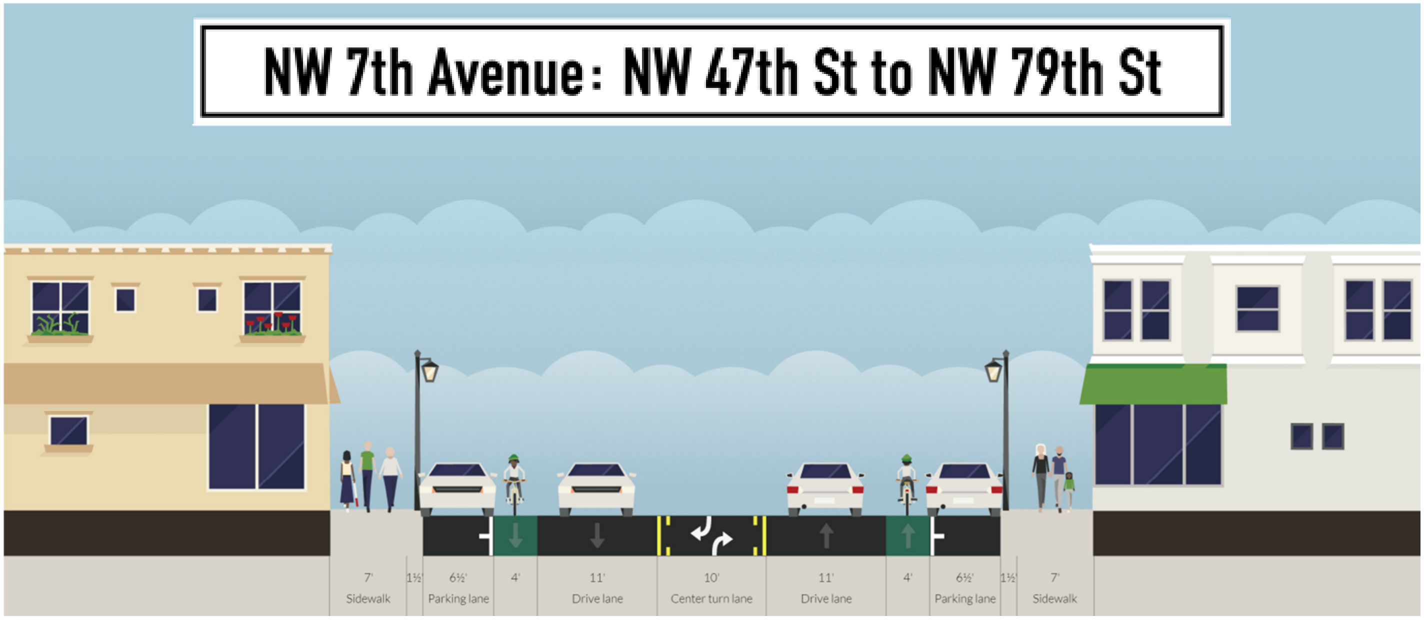
North side of Intersection



South side of Intersection



Mid-Block



Toolbox Improvements

Pedestrian Improvements
Curb extensions/bulbouts in front of transit shelters.
Pedestrian-scale lighting throughout the corridor.
Add one bench and two trash receptacles for each side of each block.
Improved crosswalks for better visibility.

Bicycle Improvements
Add one bike rack on each side of each block.
Add a bike lane to both sides of the street.

Mixed Motor Vehicle and Parking Improvements
Road Dieted from four to two through lanes with a two-way left turn lane.
On-street parking included on both sides of the street.

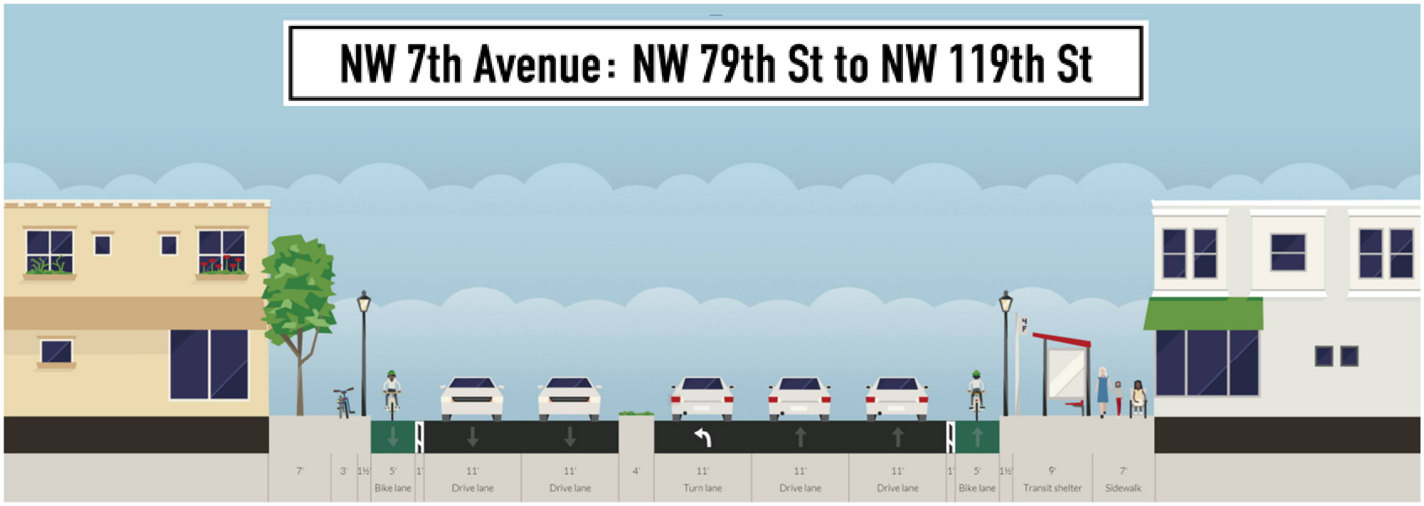
Green Improvements
Add landscaping/street trees throughout the corridor.

Transit Improvements
Bulbouts at all transit stops.
Replace all stops with transit shelters.

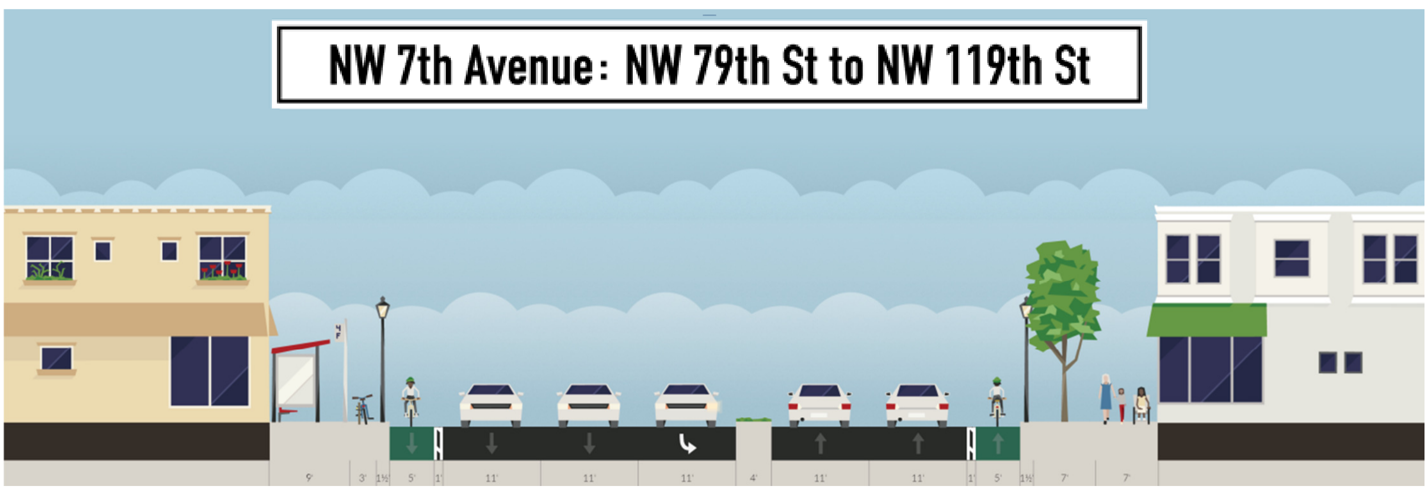
7.3.4 NW 7 Avenue from NW 79 Street to NW 119 Street

This portion of the corridor has a curb to curb distance of 74’, and is a six lane undivided roadway. Bicycle lanes with a one foot buffer are proposed for both sides of the street as well as a dedicated left turn lanes.

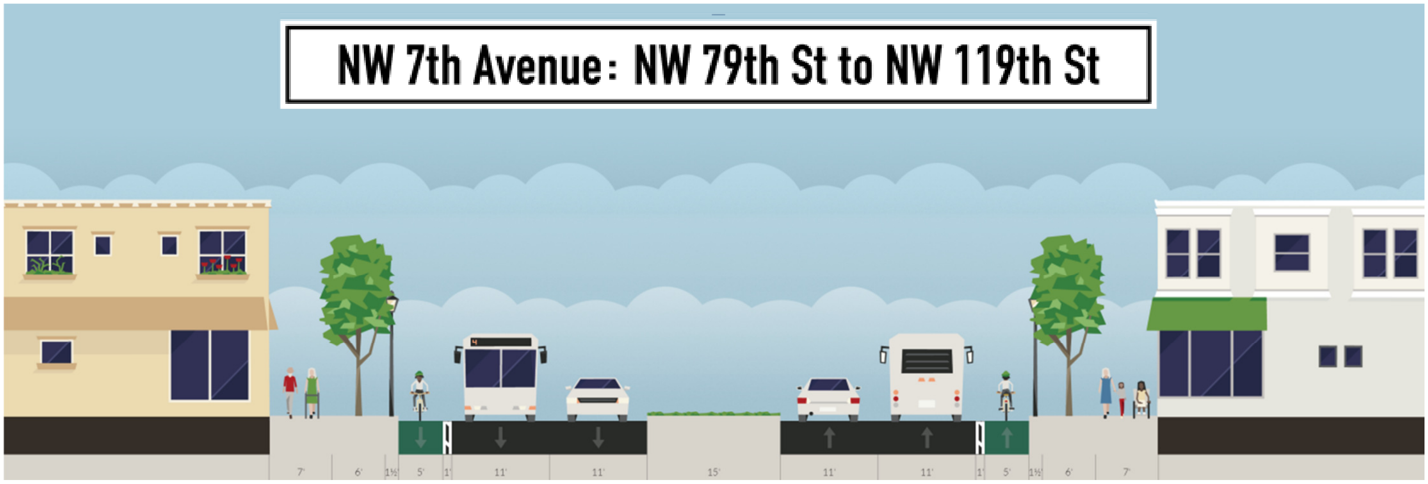
North side of Intersection



South side of Intersection



Mid-Block



Toolbox Improvements

Pedestrian Improvements
Curb extensions/bulbouts in front of transit shelters.
Pedestrian-scale lighting throughout the corridor.
Add one bench and two trash receptacles for each side of each block.
Improved crosswalks for better visibility.
Enhanced medians to provide for pedestrian refuge.

Bicycle Improvements
Add one bike rack on each side of each block.
Add a bike lane to both sides of the street with a 1' buffer between vehicular traffic.

Mixed Motor Vehicle and Parking Improvements
Road Dieted from six to four through lanes with a landscaped median with left turn lanes.

Green Improvements
Add landscaping/street trees throughout the corridor.
Enhanced landscaping in the median.

Transit Improvements
Bulbouts at all transit stops.
Replace all stops with transit shelters.

7.3.5 NW 7 Avenue Impacts to Level of Service

The proposed complete streets improvements increase the volume to capacity ratio anywhere from 11 to 21% throughout the corridor and slightly reduce the average travel speeds as a result of the repurposed travel lanes. This in turn reduces the level of service for more than half of the corridor from LOS "C" to "D".

LOS: NW 12 Street- NW 119 Street					
Segment	**Station No.**	**AADT**	**V/C**	**Average Speed (mi/h)**	**LOS**
NW 12 ST-NW 20 ST	875003	16500	**0.363**	19.4	**C**
NW 20 ST-NW 36 ST	875005	22500	**0.491**	18.7	**D**
NW 36 ST-NW 54 ST	879030	22000	**0.48**	18.8	**D**
NW 54 ST-NW 62 ST	875141	25500	**0.554**	18.4	**D**
NW 62 ST-NW 79 ST	875144	23000	**0.502**	18.7	**D**
NW 79 ST- Little River Dr	870529	34500	**0.739**	17	**C**
Little River Dr-NW 103 ST	870235	29500	**0.637**	18	**C**
NW 103 ST-NW 119 ST	875014	33500	**0.718**	17.3	**C**

7.3.6 NW 7 Avenue Rendering with Improvements

7.3.7 NW 7 Avenue Estimated Cost of Improvements

NW 7th Avenue				
Item	**Cost**	**Quantity**	**SubTotal**	**%**
Pedestrian Signals	$15,000.00	20	$300,000.00	2%
Street Tree (every 50')	$750.00	233	$174,750.00	1%
Pedestrian Street Lighting (every 75')	$5,000.00	853	$4,265,000.00	30%
Bike Rack (one per each side of block)	$800.00	166	$132,800.00	1%
Bench (one per each side of block)	$600.00	166	$99,600.00	1%
Trash Can (two per each side of block)	$600.00	332	$199,200.00	1%
Bus Shelter	$25,000.00	37	$925,000.00	6%
Bulbout	$50,000.00	42	$2,100,000.00	15%
Landscaped Median (per linear foot)	$400.00	3344	$1,337,600.00	9%
Mill and Resurface - 4 lane undivided (per mile)	$857,240.00	4.53	$3,883,297.20	27%
Mill and Resurface - 2 lane and TWLTL (per mile)	$583,844.00	1.53	$893,281.32	6%
		total	$14,310,528.52	100%

Source: Florida Department of Transportation Cost Estimation

8.0 Implementation Plan

A complete streets policy is a commitment that all future transportation projects will take into account the needs of everyone using the road. Implementation of that policy is where the work truly begins. The day-to-day decisions a transportation agency and community leaders make in funding, planning, design, maintenance, and operations should be aligned with the goals of the adopted policy.

8.1 Next Steps Moving Forward

There are a host of activities that are needed to take place when implementing a complete streets policy to fully and consistently consider the safety of all users. Each of these activities has immediate, mid-term, and long-term actions required to successfully translate policy into action.

Creating and Adopting Complete Streets Policies and Regulations

Existing development regulations, area plans, and zoning codes need to be updated and adopted to incorporate complete street policies so that County-funded projects provide improved multimodal mobility. The Miami-Dade Zoning Codes, Miami 21, and the Comprehensive Development Master Plan must act as the foundation that reflects the current best practices for implementing complete streets. The toolkit from this manual should be integrated into the standard development practices and policies required by these documents. Federal and state statutes and regulations should mirror local standards supporting complete streets so comprehensive and consistent street designs that provide safety for all road users are implemented.

Clearly Defined Street Planning Process

Simplifying the process in which complete streets are implemented increases the ability for public agencies to build safer streets. This process should be transparent and take into account a number of factors such as the street's classification, current and future adjacent land uses, current mode split, and others. Incorporating complete streets into the development process should spell out any new requirements for developers and property owners. These changes can encourage planning and zoning boards to become stewards of the complete streets implementation process.

Provide Training for Engineers, Staff, and Planners

It is vital to provide ongoing support and training to transportation professionals, other relevant agency staff, community leaders, and the general public so that they understand the complete streets approach, the new processes and partnerships it requires, and the potential new outcomes from the transportation system. Training helps to ensure the continuity and commitment for the complete streets planning and road design process, because many engineers and planners are not familiar with the complete streets ideology. Providing workshops, seminars, or other training sessions will educate staff so they become advocates and understand what is needed for implementing complete streets.

Project Prioritization

When first implementing a complete streets policy, it is often best to aim for the "low-hanging fruit" first. Low hanging fruit usually comes in the form of coordinating with other projects, such as RRR (resurfacing-restoration-rehabilitation road) projects, neighborhood master plans, projects that provide better access to schools or activity centers, and improved ADA accessibility. Implementing complete street enhancements as a part of other projects can help to prioritize projects based on the amount of collaboration with other agencies. Proven success stories can help overcome doubt and skepticism while building a broad-based coalition of support for complete streets. Complete streets projects should be included in the State Transportation Improvement Program (STIP), Miami-Dade County Transportation Improvement Program (TIP), Long Range Transportation Plan (LRTP), and the Capital Improvements Program (CIP) to help facilitate the coordination and prioritization process.

Secure Funding Sources

There are some federal programs that can offer funding for complete streets such as the Transportation Alternatives Program or Safe Routes to School funding, depending on the type(s) of improvements proposed. Another innovative way to implement these improvements is by requiring local developers to include complete street elements in their developments, which would require amending the permitting process. Overall, securing funding sources will mostly depend on the jurisdiction of the roadway and whether it is maintained by the state, county, or city. Public-private partnerships can also be organized to advocate and fund complete street improvements without regards to jurisdictional boundaries.

Inter-departmental Coordination

In order to minimize expenditures, it is essential to coordinate different projects when implementing complete streets. Fiscal responsibility can be achieved through interdepartmental coordination by identifying potential funding sources before projects are initiated. Inter-departmental coordination should be an on-going process that also helps to improve the communication between the various agencies. Combining different projects can help lower the total cost of implementation such as coordinating with major repaving/restriping projects, sewer and storm water drainage repairs, or with public or private utilities projects.

Just recently, FDOT completed a RRR project on Red Road that was able to include pedestrian, bicycle, transit, and vehicular enhancements that improved mobility and safety pictured above. Similar roadway projects for the future should coordinate with complete street efforts and incorporate complete streets improvements whenever possible.

Performance Evaluation

Measuring and monitoring the success of complete streets provides the opportunity for the local government to calibrate the program so that its performance may be enhanced within the context it is implemented. There are several performance measures that can monitor the effectiveness of a complete streets program such as routinely measuring the total miles of on-street bicycle routes, linear feet of new pedestrian accommodations, the number of new street trees, etc. Transit ridership and land use changes are important to take note of as well. It is also helpful to perform a pedestrian and bicycle count before and after the implementation of any Complete Streets improvement. Recording the volumes, speeds, and number of crashes for vehicular traffic before and after the improvements is also beneficial.

Implementation Goals

Best Practice	Goal
Create and Adopt New Policies and Regulations	**Immediate:** Allow for greater design flexibility for roadway guidelines.
	Mid/Long-Term: Adopt new Development Regulations and Zoning Code to include Complete Streets Guidelines.
Clearly Defined Street Planning Process	**Immediate:** Outline the current street planning process.
	Mid/Long-Term: Create and adopt a transparent planning process for all County-funded projects.
Provide Training for Engineers, Staff and Planners	**Immediate:** Provide training through local and National Complete Streets seminars.
	Mid-Term: Continue to provide on-going training, and conduct orientation sessions.
	Long-Term: Have new hires attend Complete Streets seminars and training.
Project Prioritization	**Immediate:** Focus prioritization of improvements on access to schools, major activity centers, ADA accessibility in conjunction with safety and congestion.
	Mid/Long-Term: Appropriately link future projects with Transportation Element of CDMP, CIP, and TIP.
Secure Funding Sources	**Immediate:** Apply for Transportation Enhancement and Safe Routes to School Funding.
	Mid-Term: Amend zoning codes to provide incentives to developers that include bike lanes and public sidewalks in new projects.
	Long-Term: Regularly update what funding will be available after any new federal transportation-related legislation is adopted.
Inter-Departmental Coordination	**Immediate:** Evaluate what current projects can be consolidated and where road diets can be made on current RRR projects.
	Mid-Term: Determine where sidewalk and bike lanes can be installed in conjunction with storm water, sewer, or utility projects.
	Long-Term: Continue coordination and outreach efforts so that projects can be combined.
Performance Evaluation	**Immediate:** Require bicycle and pedestrian counts before sidewalk/bike lane improvements or road dieting.
	Mid-Term: Conduct bicycle and pedestrian counts after major maintenance, construction, or road diets. Meaure miles of sidewalk and bike lanes to track the growth of the non-motorized network. Measure transit ridership and land use changes along streets where improvements are made.
	Long-Term: Analyze data from previous bicycle/pedestrian counts and crash data to determine the effectiveness of improvements and make adjustments where necessary.

8.2 Estimated Costs and Potential Funding Sources

Over the next five fiscal years, the Miami-Dade TIP has budgeted over $7 billion for projects in the County. The non-motorized component of the five year work program makes up just over 2% of the overall budget with over $153 million allocated – of which approximately $83 million will be awarded to FDOT District 6 projects, $64 million to Miami-Dade Public Works and Waste Management (PWWM) projects, and $6 million to Miami-Dade Transit projects. The estimated costs for pedestrian, bicycle, transit, roadway, and landscaping improvements for the three selected corridors is approximately $32.9 million.

Another major funding source included in the TIP for both transit and transportation enhancements is the revenue raised from the one-half cent sales tax from the People's Transportation Plan (PTP). Over the next five fiscal years, approximately $125,572,000 from the PTP will be used to fund transportation improvements in Miami-Dade County, which represents approximately 1.7% of the overall TIP Five Year Work Program Budget. PTP funds are allocated into two separate programs: Major Highway Improvements and Neighborhood Improvement Projects. PTP Neighborhood Improvements include many improvements that would be considered as Complete Streets elements.

- Modifications of intersections
- Resurfacing of local and arterial roads
- Installation/repairs of guardrails
- Installation of school flashing signals
- Enhancement of greenways and bikeways
- A.D.A. curb cuts/repairs
- Pavement markings
- Roadway lighting
- Traffic calming
- Traffic signals and sign replacement/repair
- Replacement/repair of sidewalks
- Repair/installation of drainage
- Landscape beautification

Improvements made to state-maintained facilities like SW 27 and NW 7 Avenues are funded by the FDOT, and county-maintained facilities like N Miami Avenue are funded by the PWWM. Primary state roads have been allocated over $4 billion to FDOT to use on major highways, intermodal projects, bicycle/pedestrian corridors, public transit, freight, rail, planning efforts, and other miscellaneous projects over the next five years. Secondary roads funding out of the 2014 TIP amounts to over $75 million, which are funds dedicated for use by PWWM.

NW 7 Avenue is unique in that a state-funded Master Plan coordinated with the City and County for the corridor is being developed concurrently with this manual with emphasis on the transportation network and the surrounding developments. The Master Plan is planning for increased densities and developments over the course of the coming years. As new developments are proposed, right-of-ways need to be adjusted to account for wider sidewalks and space for improved streets. Complete streets improvements for NW 7 Avenue referenced in this manual should be added to the short-term implementation plan for the NW 7 Avenue Master Plan, which will add another potential funding source for these improvements.

On July 6, 2012 Congress re-authorized the Federal-aid transportation program through the Transportation Equity Act for the 21st Century (MAP-21), funding surface transportation programs at over $105 billion for fiscal years (FY) 2013 and 2014. This national total is divided among the states based on each state's proportionate share of FY 2009 Transportation Enhancements funding. In FY 2009, Florida received $50,726,560 out of the $833,456,490 given out across the United States, accounting for roughly 6.09%. Based on FY 2009's percentages, Florida is anticipated to receive $49,907,559 in FY 2014.

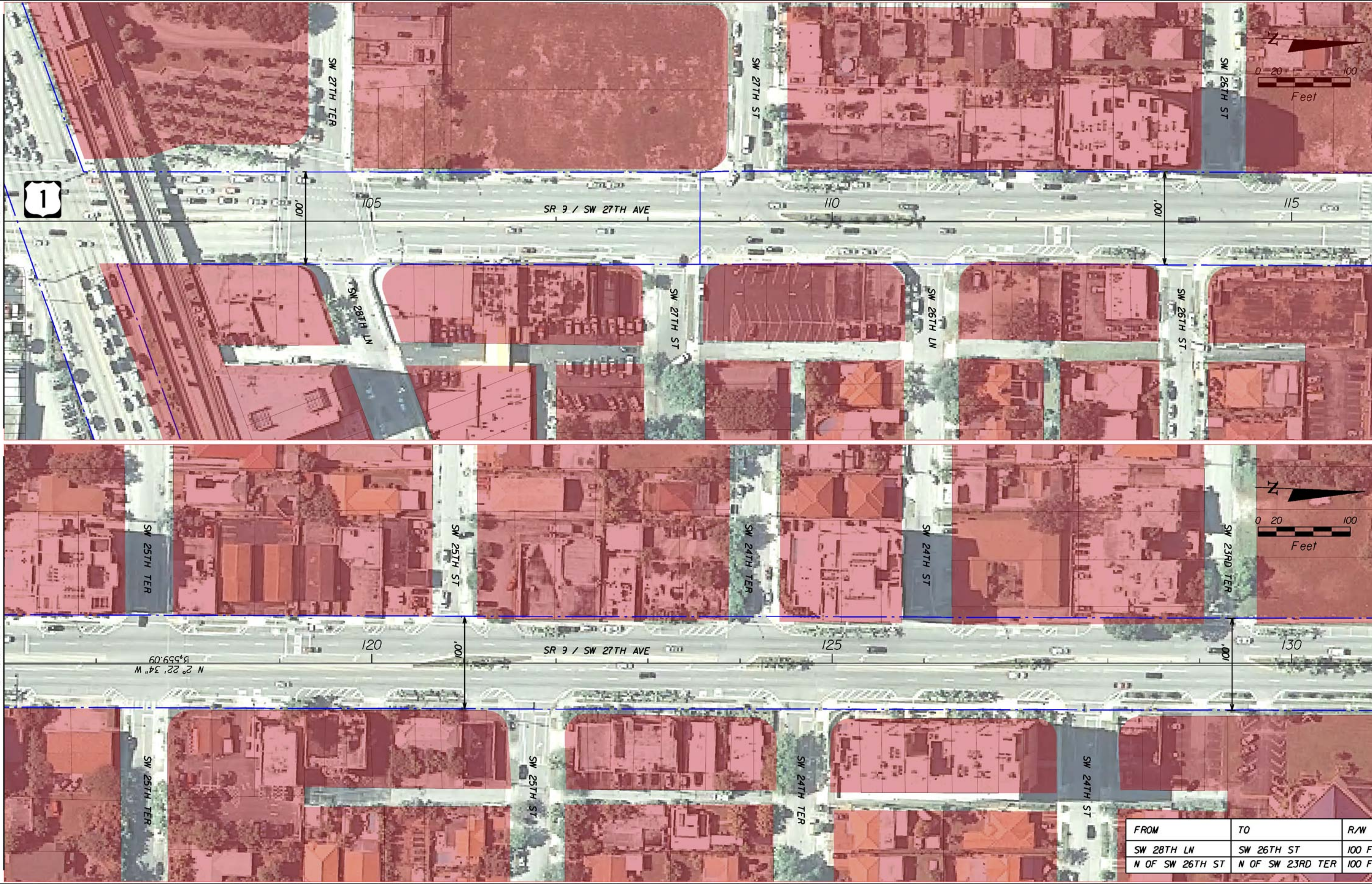
Since the adoption of MAP-21, several transportation enhancements activities were eliminated or revised and recast as transportation alternatives. The Transportation Enhancements Program was consolidated into the Transportation Alternatives Program (TAP), which provides funding for historic preservation, provision of facilities for pedestrians and bicycles, environmental mitigation, as well as funding for the Recreational Trails Program and Safe Routes to School Program. Bicycle, pedestrian, and landscaping enhancements for the three corridors can be funded through the Federal TAP or the PTP.

Transit-related improvements such as bus shelters and other capital costs involving transit upgrades can generally be funded with MDT monies. The 2014 TIP has allocated nearly $886 million to MDT for funding projects. These dollars can be used on improvements to the transit service, modifying or replacing transit vehicles, improvements to transit stations or facilities, safety and security enhancements, conducting planning and design studies, parking accommodations, and any signage improvements needed.

Currently, none of the complete streets improvements for the three identified corridors in this manual have secured funding. All of the funds from the 2014 TIP have been programmed for other projects over the next five years. Therefore, in order to implement the proposed Complete Streets improvements, it would be necessary for the jurisdictions and agencies involved to shift funding from current obligations to these projects. There will also be an opportunity to revisit inclusion of these new improvements into the 2040 LRTP update currently underway.

APPENDIX A

SW 27 Avenue Right-of-Way



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N OF SW 26TH ST	N OF SW 23RD TER	100 FT

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
		- - -

RIGHT OF WAY SR 9
US-1 TO NW 11TH ST

SHEET NO. 1

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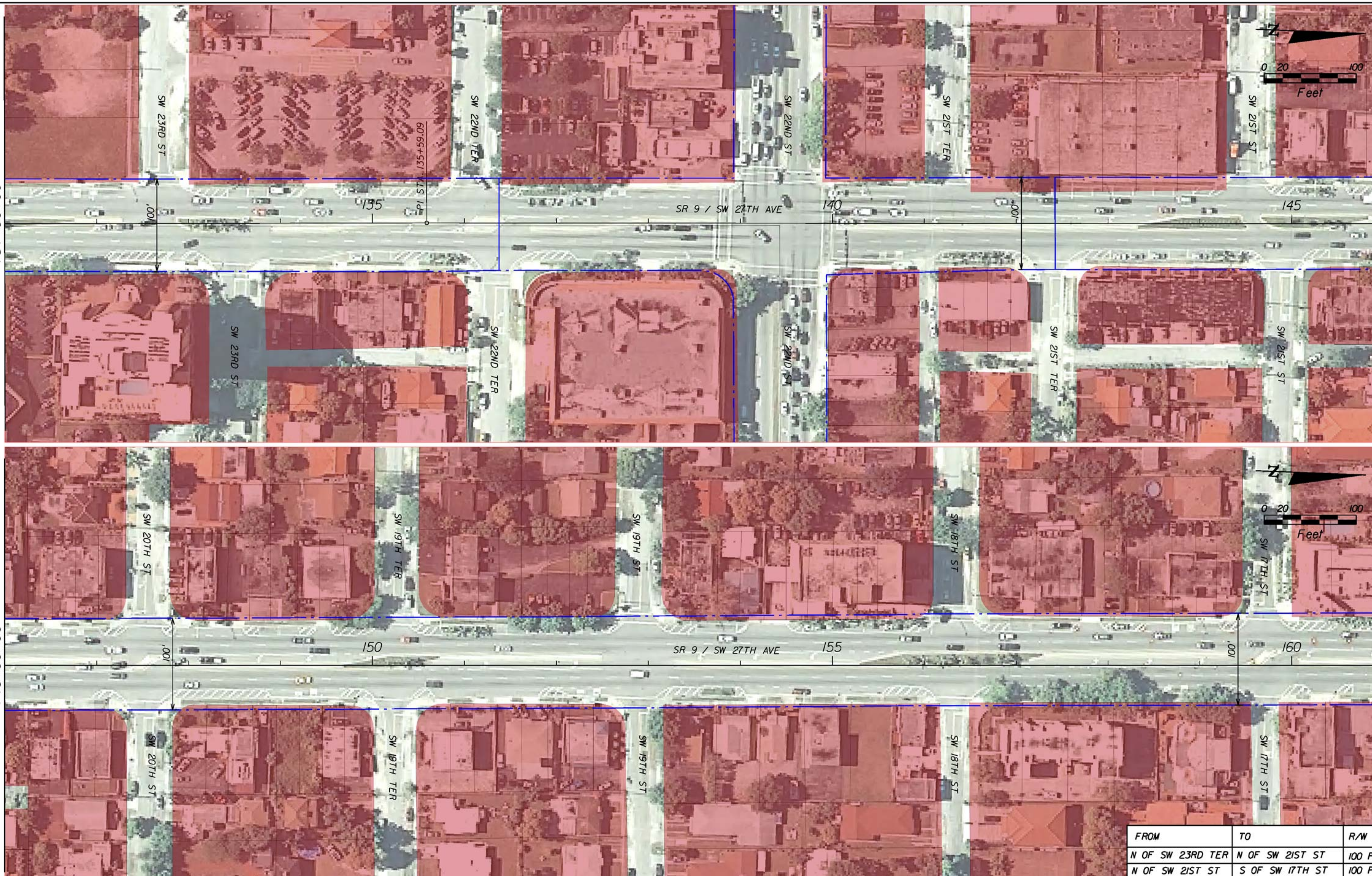

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N OF SW 21ST ST	S OF SW 17TH ST	100 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
		- - -

RIGHT OF WAY SR 9
US-1 TO NW 11TH ST

SHEET NO.
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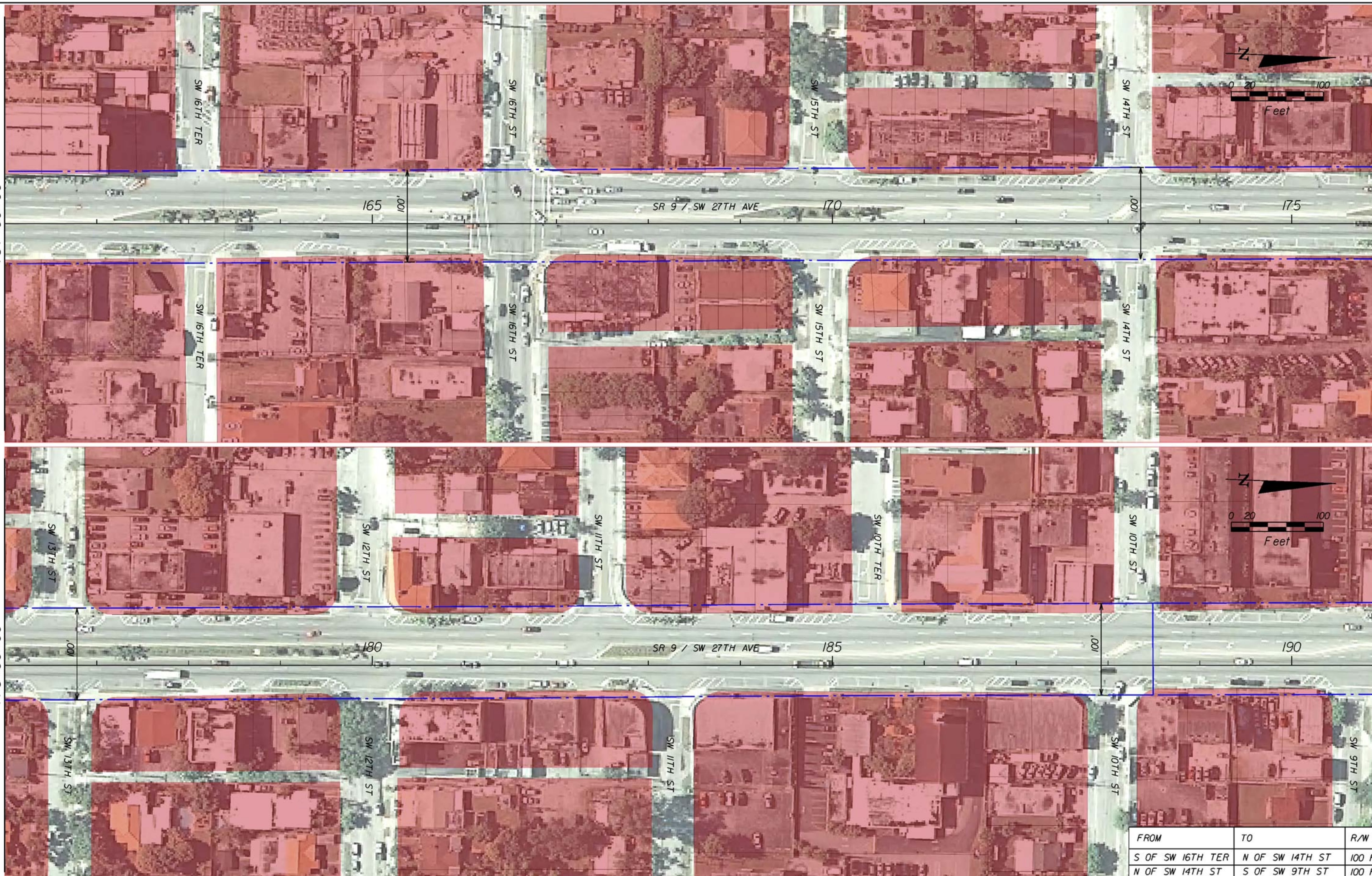

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N OF SW 14TH ST	S OF SW 9TH ST	100 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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RIGHT OF WAY SR 9
US-1 TO NW 11TH ST

SHEET NO. 3

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191+00.00

206+00.00

206+00.00

221+00.00

FROM	TO	R/W
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S OF SW 4TH ST	S OF W FLAGLER ST	100 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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RIGHT OF WAY SR 9
US-1 TO NW 11TH ST

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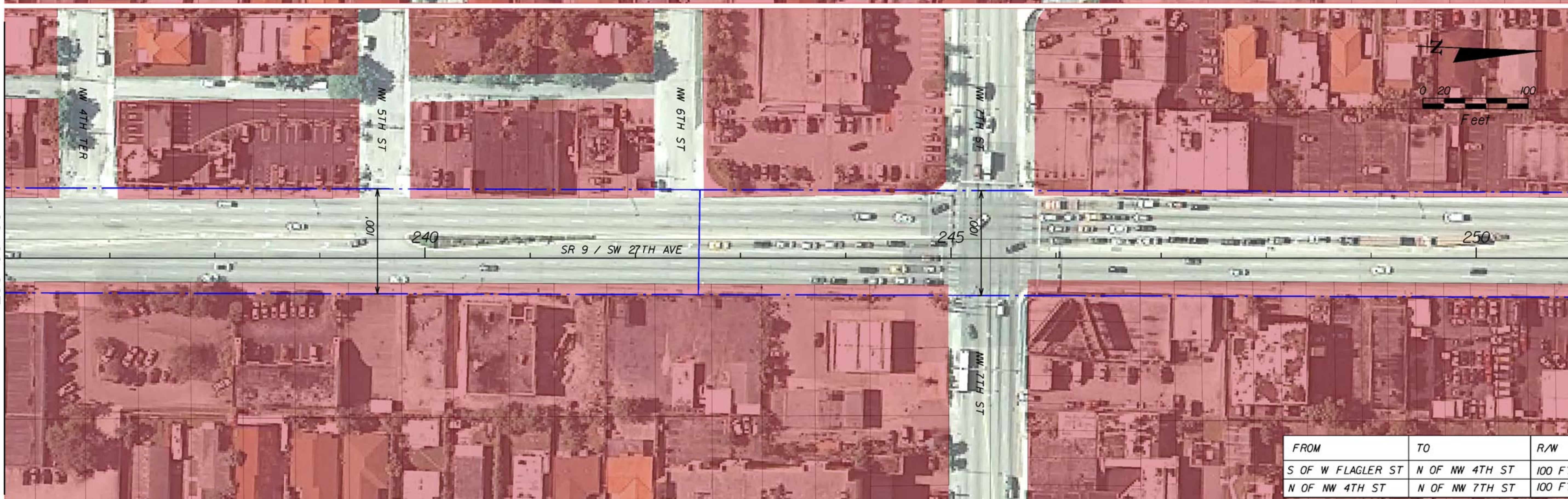

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N OF NW 4TH ST	N OF NW 7TH ST	100 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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RIGHT OF WAY SR 9
US-1 TO NW 11TH ST

SHEET NO.
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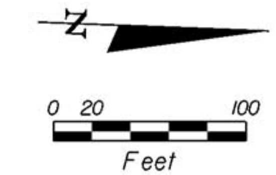

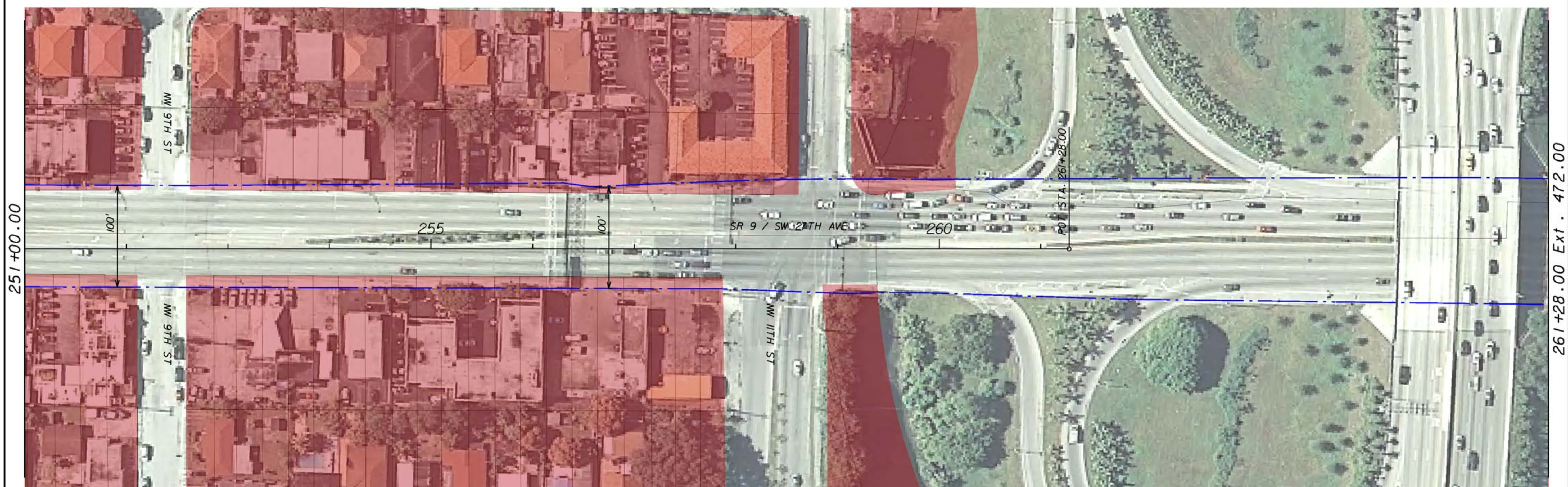

FROM	TO	R/W
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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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RIGHT OF WAY SR 9
US-1 TO NW 11TH ST

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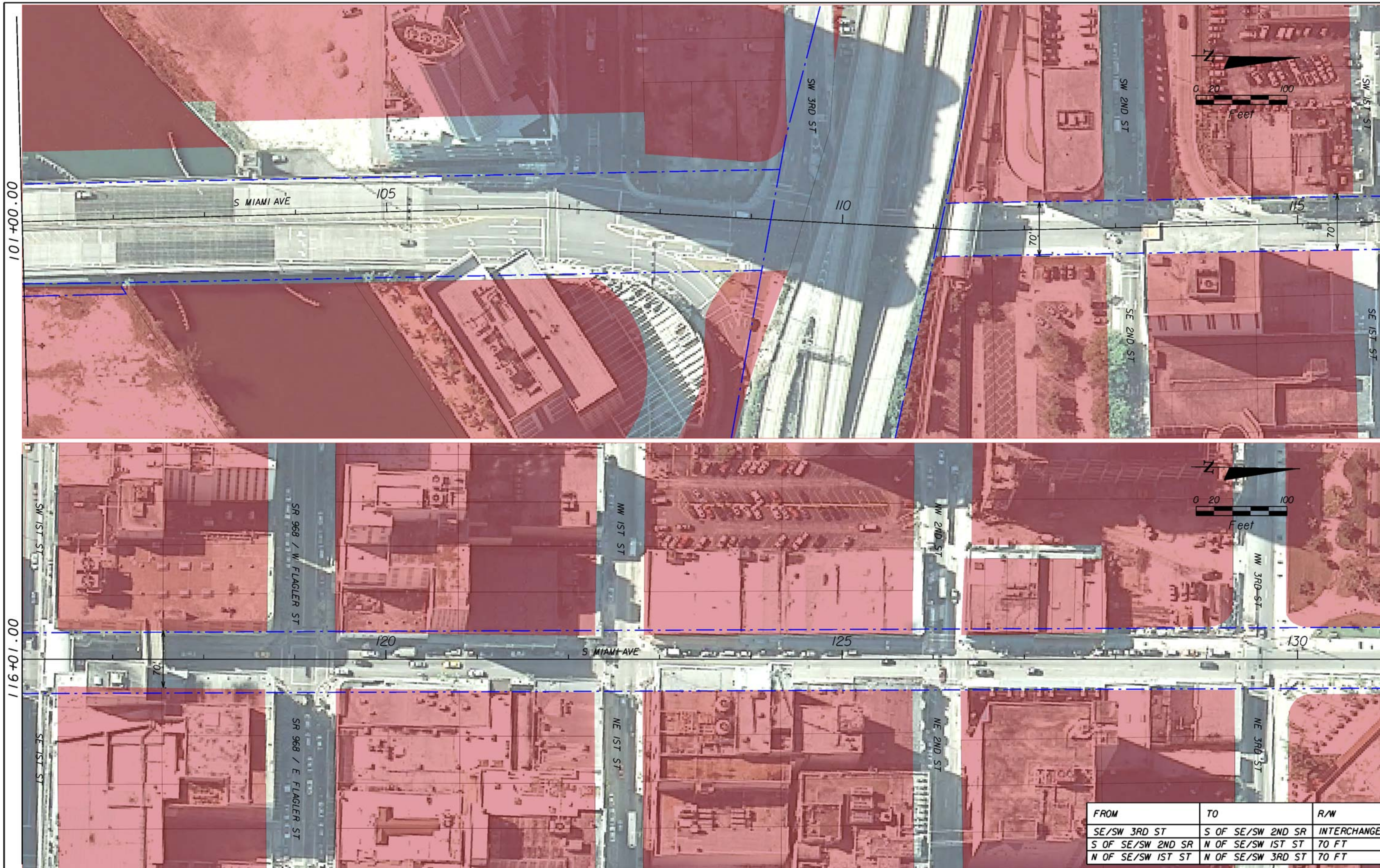
N Miami Avenue Right-of-Way



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N OF SE/SW 1ST ST	N OF SE/SW 3RD ST	70 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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RIGHT OF WAY MIAMI AVE
MIAMI RIVER TO NW 42ND ST

SHEET NO. 1

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N OF NE/NW 7TH ST	N OF NE/NW 11TH TER	70 FT

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
		- - -

RIGHT OF WAY MIAMI AVE
MIAMI RIVER TO NW 42ND ST

SHEET NO.
2

FROM	TO	R/W
N OF NE/NW 11TH TER	S OF NE/NW 13TH TER	INTERCHANGE
S OF NE/NW 13TH TER	N OF NE/NW 15TH ST	70 FT
N OF NE/NW 15TH ST	N OF NE/NW 17TH TER	70 FT

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
		- - -

RIGHT OF WAY MIAMI AVE
MIAMI RIVER TO NW 42ND ST

SHEET NO.
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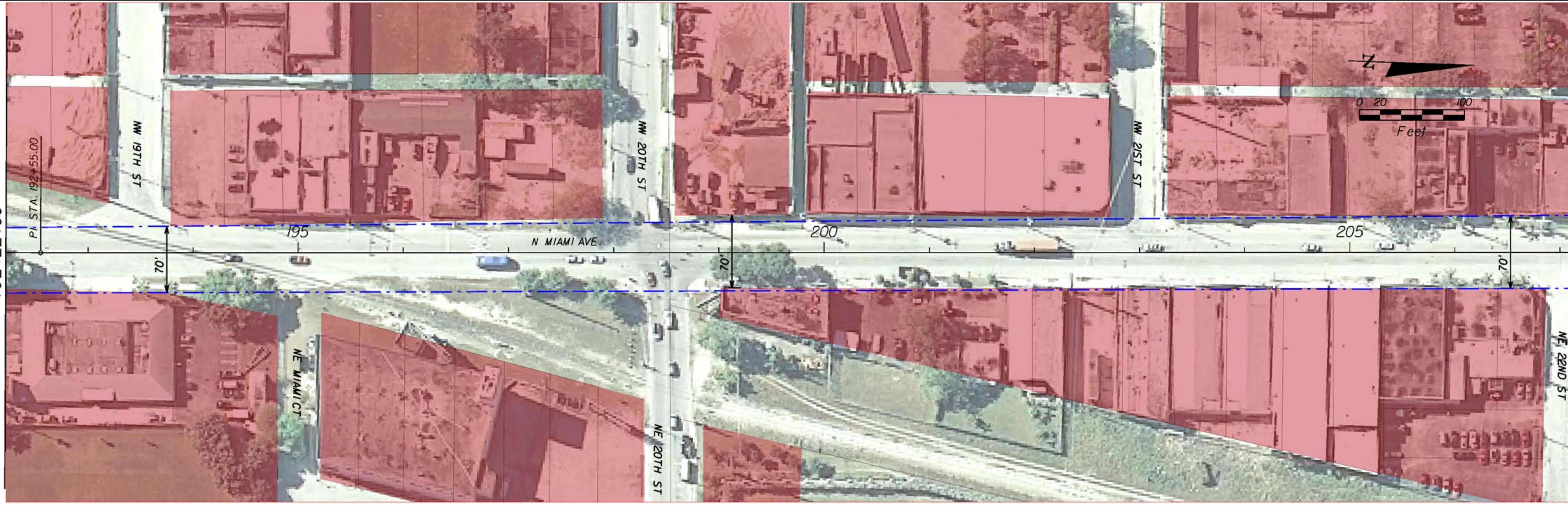

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S OF NE/NW 22ND ST	N OF NE/NW 26TH ST	70 FT

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
		- - -

RIGHT OF WAY MIAMI AVE
MIAMI RIVER TO NW 42ND ST

SHEET NO.
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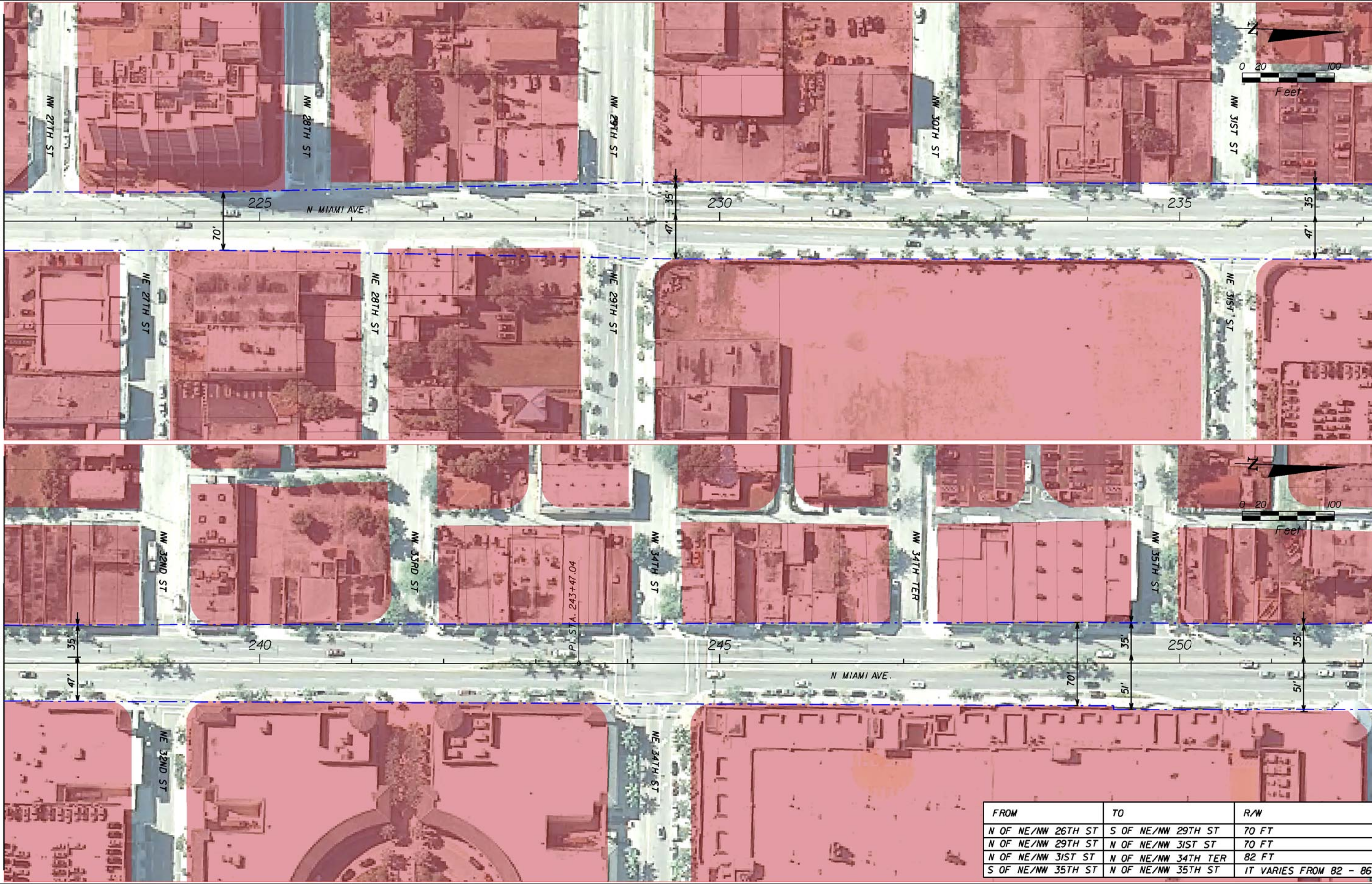

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S OF NE/NW 35TH ST	N OF NE/NW 35TH ST	IT VARIES FROM 82 - 86 FT

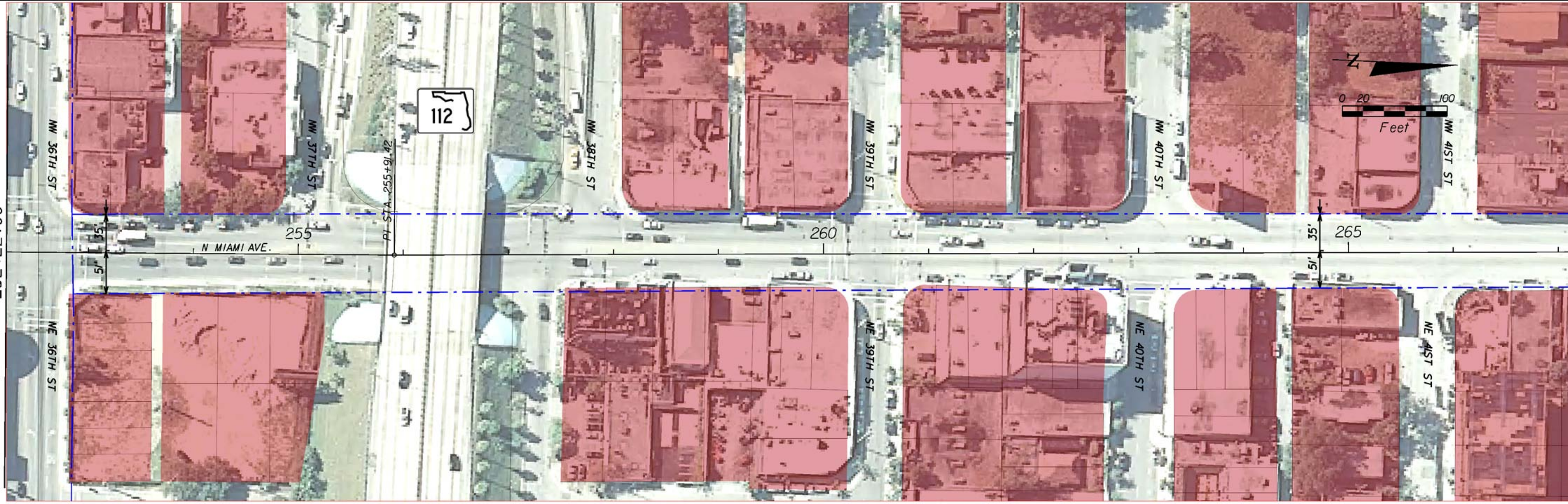
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
		- - -

RIGHT OF WAY MIAMI AVE
MIAMI RIVER TO NW 42ND ST

SHEET NO. 5



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N OF NE/NW 41ST ST	S OF NE/NW 47TH ST	86 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

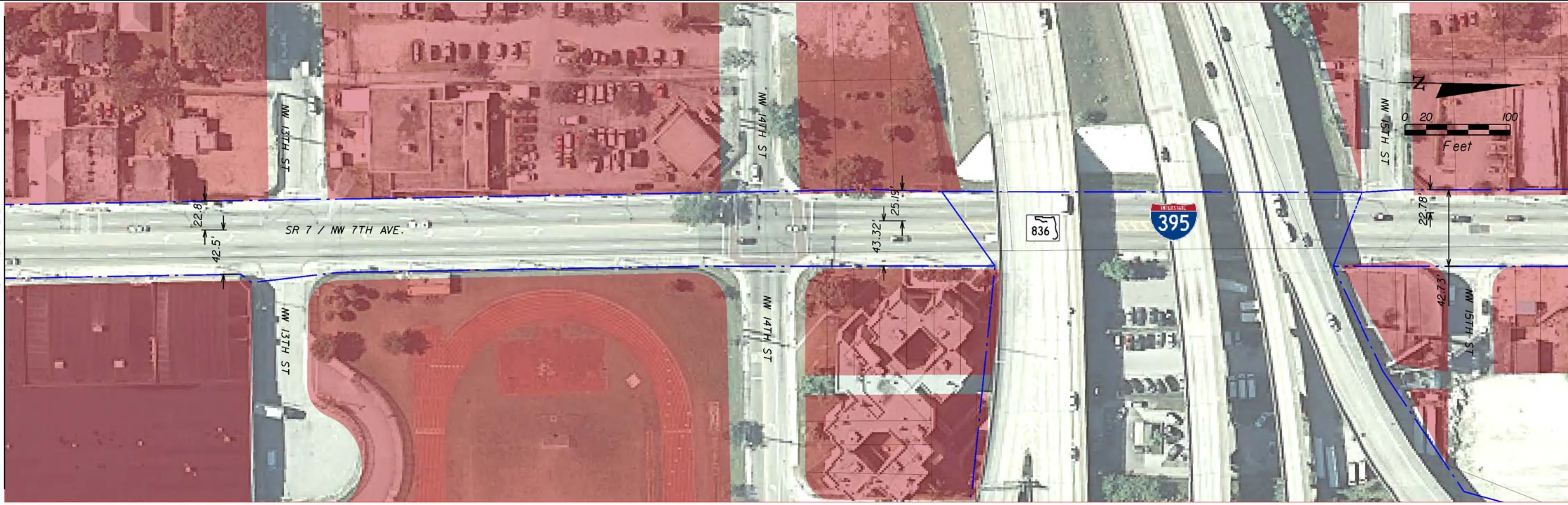
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

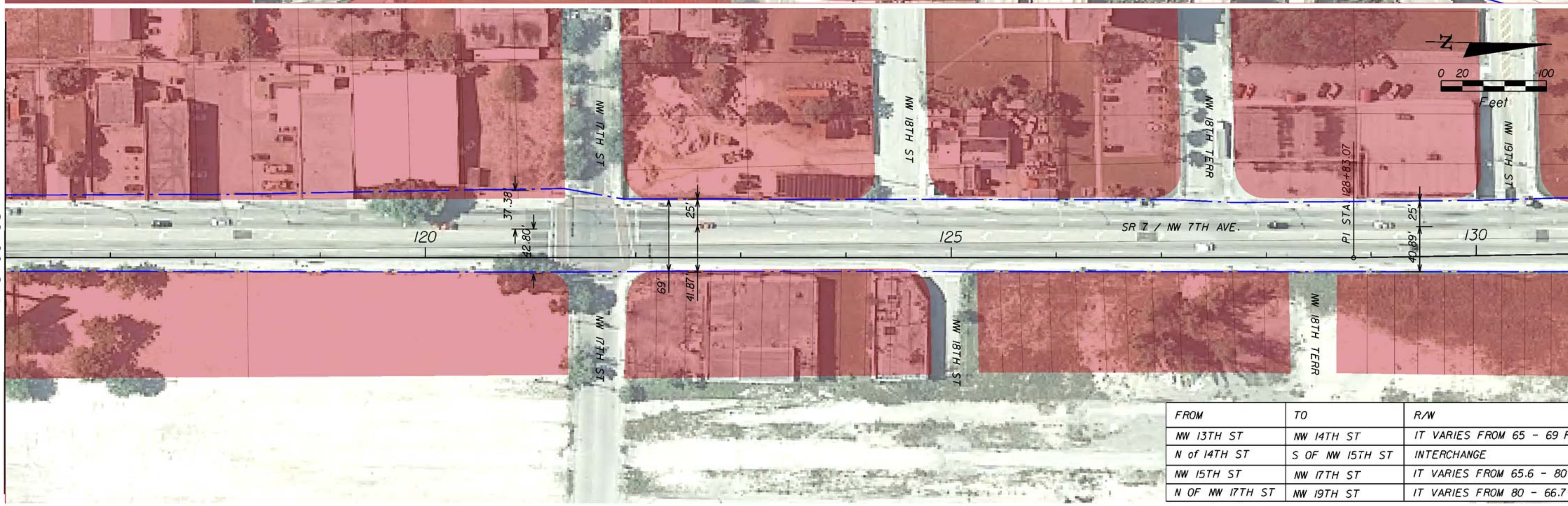
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
		- - -

RIGHT OF WAY MIAMI AVE
MIAMI RIVER TO NW 42ND ST

SHEET NO. 6

NW 7 Avenue Right-of-Way





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NW 15TH ST	NW 17TH ST	IT VARIES FROM 65.6 - 80 FT
N OF NW 17TH ST	NW 19TH ST	IT VARIES FROM 80 - 66.7 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

RIGHT OF WAY SR 7
NW 12TH ST TO NW 119TH ST

SHEET NO. 1

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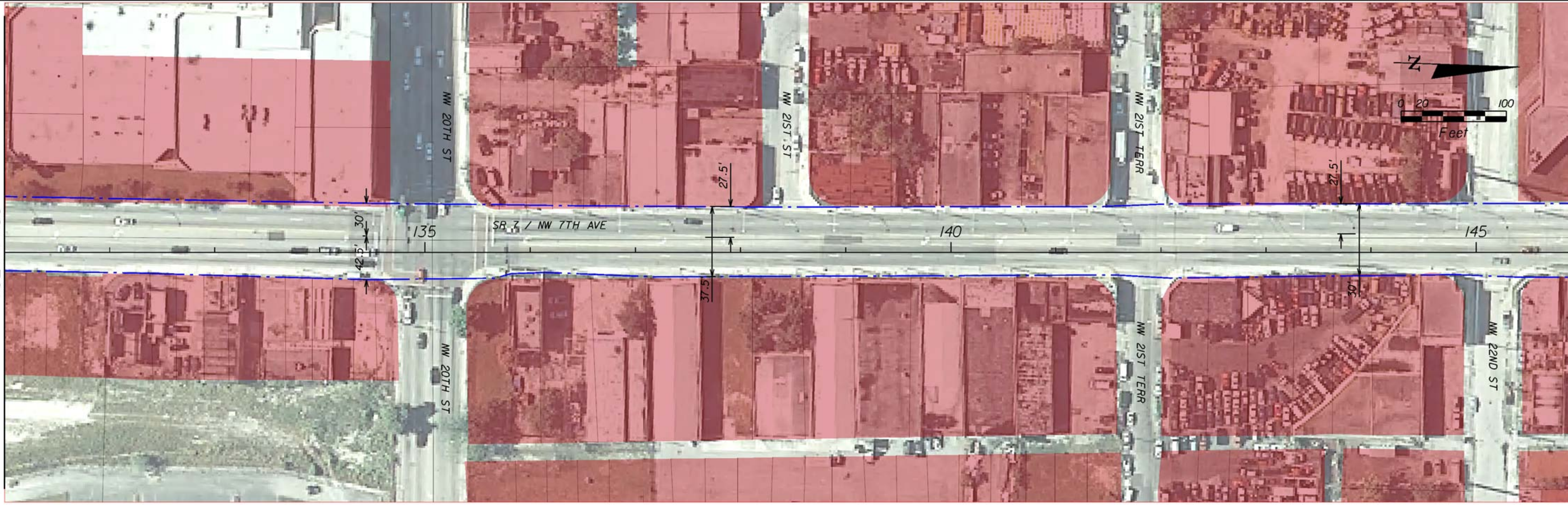

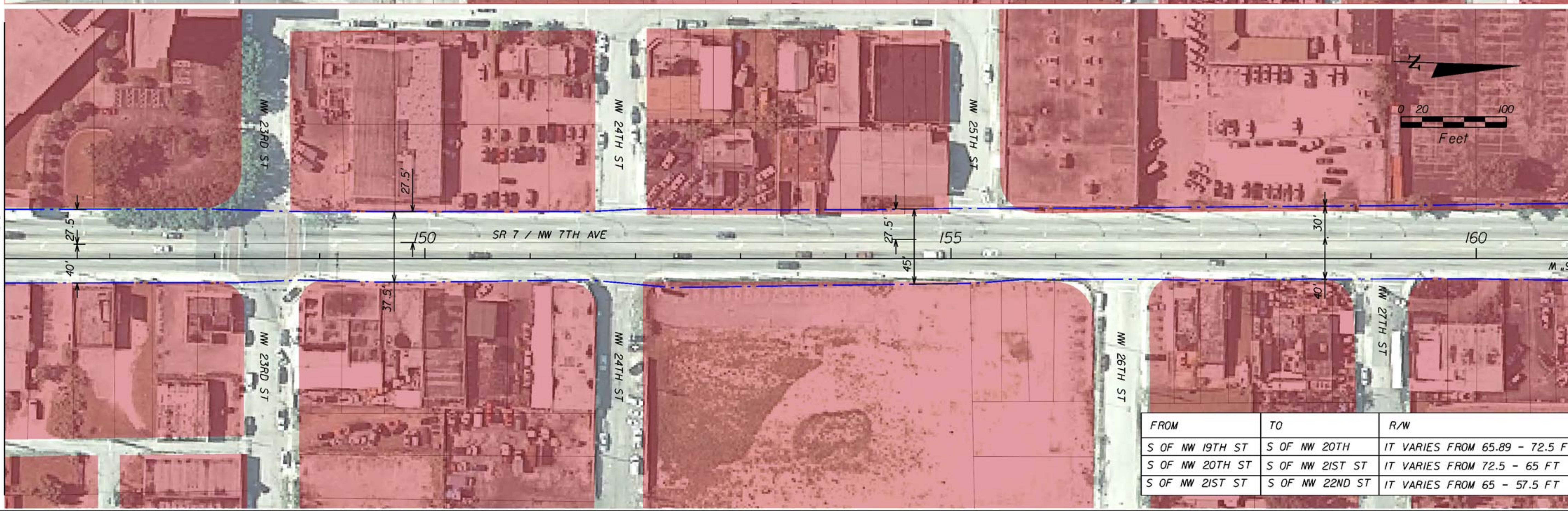

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S OF NW 21ST ST	S OF NW 22ND ST	IT VARIES FROM 65 - 57.5 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

RIGHT OF WAY SR 7
NW 12TH ST TO NW 119TH ST

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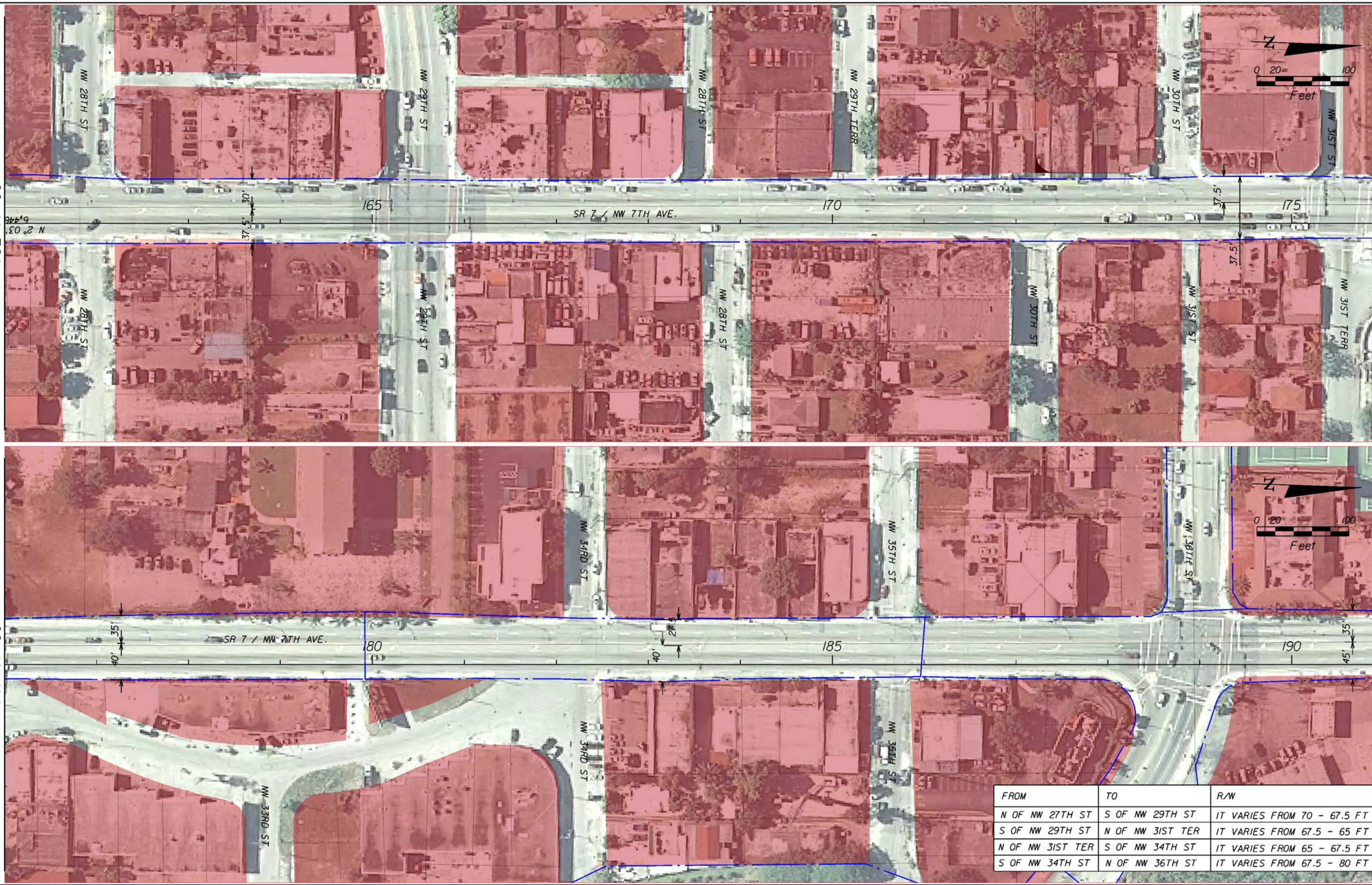

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N OF NW 31ST TER	S OF NW 34TH ST	IT VARIES FROM 65 - 67.5 FT
S OF NW 34TH ST	N OF NW 36TH ST	IT VARIES FROM 67.5 - 80 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

RIGHT OF WAY SR 7
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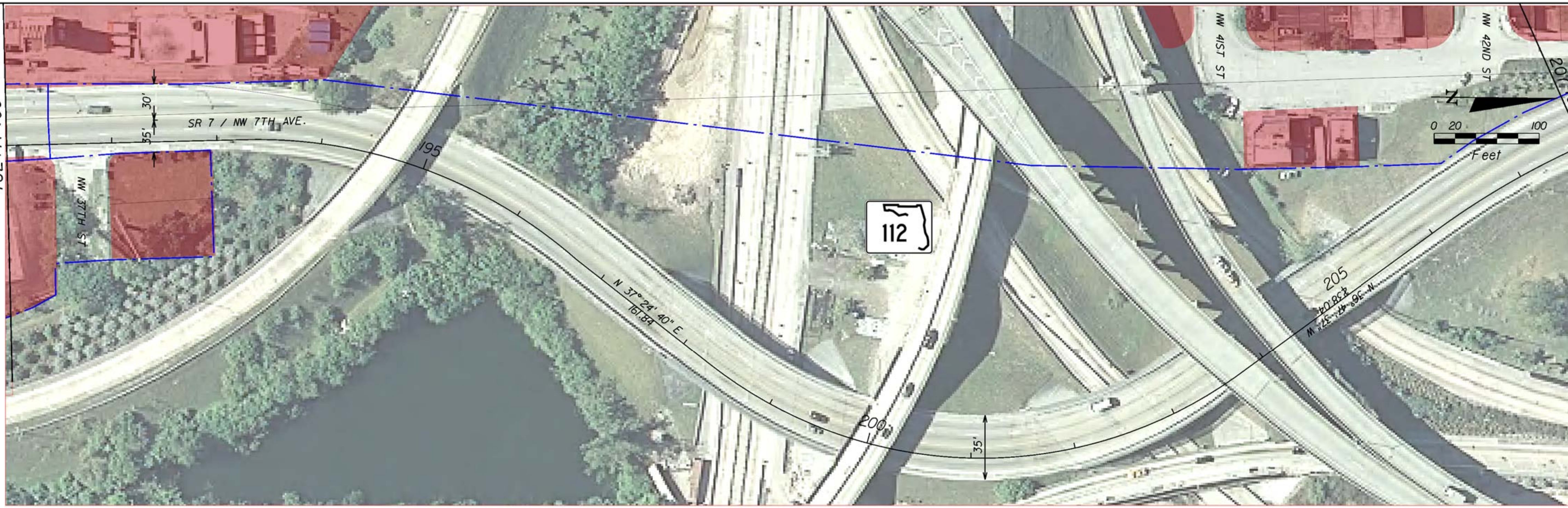

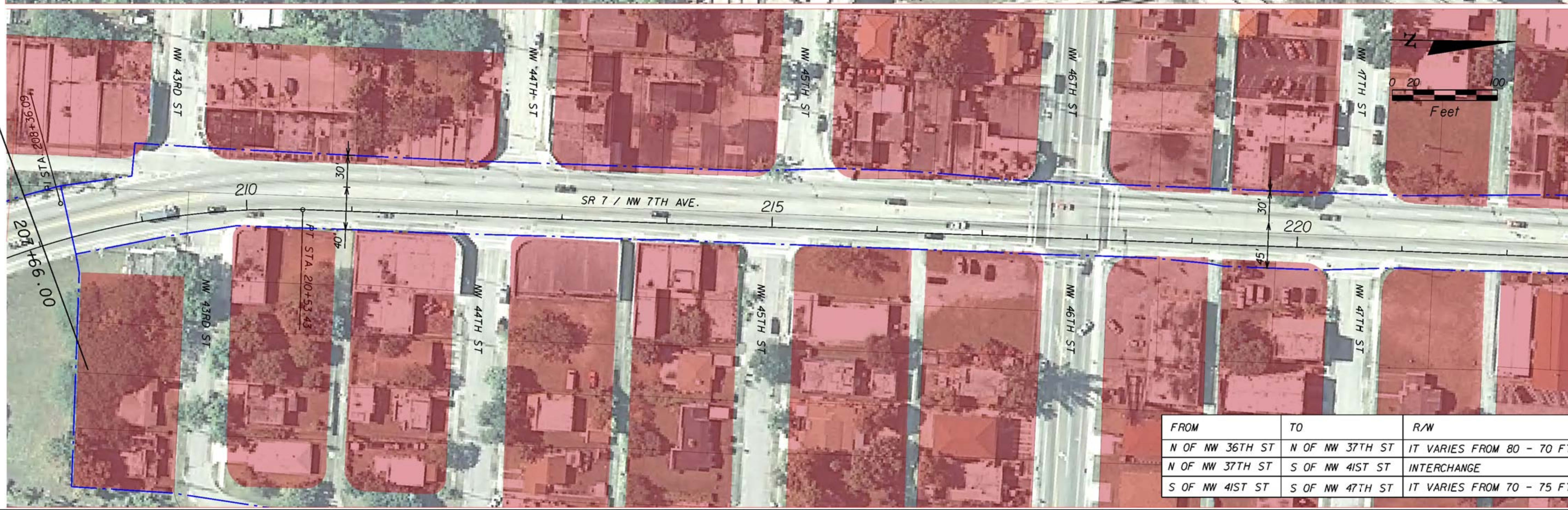

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REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

RIGHT OF WAY SR 7
NW 12TH ST TO NW 119TH ST

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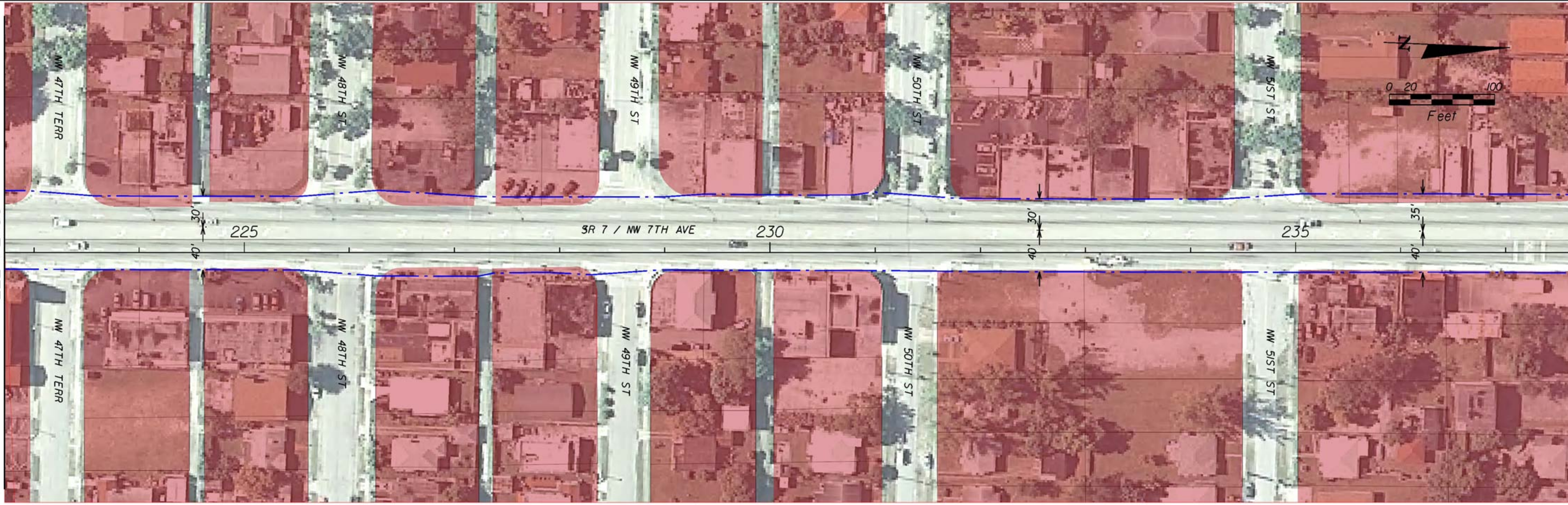

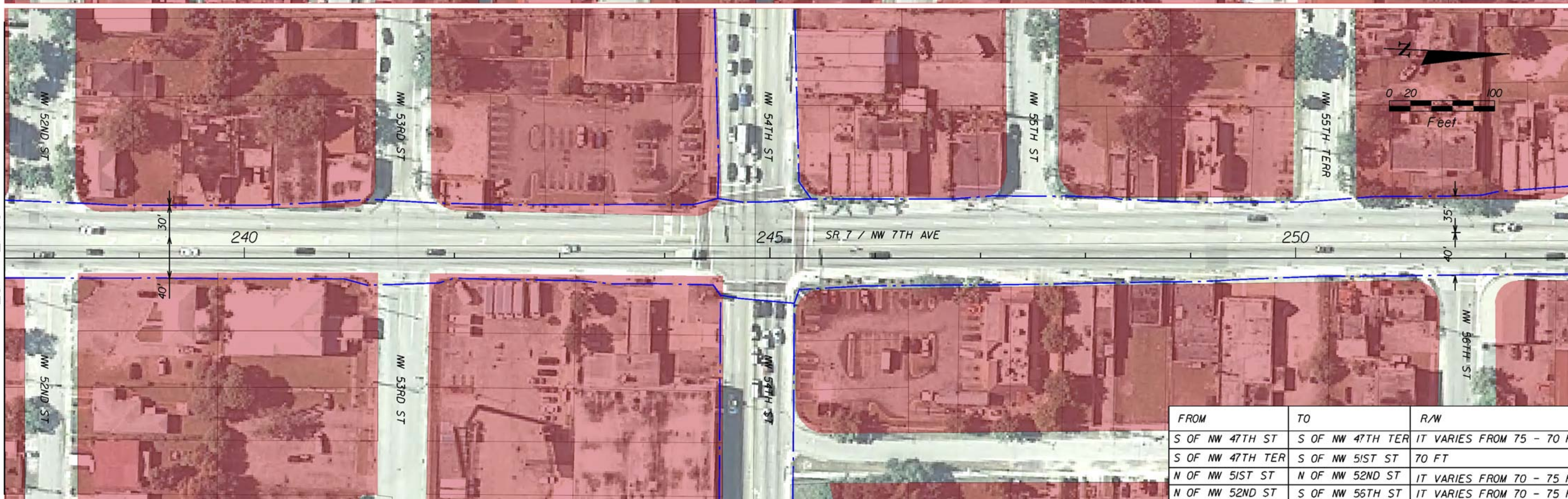

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N OF NW 51ST ST	N OF NW 52ND ST	IT VARIES FROM 70 - 75 FT
N OF NW 52ND ST	S OF NW 56TH ST	IT VARIES FROM 70 - 75 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

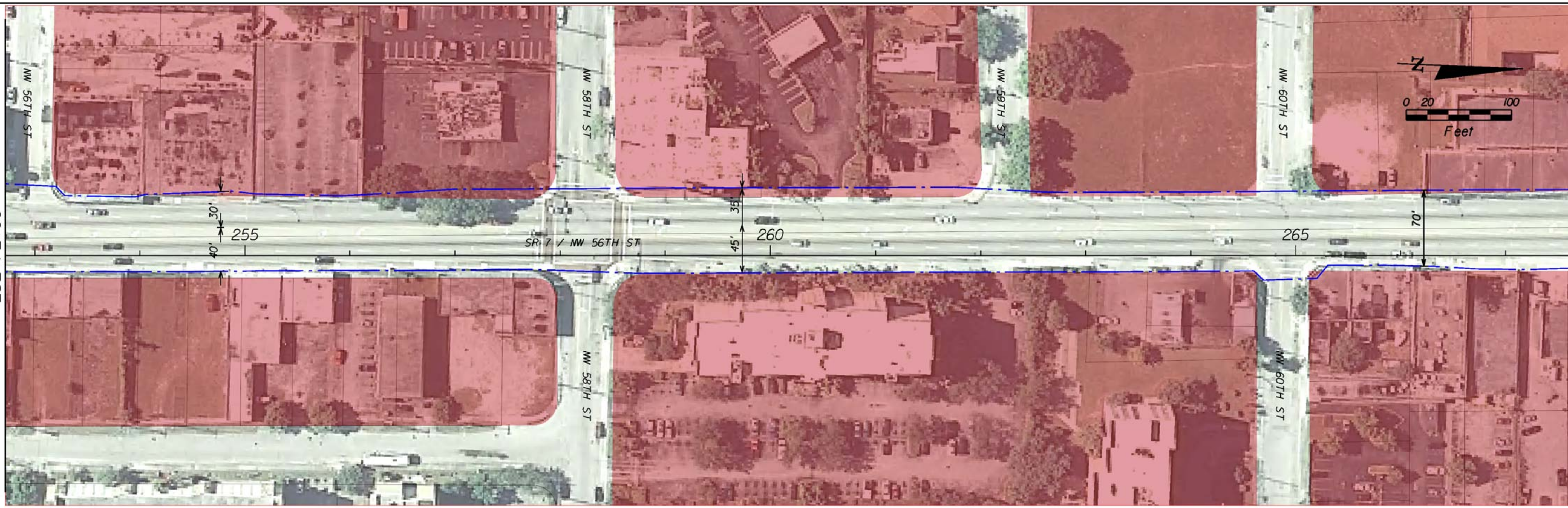
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

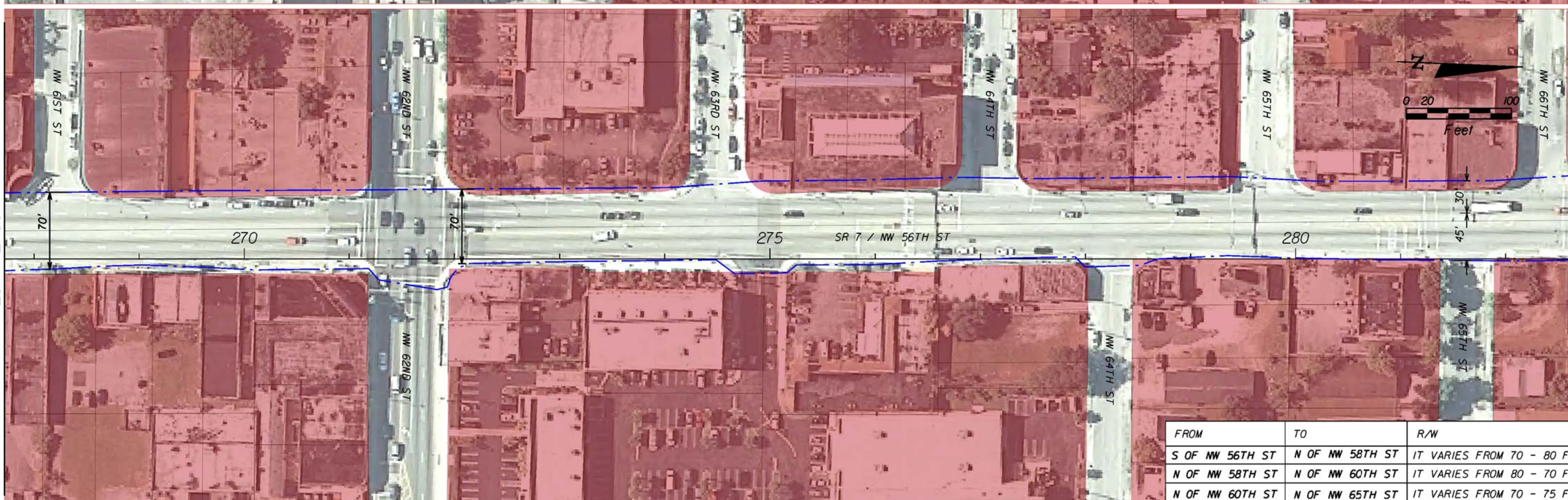
ROAD NO.	COUNTY	FINANCIAL PROJECT ID

RIGHT OF WAY SR 7
NW 12TH ST TO NW 119TH ST

SHEET NO.
5

Carlos Perez 10/23/2013 10:29:32 AM J:\RW plans\NW7AVEplanrd05.dgn





FROM	TO	R/W
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N OF NW 58TH ST	N OF NW 60TH ST	IT VARIES FROM 80 - 70 FT
N OF NW 60TH ST	N OF NW 65TH ST	IT VARIES FROM 70 - 75 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

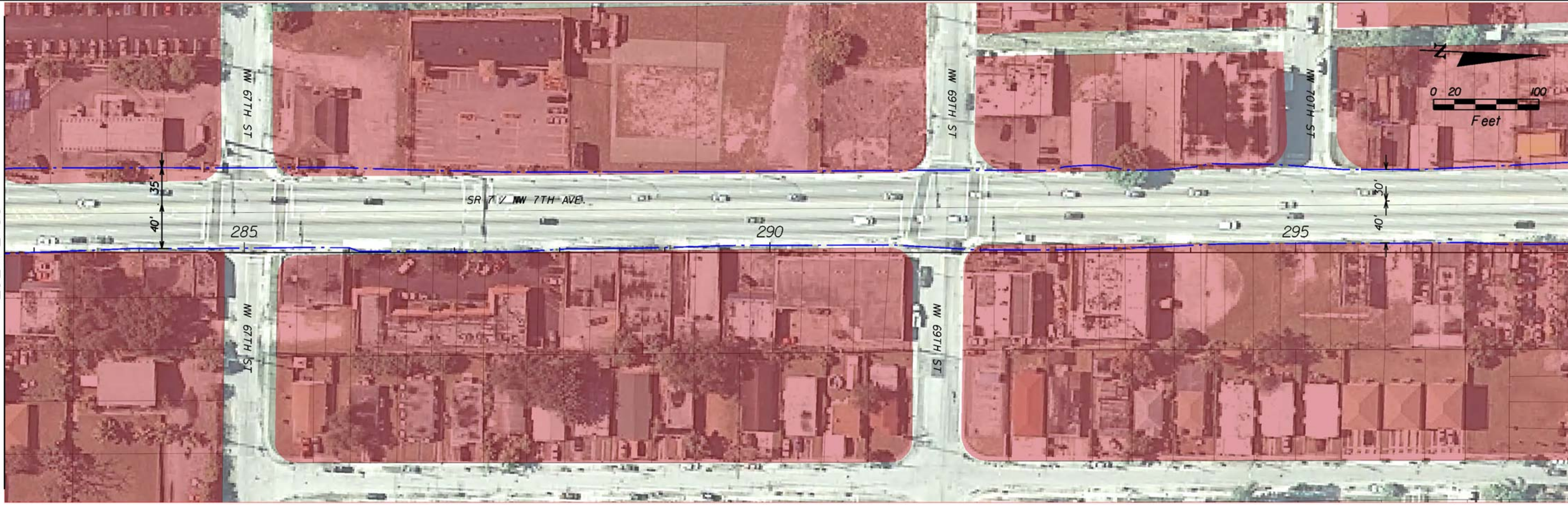
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

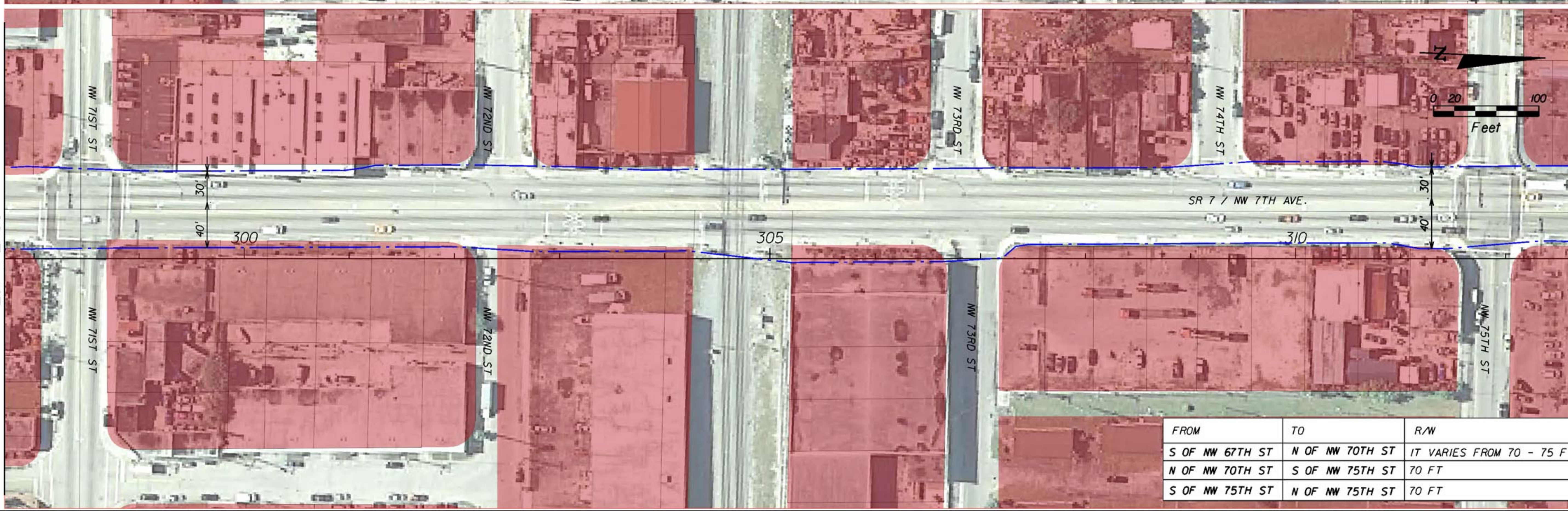
ROAD NO.	COUNTY	FINANCIAL PROJECT ID

RIGHT OF WAY SR7
NW 12TH ST TO NW 119TH ST

SHEET NO. 6

Carlos Perez 10/23/2013 10:34:51 AM J:\RW plans\NW7AVEplanrd06.dgn





FROM	TO	R/W
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N OF NW 70TH ST	S OF NW 75TH ST	70 FT
S OF NW 75TH ST	N OF NW 75TH ST	70 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

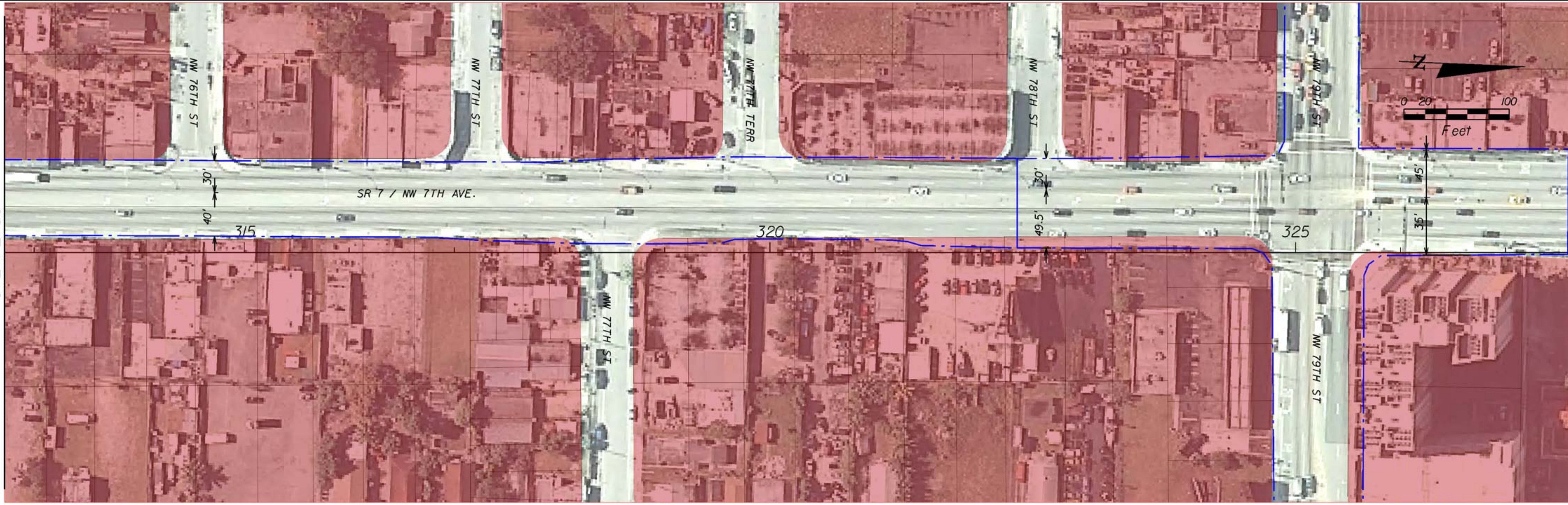
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

RIGHT OF WAY SR 7
NW 12TH ST TO NW 119TH ST

SHEET NO.
7

Carlos Perez 10/23/2013 10:38:26 AM J:\RW plans\NW7AVEplanrd07.dgn



FROM	TO	R/W
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S OF NW 78TH ST	N OF NW 79TH ST	IT VARIES FROM 79.5 - 80 FT
N OF NW 79TH ST	N OF NW 78TH ST	IT VARIES FROM 70 - 75 FT
N OF NW 78TH ST	N OF NW 79TH ST	IT VARIES FROM 75 - 70 FT
SO OF NW 80TH ST	N OF NW 83RD TER	100 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

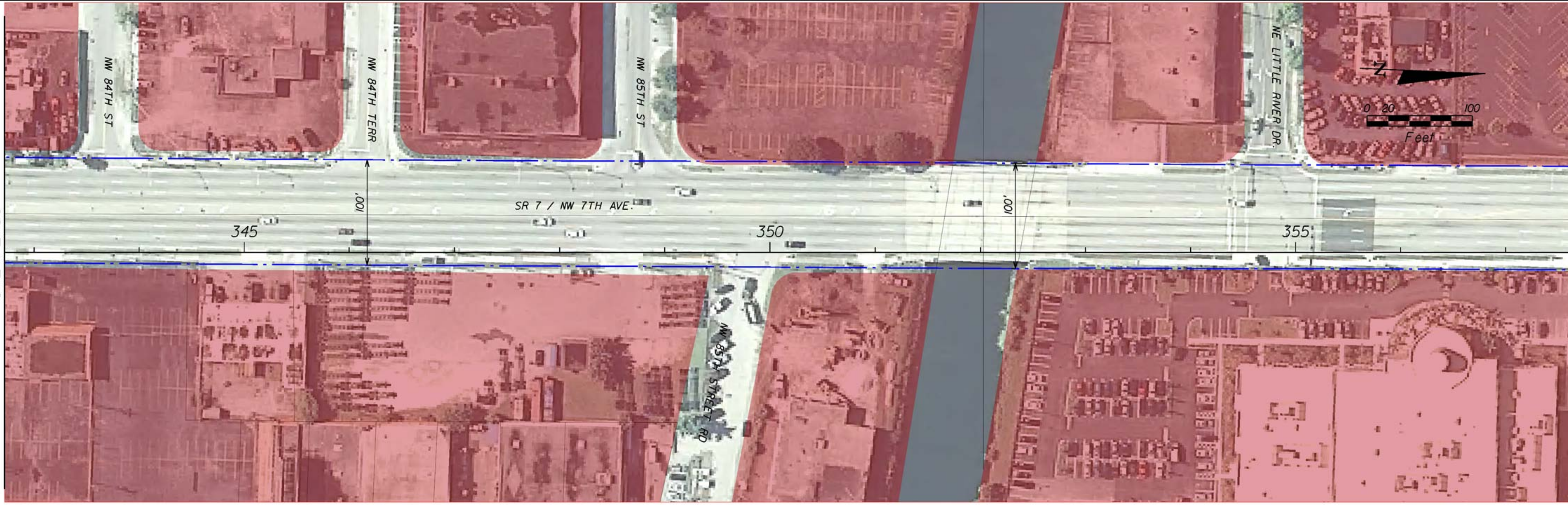
MIAMI-DADE MPO Metropolitan Planning Organization

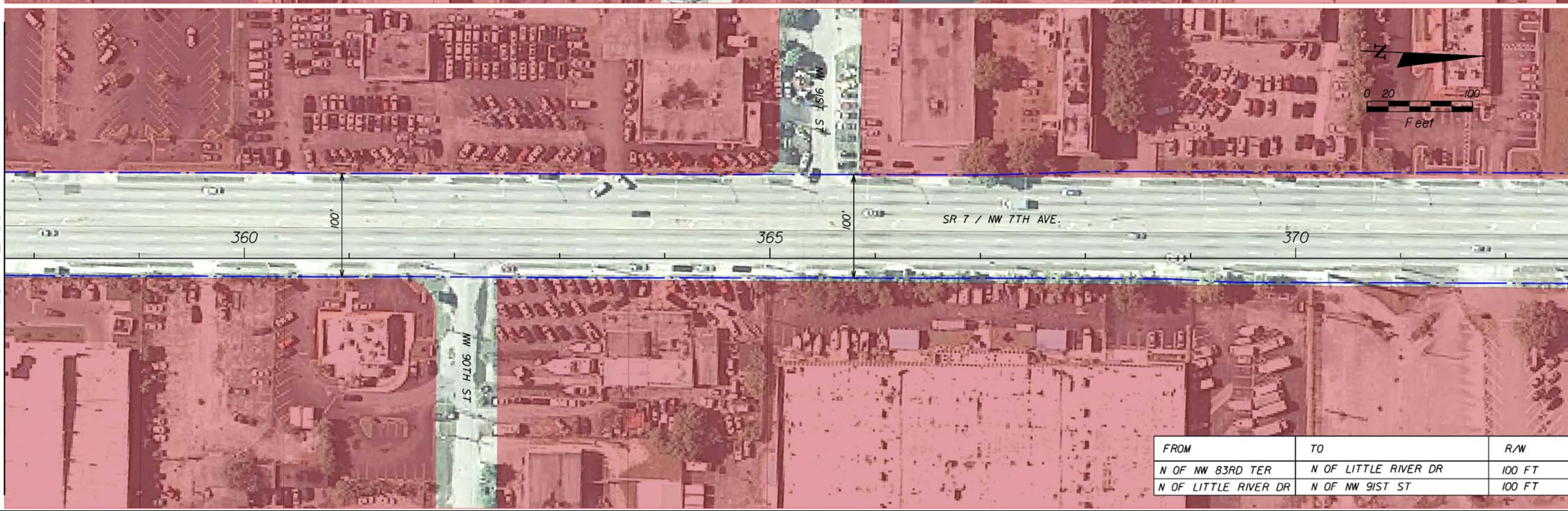
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

RIGHT OF WAY SR 7
NW 12TH ST TO NW 119TH ST

SHEET NO.
8





FROM	TO	R/W
N OF NW 83RD TER	N OF LITTLE RIVER DR	100 FT
N OF LITTLE RIVER DR	N OF NW 91ST ST	100 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

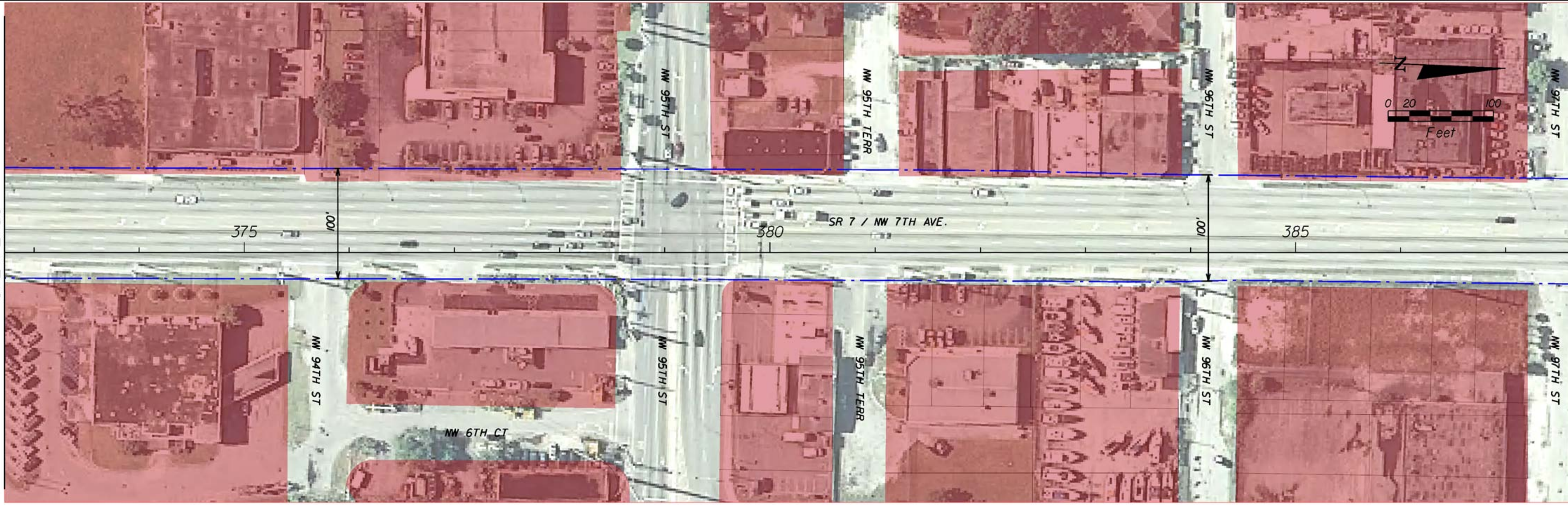
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

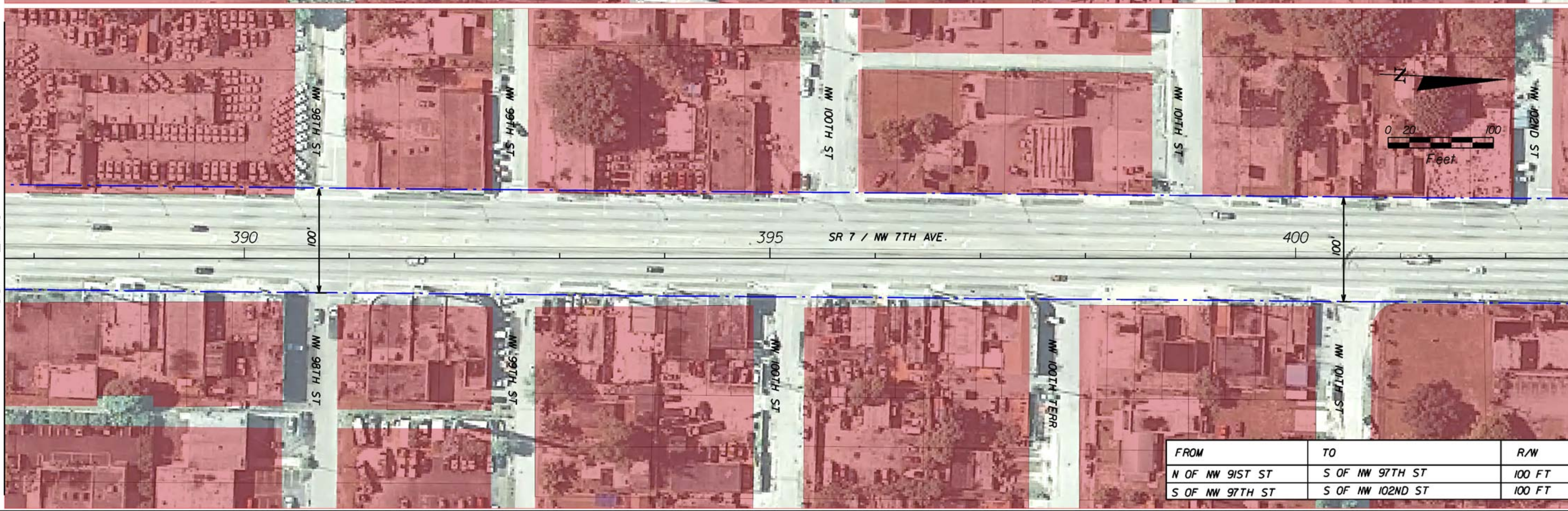
ROAD NO.	COUNTY	FINANCIAL PROJECT ID

RIGHT OF WAY SR 7
NW 12TH ST TO NW 119TH ST

SHEET NO.
9

Carlos Perez 10/23/2013 10:44:42 AM J:\RW plans\NW7AVEplanrd09.dgn





FROM	TO	R/W
N OF NW 91ST ST	S OF NW 97TH ST	100 FT
S OF NW 97TH ST	S OF NW 102ND ST	100 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

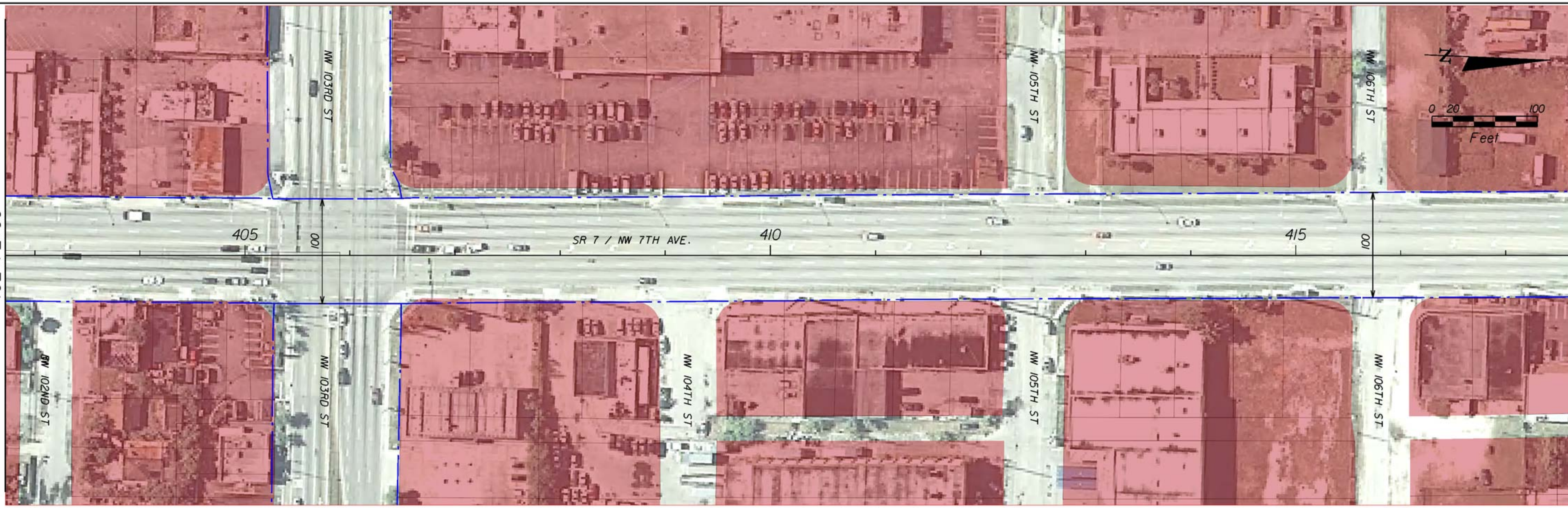
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

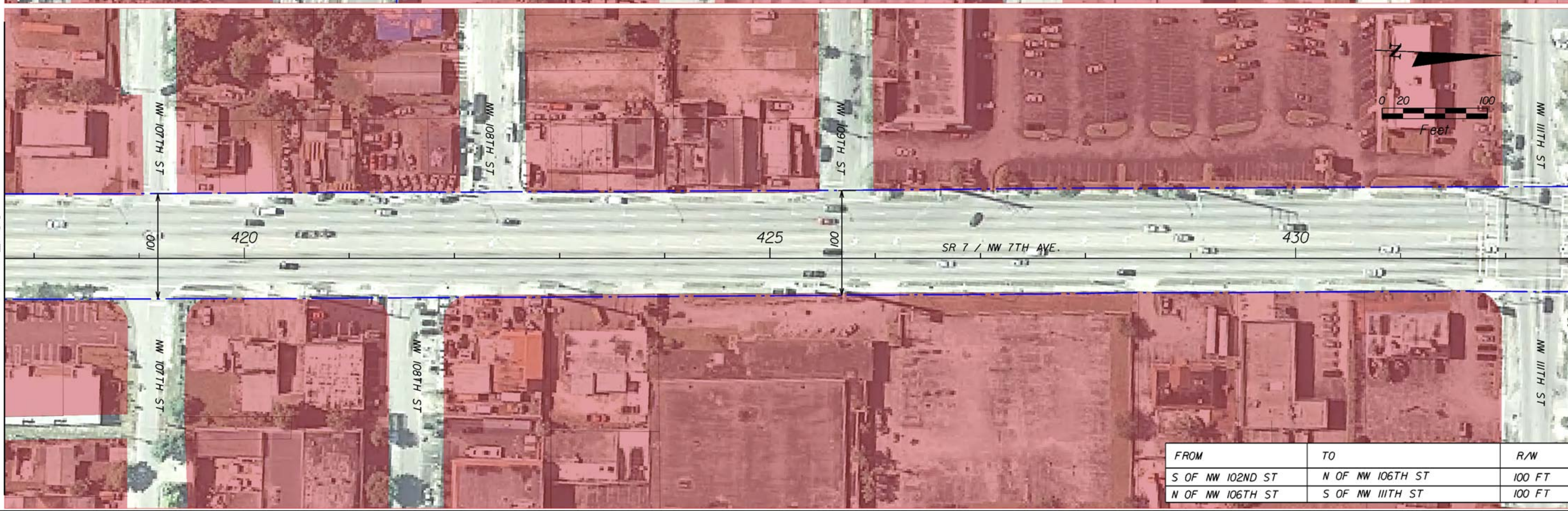
ROAD NO.	COUNTY	FINANCIAL PROJECT ID

RIGHT OF WAY SR 7
NW 12TH ST TO NW 119TH ST

SHEET NO.
10

Carlos Perez 10/25/2013 10:30:24 AM Z:\e\Projects\RW plans\NW7AVEplanrd010.dgn





FROM	TO	R/W
S OF NW 102ND ST	N OF NW 106TH ST	100 FT
N OF NW 106TH ST	S OF NW 111TH ST	100 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MIAMI-DADE MPO Metropolitan Planning Organization

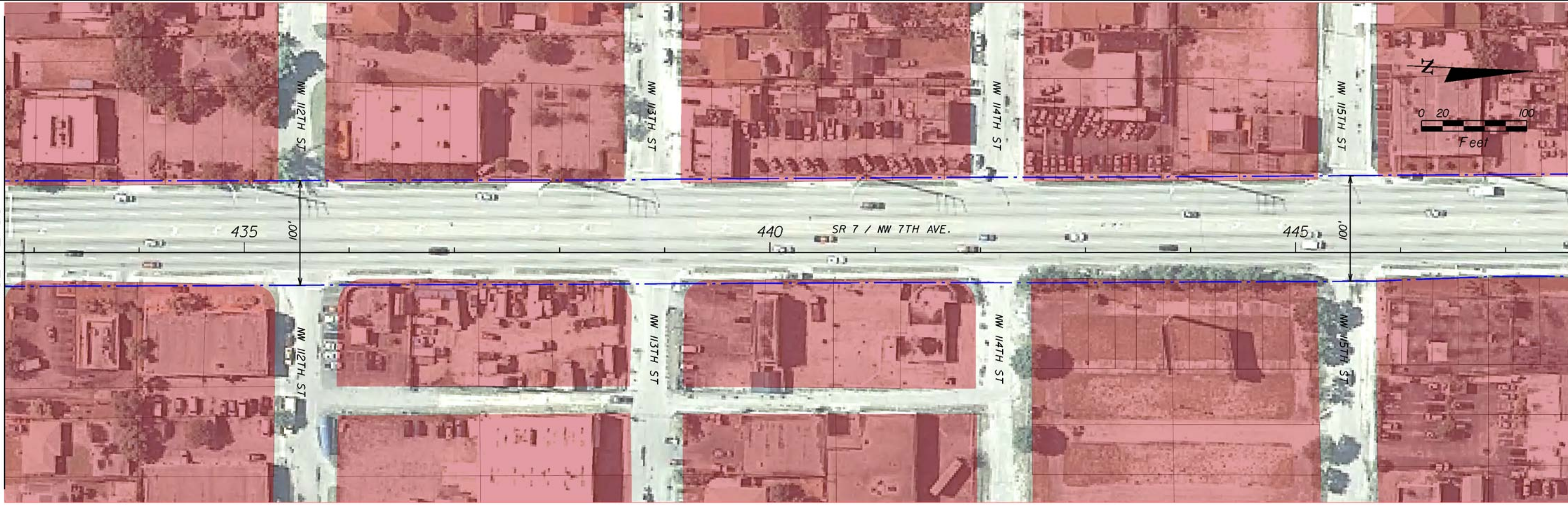
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

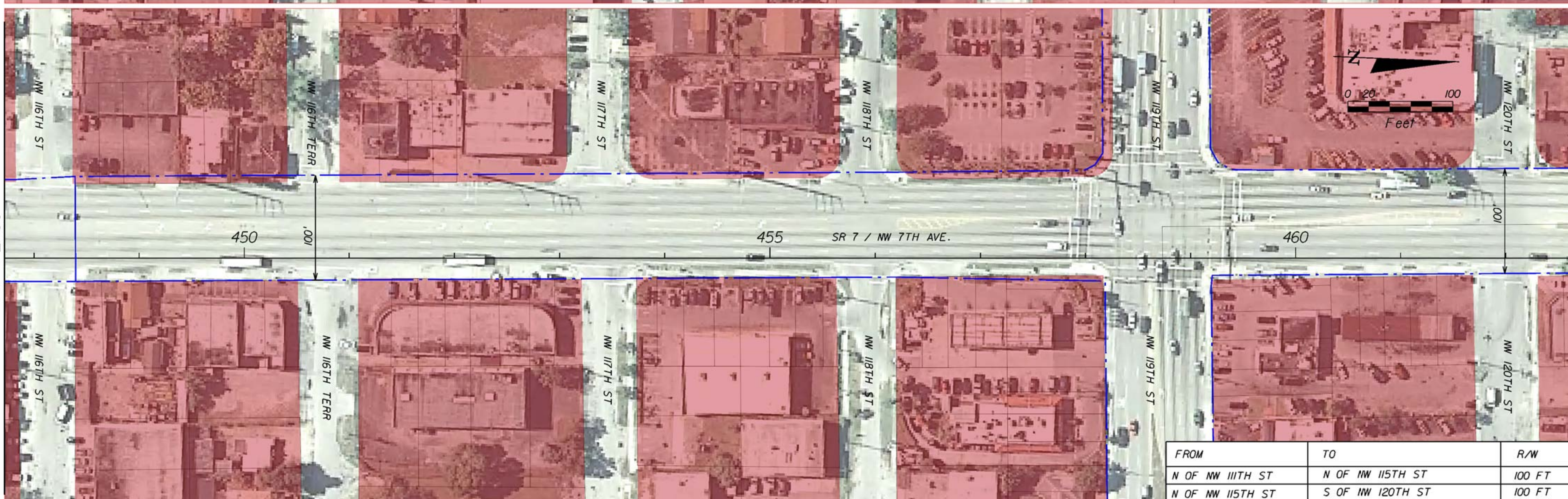
ROAD NO.	COUNTY	FINANCIAL PROJECT ID

RIGHT OF WAY SR 7
NW 12TH ST TO NW 119TH ST

SHEET NO.
11

Carlos Perez 10/23/2013 10:49:22 AM J:\RW plans\NW7AVEplanrd011.dgn





FROM	TO	R/W
N OF NW 111TH ST	N OF NW 115TH ST	100 FT
N OF NW 115TH ST	S OF NW 120TH ST	100 FT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

RIGHT OF WAY SR 7
NW 13TH ST TO NW 119TH S

SHEET NO.
12

Carlos Perez 10/23/2013 10:53:41 AM J:\RW plans\NW7AVEplanrd012.dgn

APPENDIX B

ARTPLAN 2012 Conceptual Planning Analysis

Project Information

Analyst		**Arterial Name**	SW 27 Avenue	**Study Period**	**Standard K**
Date Prepared	12/13/2013 2:06:54 PM	**From**	US1	**Modal Analysis**	Multimodal
Agency		**To**	NW 11 Street	**Program**	ARTPLAN 2012
Area Type	Large Urbanized	**Peak Direction**	Northbound	**Version Date**	12/12/2012
Arterial Class	2				

File Name	C:\Users\juanpablo\Desktop\12-13-13\1-27-2014\SW 27 Avenue\SW 27 Avenue - AADT-012714.xap
User Notes	

Arterial Data

K	0.09	**PHF**	1	**Control Type**	CoordinatedActuated
D	0.565	**% Heavy Vehicles**	2	**Base Sat. Flow Rate**	1950

Automobile Intersection Data

Cross Street	Cycle Length	Thru g/C	Arr. Type	INT # Dir.Lanes	% Left Turns	% Right Turns	Left Turn Lanes	Left Turn Phasing	# Left Turn Lanes	LT Storage Length	Left g/C	Right Turn Lanes
SW 22 Street	150	0.45	4	4	12	12	Yes	ProtPerm	1	127	0.06	No
SW 8 Street	150	0.45	4	4	12	12	Yes	ProtPerm	1	266	0.11	No
Flagler Street	150	0.45	4	4	12	12	Yes	ProtPerm	1	273	0.07	No
NW 7 Street	150	0.45	4	4	12	12	Yes	ProtPerm	1	432	0.09	No
NW 11 Street	150	0.45	4	4	12	12	Yes	ProtPerm	1	184	0.09	No

Automobile Segment Data

Segment #	Length	AADT	Hourly Vol.	SEG # Dir.Lanes	Posted Speed	Free Flow Speed	Median Type	On-Street Parking	Parking Activity
1 (to SW 22 Street)	1716	24000	1220	4	30	35	Restrictive	Yes	Low
2 (to SW 8 Street)	1716	36500	1856	4	30	35	Restrictive	Yes	Low
3 (to Flagler Street)	1716	37000	1881	4	30	35	Restrictive	Yes	Low
4 (to NW 7 Street)	1716	49000	2492	4	30	35	Restrictive	No	N/A
5 (to NW 11 Street)	1716	57500	2924	4	30	35	Restrictive	No	N/A

Automobile LOS

Segment #	Thru Mvmt Flow Rate	Adj. Sat. Flow Rate	v/c	Control Delay	Int. Approach LOS	Queue Ratio	Speed (mph)	Segment LOS
1 (to SW 22 Street)	1074	6476	0.368	19.40	B	#	21.54	C
2 (to SW 8 Street)	1633	6596	0.550	21.64	C	#	20.54	C
3 (to Flagler Street)	1655	6601	0.557	21.65	C	#	20.53	C

4 (to NW 7 Street)	2193	6720	0.725	24.70	C	#	19.52	C
5 (to NW 11 Street)	2573	6807	0.840	27.51	C	#	18.56	C

Arterial Length	**1.6818**	**Weighted g/C**	**0.45**	**FFS Delay**	**134.31**	**Threshold Delay**	**0.00**	**Auto Speed**	**20.08**	**Auto LOS**	**C**

Automobile Service Volumes

Note: The maximum normally acceptable directional service volume for LOS E in Florida for this facility type and area type is 1000 veh/h/ln.

	A	B	C	D	E
Lanes	**Hourly Volume In Peak Direction**				
1					
2					
3					
4					
*					
Lanes	**Hourly Volume In Both Directions**				
2					
4					
6					
8					
*					
Lanes	**Annual Average Daily Traffic**				
2					
4					
6					
8					
*					

Multimodal Segment Data

Segment #	Outside Lane Width	Pave Cond	Pave Shldr /Bike Lane	Side Path	Side Path Separation	Side walk	Sidewalk Roadway Separation	Sidewalk Roadway Protective Barrier	Bus Freq	Passenger Load Factor	Amenities	Bus Stop Type
1 (to SW 22 Street)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
2 (to SW 8 Street)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
3 (to Flagler Street)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
4 (to NW 7 Street)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
5 (to NW 11 Street)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical

Pedestrian SubSegment Data

	% of Segment			Sidewalk			Separation			Barrier		
Segment #	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
1 (to SW 22 Street)	100			Yes			Typical			No		
2 (to SW 8 Street)	100			Yes			Typical			No		
3 (to Flagler Street)	100			Yes			Typical			No		
4 (to NW 7 Street)	100			Yes			Typical			No		
5 (to NW 11 Street)	100			Yes			Typical			No		

Multimodal LOS

	Bicycle Street		Bicycle Sidepath		Pedestrian					Bus	
Link #	**Score**	**LOS**	**Score**	**LOS**	**1**	**2**	**3**	**Score**	**LOS**	**Adj. Buses**	**LOS**
1 (to SW 22 Street)	3.15	C	N/A	N/A				2.19	B	2.41	D
2 (to SW 8 Street)	3.44	C	N/A	N/A				2.54	B	2.41	D
3 (to Flagler Street)	3.45	C	N/A	N/A				2.55	B	2.41	D
4 (to NW 7 Street)	4.23	D	N/A	N/A				3.24	C	2.30	D
5 (to NW 11 Street)	4.30	E	N/A	N/A				3.48	C	2.30	D

Bicycle LOS	3.77	D	Pedestrian LOS	2.88	C	Bus LOS	2.37	D

MultiModal Service Volume Tables

Bicycle

	A	B	C	D	E
Lanes	**Hourly Volume In Peak Direction**				
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Hourly Volume In Both Directions**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Annual Average Daily Traffic**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0

Pedestrian

	A	B	C	D	E
Lanes	**Hourly Volume In Peak Direction**				
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Hourly Volume In Both Directions**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Annual Average Daily Traffic**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0

Bus

A	B	C	D	E
Buses Per Hour In Peak Direction				
Buses in Study Hour in Peak Direction (Daily)				

*** Service Volumes for the specific facility being analyzed, based on # of lanes from the intersection and segment data screens.**
**** Cannot be achieved based on input data provided.**
***** Not applicable for that level of service letter grade. See generalized tables notes for more details.**
 # Under the given conditions, left turn lane storage is highly likely to overflow. The number of directional thru lanes should be reduced accordingly.
Facility weighted g/C exceeds normally acceptable upper range (0.5); verify that g/C inputs are correct.
Intersection capacity (ies) are exceeded for the full hour; an operational level analysis tool is more appropriate for this situation.

ARTPLAN 2012 Conceptual Planning Analysis

Project Information

Analyst		**Arterial Name**	Miami Avenue	**Study Period**		**Standard K**	
Date Prepared	10/24/2013 10:20:33 AM	**From**	NW 17 ST	**Modal Analysis**	Multimodal		
Agency		**To**	SW 3 ST	**Program**	ARTPLAN 2012		
Area Type	Large Urbanized	**Peak Direction**	Northbound	**Version Date**	12/12/2012		
Arterial Class	2						

File Name	C:\Users\juanpablo\Desktop\12-13-13\1-27-2014\N Miami Aveue\N Miami Avenue SB - AADT-012714.xap
User Notes	

Arterial Data

K	0.09	**PHF**	1	**Control Type**	CoordinatedActuated
D	0.565	**% Heavy Vehicles**	2	**Base Sat. Flow Rate**	1950

Automobile Intersection Data

Cross Street	Cycle Length	Thru g/C	Arr. Type	INT # Dir.Lanes	% Left Turns	% Right Turns	Left Turn Lanes	Left Turn Phasing	# Left Turn Lanes	LT Storage Length	Left g/C	Right Turn Lanes
NW 15 ST	100	0.42	4	2	12	12	No	None	N/A	N/A	N/A	Yes
NW 8 ST	100	0.42	4	3	12	12	No	None	N/A	N/A	N/A	No
NW 5 ST	100	0.42	4	2	12	12	No	None	N/A	N/A	N/A	No
Flagler ST	100	0.42	4	2	12	12	No	None	N/A	N/A	N/A	No
SW 1 ST	100	0.42	4	2	12	12	No	None	N/A	N/A	N/A	No
SW 3 ST	100	0.42	4	2	12	12	No	None	N/A	N/A	N/A	No

Automobile Segment Data

Segment #	Length	AADT	Hourly Vol.	SEG # Dir.Lanes	Posted Speed	Free Flow Speed	Median Type	On-Street Parking	Parking Activity
1 (to NW 15 ST)	612	4400	224	3	35	40	Restrictive	Yes	Low
2 (to NW 8 ST)	612	4400	224	2	35	40	Restrictive	Yes	Low
3 (to NW 5 ST)	612	4400	224	2	35	40	Restrictive	Yes	Low
4 (to Flagler ST)	612	4400	224	2	35	40	Restrictive	Yes	Low
5 (to SW 1 ST)	612	4400	224	2	35	40	Restrictive	No	N/A
6 (to SW 3 ST)	612	4400	224	2	35	40	Restrictive	No	N/A

Automobile LOS

Segment #	Thru Mvmt Flow Rate	Adj. Sat. Flow Rate	v/c	Control Delay	Int. Approach LOS	Queue Ratio	Speed (mph)	Segment LOS
1 (to NW 15 ST)	197	2405	0.195	14.08	B	0.00	16.00	D
2 (to NW 8 ST)	224	3882	0.137	13.54	B	0.00	16.11	D
3 (to NW 5 ST)	224	2584	0.206	14.14	B	0.00	15.78	D

4 (to Flagler ST)	224	2584	0.206	14.14	B	0.00	15.78	D
5 (to SW 1 ST)	224	2584	0.206	14.14	B	0.00	16.34	D
6 (to SW 3 ST)	224	2584	0.206	14.14	B	0.00	16.34	D

Arterial Length	**0.7636**	**Weighted g/C**	**0.42**	**FFS Delay**	**108.64**	**Threshold Delay**	**0.00**	**Auto Speed**	**16.05**	**Auto LOS**	**D**

Automobile Service Volumes

Note: The maximum normally acceptable directional service volume for LOS E in Florida for this facility type and area type is 1000 veh/h/ln.

	A	B	C	D	E
Lanes	**Hourly Volume In Peak Direction**				
1					
2					
3					
4					
*					
Lanes	**Hourly Volume In Both Directions**				
2					
4					
6					
8					
*					
Lanes	**Annual Average Daily Traffic**				
2					
4					
6					
8					
*					

Multimodal Segment Data

Segment #	Outside Lane Width	Pave Cond	Pave Shldr /Bike Lane	Side Path	Side Path Separation	Side walk	Sidewalk Roadway Separation	Sidewalk Roadway Protective Barrier	Bus Freq	Passenger Load Factor	Amenities	Bus Stop Type
1 (to NW 15 ST)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
2 (to NW 8 ST)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
3 (to NW 5 ST)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
4 (to Flagler ST)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
5 (to SW 1 ST)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
6 (to SW 3 ST)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical

Pedestrian SubSegment Data

	% of Segment			Sidewalk			Separation			Barrier		
Segment #	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
1 (to NW 15 ST)	100			Yes			Typical			No		
2 (to NW 8 ST)	100			Yes			Typical			No		
3 (to NW 5 ST)	100			Yes			Typical			No		
4 (to Flagler ST)	100			Yes			Typical			No		
5 (to SW 1 ST)	100			Yes			Typical			No		
6 (to SW 3 ST)	100			Yes			Typical			No		

Multimodal LOS

	Bicycle Street		Bicycle Sidepath		Pedestrian					Bus	
Link #	**Score**	**LOS**	**Score**	**LOS**	**1**	**2**	**3**	**Score**	**LOS**	**Adj. Buses**	**LOS**
1 (to NW 15 ST)	2.28	B	N/A	N/A				1.63	A	1.77	E
2 (to NW 8 ST)	2.49	B	N/A	N/A				1.70	A	1.47	E
3 (to NW 5 ST)	2.49	B	N/A	N/A				1.70	A	1.47	E
4 (to Flagler ST)	2.49	B	N/A	N/A				1.70	A	1.47	E
5 (to SW 1 ST)	3.10	C	N/A	N/A				2.09	B	1.41	E
6 (to SW 3 ST)	3.10	C	N/A	N/A				2.09	B	1.41	E

Bicycle LOS	**2.70**	**B**	**Pedestrian LOS**	**1.84**	**A**	**Bus LOS**	**1.50**	**E**

MultiModal Service Volume Tables

Bicycle

	A	B	C	D	E
Lanes	**Hourly Volume In Peak Direction**				
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Hourly Volume In Both Directions**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Annual Average Daily Traffic**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0

Pedestrian

	A	B	C	D	E
Lanes	**Hourly Volume In Peak Direction**				
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Hourly Volume In Both Directions**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Annual Average Daily Traffic**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0

Bus

A	B	C	D	E
Buses Per Hour In Peak Direction				
Buses in Study Hour in Peak Direction (Daily)				

*** Service Volumes for the specific facility being analyzed, based on # of lanes from the intersection and segment data screens.**
**** Cannot be achieved based on input data provided.**
***** Not applicable for that level of service letter grade. See generalized tables notes for more details.**
 # Under the given conditions, left turn lane storage is highly likely to overflow. The number of directional thru lanes should be reduced accordingly.
Facility weighted g/C exceeds normally acceptable upper range (0.5); verify that g/C inputs are correct.
Intersection capacity (ies) are exceeded for the full hour; an operational level analysis tool is more appropriate for this situation.

ARTPLAN 2012 Conceptual Planning Analysis

Project Information

Analyst		**Arterial Name**	Miami Avenue	**Study Period**	**Standard K**
Date Prepared	10/25/2013 7:52:42 AM	**From**	NW 17 ST	**Modal Analysis**	Multimodal
Agency		**To**	I95 OFF RAMP	**Program**	ARTPLAN 2012
Area Type	Large Urbanized	**Peak Direction**	Northbound	**Version Date**	12/12/2012
Arterial Class	2				

File Name	C:\Users\juanpablo\Desktop\12-13-13\1-27-2014\N Miami Aveue\N Miami Avenue NW 17 ST-I95 Off Ramp - AADT-012714.xap
User Notes	

Arterial Data

K	0.09	**PHF**	1	**Control Type**	Pretimed
D	0.565	**% Heavy Vehicles**	2	**Base Sat. Flow Rate**	1950

Automobile Intersection Data

Cross Street	Cycle Length	Thru g/C	Arr. Type	INT # Dir.Lanes	% Left Turns	% Right Turns	Left Turn Lanes	Left Turn Phasing	# Left Turn Lanes	LT Storage Length	Left g/C	Right Turn Lanes
NW 20 ST	120	0.44	4	2	12	12	No	None	N/A	N/A	N/A	No
NW 29 ST	120	0.44	4	2	12	12	No	None	N/A	N/A	N/A	No
NW 34 ST	120	0.44	4	2	12	12	No	None	N/A	N/A	N/A	No
I95 OFF RAMP	120	0.44	4	4	12	12	No	None	N/A	N/A	N/A	No

Automobile Segment Data

Segment #	Length	AADT	Hourly Vol.	SEG # Dir.Lanes	Posted Speed	Free Flow Speed	Median Type	On-Street Parking	Parking Activity
1 (to NW 20 ST)	1371	31500	1602	2	35	40	Non-Restrictive	No	N/A
2 (to NW 29 ST)	1371	31500	1602	2	35	40	Non-Restrictive	Yes	Low
3 (to NW 34 ST)	1371	31500	1602	2	35	40	Non-Restrictive	Yes	Low
4 (to I95 OFF RAMP)	1371	31500	1602	2	35	40	Non-Restrictive	Yes	Low

Automobile LOS

Segment #	Thru Mvmt Flow Rate	Adj. Sat. Flow Rate	v/c	Control Delay	Int. Approach LOS	Queue Ratio	Speed (mph)	Segment LOS
1 (to NW 20 ST)	1602	2742	1.103	75.82	E	0.00	9.47	F
2 (to NW 29 ST)	1602	2732	1.046	49.63	D	0.00	12.59	E
3 (to NW 34 ST)	1602	2729	1.031	43.06	D	0.00	13.77	D
4 (to I95 OFF RAMP)	1602	5373	0.678	19.11	B	0.00	20.81	C

Arterial	**1.0841**	**Weighted**	**0.44**	**FFS**	**204.78**	**Threshold**	**0.00**	**Auto**	**###**	**Auto**	**###**

Length		g/C		Delay		Delay		Speed		LOS	

Automobile Service Volumes

Note: The maximum normally acceptable directional service volume for LOS E in Florida for this facility type and area type is 1000 veh/h/ln.

	A	B	C	D	E
Lanes	**Hourly Volume In Peak Direction**				
1					
2					
3					
4					
*					
Lanes	**Hourly Volume In Both Directions**				
2					
4					
6					
8					
*					
Lanes	**Annual Average Daily Traffic**				
2					
4					
6					
8					
*					

Multimodal Segment Data

Segment #	Outside Lane Width	Pave Cond	Pave Shldr /Bike Lane	Side Path	Side Path Separation	Side walk	Sidewalk Roadway Separation	Sidewalk Roadway Protective Barrier	Bus Freq	Passenger Load Factor	Amenities	Bus Stop Type
1 (to NW 20 ST)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
2 (to NW 29 ST)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
3 (to NW 34 ST)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
4 (to I95 OFF RAMP)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical

Pedestrian SubSegment Data

	% of Segment			Sidewalk			Separation			Barrier		
Segment #	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
1 (to NW 20 ST)	100			Yes			Typical			No		
2 (to NW 29 ST)	100			Yes			Typical			No		
3 (to NW 34 ST)	100			Yes			Typical			No		
4 (to I95 OFF RAMP)	100			Yes			Typical			No		

Multimodal LOS

	Bicycle Street		Bicycle Sidepath		Pedestrian					Bus	
Link #	**Score**	**LOS**	**Score**	**LOS**	**1**	**2**	**3**	**Score**	**LOS**	**Adj. Buses**	**LOS**
1 (to NW 20 ST)	4.44	E	N/A	N/A				3.74	D	2.19	D
2 (to NW 29 ST)	3.77	D	N/A	N/A				3.07	C	2.19	D
3 (to NW 34 ST)	3.74	D	N/A	N/A				2.99	C	2.19	D
4 (to I95 OFF RAMP)	3.73	D	N/A	N/A				2.96	C	1.98	E

Bicycle LOS	3.94	D	Pedestrian LOS	3.22	C	Bus LOS	2.14	D

MultiModal Service Volume Tables

Bicycle

	A	B	C	D	E
Lanes	**Hourly Volume In Peak Direction**				
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Hourly Volume In Both Directions**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Annual Average Daily Traffic**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0

Pedestrian

	A	B	C	D	E
Lanes	**Hourly Volume In Peak Direction**				
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Hourly Volume In Both Directions**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Annual Average Daily Traffic**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0

Bus

A	B	C	D	E
Buses Per Hour In Peak Direction				
Buses in Study Hour in Peak Direction (Daily)				

*** Service Volumes for the specific facility being analyzed, based on # of lanes from the intersection and segment data screens.**
**** Cannot be achieved based on input data provided.**
***** Not applicable for that level of service letter grade. See generalized tables notes for more details.**
 # Under the given conditions, left turn lane storage is highly likely to overflow. The number of directional thru lanes should be reduced accordingly.
Facility weighted g/C exceeds normally acceptable upper range (0.5); verify that g/C inputs are correct.
Intersection capacity (ies) are exceeded for the full hour; an operational level analysis tool is more appropriate for this situation.

ARTPLAN 2012 Conceptual Planning Analysis

Project Information

Analyst		**Arterial Name**	NW 7 Avenue	**Study Period**	**Standard K**
Date Prepared	12/13/2013 1:19:11 PM	**From**	NW 12 Street	**Modal Analysis**	Multimodal
Agency		**To**	NW 119 Street	**Program**	ARTPLAN 2012
Area Type	Large Urbanized	**Peak Direction**	Northbound	**Version Date**	12/12/2012
Arterial Class	2				

File Name	C:\Users\juanpablo\Desktop\12-13-13\1-27-2014\NW 7 Avenue\NW 7 Avenue - AADT-012714.xap
User Notes	

Arterial Data

K	0.09	**PHF**	1	**Control Type**	CoordinatedActuated
D	0.565	**% Heavy Vehicles**	2	**Base Sat. Flow Rate**	1950

Automobile Intersection Data

Cross Street	Cycle Length	Thru g/C	Arr. Type	INT # Dir.Lanes	% Left Turns	% Right Turns	Left Turn Lanes	Left Turn Phasing	# Left Turn Lanes	LT Storage Length	Left g/C	Right Turn Lanes
NW 20 Street	140	0.45	4	2	12	12	Yes	Protected	1	235	0.15	No
NW 36 Street	140	0.45	4	2	12	12	Yes	Protected	1	235	0.15	No
NW 54 Street	140	0.45	4	2	12	12	No	None	N/A	N/A	N/A	No
NW 62 Street	140	0.45	4	2	12	12	No	None	N/A	N/A	N/A	No
NW 79 Street	140	0.45	4	2	12	12	No	None	N/A	N/A	N/A	No
NE Little River Dr	140	0.45	4	4	12	12	No	None	N/A	N/A	N/A	No
NW 103 Street	140	0.45	4	4	12	12	Yes	Protected	1	235	0.15	No
NW 119 Street	140	0.45	4	4	12	12	Yes	Protected	1	235	0.15	No

Automobile Segment Data

Segment #	Length	AADT	Hourly Vol.	SEG # Dir.Lanes	Posted Speed	Free Flow Speed	Median Type	On-Street Parking	Parking Activity
1 (to NW 20 Street)	1207	16500	839	2	30	35	Non-Restrictive	Yes	Low
2 (to NW 36 Street)	1207	22500	1144	2	30	35	Non-Restrictive	Yes	Low
3 (to NW 54 Street)	1207	22000	1119	2	30	35	Restrictive	No	N/A
4 (to NW 62 Street)	1207	25500	1297	2	30	35	Restrictive	Yes	Low
5 (to NW 79 Street)	1207	23000	1170	2	30	35	Restrictive	Yes	Low
6 (to NE Little River Dr)	1207	34500	1754	4	30	35	Restrictive	No	N/A
7 (to NW 103	1207	29500	1500	4	30	35	Restrictive	No	N/A

Street)									
8 (to NW 119 Street)	1207	33500	1703	4	30	35	Restrictive	No	N/A

Automobile LOS

Segment #	Thru Mvmt Flow Rate	Adj. Sat. Flow Rate	v/c	Control Delay	Int. Approach LOS	Queue Ratio	Speed (mph)	Segment LOS
1 (to NW 20 Street)	738	3246	0.505	20.13	C	0.40	18.01	C
2 (to NW 36 Street)	1007	3300	0.678	23.31	C	0.58	16.77	D
3 (to NW 54 Street)	1119	2647	0.880	31.50	C	0.00	14.72	D
4 (to NW 62 Street)	1297	2652	0.902	29.81	C	0.00	14.86	D
5 (to NW 79 Street)	1170	2640	0.844	26.48	C	0.00	15.87	D
6 (to NE Little River Dr)	1754	5277	0.739	22.99	C	0.00	17.37	C
7 (to NW 103 Street)	1320	6509	0.451	18.82	B	0.79	18.98	C
8 (to NW 119 Street)	1499	6545	0.509	19.66	B	#	18.60	C

Arterial Length	1.9197	Weighted g/C	0.45	FFS Delay	224.29	Threshold Delay	0.00	Auto Speed	16.76	Auto LOS	D

Automobile Service Volumes

Note: The maximum normally acceptable directional service volume for LOS E in Florida for this facility type and area type is 1000 veh/h/ln.

	A	B	C	D	E
Lanes	**Hourly Volume In Peak Direction**				
1					
2					
3					
4					
*					
Lanes	**Hourly Volume In Both Directions**				
2					
4					
6					
8					
*					
Lanes	**Annual Average Daily Traffic**				
2					
4					
6					
8					
*					

Multimodal Segment Data

Segment #	Outside Lane Width	Pave Cond	Pave Shldr /Bike Lane	Side Path	Side Path Separation	Side walk	Sidewalk Roadway Separation	Sidewalk Roadway Protective Barrier	Bus Freq	Passenger Load Factor	Amenities	Bus Stop Type
1 (to NW 20 Street)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
2 (to NW 36 Street)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
3 (to NW 54 Street)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
4 (to NW 62 Street)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
5 (to NW 79 Street)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
6 (to NE Little River Dr)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
7 (to NW 103 Street)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical
8 (to NW 119 Street)	Typical	Typical	No	No	N/A	Yes	Typical	No	2	0.8	Excellent	Typical

Pedestrian SubSegment Data

	% of Segment			Sidewalk			Separation			Barrier		
Segment #	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
1 (to NW 20 Street)	100			Yes			Typical			No		
2 (to NW 36 Street)	100			Yes			Typical			No		
3 (to NW 54 Street)	100			Yes			Typical			No		
4 (to NW 62 Street)	100			Yes			Typical			No		
5 (to NW 79 Street)	100			Yes			Typical			No		
6 (to NE Little River Dr)	100			Yes			Typical			No		
7 (to NW 103 Street)	100			Yes			Typical			No		
8 (to NW 119 Street)	100			Yes			Typical			No		

Multimodal LOS

	Bicycle Street		Bicycle Sidepath		Pedestrian					Bus	
Link #	**Score**	**LOS**	**Score**	**LOS**	**1**	**2**	**3**	**Score**	**LOS**	**Adj. Buses**	**LOS**
1 (to NW 20 Street)	3.33	C	N/A	N/A				2.40	B	1.97	E
2 (to NW 36 Street)	3.56	D	N/A	N/A				2.74	B	2.07	D
3 (to NW 54 Street)	4.13	D	N/A	N/A				3.08	C	2.30	D
4 (to NW 62 Street)	3.61	D	N/A	N/A				2.83	C	2.30	D
5 (to NW 79 Street)	3.42	C	N/A	N/A				2.52	B	2.41	D
6 (to NE Little River Dr)	3.88	D	N/A	N/A				2.72	B	2.17	D
7 (to NW 103 Street)	3.84	D	N/A	N/A				2.67	B	2.17	D
8 (to NW 119 Street)	3.93	D	N/A	N/A				2.79	C	2.07	D

Bicycle LOS	**3.73**	**D**	**Pedestrian LOS**	**2.73**	**B**	**Bus LOS**	**2.18**	**D**

MultiModal Service Volume Tables

Bicycle

	A	B	C	D	E
Lanes	**Hourly Volume In Peak Direction**				
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Hourly Volume In Both Directions**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Annual Average Daily Traffic**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0

Pedestrian

	A	B	C	D	E
Lanes	**Hourly Volume In Peak Direction**				
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Hourly Volume In Both Directions**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0
Lanes	**Annual Average Daily Traffic**				
2	0	0	0	0	0
4	0	0	0	0	0
6	0	0	0	0	0
8	0	0	0	0	0
*	0	0	0	0	0

Bus

A	B	C	D	E
Buses Per Hour In Peak Direction				
Buses in Study Hour in Peak Direction (Daily)				

*** Service Volumes for the specific facility being analyzed, based on # of lanes from the intersection and segment data screens.**
**** Cannot be achieved based on input data provided.**
***** Not applicable for that level of service letter grade. See generalized tables notes for more details.**
 # Under the given conditions, left turn lane storage is highly likely to overflow. The number of directional thru lanes should be reduced accordingly.
Facility weighted g/C exceeds normally acceptable upper range (0.5); verify that g/C inputs are correct.
Intersection capacity (ies) are exceeded for the full hour; an operational level analysis tool is more appropriate for this situation.