Florida Department of Transportation
Livable Communities Initiative

SR 934 Corridor Study Phase II

Final Report

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Renaissance Planning Group • Bermello, Ajamil & Partners

Table of Contents

List of Figures

List of Maps

List of Tables

EXECUTIVE SUMMARY

The SR 934 Phase II Corridor Study was conducted under the Florida Department of Transportations (FDOT) Livable Communities Initiative, which seeks to balance the goals of residents, business and other stakeholders in the corridor with the Department's responsibility for ensuring mobility in the region. The study process was specifically crafted to engage the community in meaningful discussion of issues and solutions for the corridor and to arrive at a consensus that best meets the needs of all parties involved.

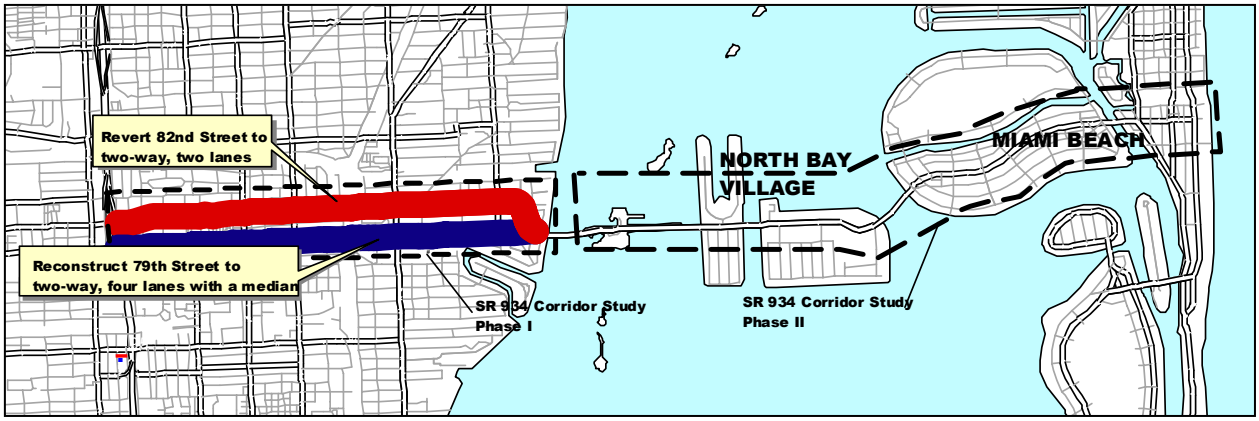
The Phase II study builds on the results of the SR 934 Phase I Corridor Study. The Phase I study addresses the corridor from Biscayne Bay to I-95. That portion of the corridor includes 79th and 82nd Street, which function as a modified one-way pair. Important recommendations from the Phase I study include reverting 82nd Street back to a two-way local street and shifting all regional traffic to 79th Street. The recommended design includes a four-lane cross-section with a landscaped median (see *Figure E-1*).

The Phase II study addresses the portion of the corridor from Biscayne Bay to Miami Beach. It begins as the JFK Causeway, a six lane divided facility that passes through the community of North Bay Village, a collection of islands that includes a mixture of highway-oriented retail establishments, single-family neighborhoods and high-rise apartments and condominiums. This section of the corridor places an emphasis on through-movement traffic and does little to acknowledge the presence of the surrounding community.

The corridor transitions from the JFK Causeway to Normandy Island and becomes a three lane, one-way pair: 71st Street and Normandy Drive. On Normandy Island, the corridor design encourages high vehicle speeds, a condition that is incompatible with the single family homes that front the corridor and with Normandy Village, a close-knit collection of shops and restaurants at the east end of the corridor.

At the North Beach Town Center in Miami Beach, the corridor tapers down to a

Figure E-1
Study Areas



JFK Causeway in North Bay Village

Normandy Drive in Normandy Island

71st Street in the North Beach Town Center

two-way, two lane with center turn lane design (71st Street) where it intersects SR A1A at its eastern terminus. The North Beach Town Center is a dense, walkable center where the dense corridor traffic does not blend well with the surrounding, pedestrian-oriented environment.

Crafting Solutions

Through a series of three community meetings held at strategic points in the study process, stakeholders were given the opportunity to craft their own solutions for the corridor. Methods such as the Nominal Group Technique and map drawing exercises were used. The study team provided participants with examples of roadway cross-sections, compatible land development types and potential multimodal strategies as part of this process.

The community identified three distinct corridor concepts for consideration:

- A series of design enhancements to each of the three unique sections of the corridor. The enhancements are designed to better integrate the corridor within each community and include narrowed travel lanes, wider and better medians, wider sidewalks, crossing enhancements, gateway treatments and bicycle facilities.

- Corridor enhancements coupled with lane reductions on the JFK Causeway and the 71st Street and Normandy Drive one-way pair. The lane reductions allow for the creation of a multi-use trail.

- A hybrid option, with lane reductions on the 71st Street and Normandy Drive one-way pair only (the JFK Causeway would remain at six lanes).

An extensive community outreach effort was initiated to ensure that all community interests were represented. Fliers were hand-delivered throughout the corridor, advertisements were featured several publications and community association/interest groups were contacted. As a result, there was good attendance at each of the meetings.

Evaluation of Alternatives

The three corridor alternatives and a No Build Alternative were evaluated against a set of livability goals identified by the community and mobility expectations established by the FDOT. *Table E-1* presents a summary of the evaluation.

No Build Alternative

As expected, the No Build Alternative performed the least favorably of the four alternatives. Although the current design of the corridor is good for automobile mobility, it does a poor job of making the corridor a livable place.

In North Bay Village, the corridor does very little to acknowledge the presence of a unique community. Wide travel lanes push vehicles through at high speeds and narrow, unbuffered sidewalks and wide intersections make walking very difficult and unsafe.

On Normandy Island, the lane configurations of the one-way pair encourage vehicles to travel a high rate of speed. Because such a significant amount of right of way is devoted to travel lanes, it creates a barrier within the community.

At the North Beach Town Center, the scale of the corridor becomes more human-scaled, a positive. However, congested, non-descript intersections make walking from block to block very difficult.

From a multi-modal mobility perspective, the current design of the corridor is deficient. Narrow, unbuffered sidewalks make walking difficult and unsafe. Barriers to walking exist throughout the corridor, and there are no bicycle facilities. Although there is a high level of transit service in the corridor, access is very difficult.

Alternative 1 – Corridor Enhancements

Alternative 1 represents a significant improvement in livability over the No-Build Alternative. Travel lanes become narrowed and medians become wider, inducing slower vehicle speeds. Gateway treatments at both entrances to the city, intersection enhancements and better median landscaping signify the presence of a unique community and make the corridor more aesthetically pleasing.

On Normandy Island, narrowed travel lanes induce slower vehicle speeds and create less of a barrier in the community. Intersection enhancements, pedestrian-scale lighting and landscaping improvements make the corridor more neighborhood-friendly and aesthetically pleasing.

At the North Beach Town Center, the presence of intersection enhancements and median refuges and bulb-outs at key mid-block locations make the corridor more pedestrian-friendly and compliment its human scale.

Table E-1
Evaluation Summary

Goal/Expectation	No Build Alternative		Alternative 1 Keep existing number of lanes with enhancements		Alternative 2 Reduce lanes on 71st Street and Normandy Drive and on the JFK Causeway		Hybrid Alternative Reduce lanes on 71st Street and Normandy Drive	
Livability Goal Number 1 (North Beach Town Center) - Transform 71st Street into a neighborhood-oriented "Town Center" for North Beach that makes it the community's focal point for shopping, entertainment, cultural and recreational activities.	☑	❖ Street design, wide sidewalks and no/low building setbacks create a very walkable environment. ❖ Heavy traffic creates safety conflicts ❖ Barriers to beach, Normandy Village	☑	❖ Street design, wide sidewalks and no/low building setbacks create a very walkable environment. ❖ Crossing treatments, median refuges create a safer walking environment ❖ Linkages established with beach and Normandy Village	☑	❖ Street design, wide sidewalks and no/low building setbacks create a very walkable environment. ❖ Crossing treatments, median refuges create a safer walking environment ❖ Linkages established with beach and Normandy Village	☑	❖ Street design, wide sidewalks and no/low building setbacks create a very walkable environment. ❖ Crossing treatments, median refuges create a safer walking environment ❖ Linkages established with beach and Normandy Village
Livability Goal Number 2 (Normandy Island) - Enhance and promote the neighborhood character of 71st Street and Normandy Drive.	☒	❖ 71st Street and Normandy Drive promote higher speeds, create a barrier in the community	☑	❖ Narrow lanes slow vehicles down ❖ Intersection enhancements slow vehicles and create a safer walking environment ❖ Improved lighting and landscaping make the corridor more pedestrian friendly and aesthetically pleasing	☑	❖ Reduced lanes slow vehicles and make the corridor more safe and pedestrian friendly ❖ Intersection enhancements slow vehicles and create a safer walking environment ❖ Multi-use trails create opportunities for bicycle/pedestrian travel	☑	❖ Reduced lanes slow vehicles and make the corridor more safe and pedestrian friendly ❖ Intersection enhancements slow vehicles and create a safer walking environment ❖ Multi-use trails create opportunities for bicycle/pedestrian travel
Livability Goal Number 3 (North Bay Village) - Develop the JFK Causeway into a safe and attractive corridor that acknowledges the unique community of North Bay Village	☒	❖ Road design pushes vehicles through at higher speeds ❖ Narrow, unbuffered sidewalks make the corridor a dangerous place to walk	☑	❖ Narrow lanes, wider medians induce slower vehicle speeds ❖ Gateway treatments, intersection enhancements, median and buffer landscaping signify the presence of a unique community and make the corridor more aesthetically pleasing	☑	❖ Reduced and narrowed lanes and wider medians will induce significantly slower vehicle speeds ❖ Additional ROW creates opportunities for wider medians and sidewalk buffers with significant landscaping ❖ Additional ROW	☑	❖ Narrow lanes, wider medians induce slower vehicle speeds ❖ Gateway treatments, intersection enhancements, median and buffer landscaping signify the presence of a unique community and make the corridor more aesthetically pleasing

Table E-1
Evaluation Summary

Goal/Expectation	No Build Alternative	Alternative 1 Keep existing number of lanes with enhancements	Alternative 2 Reduce lanes on 71st Street and Normandy Drive and on the JFK Causeway	Hybrid Alternative Reduce lanes on 71st Street and Normandy Drive
		❖ Wider sidewalks, buffers, crossing treatments and slower vehicle speeds make the corridor more pedestrian friendly	could also facilitate the creation of a multi-use trail	❖ Wider sidewalks, buffers, crossing treatments and slower vehicle speeds make the corridor more pedestrian friendly
Mobility Expectation Number 1 - Maintain adequate capacity and safety for regional traffic flows.	✓ ❖ Most of the corridor can be traversed without substantial delays ❖ Significant congestion-induced delays will occur at the Indian Creek intersection and on 71st Street in the North Beach Town Center	✓ ❖ Most of the corridor can be traversed without substantial delays ❖ Significant congestion-induced delays will occur at the Indian Creek intersection and on 71st Street in the North Beach Town Center	✗ ❖ Lane reductions on the JFK Causeway could result in significant congestion ❖ Significant congestion-induced delays will occur at the Indian Creek intersection and on 71st Street in the North Beach Town Center congestion and delay	✓ ❖ Most of the corridor can be traversed without substantial delays ❖ Significant congestion-induced delays will occur at the Indian Creek intersection and on 71st Street in the North Beach Town Center
Mobility Expectation Number 2 - Promote choice in transportation through a balance of transportation modes within the corridor.	✗ ❖ Narrow, unbuffered sidewalks make walking on the causeway difficult and unsafe ❖ Barriers to walking exist throughout the corridor ❖ Lack of adequate facilities makes bicycling very difficult and unsafe ❖ High level of transit service is present, but accessibility could be improved	✓ ❖ Wider, buffered sidewalks, reduced vehicle speeds and crossing enhancements make the corridor more safe and pedestrian-friendly ❖ Bicycle lanes and multi-use trails enable safe bicycling on the corridor ❖ Improved access to transit stops	✓ ❖ Wider, buffered sidewalks, reduced vehicle speeds and crossing enhancements make the corridor more safe and pedestrian-friendly ❖ Bicycle lanes and multi-use trails enable safe bicycling on the corridor ❖ Improved access to transit stops	✓ ❖ Wider, buffered sidewalks, reduced vehicle speeds and crossing enhancements make the corridor more safe and pedestrian-friendly ❖ Bicycle lanes and multi-use trails enable safe bicycling on the corridor ❖ Improved access to transit stops
Cost	$0.0	$3.5 to $10.0 million	$7.3 to $14.3 million	$4.1 to $11.2 million

Because this alternative does not propose lane reductions, automobile mobility will remain generally the same. Wider, buffered sidewalks, slower vehicle speeds and intersection enhancements will make walking easier and transit more accessible. Alternative 1 also includes opportunities for bicycling by proposing an off-corridor, off-road, multi-use trail in North Bay Village and bicycle lanes on 71st Street and Normandy Drive in Normandy Island.

Alternative 2 – Corridor Enhancements with Lane Reductions in North Bay Village and Normandy Island

Alternative 2 proposes many of the same corridor enhancements as the first alternative. This alternative then goes a step further by proposing lane reductions on the JFK Causeway in North Bay Village and on 71st Street and Normandy Drive in Normandy Island. In both areas, the lane reductions significantly enhance corridor livability by de-emphasizing the presence of corridor traffic in the community. The additional right-of-way created by the lane reductions also presents the opportunity to create wide multi-use trails along the corridor.

From an automobile mobility perspective, however, this alternative encounters a fatal flaw. On the JFK Causeway, traffic volumes currently exceed well over 30,000 vehicles per day. Reducing the number of lanes on the causeway will result in significant congestion and delay.

Hybrid Alternative - Corridor Enhancements with Lane Reductions Only in Normandy Island

The Hybrid Alternative was created as a compromise between the first two alternatives to address the automobile mobility issues associated with lane reductions on the JFK Causeway. This alternative includes lane reductions only on 71st Street and Normandy Drive in Normandy Islands. Based on a traffic analysis of the corridor, lane reductions can be accomplished here without significantly compromising automobile mobility. This is attributed to two factors. First, this section of the corridor carries less traffic than the JFK Causeway. Second, the one-way configuration provides higher mobility than a two-way configuration (such as on the causeway) because there is no delay associated with left-turning vehicles.

Recommendations and Implementation

The results of the alternatives evaluation were presented at community meetings in Miami Beach and North Bay Village. Participants were given the opportunity provide verbal feedback to the study team as well as rank each alternative according to their preference.

At the Miami Beach meeting, participants clearly favored the alternatives that entailed lane reductions (Alternative 2 and the Hybrid Alternative), ranking them the highest by far. At the North Bay Village meeting, the results were less clear cut, but participants seemed to favor the alternatives that entailed no lane reductions (Alternative 1 and the No Build Alternative).

Table E-2
Summary of Corridor Improvements

Short Term Improvements	Long Term Improvements
• Intersection enhancements • Medians and bulb-outs on 71st Street in the North Beach Town Center • Landscaping and lighting in the most critical areas • Restriping Normandy Drive and 71st Street – lane reductions *Total cost - $1.1 to $1.8 million*	• Enhancements at Indian Creek Drive • Corridor-wide landscaping and lighting enhancements • Reconstruct or partially reconstruct 71st Street and Normandy Drive – streetscaping; multi-use trail • Reconstruct or partially reconstruct the JFK Causeway – wider medians; streetscaping • Construct an off-road path on the Pelican Park section of the JFK Causeway *Total cost - $2.9 to $8.7 million*

Based on the results of the alternatives evaluation and feedback received at the community meetings, the Hybrid Alternative was recommended for implementation in the corridor. This alternative achieves the greatest balance between livability and mobility in the corridor, and represents a reasonable compromise between the stated preferences at each of the community meetings.

A corridor-wide map of the study recommendations is illustrated in Figure E-2. Recommended typical sections for the North Beach Town Center, Normandy Island and the North Bay Village are depicted in *Figures E-3* through *E-5*, respectively.

Improvements required to implement the recommended alternative include lane reductions in Normandy Island, intersection enhancements, curb and median modifications and lighting and landscaping enhancements. The total cost of these improvements ranges from $4 million to $11 million, depending on the need for and amount of additional right of way required.

Given the magnitude of the complete study recommendations, the project could take several years to make its way through the planning, project development and environmental (PD&E), design, funding procurement and programming processes. Rather than attempt to implement all of the recommendations in one big "chunk", the implementation strategy divides the improvements into two distinct phases:

- **Short term improvements** – these are generally lower-cost improvements that can be implemented in the next one to three years and produce immediate results;

- **Long term improvements** – these are improvements that will take longer to implement, because they are costly and/or will require further analysis.

Short and long term improvements are identified in *Table E-2*.

Figure E-2

Corridor Recommendations

Figure E-3
Recommended Typical Section on 71st Street in the North Beach Town Center

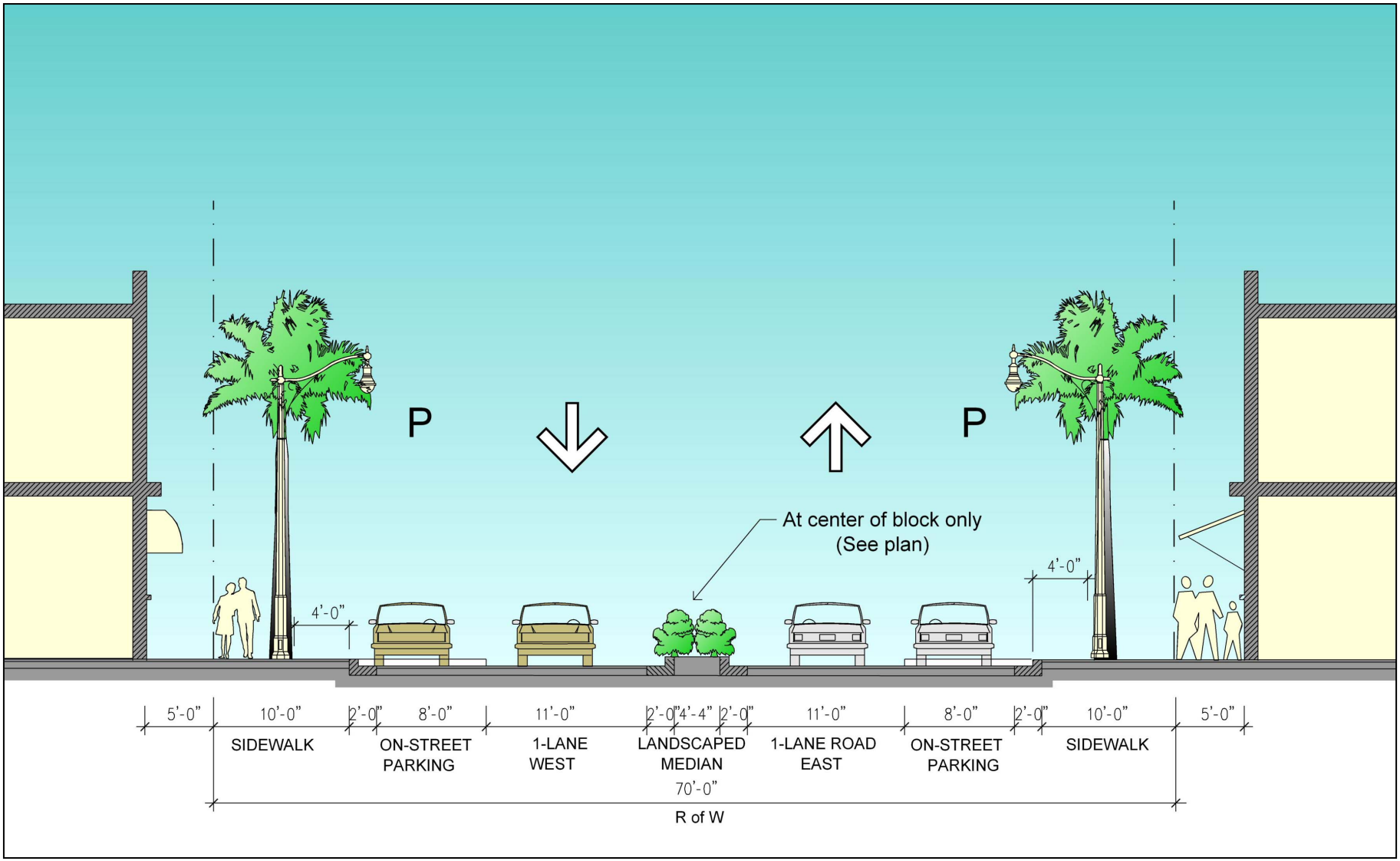


Figure E-4
Recommended Typical Section on 71st Street and Normandy Drive in Normandy Island

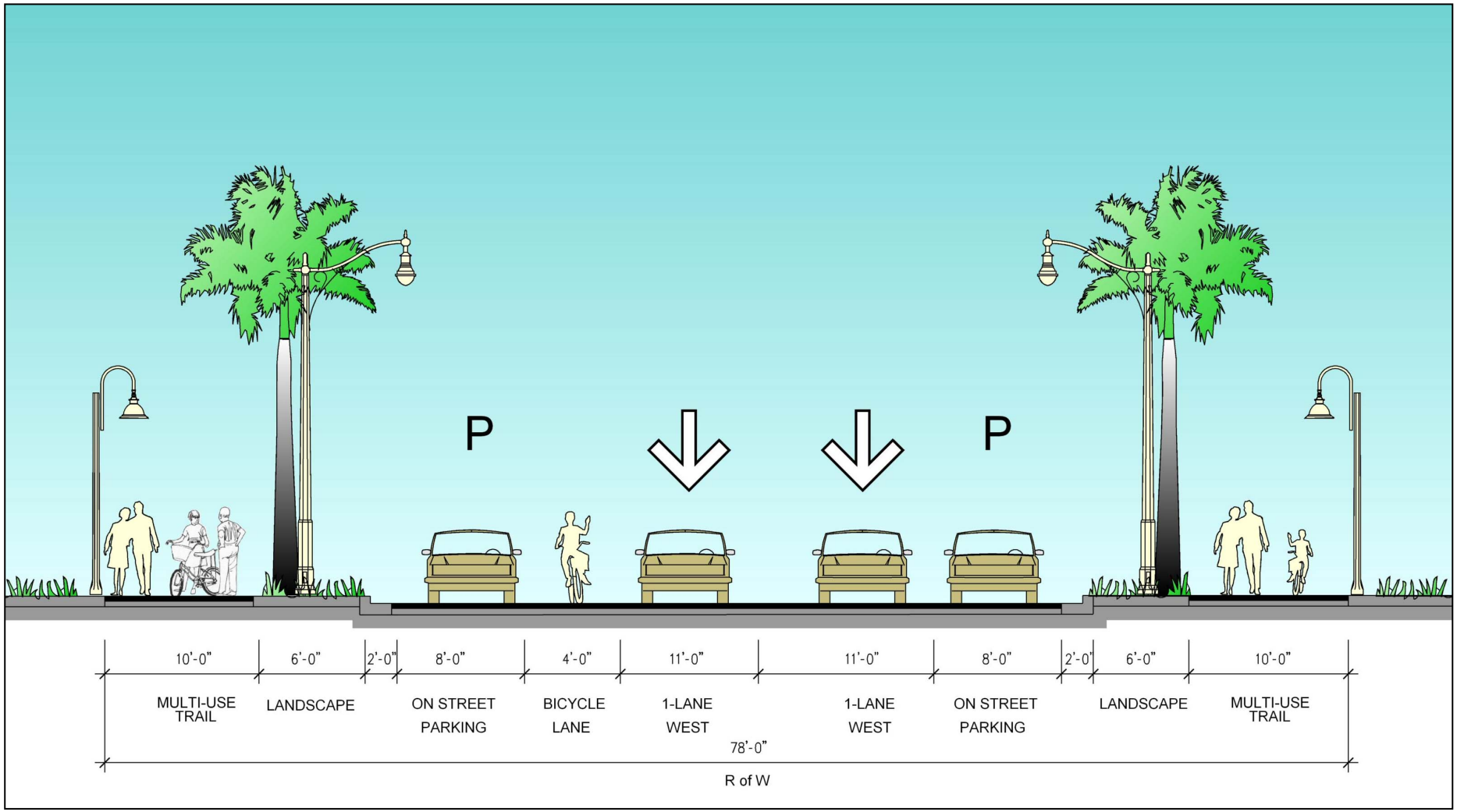
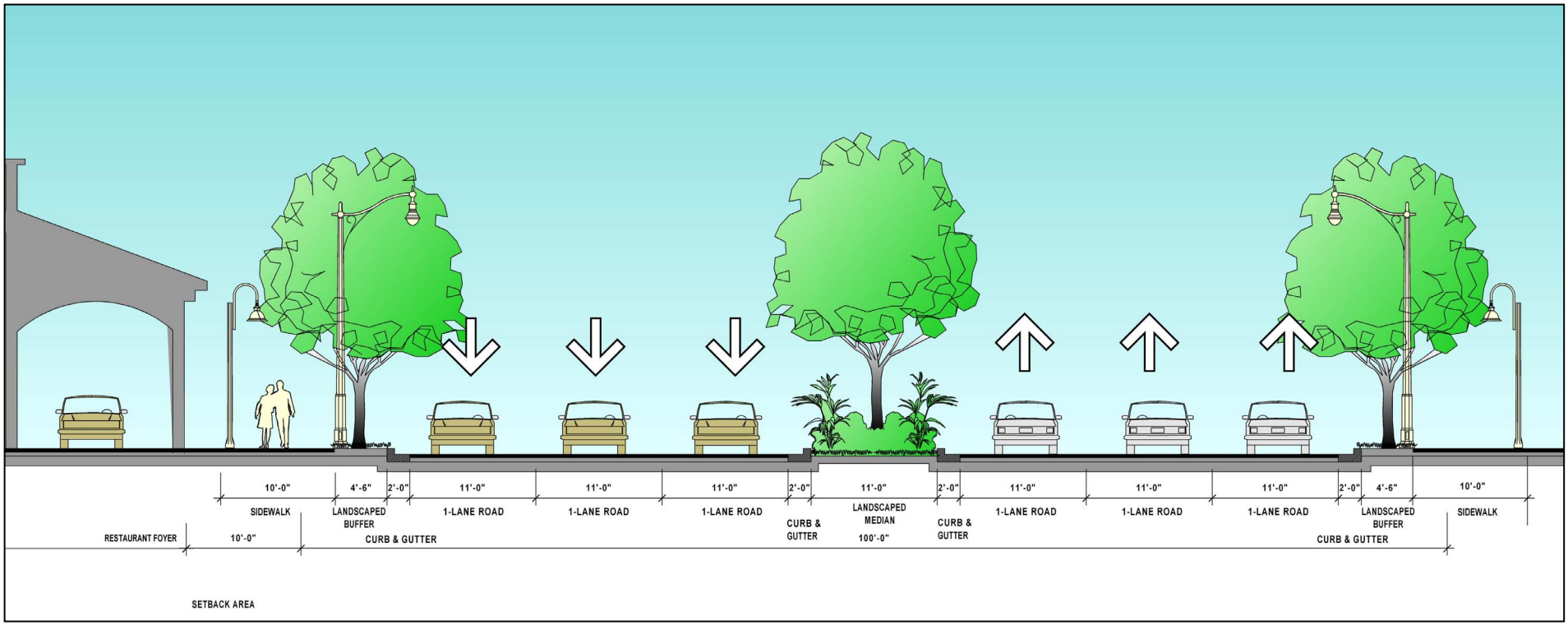


Figure E-5
Recommended Typical Section on the IFK Causeway in North Bay Village



Additional Considerations

The recommendations presented here address strategies that largely fall under the purview of FDOT. In addition to these, there are other important considerations that, while not the direct responsibility of FDOT, will play a role in enhancing the livability of the corridor:

- **Land use and urban design** - In North Bay Village, new development and redevelopment should be oriented more toward the roadway to encourage walking and limit direct driveway access to the corridor. Land use and urban design plans/regulations are the responsibility of the city.

- **Regional bicycle and pedestrian corridor** – By providing good facilities for bicycles and pedestrians, the proposed strategies have the opportunity to elevate the corridor as the only regional bicycle and pedestrian corridor in the county connecting the mainland to the beach, improving the chances for funding. This strategy will need to be supported by the Miami-Dade Metropolitan Planning Organization (MPO), Miami-Dade County and the cities of Miami, Miami Beach and North Bay Village.

- **Local transit service** – As part of the Phase I study, a locally-oriented transit service, similar to the Electrowave Shuttle, is proposed for 79th Street to compliment redevelopment. Consider-ation should be given to extending the service to Miami Beach.

- **Multi-modal hub** – The proposed regional bicycle and pedestrian corridor would tie into the North Shore Recreational Corridor at the North Shore Park. The creation of a multi-modal hub at this location would facilitate the convergence of bicycles, pedestrians and the many transit routes that serve Miami Beach.

- **Draw bridge coordination** – Corridor stakeholders raised concerns about automobile delays in the corridor caused by both draw bridges on the causeway. One possibility is to place peak period restrictions on the bridges, which currently operate on an on-demand basis.

Issues for Further Study

This study has identified several improvements for implementation within the corridor. Prior to implementation, there are two areas that will likely need further analysis:

- **Capacity on 71st Street and Normandy Drive** – This study recommends lane reductions on both 71st Street and Normandy Drive in Normandy Island. While planning level analysis shows that this can be accomplished with negligible effects on capacity, a more detailed traffic analysis may need to be performed to confirm the findings. One option may be to implement the short term recommendation of restriping the roads, then closely scrutinizing the results (but even this strategy will likely require further analysis).

- **Right of way impacts on the JFK Causeway** – This study also recommends livability enhancements to the JFK Causeway in North Bay Village, including wider medians and sidewalks and a landscaped buffer. In some cases, it is unknown if the recommended cross-section can be accomplished within the

existing right of way (although any potential ROW impacts would be minor). Additional analysis will be required to assess ROW impacts, if any.

Both of these issues will need to be addressed through a PD&E study. A PD&E study for the Phase I study recommendations is set to begin in the summer of 2003. A similar study for the Phase II recommendations will likely begin in 2004.

CHAPTER ONE: EXISTING CONDITIONS

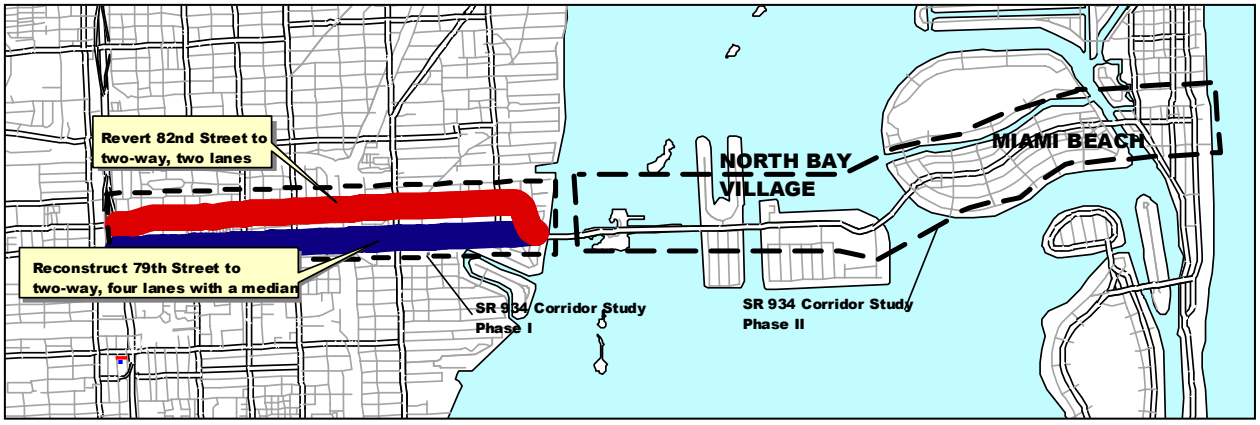
1.1.0 Overview

As part of its Livable Communities Initiative, the Florida Department of Transportation (FDOT) is performing a series of studies on the State Road 934 corridor from Interstate 95 in northeast Miami to State Road A1A in Miami Beach. The first phase of the study, recently completed, addresses the portion of the corridor from Interstate 95 to Biscayne Bay. The second phase, which is the subject of this current effort, addresses the portion of the corridor from Biscayne Bay to State Road A1A (*Map 1-1*).

SR 934 provides a major east-west connection between Miami Beach and the mainland. It exhibits significant variation in both design and character throughout its entire length. In Miami Beach, the corridor (also named 71st Street) is two lanes and forms the heart of the city's North Beach Town Center, a village center with pedestrian oriented retail uses. In Normandy Island, the corridor becomes a one-way pair (71st Street and Normandy Drive) with three lanes each, traversing the Normandy Isles neighborhood that includes single family homes, apartment complexes and commercial districts at both ends. Beyond Normandy Island, the corridor converges to form the John F. Kennedy Causeway, a six lane causeway. The JFK Causeway passes through the City of North Bay Village, a collection of islands with high rise condominiums, single family homes and commercial uses.

While the corridor exhibits unique design and character across its length, the community issues are unique as well. In the North Beach Town Center, issues center around the need to further develop a walkable village center with a more friendly pedestrian environment. In Normandy Island, the current one-way pair configuration conflicts with the neighborhood's residential character and the Normandy Village retail district on the east end of the island. In North Bay Village, there is a desire to create a context-sensitive, "Main Street" concept along the corridor and provide safe pedestrian passages to the different islands.

Map 1-1
Study Areas



The purpose of this SR 934 Phase II planning study is to develop a clear understanding of the issues along the corridor and to identify community and transportation solutions that address these issues. This chapter covers existing conditions along the corridor.

1.2.0 Land Use and Building Conditions

1.2.1 Existing Land Use

The SR 934 corridor contains a varied mix of residential and commercial land uses. At its eastern end where SR 934/71st Street meets SR A1A/Collins Avenue, redeveloping high rise condominiums and hotels separate the intersection from the beach. Moving west along the corridor, the land uses that front SR 934/71st Street serve as a village center with closely spaced, mostly small-scale retail establishments, restaurants and some banks and offices that front the street. Several apartment complexes are located in the blocks both north and south of the corridor. This section of the corridor has experienced new development in recent years related to the larger redevelopment of north Miami Beach. Just north of the corridor, a large city-owned vacant parcel was the subject of charrette in the summer of 2001. *Map 1-2* shows existing land uses in the North Beach Town Center.

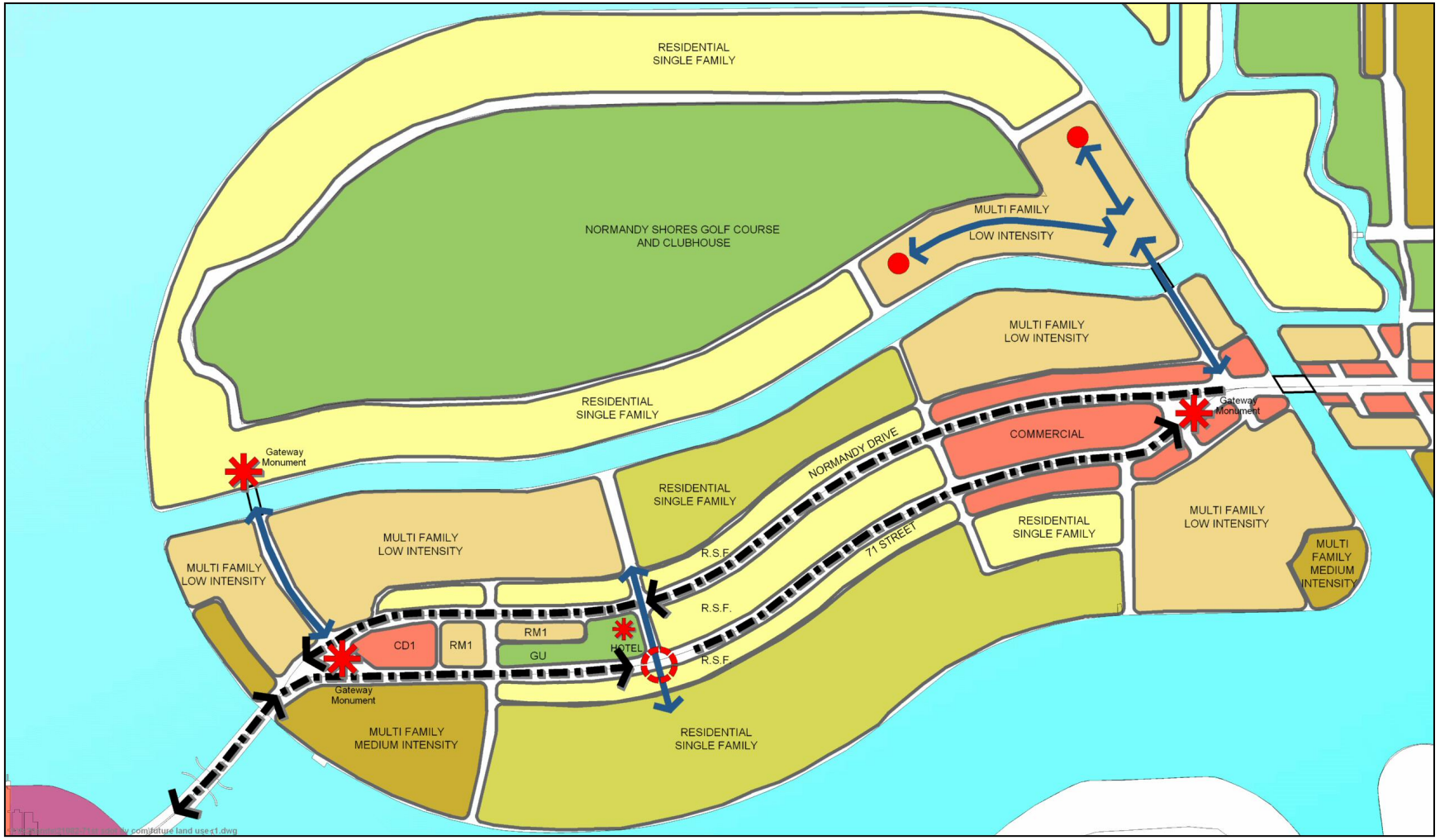
At Normandy Island, SR 934 becomes a one way pair (71st Street and Normandy Drive) and traverses a mix of retail uses and residential neighborhoods. The eastern end of the island is Normandy Village, a commercial district with restaurants, a grocery store and other retail establishments. This area hosts a farmer's market on Saturdays. Beyond Normandy Village, the corridor traverses a neighborhood with a mix of established single family homes and apartment complexes and a public park. Existing land uses in Normandy Island are shown in *Map 1-3*.

The City of North Bay Village is comprised of two separate islands, Treasure Island and Harbor Island, both of which are traversed by SR 934, which transitions to a six lane causeway (the JFK Causeway). On Treasure Island, the predominant land use on SR 934 is highway oriented commercial, including a grocery store, service stations, restaurants and strip malls, hotels, a television station and parking lots. A mix of apartment complexes, a single family neighborhood and an elementary school are located in the blocks south of the corridor. On Harbor Island, North Bay Village City Hall, a service station and tennis club front the north side of the corridor, while a gated, internally-oriented single family neighbor-hood is located on the south side. *Map 1-4* shows existing land uses in North Bay Village.

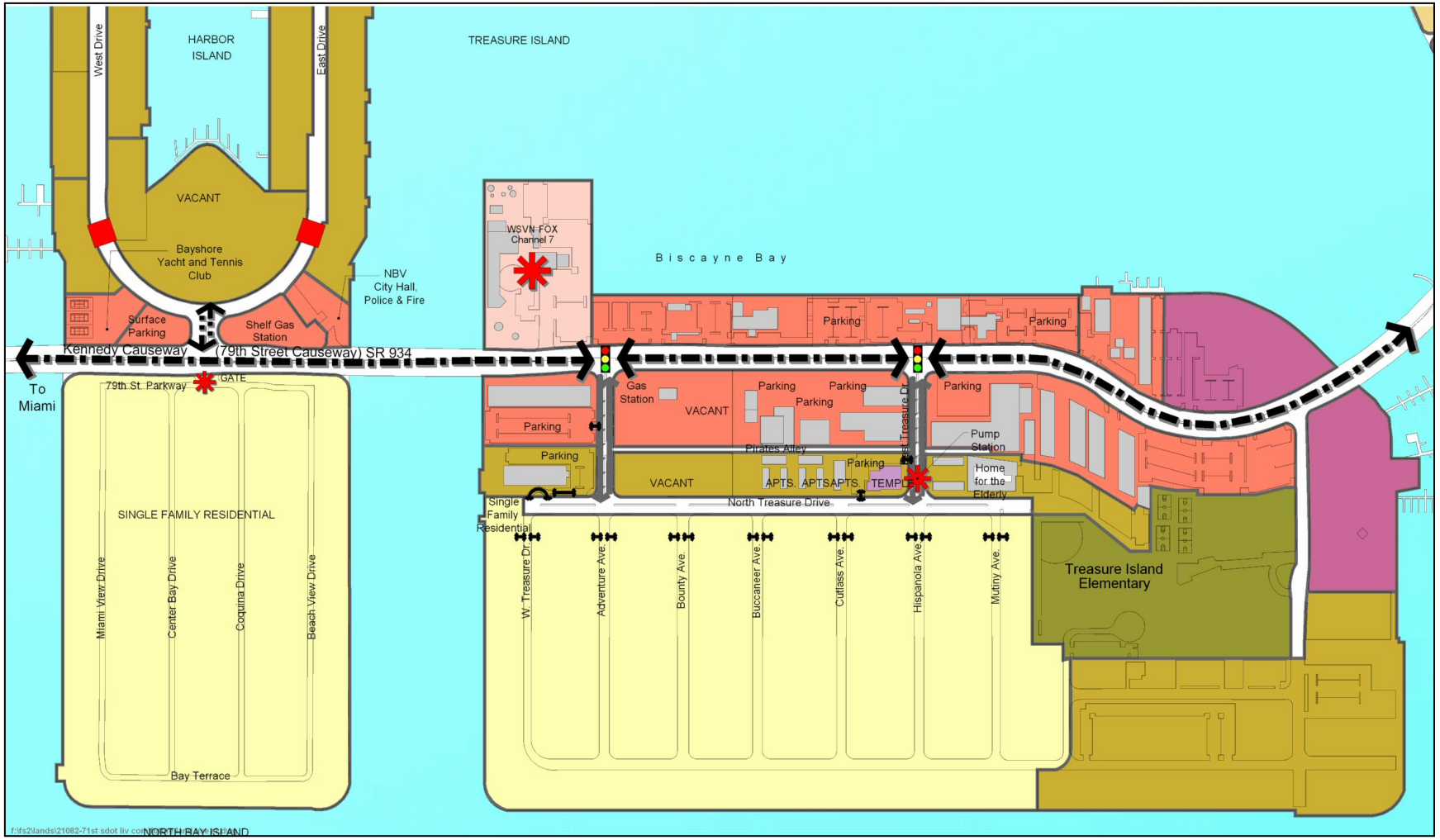
West of North Bay Village, just before the causeway meets the mainland, the corridor traverses Pelican Harbor Park, a public facility.

Map 1-2
Existing Land Use in the North Beach Town Center

Map 1-3
Existing Land Use in Normandy Island



Map 1-4
Existing Land Use in North Bay Village



1.2.2 Zoning

Map 1-5 shows current zoning adjacent to the SR 934 corridor in Miami Beach and North Bay Village. Zoning in both jurisdictions reinforces existing development patterns and uses.

In the North Beach Town Center, the parcels that separate the corridor from the beach are zoned for high intensity multi-family residential uses, while the parcels that front the corridor are zoned for high intensity commercial uses. Uses that front SR 934/71st Street in this area must be set back a minimum of five to 20 feet and cannot exceed a height ranging from 75 to 100 feet.

In Normandy Island, the parcels in Normandy Village on the side of the island are zoned for medium intensity commercial uses. On the central part of the island, parcels are zoned for single family detached dwellings. On the east side of the island, parcels are zoned for low intensity multi-family residential, medium multi-family residential and low intensity commercial uses.

Uses that front SR 934/71st Street/Normandy Drive on the west end of the island must be set back a minimum of five to 20 feet and cannot exceed a height of 50 feet. Uses that front the corridor on the east side of the island must be set back 20 feet and cannot exceed a height ranging from 25 to 140 feet.

In North Bay Village, parcels fronting the corridor on Treasure Island are zoned for commercial limited (hotels and motels) and general commercial uses, while parcels fronting the corridor on Harbor Island are zoned for general commercial (north side) and low density single family (south side) uses.

Uses fronting the corridor in North Bay Village must be set back at least 20 feet and cannot exceed a height of 33 feet for residential uses and 130 feet for commercial uses. A summary of the zoning code regulations for Miami Beach and North Bay Village are shown in *Figures 1-1* and *1-2*, respectively.

Map 1-5
Current Zoning

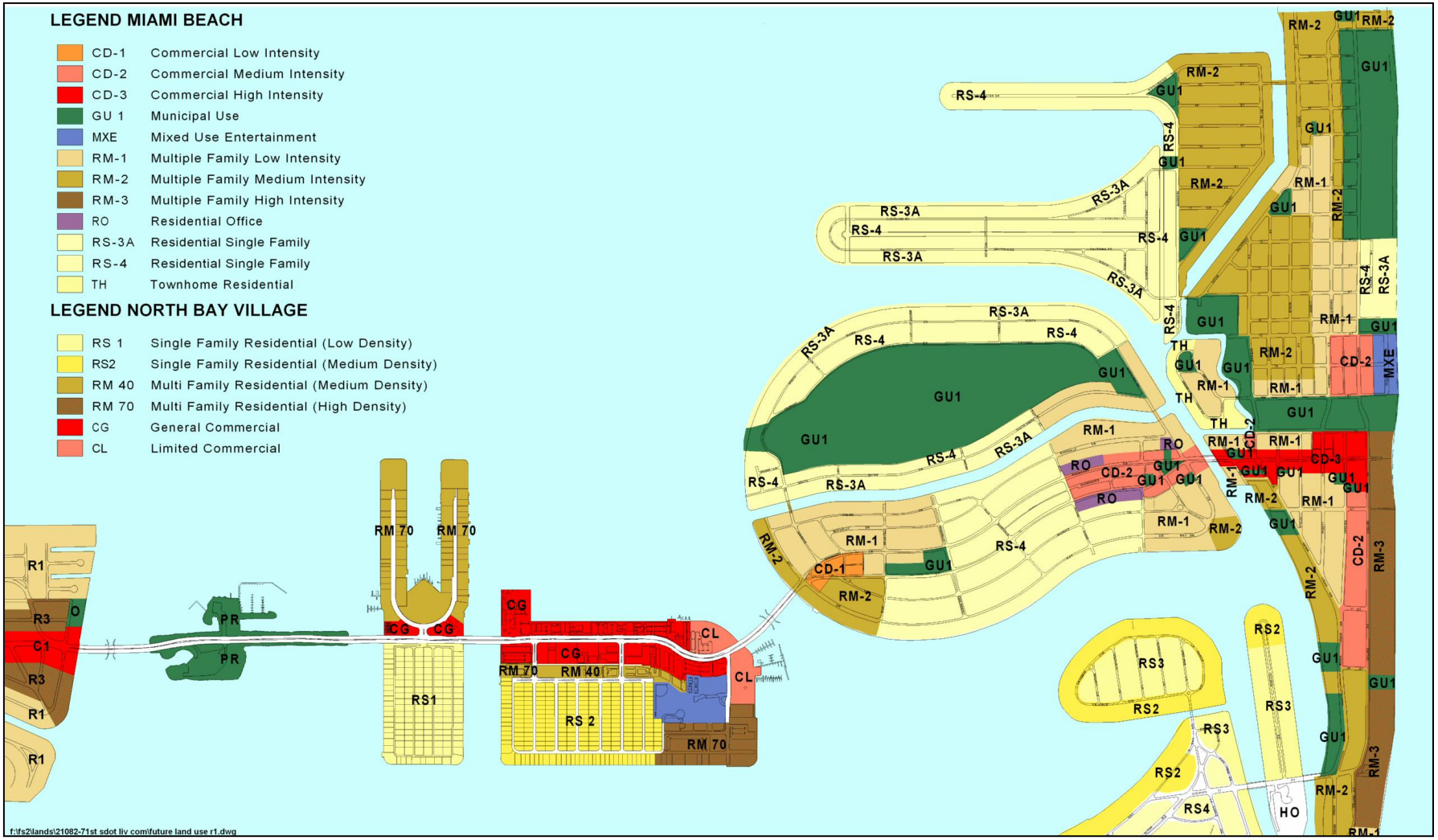
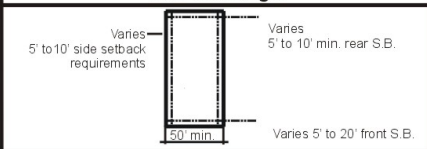
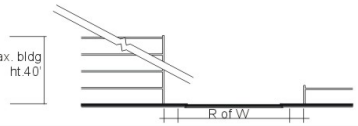
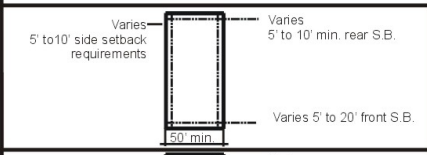
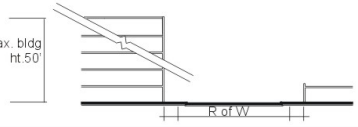
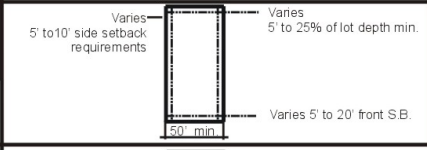
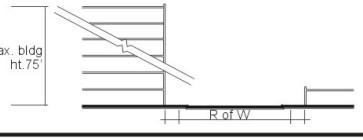
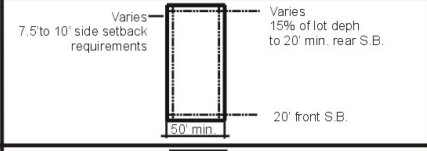
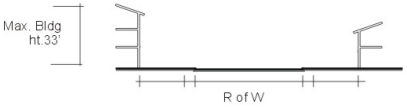
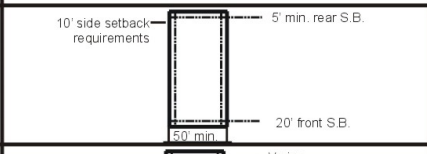
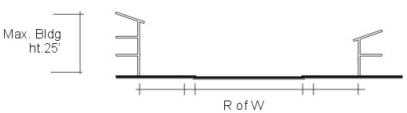
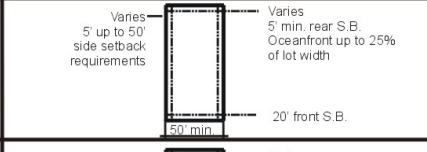
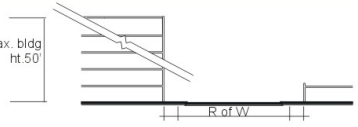
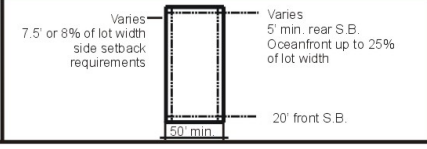
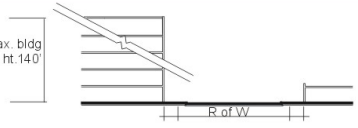
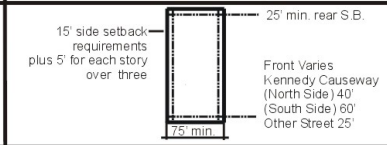
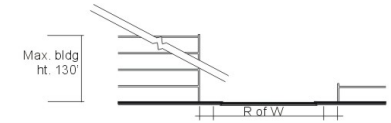
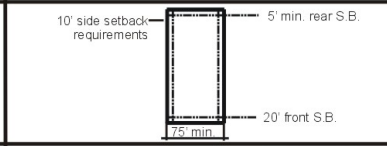
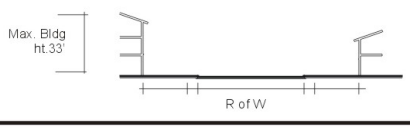
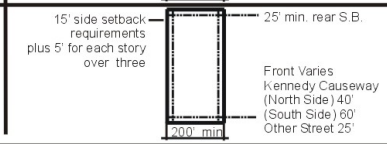
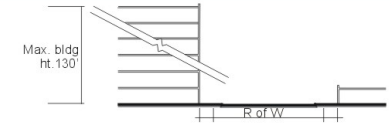


Figure 1-1
Miami Beach Zoning Code Analysis

Zoning Designation	Permitted Uses	F.A.R.	Site Coverage	Maximum Height Requirements
CD-1 Commercial, Low Intensity *City of Miami Beach Zoning Code*	**Commercial Uses; Apartments; Bed and breakfast In; and Uses that serve alcoholic beverages.**	Max. F.A.R.: 1.0 Min. Lot Area: Commercial: None Residential: 5,600 Sq. Ft. Min. Lot Width: Commercial: None Residential: 50 feet Max. Building Height:40 feet Max. Numb. Of Stories: 4		
CD-2 Commercial, Medium Intensity *City of Miami Beach Zoning Code*	**Commercial Activities; Services; Offices and related activities which serve the entire city.**	Max. F.A.R.: 1.5 Min. Lot Area: Commercial: None Residential: 7,000 Sq. Ft. Min. Lot Width: Commercial: None Residential: 50 feet Max. Building Height:50 feet Max. Numb. Of Stories: 5		
CD-3 Commercial, High Intensity *City of Miami Beach Zoning Code*	**Commercial Uses; Apartments; Apartment/Hotels; Hotels**	Max. F.A.R.: Varies 2.25 to 3.0 Min. Lot Area: Commercial: None Residential: 7,000 Sq. Ft. Min. Lot Width: Commercial: None Residential: 50feet Max. Building Height:varies 75 to 100 feet Max. Numb. Of Stories: varies 7 to 11		
RO Residential/Office City of Miami Beach Zoning Code	**Single Family dwelling; Apartments and Offices**	Max. F.A.R.: .75 Min. Lot Area: Residential: 6,000 Office: None Min. Lot Width: Residential:50 feet Office: None Max. Building Height: 33 feet Max. Number of Stories: 3		
RS-4 Single Family Residential City of Miami Beach *Zoning Code*	**Single Family Detached Dwellings.**	Min. Lot Size-6,000 Sq. Ft. Min. Lot Width: 50 feet. Min. Unit Size: 1,800 Sq. Ft. Max. Building Height:25 feet or 50% of lot width, whichever is greater, up to a maximum of 33 feet. Maximum Number of Stories: 3		
RM-1 *Residential Multifamily, Low Intensity* *City of Miami Beach Zoning Code*	**Single-family detached dwelling, townhomes, apartments, hotels, for properties fronting Harding Av., From the City Line on the north, to 73rd Street on the South, and bed and breakfast inn (pursuant to article IV, division7 of this chapter)**	Max. FAR: 1.25; west side of Collins Av. Between 76th and 79th St 1.4. Public and Private institutions: Lot area equal or less than 15,000 Sq. Ft. 1.25; lot area greater than 15,000 Sq. Ft. 1.4 Min. Lot Area: 5,600 Sq. Ft. Min. Lot Width: 50 feet Max. Building height: 50 feet		
RM-2 *Residential Multifamily, Medium Intensity* *City of Miami Beach Zoning Code*	**Single Family detached dwellings, Town homes; Apartments; Apartments-Hotels; and Hotels.**	Max. FAR: 2.0 Min. Lot Area: 7,000 Sq. Ft. Min. Lot Width: 50 feet Max. Building Height: varies 75 to 140 feet Max. Number of stories: varies 5 to 15 stories.		

(Analysis reflects data taken from *2001 City of Miami Beach Zoning Code*)

Figure 1-2
North Bay Village Zoning Code Analysis

Zoning Designation	Permitted Uses	Development Standards	Site Coverage	Maximum Height Requirements
CG General Commercial District *City of North Bay Village Zoning Code*	**General Office; Retail; and Service Commercial Uses.**	Min. Lot Area: 10,000 Sq. Ft. Min. Lot Width: 75 feet Max. Building Height:130 feet Max. Numb. Of Stories: 12 Min. Pervious Area: 20%of the total parcel		
RS-1 Single Family (Low Density) *City of North Bay Village Zoning Code*	**Single Family Residential**	Min. Lot Area: 9,000 Sq. Ft. Min. Lot Width: 75 feet Max. Building Height 33 feet Max. Numb. Of Stories: 3 Max. Density: Up to 6 Du/Acre		
CL Limited Commercial District *City of North Bay Village Zoning Code*	**Tourist Accommodation; including but not limited to Hotels and Motels; and accessory uses thereto; will be permitted.**	Min. Lot Area: 28,000 Sq. Ft. Min. Lot Width: 200feet Max. Building Height:130 feet Max. Numb. Of Stories: 12 Max. Density: (70) One bedroom dwelling units per net acre.		

(Analysis reflects data taken from *2001 North Bay Village Zoning Code*)

1.2.3 Typical Cross-sections

The typical cross-section for SR 934 varies greatly across the study area. Generally speaking, the corridor begins in Miami Beach with a narrow cross-section then broadens as it progresses to the west. Typical cross-sections are described below.

North Beach Town Center

At SR A1A/Collins Avenue, 71st Street maintains a 70 foot right of way with one 11 foot lane in each direction, a center turn lane and on-street parking on both sides of the road. West of Carlyle Avenue, the on-street parking is replaced by an additional travel lane in each direction and the center turn lane is replaced by a six foot striped median. West of Indian Creek Drive, the right of way expands to 94 feet. In the eastbound direction, there are two 12 foot travel lanes. In the westbound direction, there are two 12 foot travel lanes, a 12 foot auxiliary lane and on-street parking. The corridor becomes undivided at this point. From SR A1A to west of Indian Creek Drive, sidewalks are generally 10 feet in width and setbacks are minimal (predominantly five feet or less).

At the approach to the bridge connecting the North Beach Town Center to Normandy Island, 71st Street transitions to a six lane undivided facility, with three 12 foot travel lanes and a four foot shoulder in each direction. The bridge includes five and half foot sidewalks on both sides of the road. Typical cross-sections of SR 934 in the North Shore area are illustrated if *Figures 1-3* through *1-6*.

Map 1-6
Key to Cross-sections

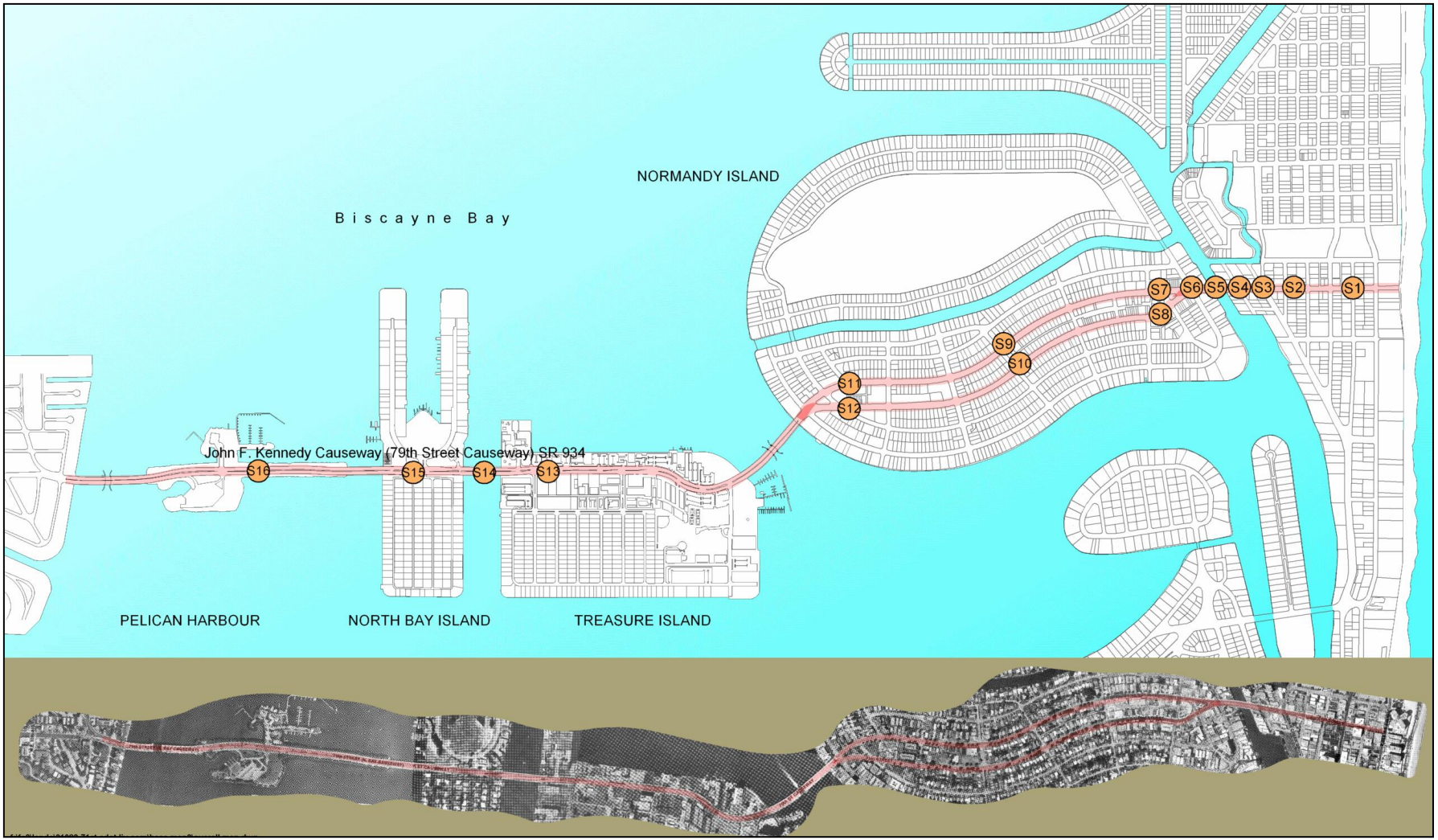
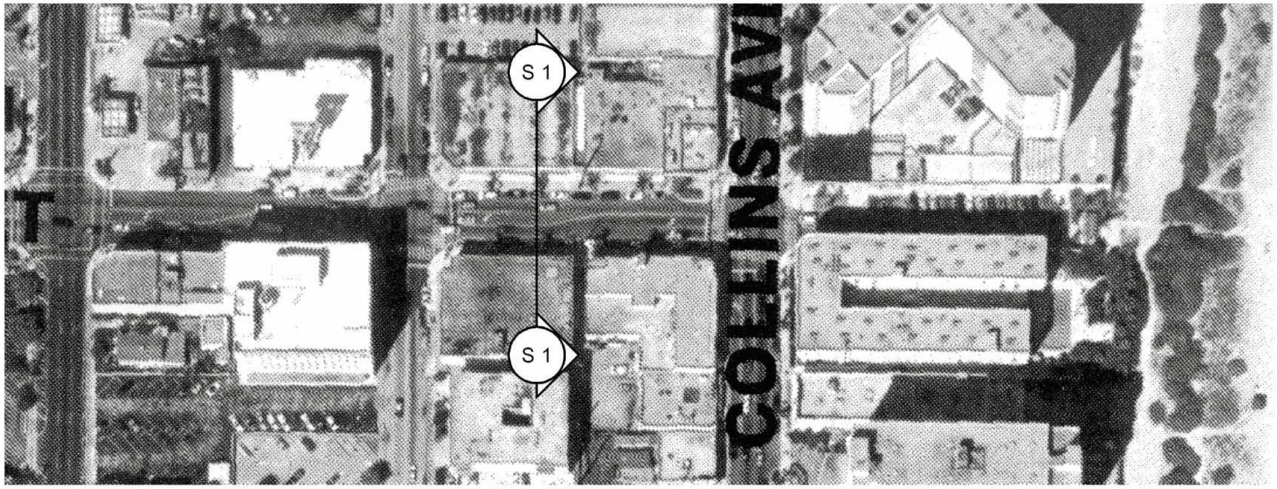


Figure 1-3
Existing Cross-section - SR 934/71st Street at SR A1A/Collins Avenue



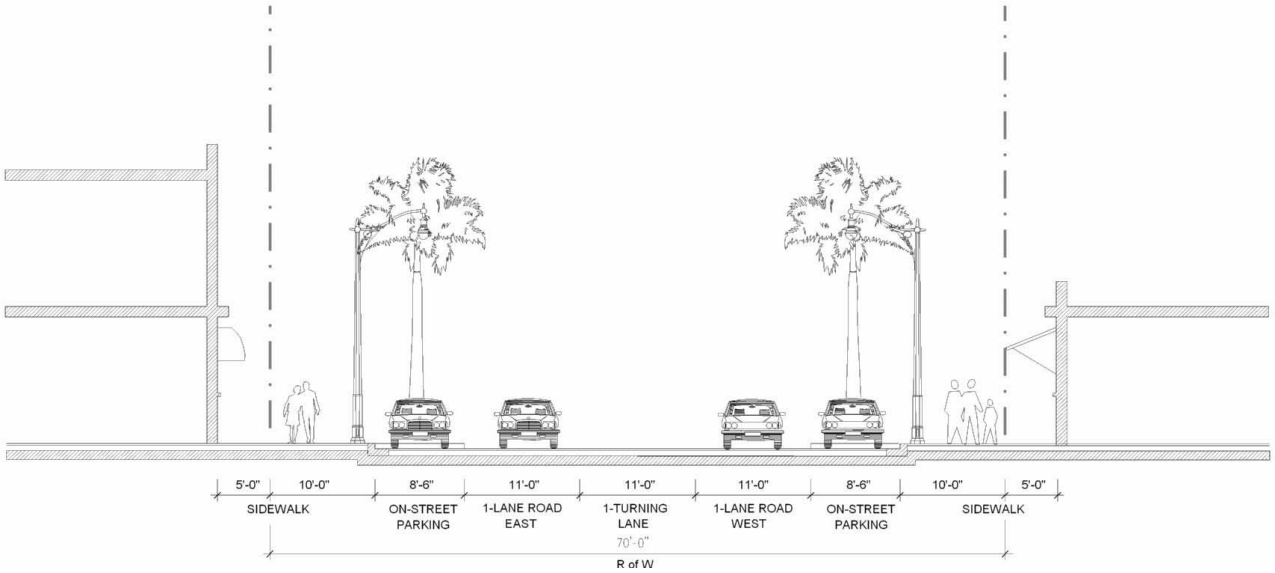
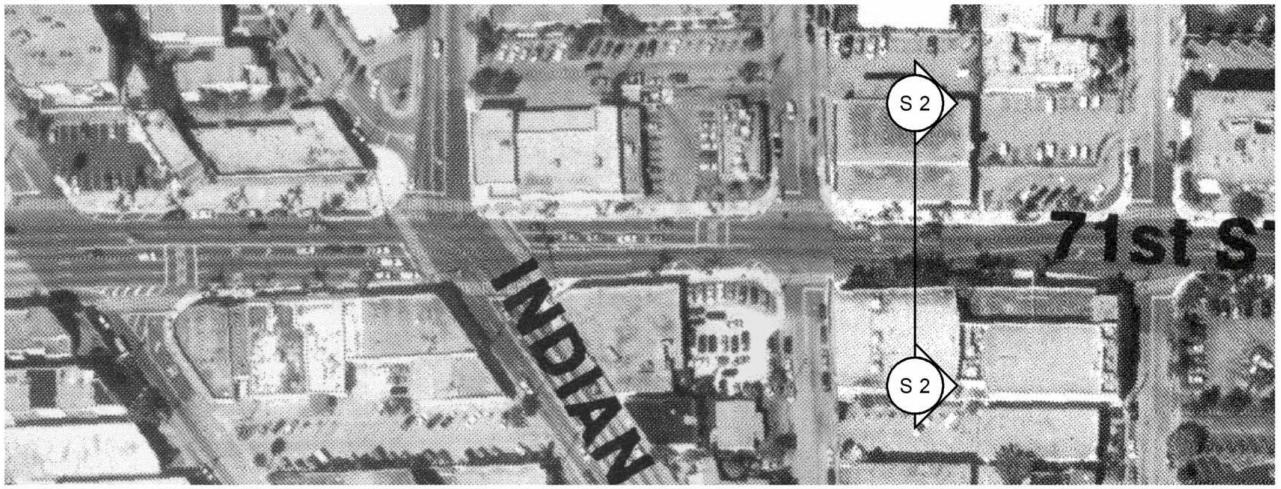


Figure 1-4
Existing Cross-section - SR 934/71st Street at Byron Avenue



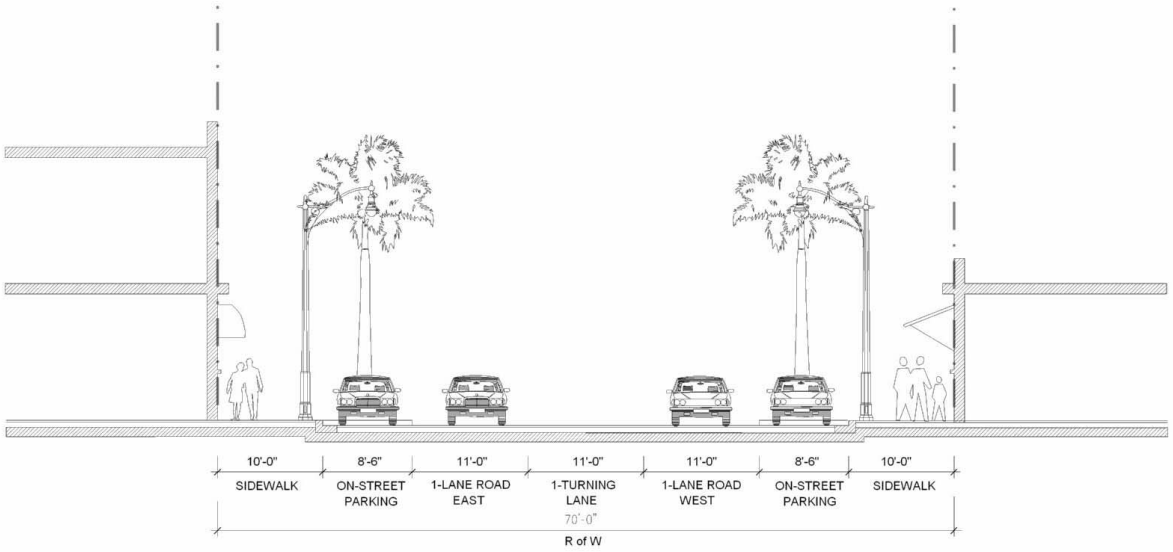
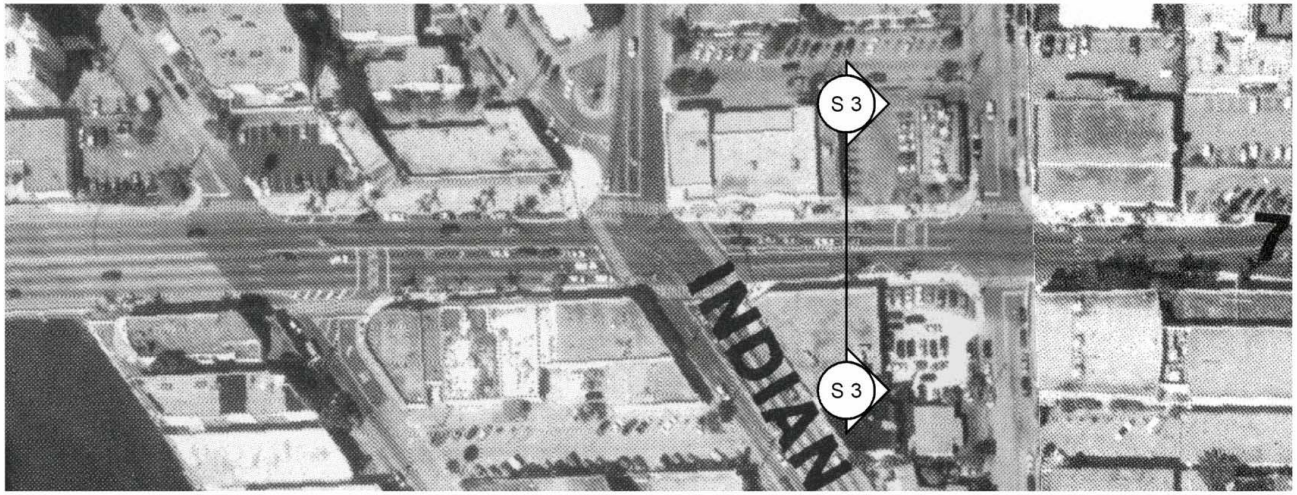


Figure 1-5
Existing Cross-section - SR 934/71st Street at Carlyle Avenue



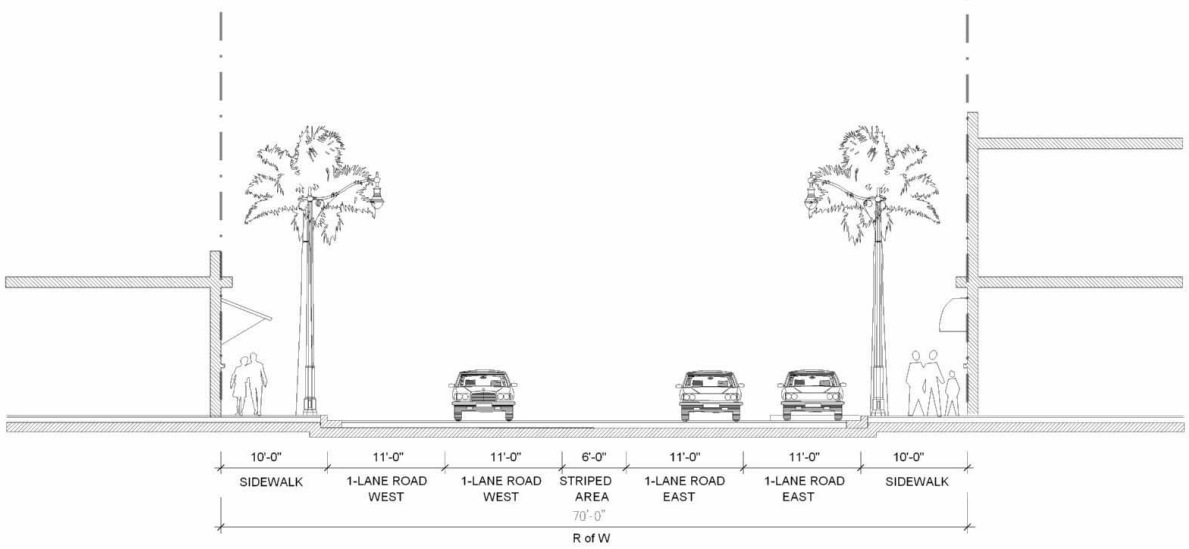
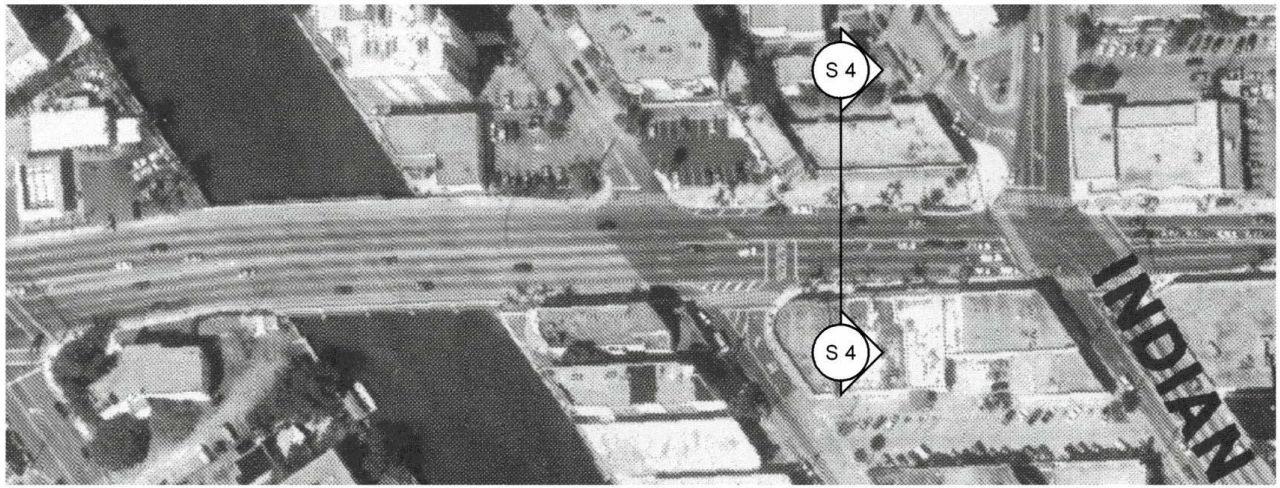
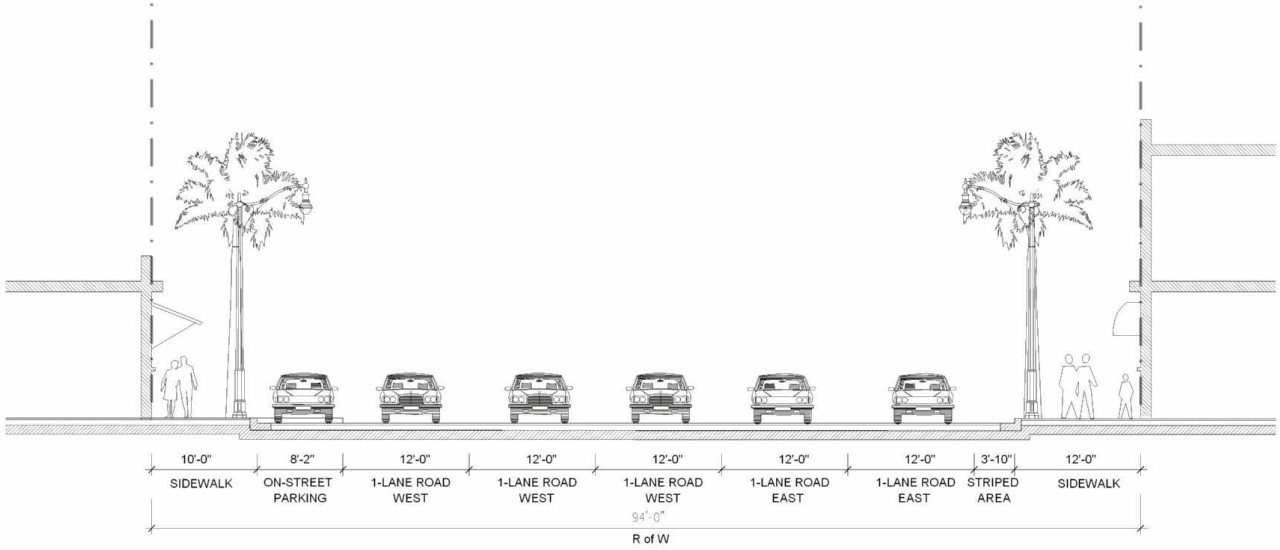


Figure 1-6
Existing Cross-section - SR 934/71st Street at Indian Creek Drive





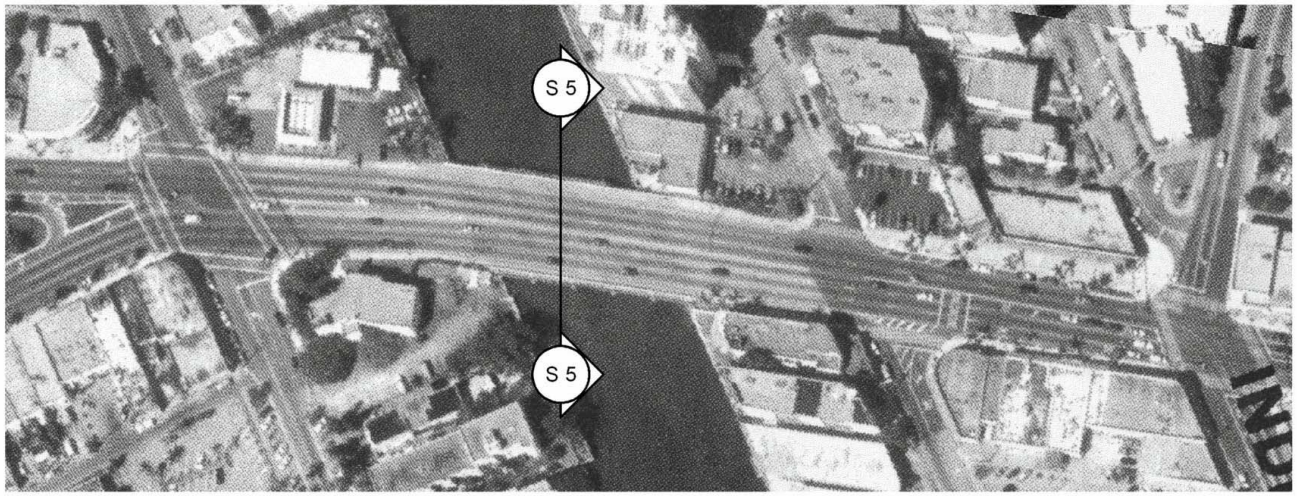
Normandy Island

At Normandy Village on the east end of Normandy Island, SR 934 transitions into a one way pair configuration (71st Street and Normandy Drive), each maintaining 72 to 74 feet of right of way. In the westbound direction, there are three 11 foot travel lanes with a 10 foot striped area dividing the interior travel lane from an 11 foot turn lane. In the eastbound direction, there are three 11 foot travel lanes with a 10 and a half foot turn lane adjacent to the interior travel lane and on-street parking adjacent to the exterior travel lane. Both cross-sections include 15 foot sidewalks on the exterior side and five foot sidewalks on the interior side. Building setbacks are minimal (five feet or less) in both cross-sections.

In the central residential section of Normandy Island, both 71st Street and Normandy Drive maintain identical 78-foot cross-sections. Each have three 12 foot travel lanes with on-street parking on both sides. Each have five foot sidewalks with a six foot grass buffer. Homes are generally set back approximately 25 feet from the right of way line.

At the west end of Normandy Island, both 71st Street and Normandy Drive maintain similar 78-foot cross-sections as the central section. The travel lane widths are reduced to 11 feet. Setbacks vary from 8 feet to 20 feet. Typical cross-sections of SR 934 in Normandy Island area are illustrated in *Figures 1-7* through *1-11*.

Figure 1-7
Existing Cross-section - SR 934/71st Street at Normandy Island Bridge (west)



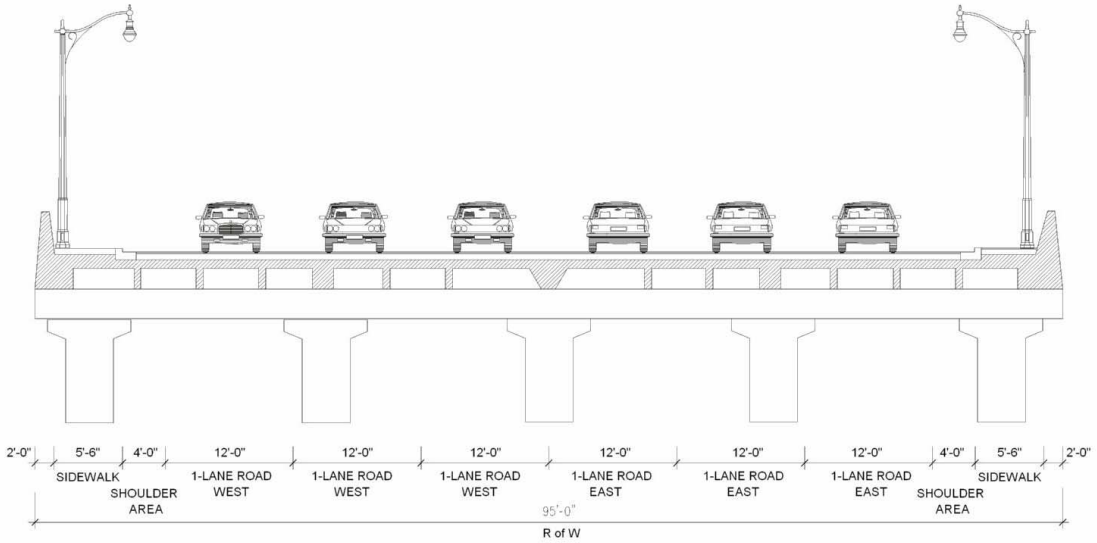
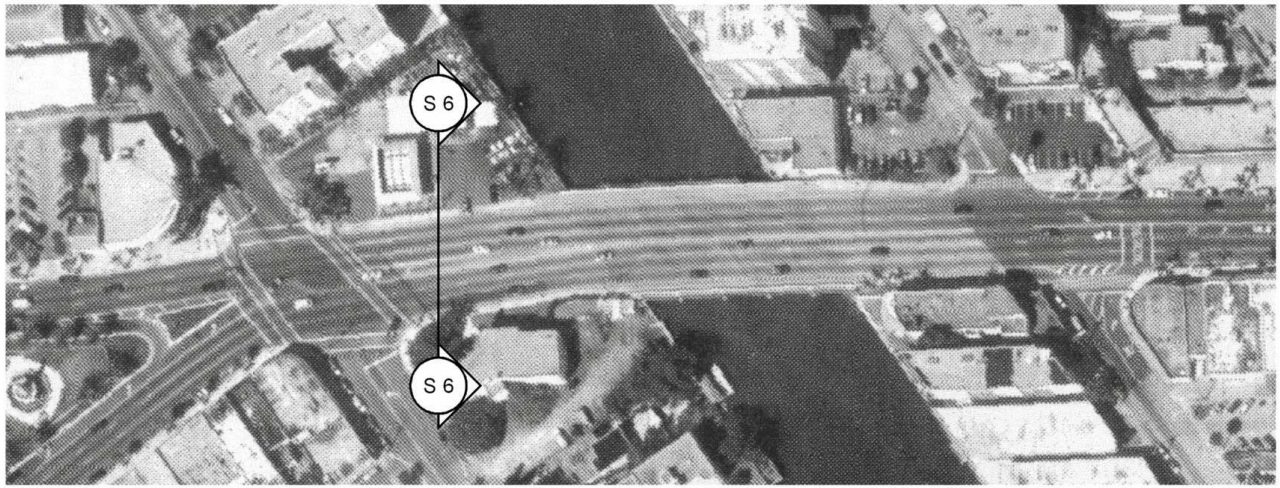


Figure 1-8
Existing Cross-section - SR 934/71st Street at East Bay Drive



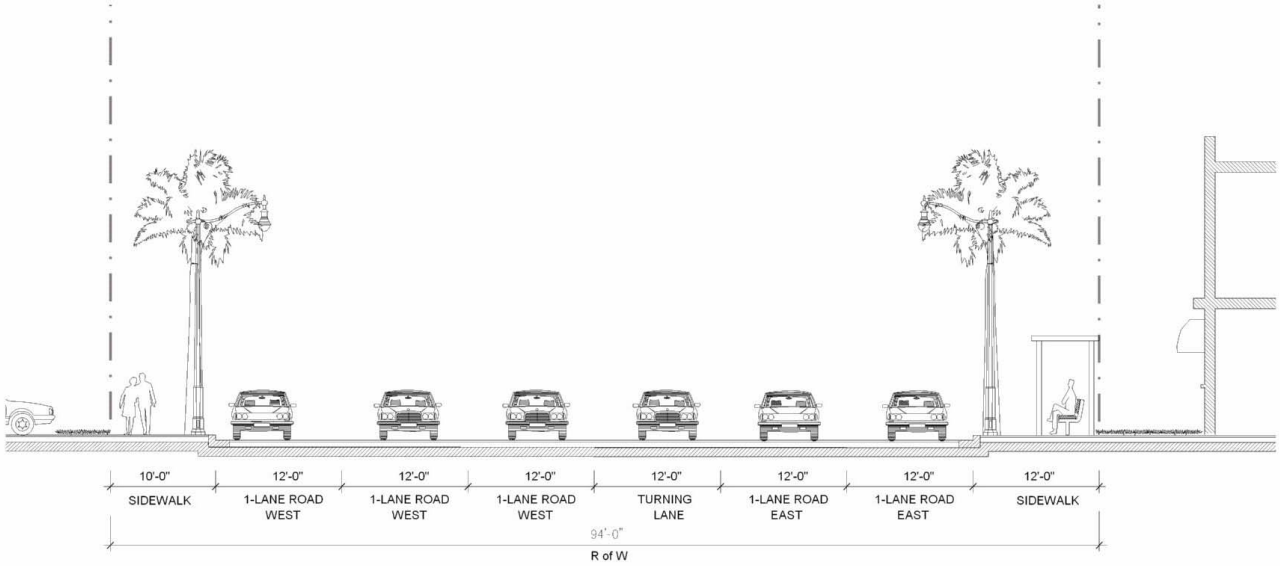
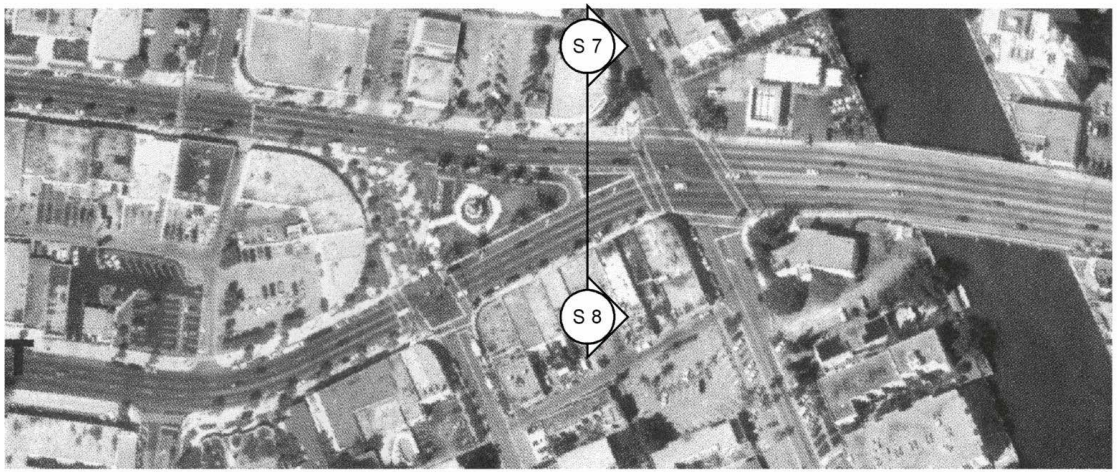


Figure1-9
Existing Cross-section - SR 934/71st/Normandy Drive at East Bay Drive



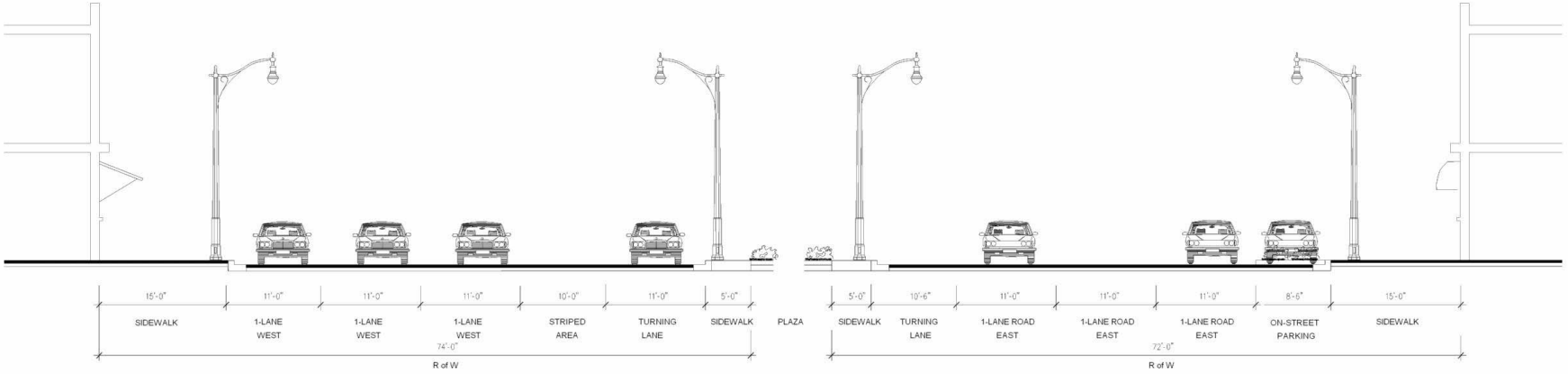


Figure 1-10
Existing Cross-section - SR 934/71st/Normandy Drive at Rue Bordeaux

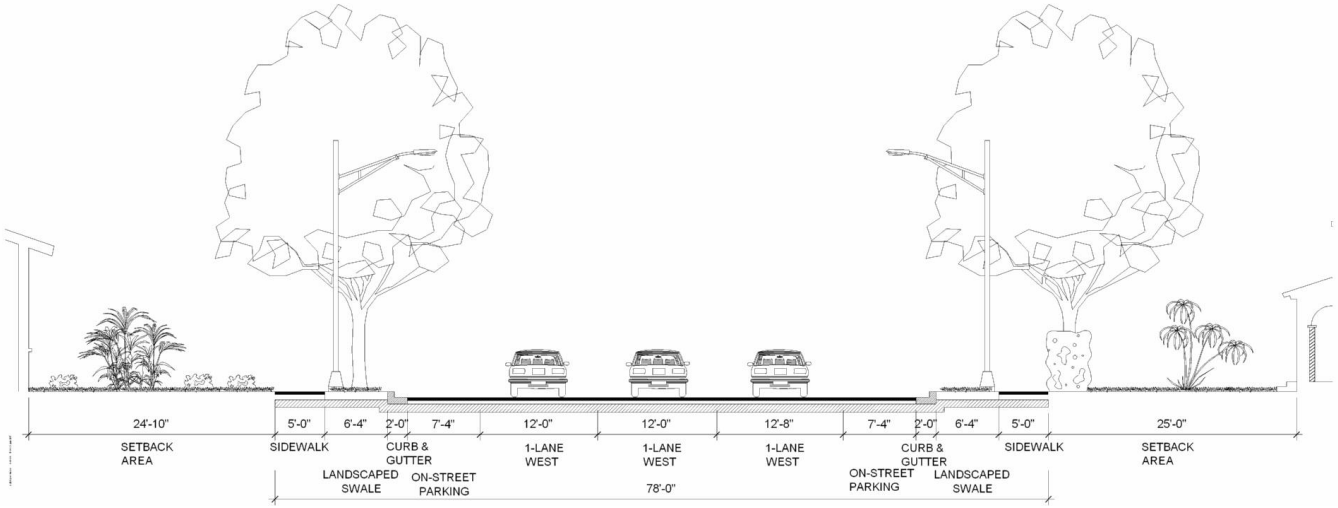
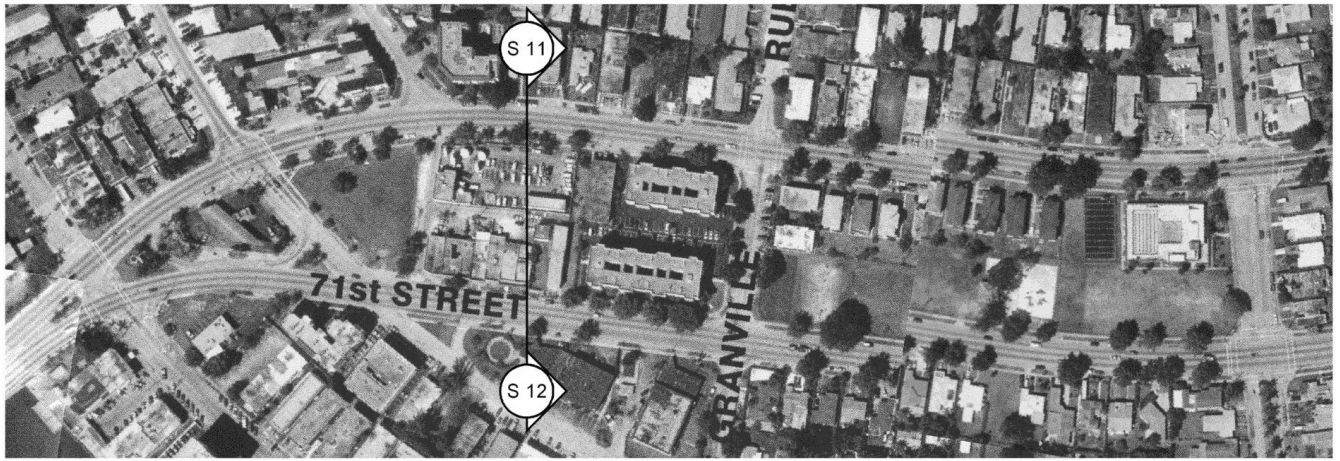
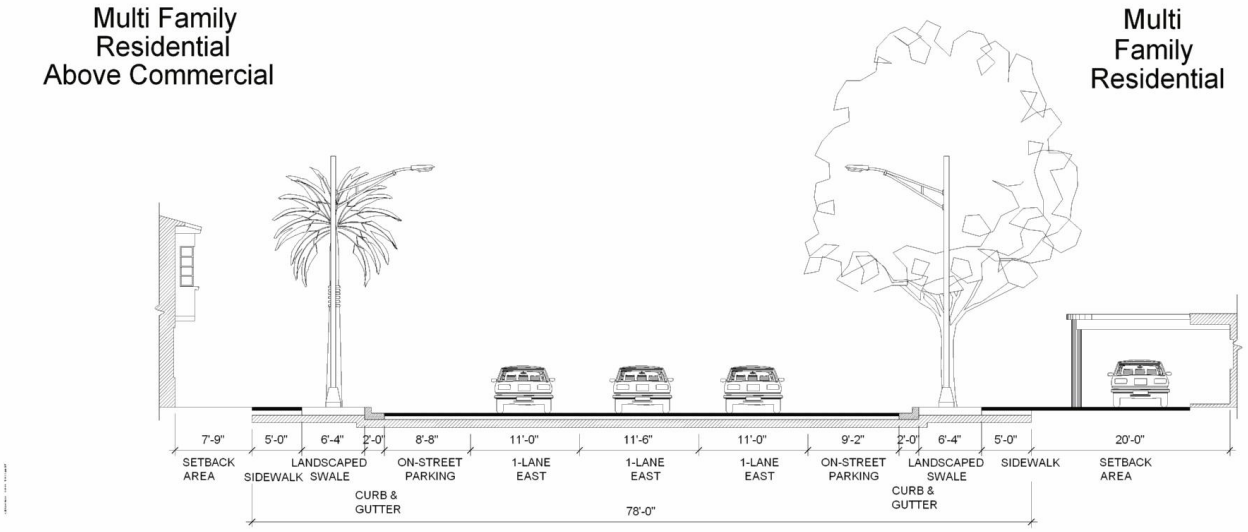


Figure 1-11
Existing Cross-section - SR 934/71st/Normandy Drive at Rue Granville





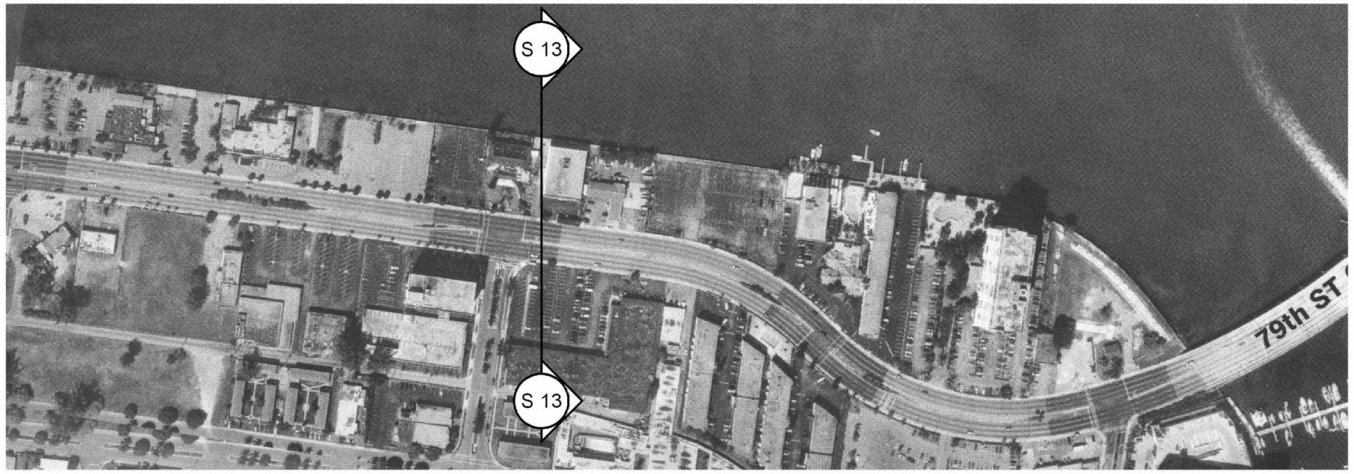
North Bay Village and Bridges/Causeways

At Treasure Island in North Bay Village, SR 934 becomes the JFK causeway and converges back to a two-way configuration with a right of way width of 96 feet. There are three travel lanes in each direction; the two exterior lanes are 10 to 11 feet wide in both directions, with the interior lanes varying between 10 and 14 feet. A 15 foot raised concrete median separates the travel lanes; 11 foot turn lanes are located at median openings. Five foot sidewalks are located on both sides. Building setbacks vary from 15 feet to over 50 feet.

At Harbor Island, the right of way expands to 104 feet. There are three travel lanes in each direction of 10 to 11 and a half feet in width. The travel lanes are separated by a 15 foot raised concrete median with 11 foot turn lanes at median openings. An eight foot exterior turn lane alternates on either side. Five foot sidewalks are located on both sides. Setbacks vary from 10 feet to over 50 feet.

SR 934 connects the islands and the mainland through a series of bridges and causeways. Each maintain a right of width of approximately 94 feet. There are three 11 and a half foot travel lanes in each direction, with exterior lanes alternately expanding to approximately 13 feet. The travel lanes are separated by 11 to 12 and a half foot landscaped or raised concrete medians. Sidewalks are located on both sides and vary from four to five feet in width. At varying locations, the sidewalks are separated from the travel lanes by fences. Typical cross-sections of SR 934 in Normandy Island area are illustrated if *Figures 1-12* through *1-15*.

Figure 1-12
Existing Cross-section - SR 934/JFK Causeway at Adventure Avenue



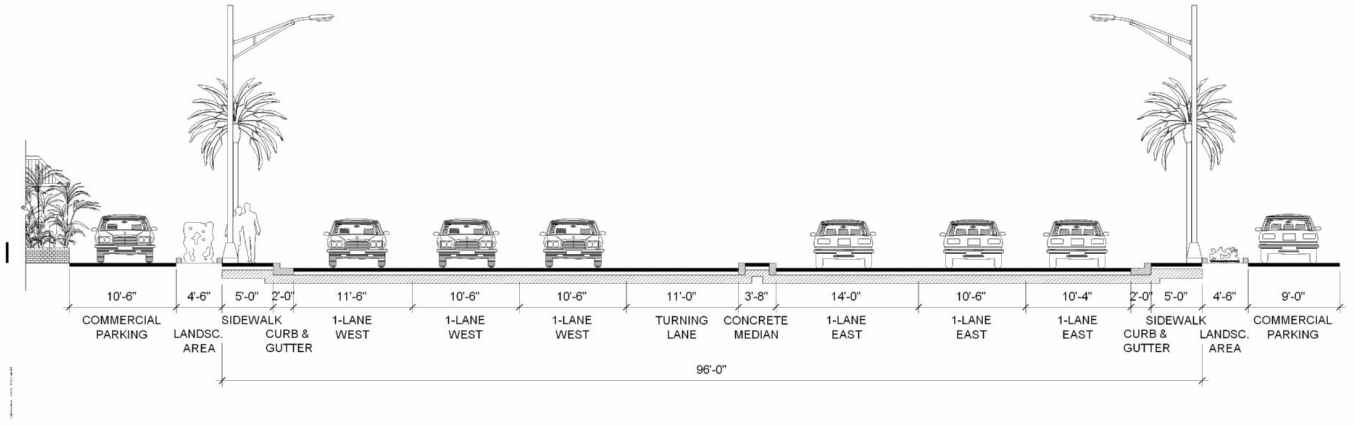
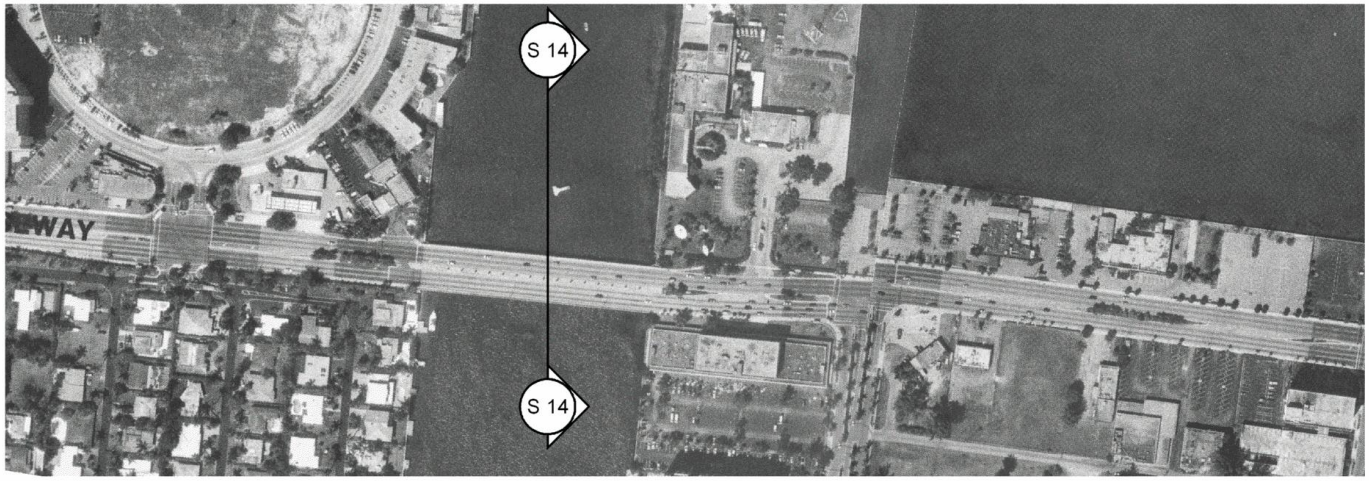


Figure 1-13
Existing Cross-section - SR 934/JFK Causeway between Treasure Island and Harbor Island



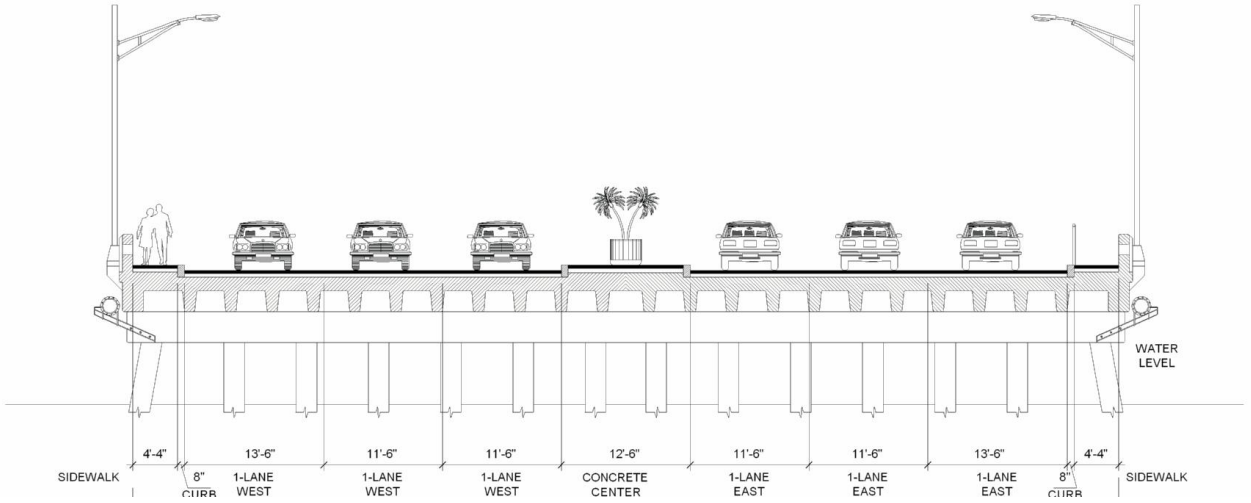
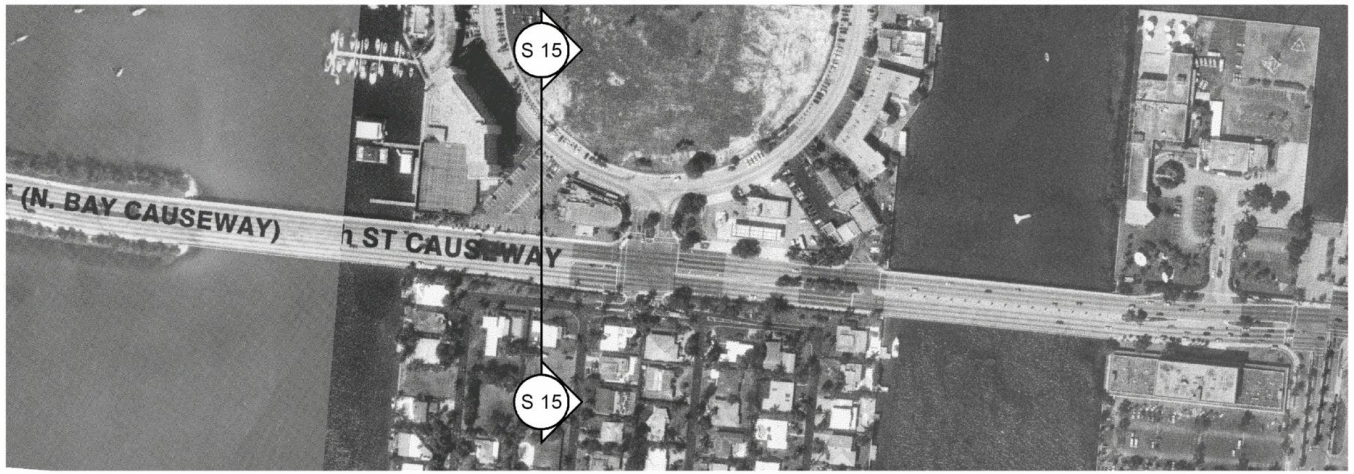


Figure 1-14
Existing Cross-section - SR 934/JFK Causeway at Harbor Island Drive



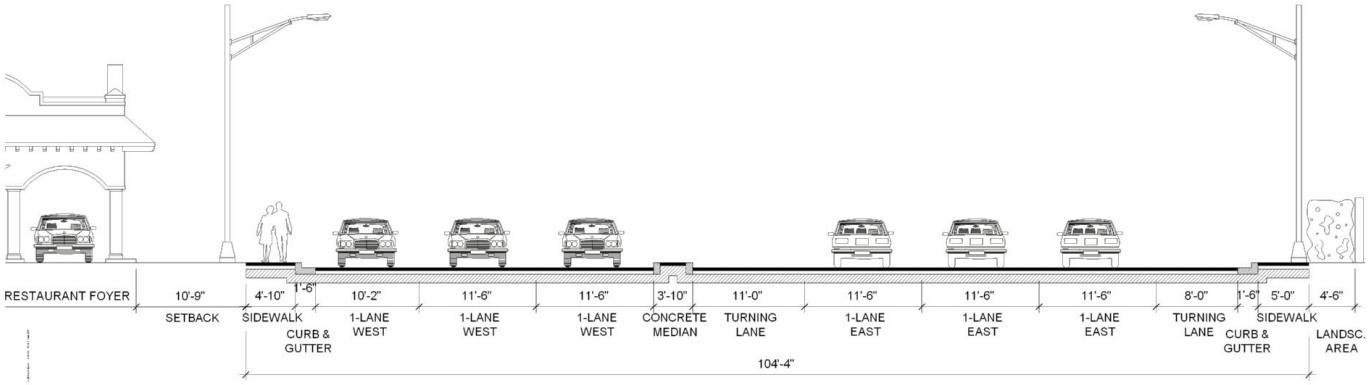
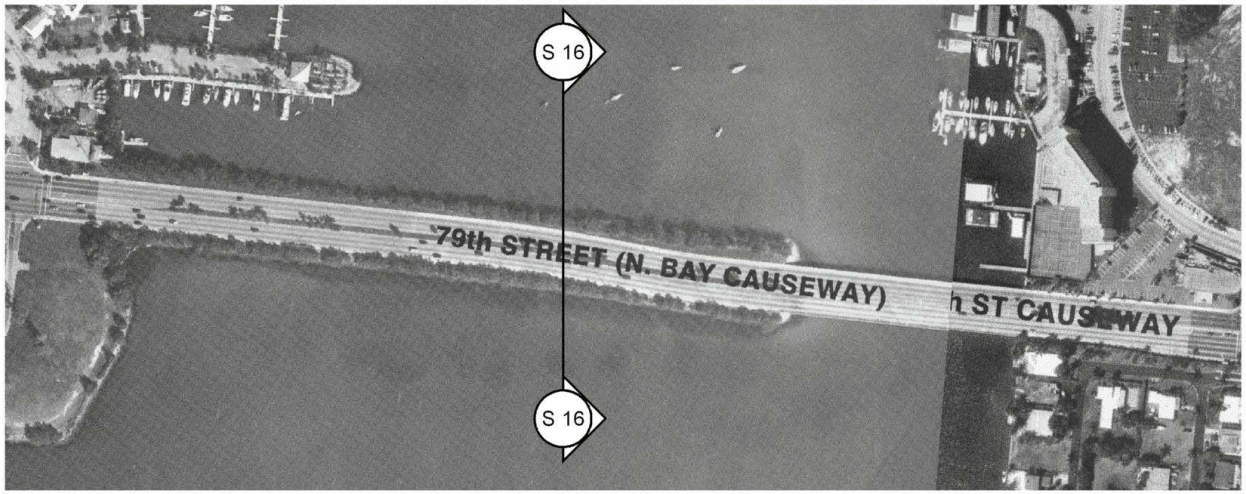
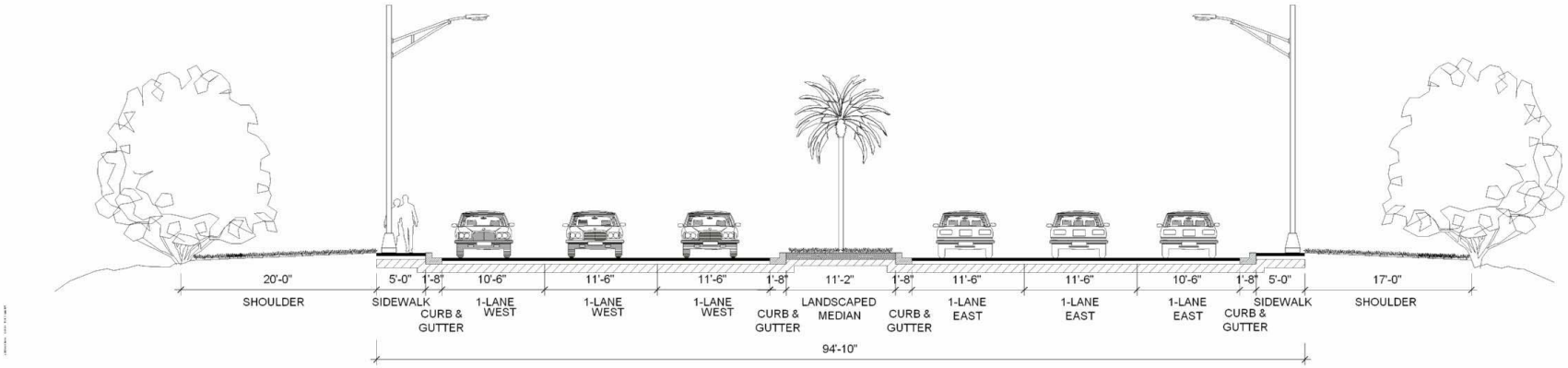


Figure 2-15
Existing Cross-section - SR 934/JFK Causeway west of Harbor Island





1.3.0 Transportation Conditions

1.3.1 Roadway and Traffic Characteristics

SR 934 is a major east-west facility and provides the only connection between north Miami Beach and the mainland. In Miami Beach, the corridor is intersected by SR A1A, a one-way pair formed by Collins Avenue and Abbott Avenue. SR A1A is the major north-south artery for Miami Beach. Several local streets intersect the corridor, and a grid street network generally prevails in the North Shore area of the corridor.

Average daily traffic volumes on SR 934 in the North Beach Town Center range from 11,200 vehicles per day between Collins Avenue and Abbott Avenue to 39,000 vehicles per day west of Indian Creek Drive.

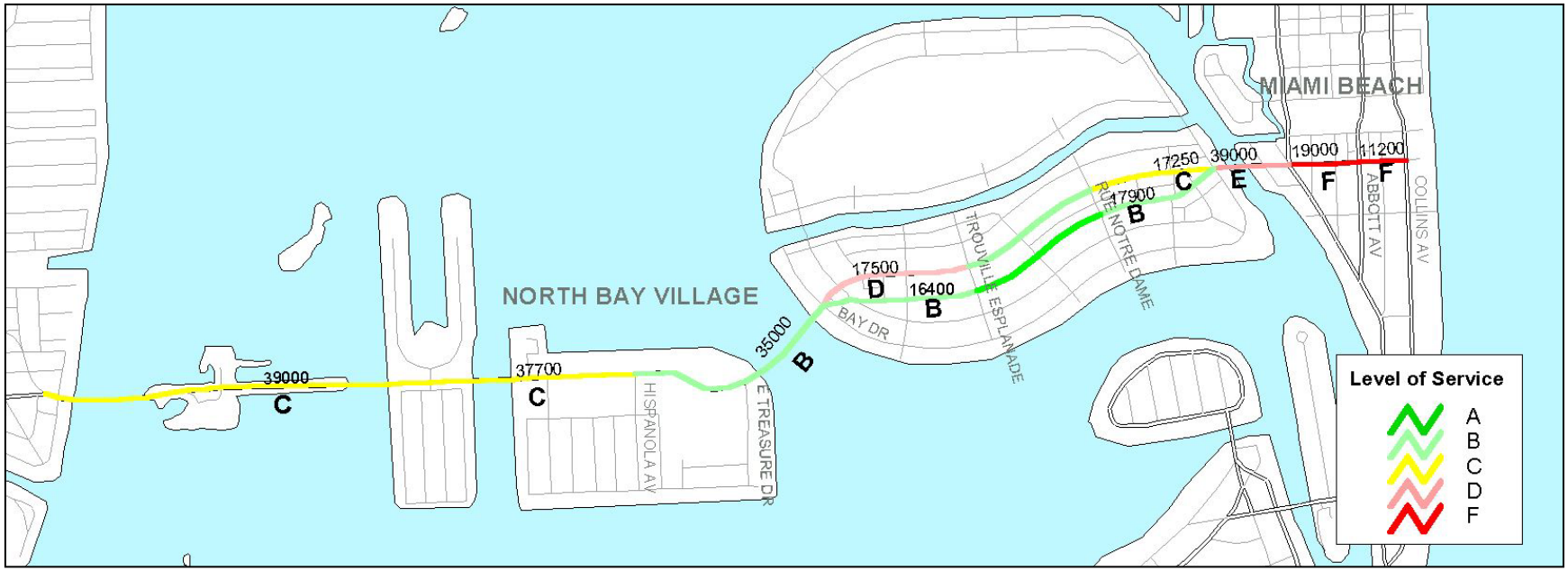
The fact that traffic volumes reduce dramatically from west to east indicates that this area of Miami Beach is not necessarily a destination for vehicles traveling to and from the mainland on SR 934; rather, these trips are headed to other destinations both north and south along the beach.

The Department's ART-PLAN software was used to evaluate transportation conditions within the corridor in terms of automobile, bicycle, pedestrian and transit level of service. Automobile level of service is measured for the peak hour/peak direction and is rated with an A through F designation with A representing no congestion and F representing significant congestion. In the North Shore area, SR 934 has an LOS of F, indicating significant congestion in the peak hour/peak direction.

Normandy Island also includes a well-connected grid street network. However, the network is confined to the island itself, and all external trips must use SR 934 to reach either Miami Beach or the mainland. Traffic volumes on SR 934 remain relatively consistent throughout the island; SR 934/Normandy Drive carries between 17,250 and 17,500 westbound vehicles per day while SR 934 71st Street carries between 16,400 and 17,900 eastbound vehicles per day. Based on an LOS analysis, SR 934 experiences virtually no congestion in Normandy Island with the exception of a small section on the west end of Normandy Drive, which may experience a borderline congestion condition.

North Bay Village consists of small islands with limited internal street networks. As a result, virtually all trips are oriented toward SR 934. Similar to Normandy Island, the SR 934 corridor is the only connection to Miami Beach and the mainland. SR 934 carries between 35,000 and 39,000 vehicles per day through North Bay Village and experiences an automobile LOS of C, indicating mild congestion. *Map 1-7* summarizes existing traffic volumes and level of service for SR 934. Detailed results of the ART-PLAN analysis can be found in *Appendix A*.

Map 1-7
Existing Traffic Conditions:
Daily Traffic Volumes and Peak Hour, Peak Direction LOS



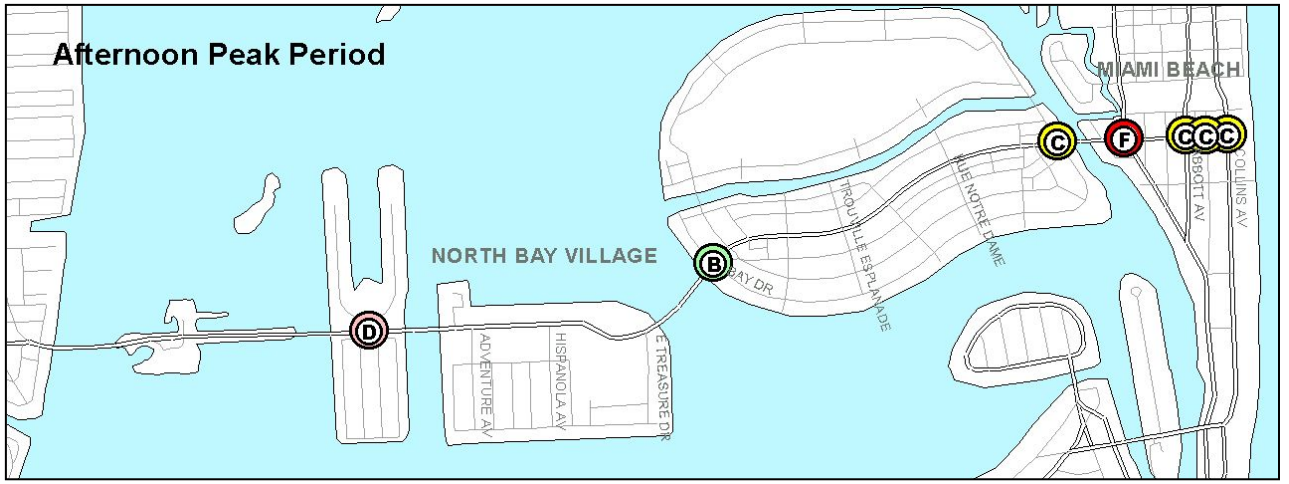
1.3.2 Critical Intersections

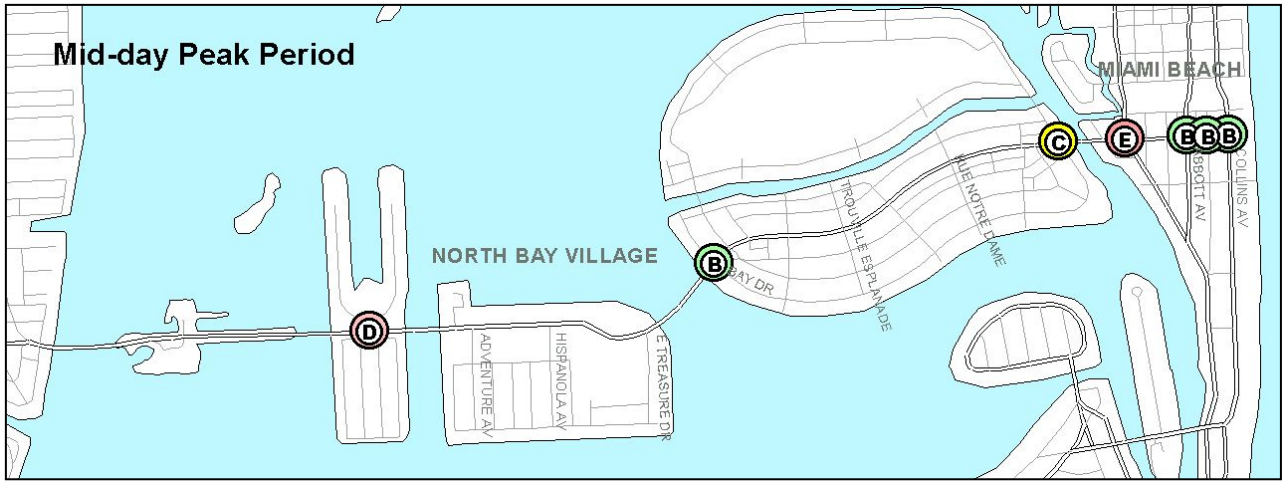
SR 934 is traversed by key north-south roads, forming critical intersections at several locations throughout the corridor. In the North Beach Town Center, critical intersections include the SR A1A one-way pair of Collins Avenue and Abbott Avenue, Harding Avenue (because of its proximity to Collins and Harding) and Indian Creek Drive. On Normandy Island, critical intersections are located at either end where the one-way pair converges and intersects with Bay Drive, a collector road for the island. At North Bay Village, Harbor Drive provides the only access to SR 934 from Harbor Island for several thousand residents on both the north and south side of the island.

These critical intersections were analyzed during the mid-day and afternoon peak hours using the Highway Capacity Software (HCS) analysis package, which takes into account factors such as turn lanes, through lanes and signal timing to evaluate the ability of an intersection to accommodate turn and through movements at all approaches. Similar to ART-PLAN analysis, a rating system of A through F is used to measure level of service at each intersection.

The intersection of SR 934 and Indian Creek Drive is the most deficient of all intersections, with an LOS of F (indicating severe delays) in the afternoon peak and an LOS of E in the mid-day. These conditions are attributed to a large number of turning movements for eastbound and northbound vehicles approaching the intersection. Another potential problem area is the intersection of SR 934 and Harbor Drive, which experiences an LOS of D for both the mid-day and afternoon peak periods. Intersection Level of service at critical intersections along the corridor is summarized in *Map 1.8*. Results of the HCS analysis are located in *Appendix C*.

Map 1-8
Levels of Service at Critical Intersections:
Mid-day and Afternoon Peak Periods



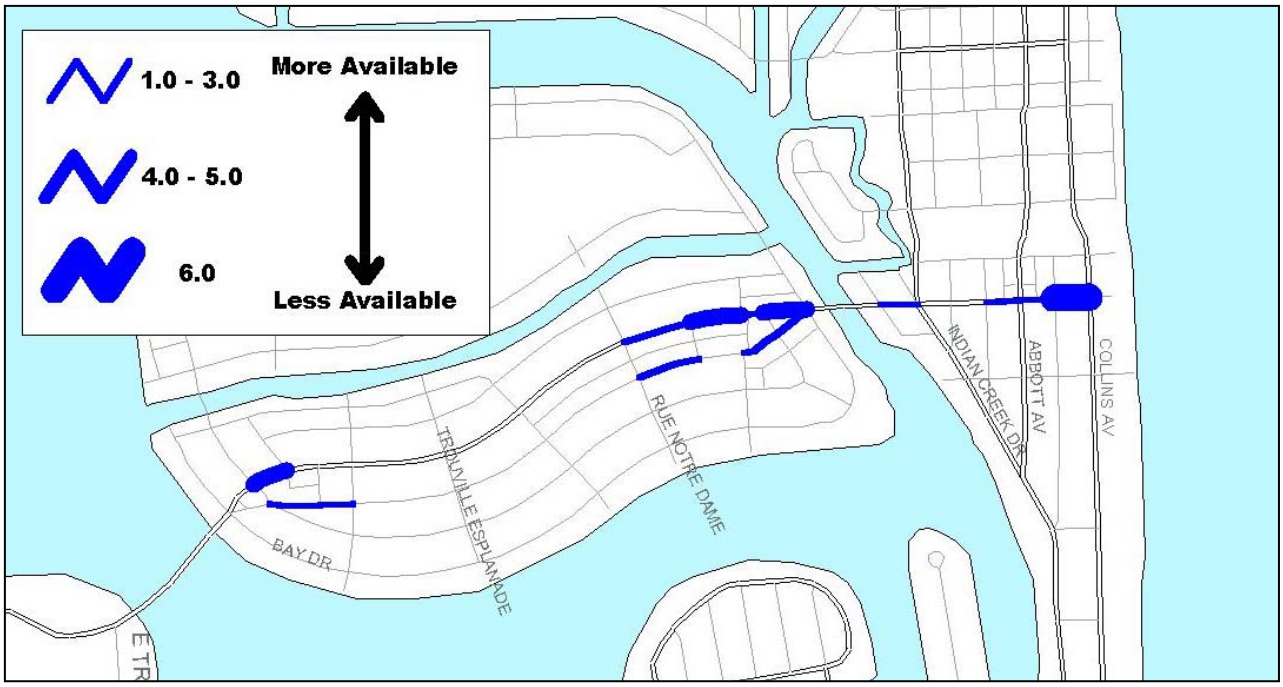


1.3.3 Parking Conditions

Approximately 570 on-street parking spaces exist on SR 934 in the North Beach Town Center and on Normandy Island (there are no on-street parking spaces on the causeway). These locations were inventoried during morning, mid-day, afternoon and evening periods on both a weekday and a Saturday to determine locations where parking availability is tight. A scoring system was used to develop a cumulative measure of parking availability along the corridor, with scores ranging from 0.0, indicating parking is available during all time periods, to 6.0, indicating parking demand exceeds supply during all time periods. Scores for parking conditions during weekday time periods were weighted more heavily than scores for weekend time periods.

Map 1-9 shows the results of the parking inventory and analysis. One location along SR 934, between Collins Avenue and Harding Avenue, received the maximum score of 6.0. Other locations where the analysis revealed locations of tight parking demand include Normandy Village on the east end of Normandy Island, particularly on the Normandy Drive side of the one-way pair, and on Normandy Drive adjacent to the apartment complexes on the west end. As an area redevelops and/or intensifies, parking demand will most likely increase. Detailed results from the parking inventory and analysis can be found in *Appendix C.*

Map 1-9
Parking Analysis



1.3.4 Transit and Bicycle/Pedestrian Conditions

Transit service is provided along the SR 934 corridor by Miami-Dade Transit Route L. This route, which ultimately connects the South Beach area of Miami Beach to the Northside and Hialeah Metrorail stations, is one of the most heavily used routes in the county. Service is provided every 10 minutes during peak periods and generally every 15 to 20 minutes during off-peak periods from 4:30 AM to 1:30 AM each weekday. During field observations, numerous passenger boardings were observed throughout the corridor, particularly in the North Beach Town Center.

North-south transit routes traverse the corridor in the North Beach Town Center via the SR 934 one-way pair. Because SR A1A is the only continuous north-south road in Miami Beach, it is served by all north-south transit routes along the beach. Routes G, H, J, K, L, R, S and T all traverse the SR 934 corridor via A1A, providing an effective headway of less than five minutes.

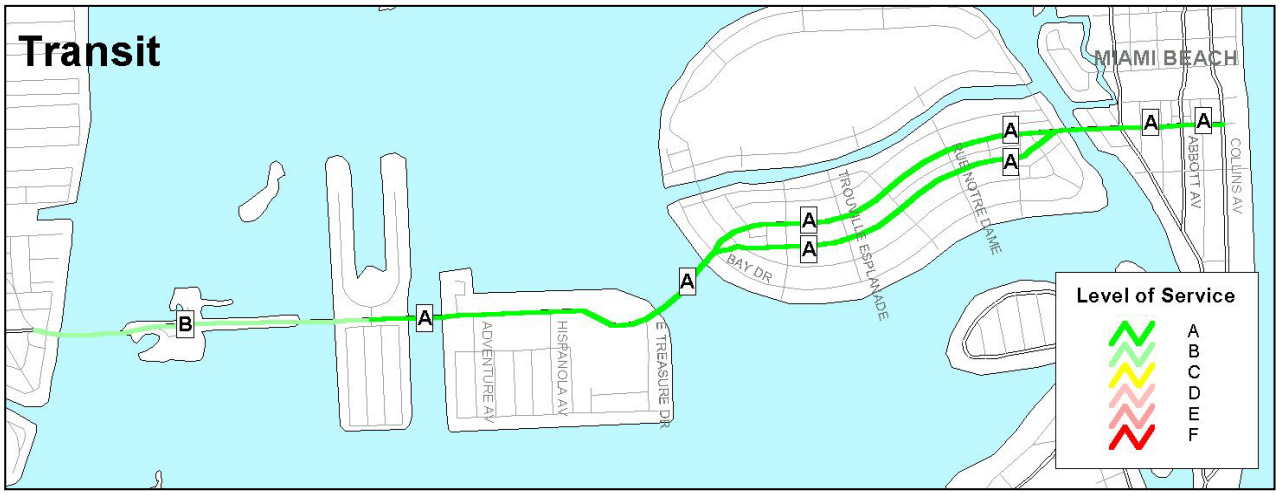
Continuous sidewalk coverage is provided throughout the corridor. The sidewalks vary in width, from 8 to 14 feet in the North Beach Town Center and Normandy Village to three to five feet further west along Normandy Island and along the causeway. Heavy pedestrian activity was observed within the North Shore area and between that area and eastern part of Normandy Island. Pedestrian activity becomes more infrequent further west along the corridor; very few pedestrians were observed along SR 934 in North Bay Village.

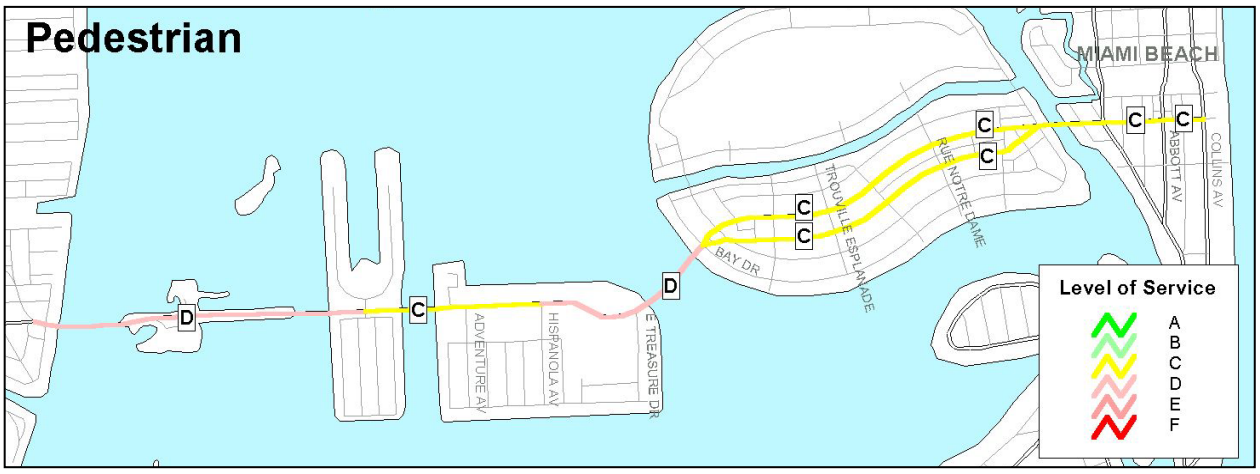
Despite frequent bicycle use observed throughout the corridor, there are no bicycle facilities, either paved shoulders or marked bicycle lanes.

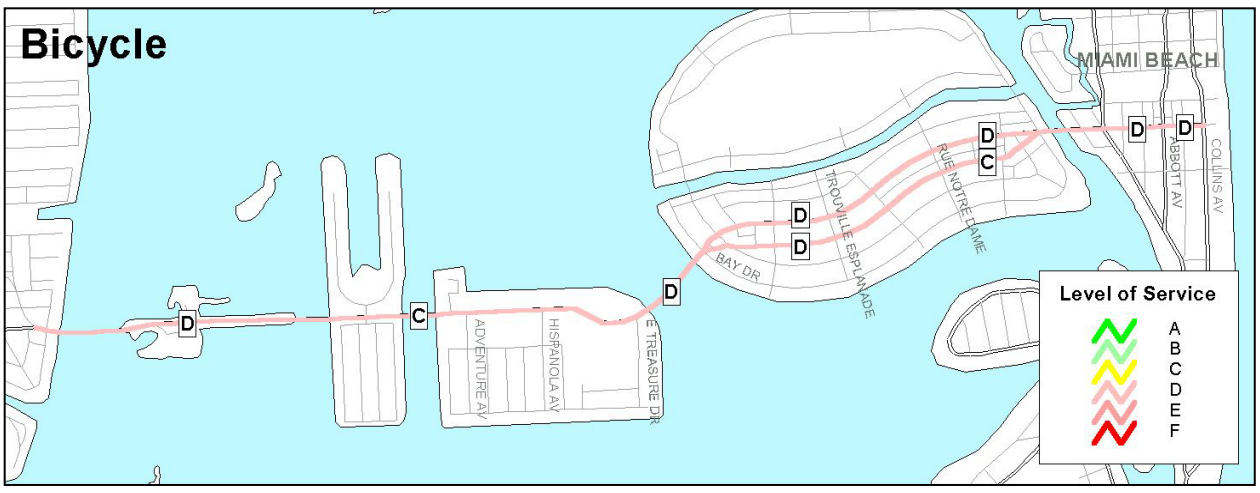
The Department's latest version of ART-PLAN software measures of transit, pedestrian and bicycle, and level of service in addition to roadway level of service. The purpose of the new version is to evaluate, from a facility-based perspective, the adequacy of given corridor in accommodating riding transit, walking and bicycling. ART-PLAN was used to measure the adequacy of transit service and bicycle pedestrian facilities along SR 934.

Because the corridor experiences a peak period bus frequency of six buses per hour, it has a transit LOS of A. A majority of the corridor currently experiences a pedestrian LOS of C or D, primarily attributed to the amount of adjacent automobile traffic and lack of a protective barrier between the sidewalk and the street. The entire corridor experiences a bicycle LOS of D, primarily attributed to the lack of paved shoulder or marked bicycle lane. Transit, bicycle and pedestrian LOS are illustrated in *Map 1-10*. Results of the ART-PLAN analysis are located in *Appendix A*.

Map 1-10
Transit , Pedestrian and Bicycle LOS







1.4.0 Corridor Issues

This existing conditions inventory and analysis reveals several key issues to be addressed during the course of the study:

- The current road configuration and traffic levels on SR 934/71st Street in the North Beach Town Center are incompatible with redevelopment objectives, particularly with respect to the section between Abbott Avenue and Indian Creek Drive.

- The current one-way pair configuration on Normandy Drive conflicts with the neighborhood's residential character and Normandy Village on the east end of the island.

- The SR 934/JFK Causeway needs to be more context sensitive within the community of North Bay Village, including the provision safe pedestrian passages between the different islands, while maintaining the adequate capacity for regional traffic flows.

- SR 934/71st Street is very congested between Abbott Avenue Indian Creek Drive.

- The intersection of SR 934/71st Street and Indian Creek is currently operating at a deficient level of service.

- The entire corridor needs to provide better opportunities for walking and bicycling.

- Any proposed reconfiguration of SR 934 needs to be sensitive to parking availability, particularly on the east side of the North Beach Town Center and at Normandy Village.

1.5.0 Summary

SR 934 is a major east-west corridor in northeast Miami-Dade County, linking north Miami Beach to the mainland and Interstate 95. The corridor is extremely diverse, both from a transportation and land use perspective. The corridor begins on the east end in Miami Beach as a two lane road in a closely-spaced, walkable village environment. As the corridor progresses to the west it expands to a six lane facility carrying between 35,000 and 40,000 cars per day with land uses more spread out and oriented to automobile travel.

Among the issues to be addressed by this study include identifying road configurations that are sensitive to local communities and their development objectives, addressing roadway and intersection deficiencies and better accommodating bicycling and walking.

CHAPTER TWO:
LIVABILITY GOALS AND MOBILITY EXPECTATIONS

2.1.0 Overview

This chapter identifies livability goals and mobility expectations to guide the development and evaluation of alternative strategies proposed for the SR 934 corridor within the study area. Livability goals reflect the concerns of key stakeholders within the corridor and are based on community input, while mobility expectations address the responsibility of the Florida Department of Transportation to ensure adequate mobility within the corridor and region. For each goal and expectation, a set of evaluation measures has been developed to assess the degree to which they are met by the proposed strategies.

2.2.0 Livability Goals

On January 31, 2002, Community Meeting Number One was held at Treasure Island Elementary in North Bay Village. The purpose of the meeting was to receive feedback on issues and concerns within the corridor. This was accomplished through the Nominal Group Technique (NGT), a structured process designed to achieve balanced participation for all participants. The results of the NGT process are included in *Appendix D*.

Further feedback was provided from the results of a charrette conducted by the City of Miami Beach on June 7th, 2001. The charrette was focused on a parcel adjacent to 71st Street (one block north of SR 934/71st Street) in the North Beach Town Center, and addressed many issues that have implications for SR 934.

A variety of issues, concerns and desires for the future development of the corridor were received from citizens both at Community Meeting Number One and at the 71st Street charrette. These issues, concerns and desires are articulated in a set of Livability Goals for each distinct area of the corridor:

Livability Goal Number 1 (North Shore Area) – Transform 71st Street into a neighborhood-oriented "Town Center" for the North Town Center that makes it the community's focal point for shopping, entertainment, cultural and recreational activities.

The overall theme emanating from the 71st Street charrette was the desire on behalf of the residents to make 71st Street and the nearby 72nd Street parcel the focus of the North Beach Town Center and the larger North Beach community. In contrast to South Beach, which is a prominent destination not only for the region but for visitors from around the world, residents articulated a vision for 71st Street that entails development on a smaller, neighborhood scale. Several evaluation measures will be used to assess this goal:

- Corridor design that promotes development at a human scale;
- Safe access for pedestrians and the elimination of barriers to walking;
- Design features that are aesthetically pleasing and create a unique identity, and
- The provision of adequate parking.

Livability Goal Number 2 (Normandy Island) – Enhance and promote the neighborhood character of 71st Street and Normandy Drive.

Meeting participants expressed a desire to make 71st Street and Normandy Drive more sensitive to the surrounding residential community (and retail district), particularly with respect to reducing the high vehicle speeds observed within the corridor. Emphasis was also placed on improving the appearance of both streets and making them friendlier places to walk. Evaluation measures that will be used to assess this goal include:

- Reduced travel speeds;
- Neighborhood friendly street design and features, such as improved landscaping;
- Improved pedestrian facilities, and
- Provision of adequate parking.

Livability Goal Number 3 (North Bay Village) – Develop the JFK Causeway into a safe and attractive corridor that acknowledges the unique community of North Bay Village.

Meeting participants expressed a strong concern that current conditions on the JFK Causeway place too much emphasis on through-moving automobiles and neglect the presence of North Bay Village. Several potential strategies identified by participants entailed discouraging travel on the causeway (e.g. reducing the number of lanes, narrowing the road, installing a toll booth). A large number of responses focused on improving the image of the corridor and making it safer for pedestrians. Evaluation measures that will be used to assess this goal include:

- Design features that are aesthetically pleasing and create a unique identity;
- A more even balance between through-moving vehicles and the surrounding community, and
- The creation of safe pedestrian access along the corridor.

2.3.0 Mobilty Expectations

Because SR 934 is a state road, the Florida Department of Transportation must ensure that the ultimate strategy selected for the corridor serves the mobility needs of the community and region. Two mobility expectations have been developed to address the Department's objectives. They are essentially the same as the mobility expectations identified for the SR 934 Phase I study.

Mobility Expectation Number 1 – Maintain adequate capacity and safety for regional traffic flows.

The Department must ensure that any strategy selected for the corridor does not adversely impact roadway capacity or safety for regional automobile travel. Increased emphasis is placed on this mobility expectation because SR 934, particularly the causeway, is a hurricane evacuation route. Capacity is typically measured by level of service standards established by FDOT. Four evaluation measures have been identified to ensure that this mobility expectation has been met:

- Level of service on SR 934;
- Level of service on parallel state roads (when a capacity reduction on SR 934 is proposed);
- Travel time from Miami Beach to the mainland (for hurricane evacuation), and
- The potential for operational conflicts on SR 934.

Mobility Expectation Number 2 - Promote choice in transportation through a balance of transportation modes within the corridor.

The Department is responsible for ensuring adequate mobility for all transportation modes. Because the first mobility expectation focuses on automobile mobility, this one focuses on alternative forms of transportation, including riding transit, bicycling and walking. Evaluation measures for alternative transportation mobility include:

- Bicycle, pedestrian and transit level of service (bus headways);
- Access to transit stops;
- The presence of bicycle facilities, and
- The presence of sidewalks, crossing treatments, etc.

2.4.0 Summary

The livability goals and mobility expectations presented in this memorandum have been created to guide the development and evaluation of proposed strategies for SR 934. The livability goals are derived from the community's concerns and desires, while the mobility objectives address the Department's responsibility to provide adequate mobility and safety.

The next step in the study process is to develop a set of community-identified alternatives for the corridor. Each of these alternatives will be evaluated against the community's livability goals and the Department's mobility expectations. The results of the evaluation will be presented to the community, who will then select a preferred alternative for the corridor.

CHAPTER THREE: IDENTIFY MOBILITY OPTIONS

3.1.0 Overview

Chapter One identifies current conditions and issues in the corridor. Chapter Two defines corridor livability goals and mobility expectations based on comments received during the first community meeting.

Chapter Three begins with an assessment of how improvements along parallel east-west corridors might influence travel demand along SR 934. It also presents non-automobile mobility strategies that are viable in the corridor given existing and anticipated conditions. Finally, this chapter presents candidate corridor cross-sections and the development of corridor alternatives.

3.2.0 Regional Mobility Options

Prior to identifying transportation strategies within the SR 934 corridor, improvements to parallel facilities were tested to determine their ability to induce a shift in traffic away from the SR 934 corridor. In addition, one of the facilities, currently a tolled facility, was tested to determine if eliminating tolls would induce traffic shifts from SR 934. Four scenarios were tested:

- Widening the Broad Causeway, located north of SR 934, to six lanes;
- Eliminating the toll on the Broad Causeway, while keeping it at four lanes;
- Widening the Broad Causeway to six lanes and eliminating the toll, and
- Widening I-195/Julia Tuttle Causeway, located south of SR 934, to eight lanes.

Future year (2025) traffic forecasts were performed for each of these scenarios using the Miami-Dade Metropolitan Planning Organization's (MPO) FSUTMS travel demand forecasting model, modified to better replicate traffic conditions in the SR 934 Corridor.

Table 3-1 shows the effects of the parallel corridor capacity improvements and toll strategies on SR 934. Adding capacity to the Broad Causeway has almost no effect on the SR 934 corridor at the JFK Causeway and in Normandy Island, with traffic volume shifts ranging up to an approximately two percent decrease. In the North Beach Town Center, traffic volumes at the eastern extent 71st Street decrease noticeably (13 percent).

When tolls are eliminated on the Broad Causeway (and it remains at four lanes), virtually not traffic shifts from the SR 934 corridor. When tolls are eliminated on the Broad Causeway and it is widened to six lanes, a modest shift in traffic away from the SR 934 corridor takes place on each of the three sections (up to a five percent decrease).

Providing additional capacity on I-195/Julia Tuttle Causeway does induce shifting of traffic from the SR 934 corridor on all three sections of the corridor. Shifts range from four percent up to 12 percent.

These results indicate that changes to the Broad Causeway, either through capacity increases, toll elimination or both, has a minimal effect on shifting traffic away from the SR 934 corridor. By contrast, widening I-195/Julia Tuttle Causeway to six lanes does have significant effect on shifting traffic away from SR 934 on the JFK Causeway and in Normandy Island. A reasonable conclusion is that a portion of traffic on SR 934 is attributed to inadequate capacity on a

parallel facility (in this case I-195), and that creating additional capacity on that facility will improve automobile mobility on SR 934. Of course, the widening of I-195 would need to occur as part of a broader, regional strategy. Further, the impact of widening I-95 on the section of SR 934 in the North Beach Town Center would need to be addressed.

Table 3-1
Corridor Traffic Shifts Caused by Parallel Facility Improvements
Year 2025 Traffic Volumes

Segment	From	To	Scenario*							
			Do Nothing	Broad Causeway					Widen I-195 Tuttle Causeway to Eight Lanes	
				Widen to Six Lanes		Elminate Toll (Keep at Four Lanes)		Widen to Six Lanes and Eliminate Toll		
			SR 934 Volume	SR 934 Volume	% Shift	SR 934 Volume	% Shift	SR 934 Volume	% Shift	SR 934 Volume	% Shift
North Bay Village											
JFK Causeway	Bayshore Court	Harbor Island Drive	47,700	47,300	-0.8%	47,000	-1.5%	46,100	-3.4%	43,800	-8.2%
JFK Causeway	Harbor Island	Adventure Avenue	46,000	45,500	-1.1%	45,200	-1.7%	43,800	-4.8%	41,000	-10.9%
JFK Causeway	Adventure Avenue	Hispanola Avenue	46,000	45,500	-1.1%	45,200	-1.7%	43,800	-4.8%	41,000	-10.9%
JFK Causeway	Hispanola Avenue	Begin one-way pair	41,800	41,300	-1.2%	41,100	-1.7%	39,800	-4.8%	37,200	-11.0%
Normandy Island											
71st Street	Begin one-way pair	Trouville Esplanade	20,600	20,400	-1.0%	20,400	-1.0%	19,700	-4.4%	18,100	-12.1%
71st Street	Trouville Esplanade	Rue Notre Dame	20,600	20,400	-1.0%	20,400	-1.0%	19,700	-4.4%	18,100	-12.1%
71st Street	Rue Notre Dame	Begin one-way pair	23,500	23,500	0.0%	23,400	-0.4%	22,800	-3.0%	22,000	-6.4%
SR 934/Normandy Drive	Begin one-way	Rue Notre Dame	23,000	23,000	0.0%	22,600	-1.7%	22,100	-3.9%	22,100	-3.9%
SR 934/Normandy Drive	Rue Notre Dame	Trouville Esplanade	21,200	21,000	-0.9%	20,700	-2.4%	20,100	-5.2%	19,200	-9.4%
SR 934/Normandy Drive	Trouville Esplanade	Begin one-way pair	21,200	21,000	-0.9%	20,700	-2.4%	20,100	-5.2%	19,200	-9.4%
North Beach Town Center											
71st Street	Begin one-way	Indian Creek Drive	52,200	52,200	0.0%	51,600	-1.1%	50,400	-3.4%	49,400	-5.4%
71st Street	Indian Creek Drive	Abbott Avenue	17,400	17,800	2.3%	17,200	-1.1%	16,900	-2.9%	17,300	-0.6%
71st Street	Abbott Avenue	Harding Avenue	15,300	15,100	-1.3%	18,000	17.6%	16,500	7.8%	14,400	-5.9%
71st Street	Harding Avenue	Collins Avenue	16,200	14,100	-13.0%	15,500	-4.3%	13,800	-14.8%	15,400	-4.9%

* Source: Year 2025 Miami-Dade Cost Feasible Network; Renassaince Planning Group.

3.3.0 Strategy Screening

A screening process was applied to the SR 934 corridor to determine viable strategies for enhancing non-automobile travel, reducing vehicle trips and improving overall mobility. The process uses a series of screening questions about specific conditions within the corridor, such as congestion levels, population density employment levels. Based on the answers to the questions, strategies can be identified as having potential application within the corridor.

The screening process is based on a hierarchy of strategy types. The first level includes those strategies that eliminate the need for a vehicle trip, such as changing land use patterns to encourage more walking trips or telecommuting. The next level includes those strategies that shift person trips into transit, such as increasing transit service. The third level includes those strategies that increase the number of persons per vehicle, such as car-pooling programs and high occupancy vehicle (HOV) lanes. The fourth level includes strategies that improve operations along a roadway, such as access management or signal timing. The final level focuses on adding lanes to increase capacity for all vehicles.

Comments from the first community meeting indicated concern about the amount and speed of traffic in the corridor. Because level four and level five strategies attempt to improve traffic flow, which results in increased speeds and traffic volumes, the strategy screening for the SR 934 corridor focused primarily on the non-automobile oriented strategy levels – those that eliminate the need for a trip and those that increase transit use. The third strategy level is focused on increasing automobile occupancies through HOV facilities; these strategies are not applicable to 71st Street and Normandy Drive in the study corridor.

Potentially viable strategies for the SR 934 corridor resulting from the first two strategy screen levels include:

- **Design standards** – Pedestrian friendly design encourages people to walk from place to place along the corridor. Design features to consider include build-to lines that bring buildings up to the street, streetscaping such as vegetation for shading and benches for resting, human-scale signing and street lighting and corner bulb-outs to reduce pedestrian crossing distances at intersections. Many of these design elements are already in place in the North Beach Town Center, east of Byron Avenue, and are generally reinforced by existing zoning.

  Design standards are most needed for the section of the corridor that includes 71st Street between Abbott Avenue and Indian Creek Drive, which is the focus of redevelopment efforts, although any standards that are developed could be applied to other areas in the corridor. Chapter Four will provide more discussion on design standards for the corridor.

- **Light rail transit or busways** – The corridor has sufficient residential densities and employment levels to make exclusive right of way transit strategies such as light rail and busways potentially viable, although right of way constraints will likely limit their viability. If lane reductions are proposed in the corridor, one option may be to create exclusive bus lanes. If a current fixed guideway study focused on linking South beach to downtown Miami is implemented,

consideration should be given to developing a north south fixed guideway connection through the study corridor and down to South Beach.

- **Advanced Pulic Transit Systems (traffic signal preemption and intelligent bus stops)** – Signal preemption is a strategy in which traffic signals react to approaching transit vehicles, giving them the "green". Miami-Dade Transit Route L operates in the study corridor at a frequency of six buses per hour during peak periods and is one of the most heavily traveled routes in the system. The route is not quite operating at a level where signal preemption is warranted. However, if transit service in the corridor further intensifies, signal preemption could be a viable strategy.

  Similar to the implementation of signal preemption for transit, if the corridor experiences an increase in the level of bus service, intelligent bus stops could enhance non-automobile mobility in the corridor. Intelligent bus stops provide real-time information on bus arrivals and can assist with trip planning. This strategy, which requires integration with on-board vehicle locator devices, would need to be implemented in the corridor as part of a broader, systemwide initiative.

- **Bicycle and pedestrian facilities** – There are enough observed bicycle and pedestrian trips and overall demand for short trips in the study corridor to warrant the addition of new bicycle facilities and improvement of existing pedestrian facilities. This could include bicycle lanes, wider sidewalks and/or off-road shared paths.

- **Bicycle lockers** – Should bicycle facilities be implemented within the corridor and bicycle trips increase, the addition of bicycle lockers may be a possibility. The lockers, which would most likely be installed in the North Beach Town Center, would increase the viability of making recreational, shopping and work trips within the corridor.

Specific screening questions and answers for each of the levels are included in *Appendix E*.

3.4.0. Corridor Cross-Sections

The project team identified several potential corridor cross-sections for consideration by the community. A different set of cross-sections was identified for each of the three unique areas along the corridor. Each cross-section was developed within the existing rights of way to avoid property impacts. They mainly vary by number of lanes and roadway characteristics (presence of a median, etc.).

Each potential cross-section was developed with two mitigating factors in mind: Generally speaking, there is a relationship between roadway cross-section and the type and scale of adjacent development (see *Table 3-2*). Since there is already an established development pattern along the corridor, potential cross-sections were identified within this context.

In addition, the characteristics of each cross-section, such as the number of lanes, presence of a median, directionality, etc., have implications for the vehicular capacity of the corridor. Future year (2025) traffic forecasts under each potential cross-section were performed using the MPO's travel demand forecasting model and compared to the resulting capacity of the roadway.

Table 3-2
Relationship Between Cross-section and Development Type

	Small scale residential (less than three stories)	Large scale residential (greater than three stories)	Small scale mixed use (less than three stories/100,000 sf footprint)	Large scale mixed use (greater than three stories/ 100,000 sf footprint)
Two lane, two way	🗐	✠	🗐	✠
Two lane, one way	✠	❍	✠	❍
Three lane, one way	✠	❍	✠	✠
Four lane, two way with median	❍	🗐	🗐	🗐
Six lane, two way with median	✠	❍	✠	❍

North Shore
Normandy Island
North Bay Village

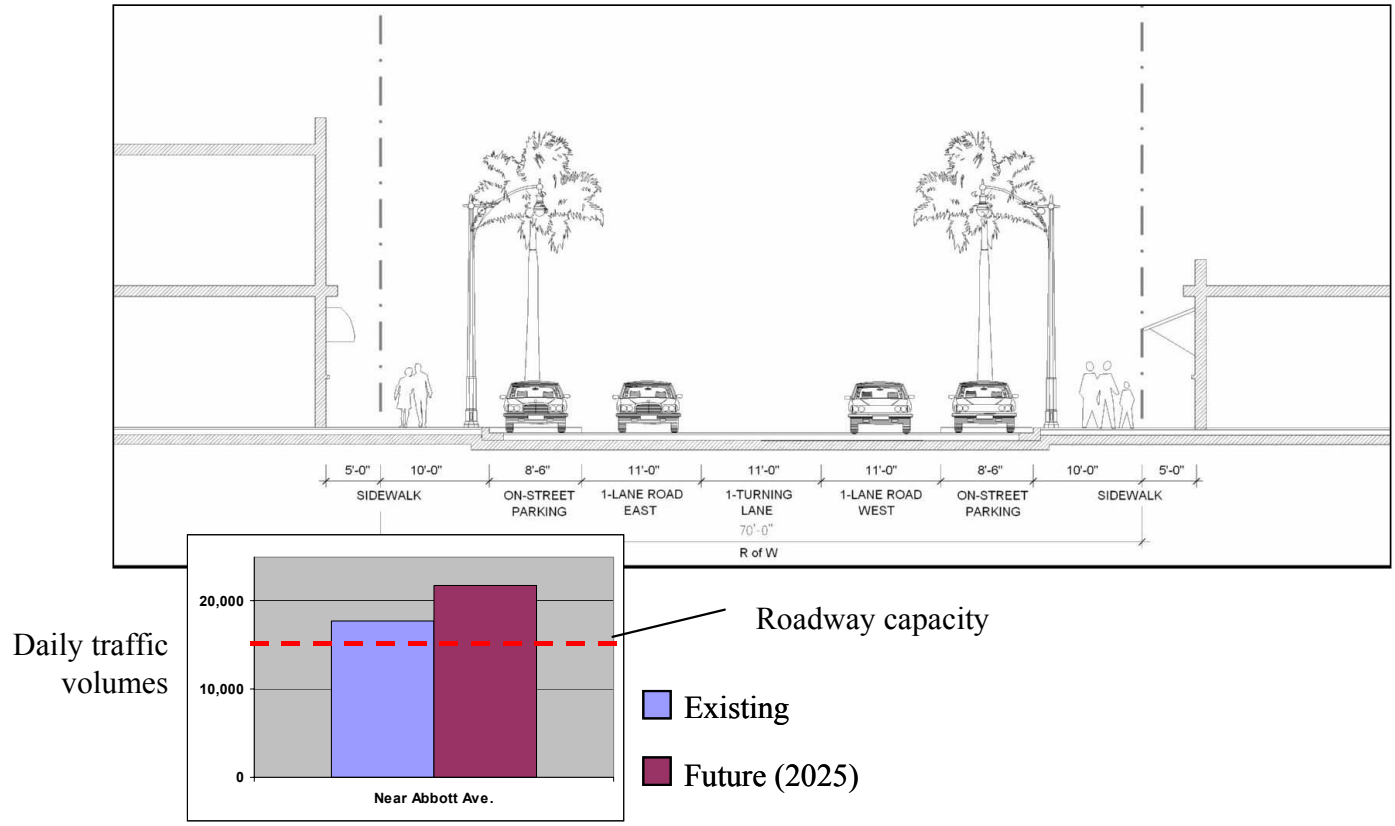
🗐 - Preferred ❍ - Acceptable ✠ - Not desirable

3.4.1. North Beach Town Center

Right of way constraints in the North Beach Town Center (71st Street is located within 70 feet of right of way) limit the number of potential cross-sections. Essentially, there are two options for this section of the corridor:

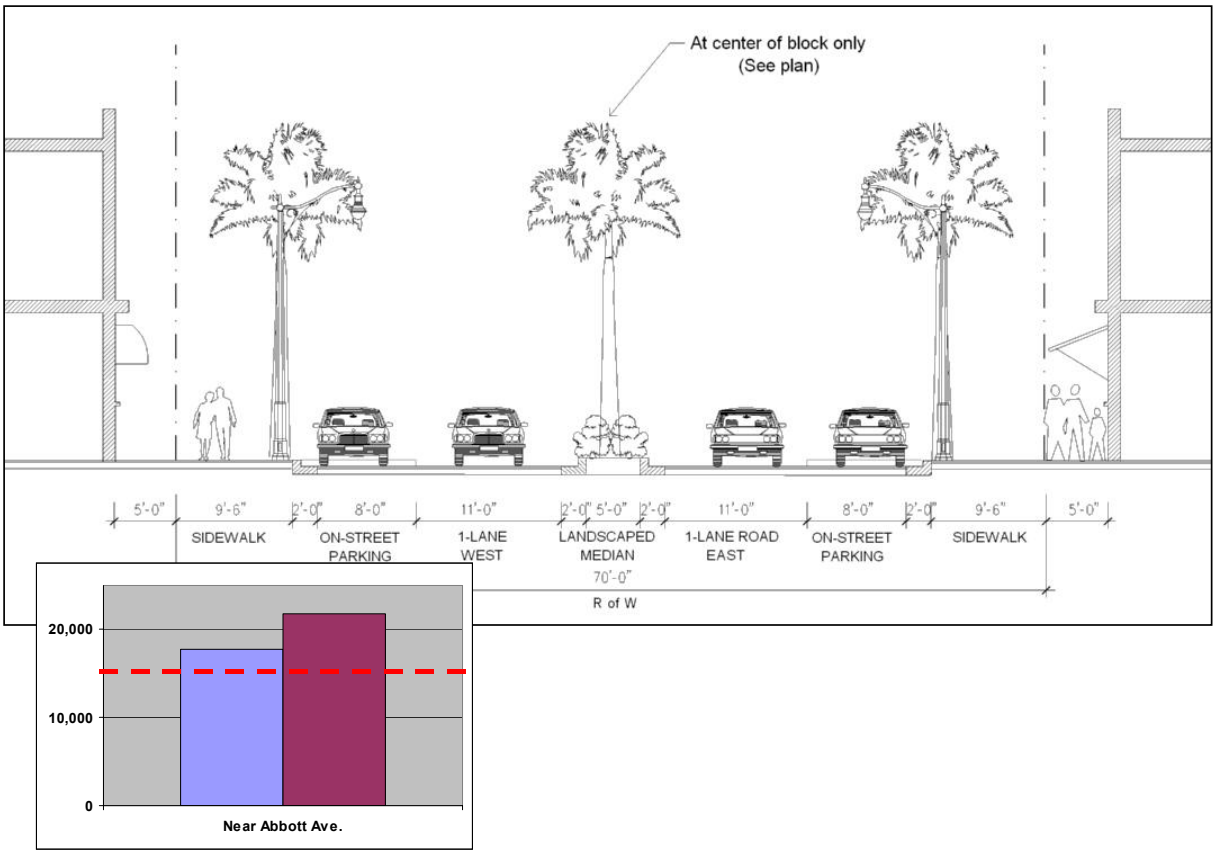
- **Two lanes, two-way with a center turn lane (*Figure 3-1.a*)** – this is the existing cross-section of 71st Street in the North Beach Town Center. Given the relatively high volume of vehicles on 71st Street, (11,000 to 20,000 AADT) this cross-section results in significant congestion throughout the day, but is highly compatible with the adjacent small-scale mixed-use environment.

Figure 3-1.a
Existing Corridor Cross-section on 71st Street in the North Beach Town Center
Two Lanes, Two-way with a Center Turn Lane



- **Two lanes, two-way with enhancements** (***Figure 3-1.b***) – right of way constraints and the need to provide on-street parking and sidewalks limit the total number of lanes on 71st Street to one in each direction. Even within the two-lane configuration, however, there are still some enhancements that can be accomplished. For example, the two-way center turn lane can be integrated with a median divider. The median divider will limit conflicting turn movements within the corridor and provide refuge for pedestrians at key mid-block locations. Other potential enhancements include improved landscaping and bulb-outs at intersections.

Figure 3-1.b
Potential Corridor Cross-section on 71st Street in the North Beach Town Center
Two Lanes, Two-way with Enhancements

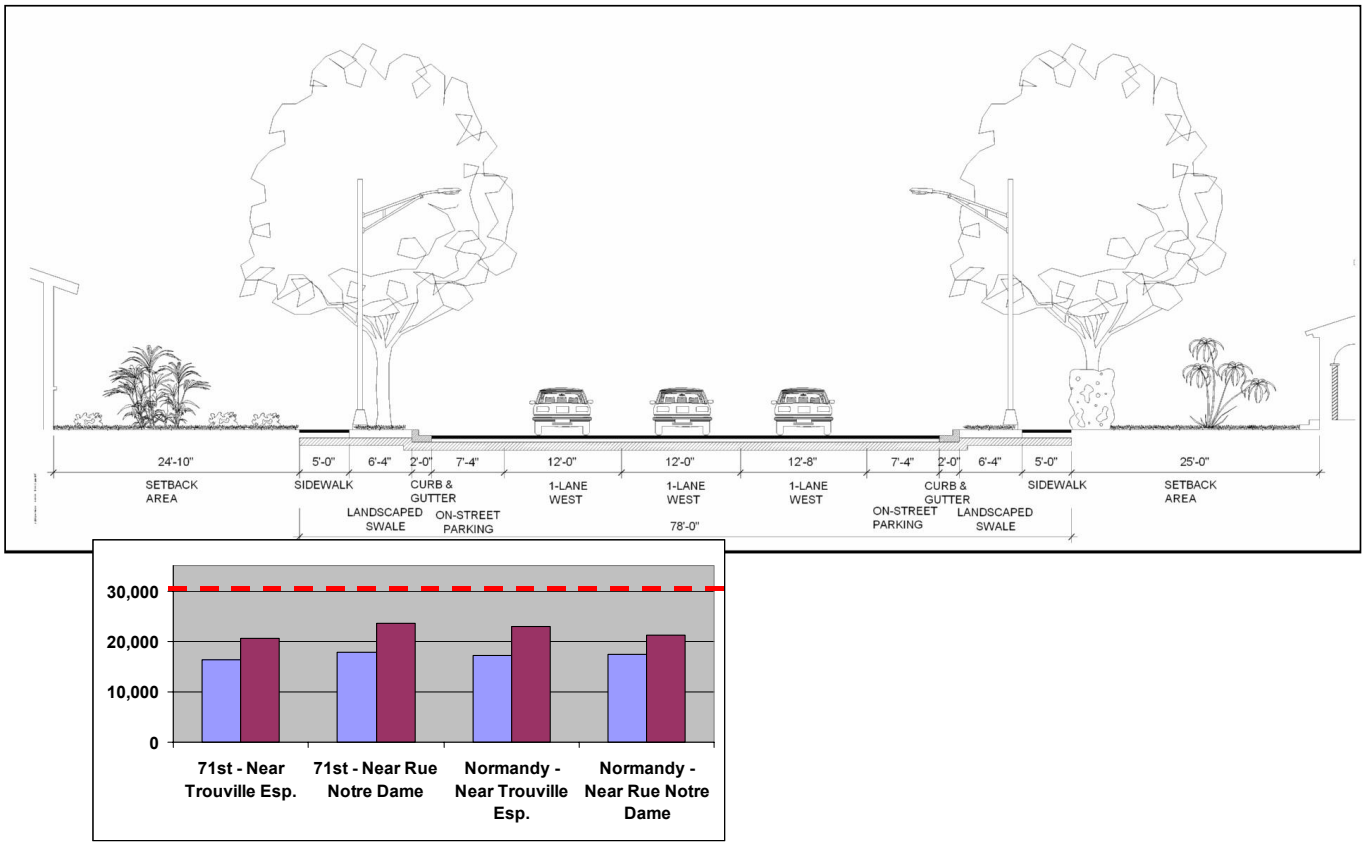


3.4.2. Normandy Island

Normandy Island includes the one-way pair configuration of 71st Street and Normandy Drive. The significant amount of right of way (approximately 78 feet on each road) and traffic volume characteristics in this section of the corridor allow several different options for cross-sections.

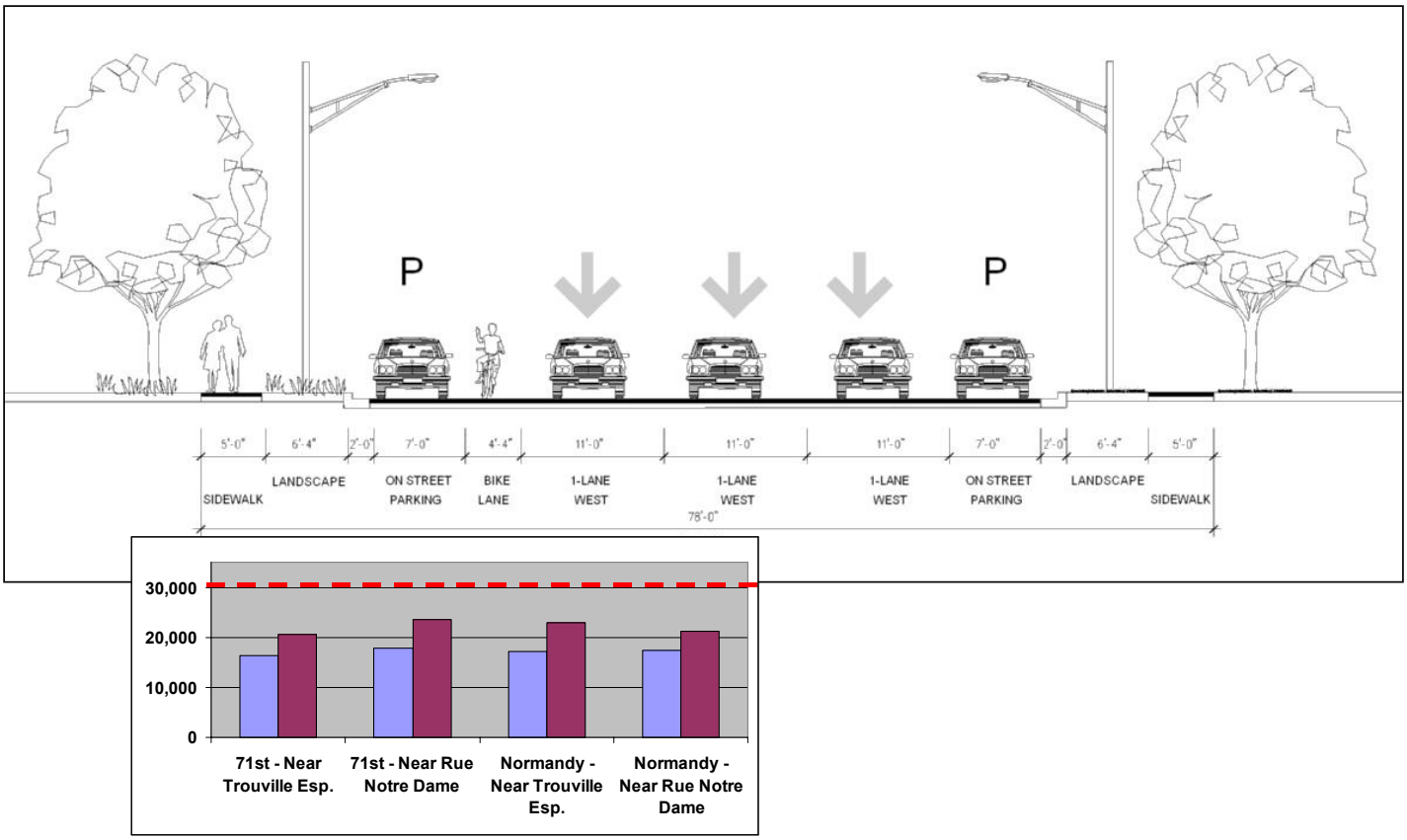
- **One way, three lanes each direction (*Figure 3-2.a*)** – this is the existing cross-section of 71st Street and Normandy Drive on Normandy Island. The one-way direction provides for optimal traffic flow and (in combination with the comparatively low traffic volumes) high vehicle speeds. This design is generally not compatible with the adjacent single-family residential neighborhood.

Figure 3-2.a
Existing Corridor Cross-section on 71st Street and Normandy Drive in Normandy Island
One-way, Three Lanes Each Direction



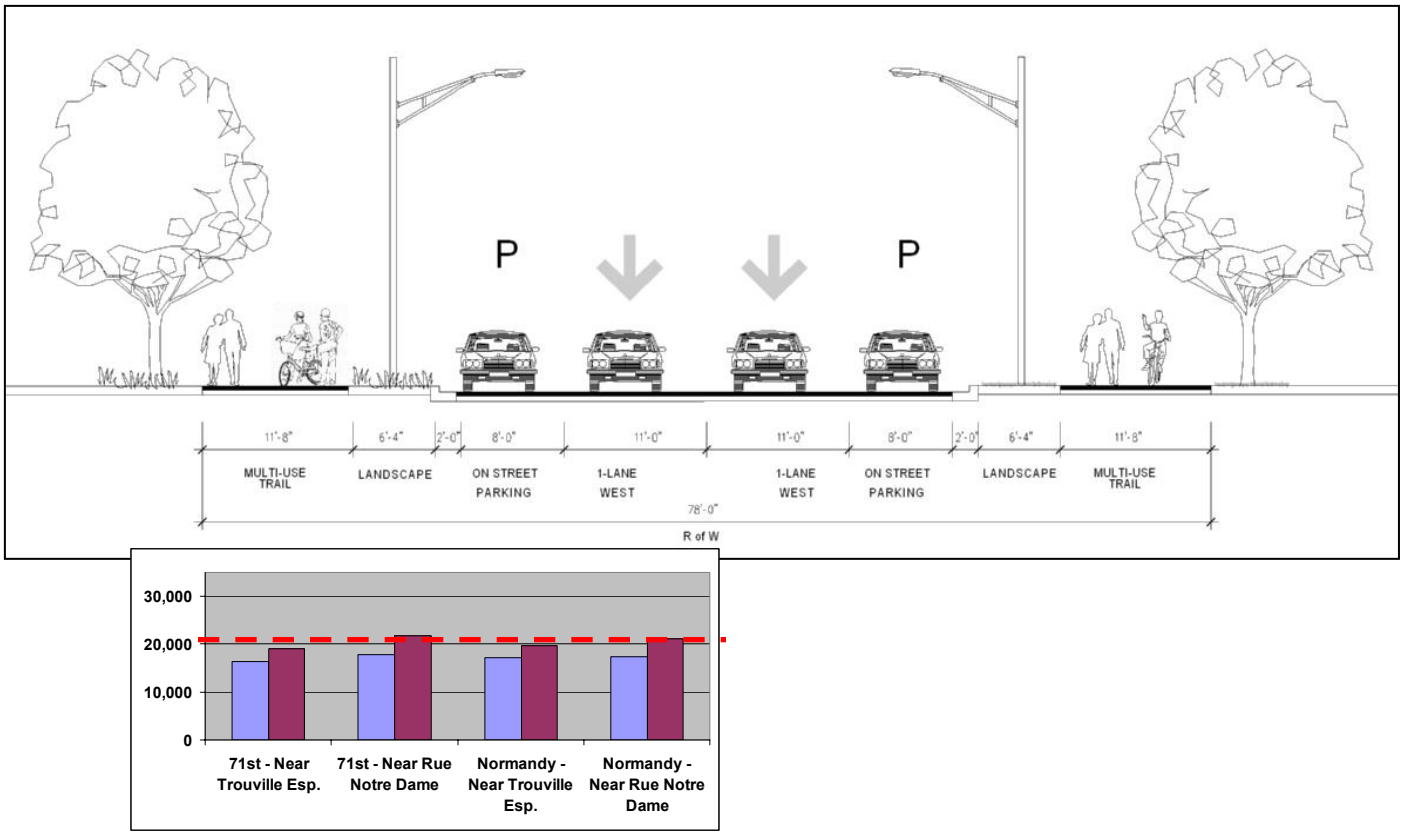
- **One way, three lanes each direction with enhancements (*Figure 3-2.b*) –** this cross-section maintains the current lane configuration, but would include enhancements to lower vehicular speeds and facilitate walking and bicycling, including more narrow lane widths, the addition of a bicycle lane, wider sidewalks and/or an off-road multi-use trail. Depending on the enhancements selected, this option may require that one of the two on-street parking lanes in each direction be removed in most locations along this section of the corridor.

Figure 3-2.b
Potential Corridor Cross-section on 71st Street and Normandy Drive in Normandy Island
One-way, Three Lanes Each Direction with Enhancements



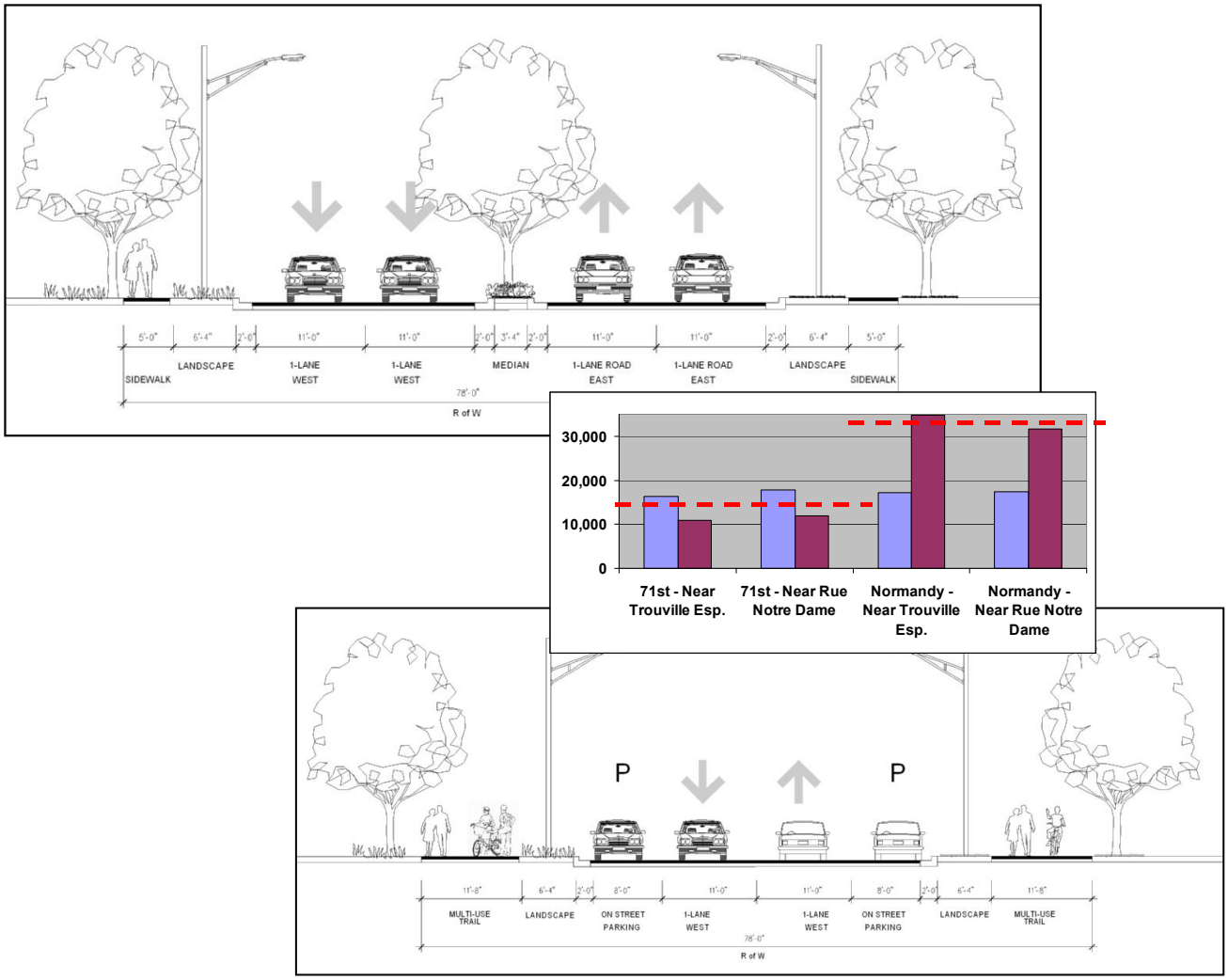
- **One-way, two lanes each direction (*Figure 3-2.c*)** – this cross-section would maintain the one-way pair configuration, but reduce the number of travel lanes in each direction to two. The residual right of way from the lane reductions could be used to add a multi-use, off-road path. The lane reductions would have the effect of lowering vehicle speeds and creating an additional buffer between adjacent homes. A preliminary analysis of existing and future traffic volumes on 71st Street and Normandy Drive on Normandy Island suggests that the lane reductions may create a borderline congested condition in some areas.

Figure 3-2.c
Potential Corridor Cross-section on 71st Street and Normandy Drive in Normandy Island
One-Way, Two Lanes in Each Direction



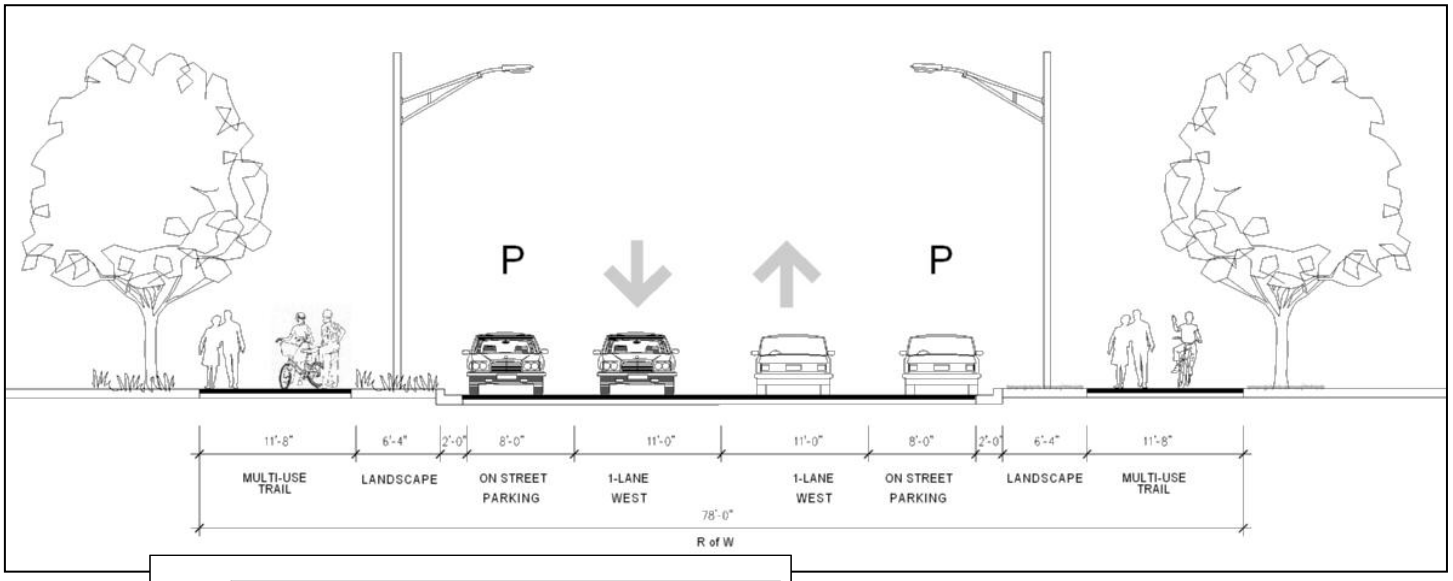
- **Two-way, four lanes with a median and two-way, two lanes (*Figure 3-2.d*)** – Under this configuration, two-way traffic flow would be restored on both streets. One of the two streets, either Normandy Drive or 71st Street, would have two lanes in each direction with a median while the other would have one lane in each direction. The four-lane road would remain a regional arterial while the two-lane road would become a local collector. The introduction of two-way traffic has a strong influence on reducing vehicle speeds and the median will eliminate turn movement conflicts and create a refuge for pedestrians. This configuration is more compatible with the adjacent residential land uses, although preliminary analysis of existing and future traffic volumes reveals a potential borderline congestion condition on the four-lane section. In addition, on-street parking would need to be removed on the four-lane section to accommodate the additional travel lane and median.

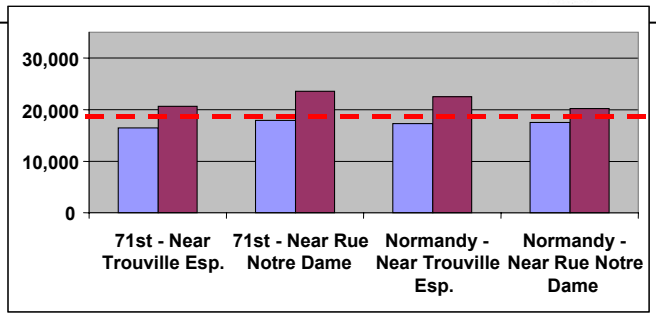
Figure 3-2.d
Potential Corridor Cross-section on 71st Street and Normandy Drive in Normandy Island
Two-Way, Four Lanes With a Median and Two-Way, Two Lanes



- **Two-way, two lanes each road (*Figure 3-2.e*)** – this configuration entails converting both streets to two way, but each with one lane in each direction. Both streets would maintain their regional status. This design provides for a high level of compatibility with adjacent land uses and flexibility in the placement of on-street parking, multi-use trails, landscaping buffers and other livability enhancements. However, the roadway capacity relative to existing and future traffic volumes will result in severe congestion, and operations will be significantly compromised where the two roads converge at either end of the island.

Figure 3-2.e
Potential Corridor Cross-section in Normandy Island
Two-Way, Two Lanes on each Road



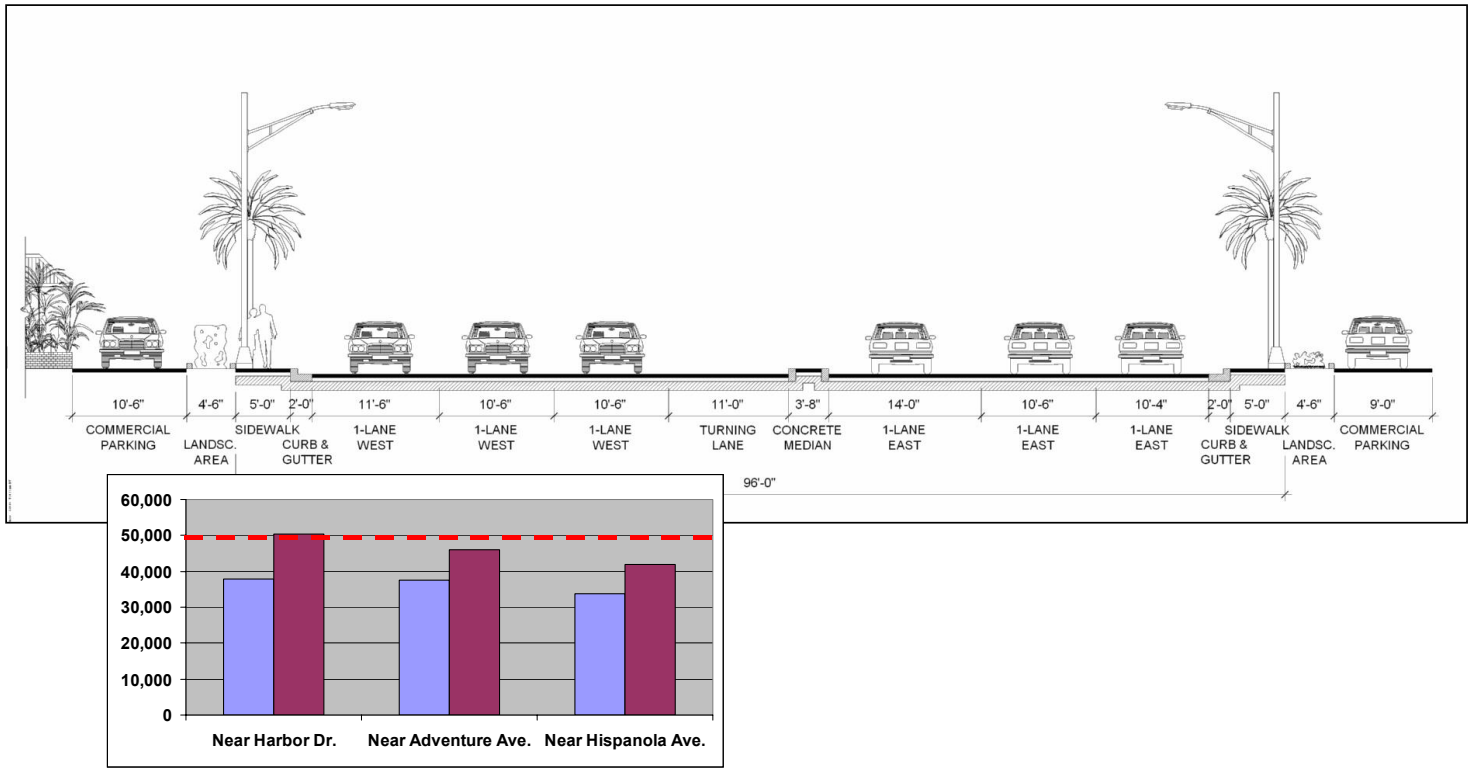


3.4.3. North Bay Village

This section of the corridor includes the causeway and maintains the largest rights of way (96 to 104 feet) of any single roadway section in the study corridor. It also carries the highest volume of traffic. There are three different options for this section of the corridor.

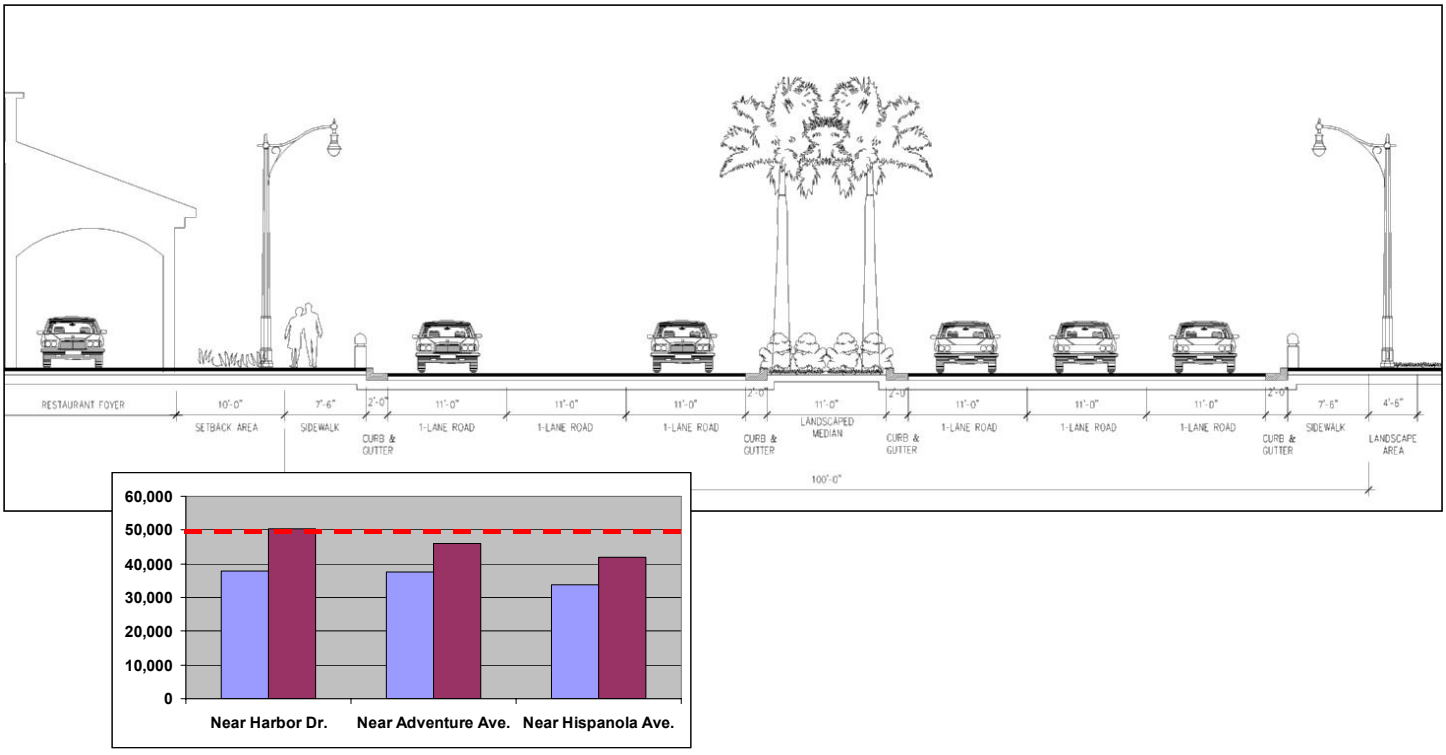
- **Three lanes in each direction with a center median** ***(Figure 3-3.a)*** – this is the existing cross-section of the corridor in North Bay Village. It provides adequate mobility for through moving vehicles and is compatible with the adjacent large scale residential uses. At the same time, this configuration, with its emphasis on through mobility, is not sensitive to the presence of the surrounding community.

Figure 3-3.a
Existing Corridor Cross-section in North Bay Village
Three Lanes in Each Direction with a Center Median



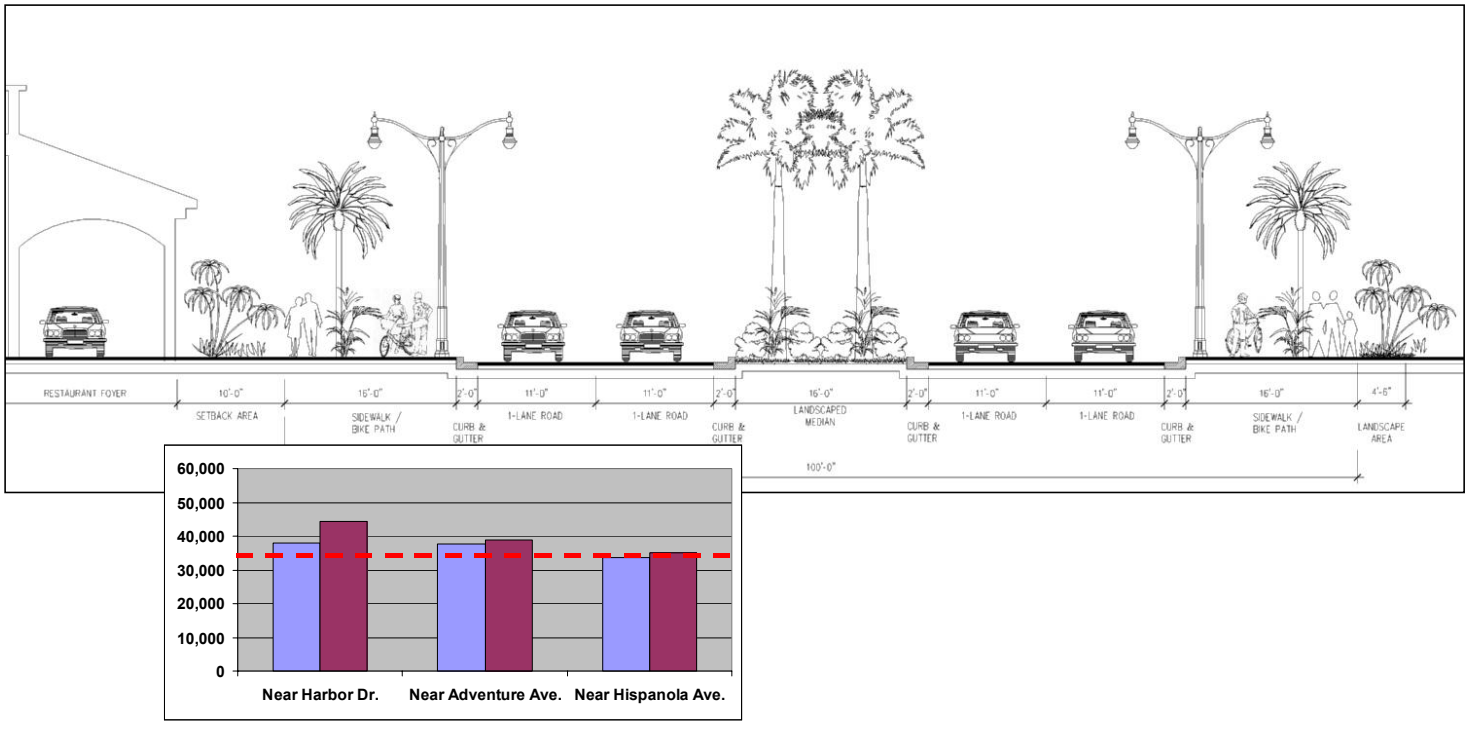
- **Three lanes in each direction with enhancements** ***(Figure 3-3.b)*** – this option would maintain three lanes in each direction, but would include livability enhancements such as wider sidewalks with roadway barriers/buffers, wider medians where possible, crossing treatments and better landscaping.

Figure 3-3.b
Potential Corridor Cross-section in North Bay Village
Three Lanes in Each Direction with Enhancements



- **Two lanes in each direction** ***(Figure 3-3.c)*** – under this option the number of travel lanes would be reduced to two lanes in each direction. The residual right of way from the lane reduction could be used to add wider medians, an off-road multi-use path and additional landscaped buffers between the road and adjacent land uses. At the same time, the lane reduction would also result in less roadway capacity and significant congestion in some areas.

Figure 3-3.c
Potential Corridor Cross-section in North Bay Village
Two Lanes in Each Direction



3.5.0 Development Of Alternatives

3.5.1. Community Meeting Number Two

A second community meeting was held on April 18th, 2002 at Treasure Island Elementary in North Bay Village. Approximately 35 residents, business owners and elected officials attended the meeting, many of which attended the first community meeting.

Participants were first presented the cross-section options for the corridor. Through a small group table exercise, they were then given the opportunity to identify a preferred cross-section for each unique area. Preferences identified include:

- **North Beach Town Center** – Participants unanimously selected the two lanes, two-way with enhancements cross-section. The only other option for this section of the corridor was the two existing lanes, two-way cross-section.

- **Normandy Island** – Participants were roughly split equally on two different cross-sections. Half of the participants preferred the two-lanes, one-way cross section, while the other half preferred the three lanes, one-way with enhancements cross-section. No participants selected either of the two cross-sections that would entail restoring two-way traffic on 71st Street and Normandy Drive.

- **North Bay Village** – Participants again were split on two different cross sections for the causeway. A slight majority preferred the three lanes in each direction with enhancements cross-section, while the remainder preferred the two lanes in each direction cross-section.

In addition to identifying preferred cross-sections for the corridor, participants were given the opportunity to identify improvements and strategies beyond the basic cross-section. These are summarized in *Figure 3-4*.

Figure 4
Desired Corridor Improvements and Strategies

- Replace black olive trees along the corridor on Normandy Island with royal palms.
- Synchronize traffic signals on Normandy Island.
- Shade trees are needed along the corridor in North Bay Village.
- Decrease speed limit to 30 MPH on Normandy Island.
- Repair and enhance all sidewalks along the corridor.
- Limit parking and install sidewalks around the Normandy Island fountain to facilitate a more pedestrian-friendly environment.
- Enhanced aesthetic characteristics are desired in all areas along the corridor (landscaped medians and swales, better street lighting, bike lanes, etc.)

3.5.2. Corridor Alternatives

Based on the preferred cross-sections identified during Community Meeting Number Two, two distinct cross-sections have been developed for evaluation by the study team. The first alternative essentially entails keeping the existing lane configurations across the corridor and making enhancements to each section. The second alternative entails lane reductions on both Normandy Island (while maintaining one-way traffic flow) and North Bay Village. Each

alternative is summarized below and in *Figure 3-5*.

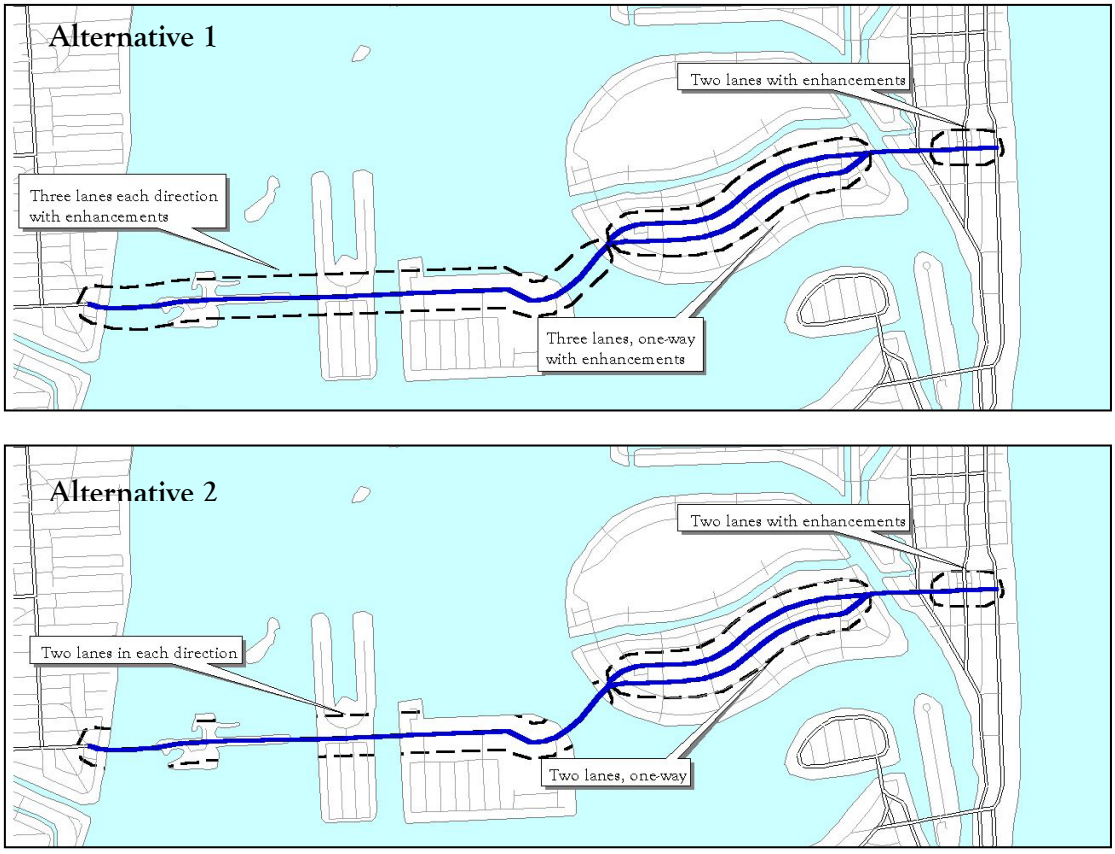
Alternative 1

- North Beach Town Center – Two-lanes, two way with enhancements;
- Normandy Island – three lanes, one way (each road) with enhancements;
- North Bay Village – three lanes in each direction with enhancements.

Alternative 2

- North Beach Town Center – Two-lanes, two way with enhancements;
- Normandy Island – two lanes, one way (each road);
- North Bay Village – two lanes in each direction.

Figure 5
Corridor Alternatives



3.6.0. Summary And Next Steps

This chapter presents anticipated traffic shifts to or from the corridor based on improvements to parallel corridors to determine if traffic volumes in the corridor will drop with improvements elsewhere. Results suggest a moderate shift in volumes on the corridor if I-195/Julia Tuttle is widened to eight lanes.

This chapter also includes an assessment of viable non-automobile mobility strategies based on a screening process of existing and anticipated conditions. The screening indicates that design standards that encourage a mix of land uses in close proximity to each other and improved bicycle and pedestrian amenities can influence short bicycle and pedestrian trips in the corridor. The screening also indicates that conditions are favorable for fixed guideway transit or a busway within the corridor, although right of way constraints likely make these strategies infeasible. If bus service intensifies within the corridor, the screening indicates that advanced public transportation systems, including signal preemption and intelligent bus stops, are viable strategies.

A series of potential cross-sections have been developed by the study team for the SR 934 corridor that address issues and concerns raised by the community. These cross-sections attempt to enhance livablity within the corridor, but acknowledge the fact that the corridor must also provide adequate mobility.

The potential cross-sections were presented to the community for their consideration. Based on community preferences identified during the second community meeting, two distinct corridor alternatives have emerged. The first alternative maintains the existing lane configurations throughout the corridor with enhancements. The second alternative includes lane reductions on 71st Street and Normandy Drive on Normandy Island (while maintaining the one-way configuration) and lane reductions on the causeway in North Bay Village. Additional improvements and strategies, beyond the basic cross-sections, have been identified by the community and will be addressed in the alternatives.

The next step in the study process is to evaluate the alternatives in more detail using the criteria established for the livability goals and mobility expectations presented in Chapter Two. Based on the results of the evaluation, a preferred alternative is selected for consideration by the community.

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CHAPTER FOUR: EVALUATION OF ALTERNATIVES

4.1.0. Overview

Chapter Four presents the results of the evaluation of the corridor alternatives using the livability goals and mobility expectations described in Chapter Two. It begins with a description of the alternatives and a summary of the evaluation results, followed by a detailed evaluation of the alternatives.

4.2.0. Corridor Alternatives

At the second community meeting, participants unanimously agreed on a two-lane, two-way cross-section with enhancements for 71st Street in the North Beach Town Center (the only other option for this section was to keep the current two-lane, two-way cross-section for 71st Street with no enhancements).

For the other two distinct sections of the corridor, however, participants were split in their preferences. On 71st Street and Normandy Drive in Normandy Island, roughly half of the participants selected a two-lane, one-way cross-section for both roads. The other half of participants chose to keep both roads at three lanes, one-way with enhancements.

On the JFK Causeway in North Bay Village, participants again were split on two different cross-sections. A slight majority favored keeping the causeway at six lanes with enhancements, while the remaining participants selected the four-lane cross-section with enhancements.

Based on the responses of the meeting participants, two distinct corridor alternatives were initially developed for evaluation:

- **Alternative 1** – Keep the existing lane configurations. Under this alternative, all three unique sections of the corridor would keep the same lane configurations – 71st Street in the North Beach Town Center as two-lanes, two-way; 71st Street and Normandy Drive in Normandy Island as three lanes, one-way each; the JFK Causeway as six lanes, two-way. Each section of the corridor would include enhancements such as narrowed travel lanes, wider sidewalks, crossing treatments, bicycle lanes and improved lighting and landscaping.

- **Alternative 2** – Lane reductions in Normandy Island and North Bay Village. Under this alternative, 71st Street in the North Beach Town Center would also be two-lanes, two-way. However, the other two sections of the corridor would experience lane reductions: 71st Street and Normandy Drive in Normandy Island at two lanes, one-way each and the JFK Causeway in North Bay Village at four lanes, two-way. Each section would include the same enhancements as Alternative 1. However, the residual right of way from the lane reductions would allow further enhancements, such as multi-use trails, landscaped buffers and wider medians.

During the course of the alternatives evaluation, it became evident that a third

alternative made sense given the results of the first two alternatives:

- **Hybrid Alternative** – Lane reduction only in Normandy Island. The third alternative is referred to as the Hybrid Alternative because it is a combination of the first two alternatives. It includes a reduced two-lane, two-way cross-section on 71st Street and Normandy Drive in Normandy Island, while the JFK Causeway in North Bay Village would remain at six lanes, two-way. The Hybrid Alternative includes the same enhancements included under Alternatives 1 and 2.

All three unique sections of the corridor have stable land use patterns, and existing zoning supports the current development. The development type remains constant for all three sections under each of the alternatives: small scale mixed use in the North Beach Town Center, small scale mixed use and small scale residential in Normandy Island and small scale mixed use, small scale residential and large scale residential in North Bay Village.

Diagrams of the alternative cross-sections are shown in *Figures 4-1* through *4-5*. For comparison purposes, a "no build" alternative will also be considered in the evaluation. The No Build Alternative, which assumes that no changes will be made to the corridor, provides a basis for determining the impacts of Alternative 1, Alternative 2 and the Hybrid Alternative.

Figure 4-1
Typical Cross-section on 71st Street in the North Beach Town Center
Alternative 1, Alternative 2, Hybrid Alternative

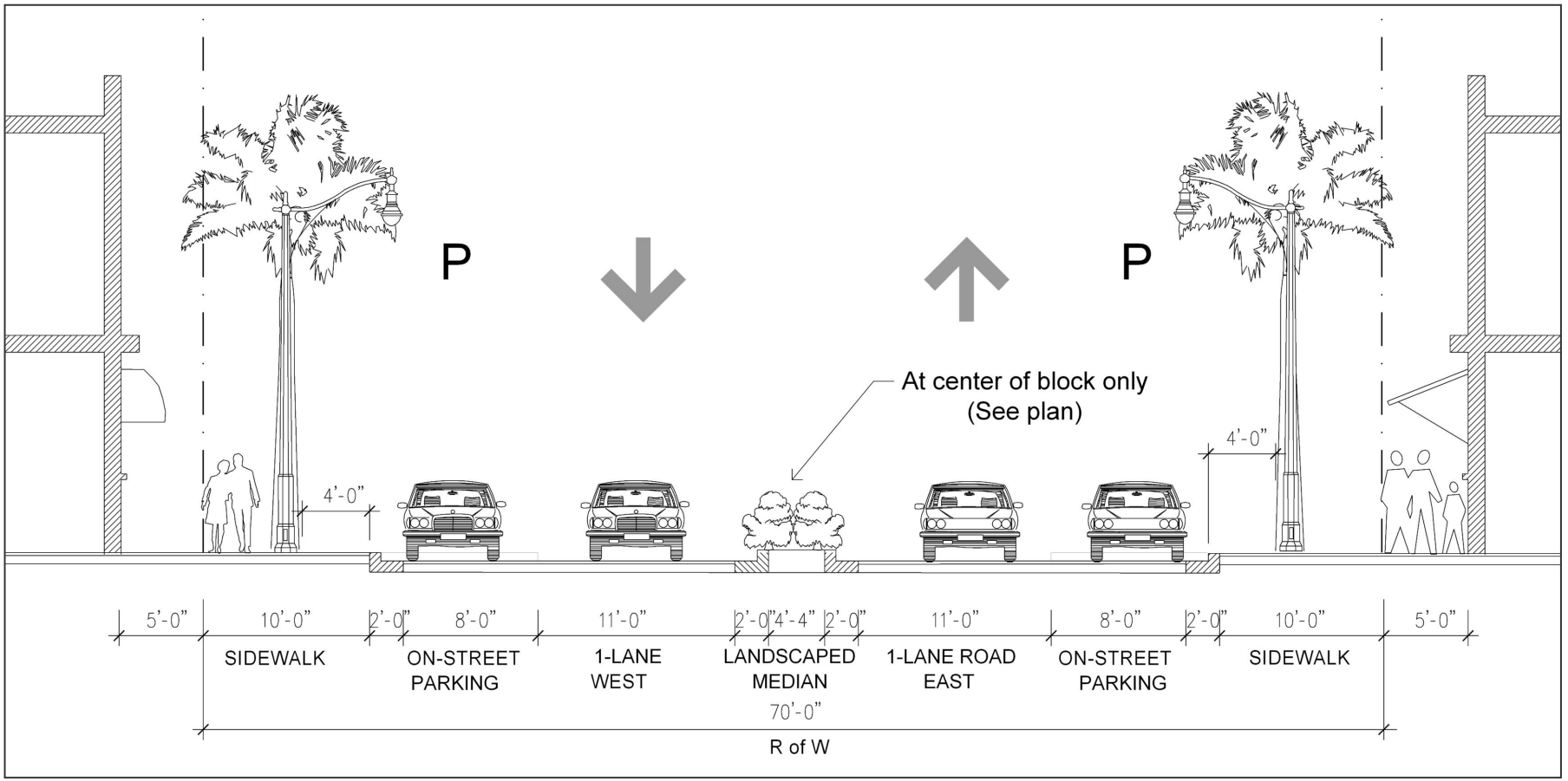


Figure 4-2
Typical Cross-section on 71st Street and Normandy Drive in Normandy Island
Alternative 1

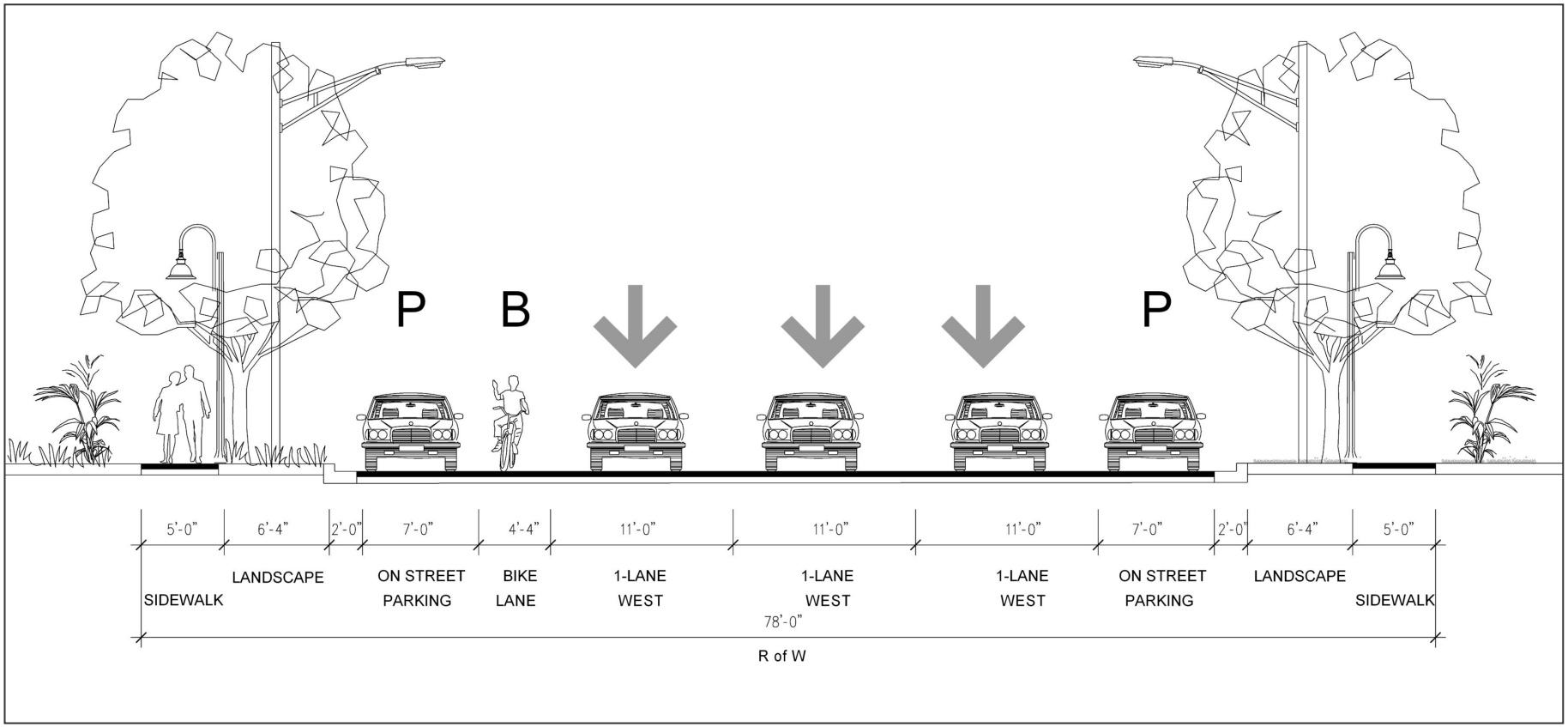


Figure 4-3
Typical Cross-section on 71st Street and Normandy Drive in Normandy Island
Alternative 2 and Hybrid Alternative

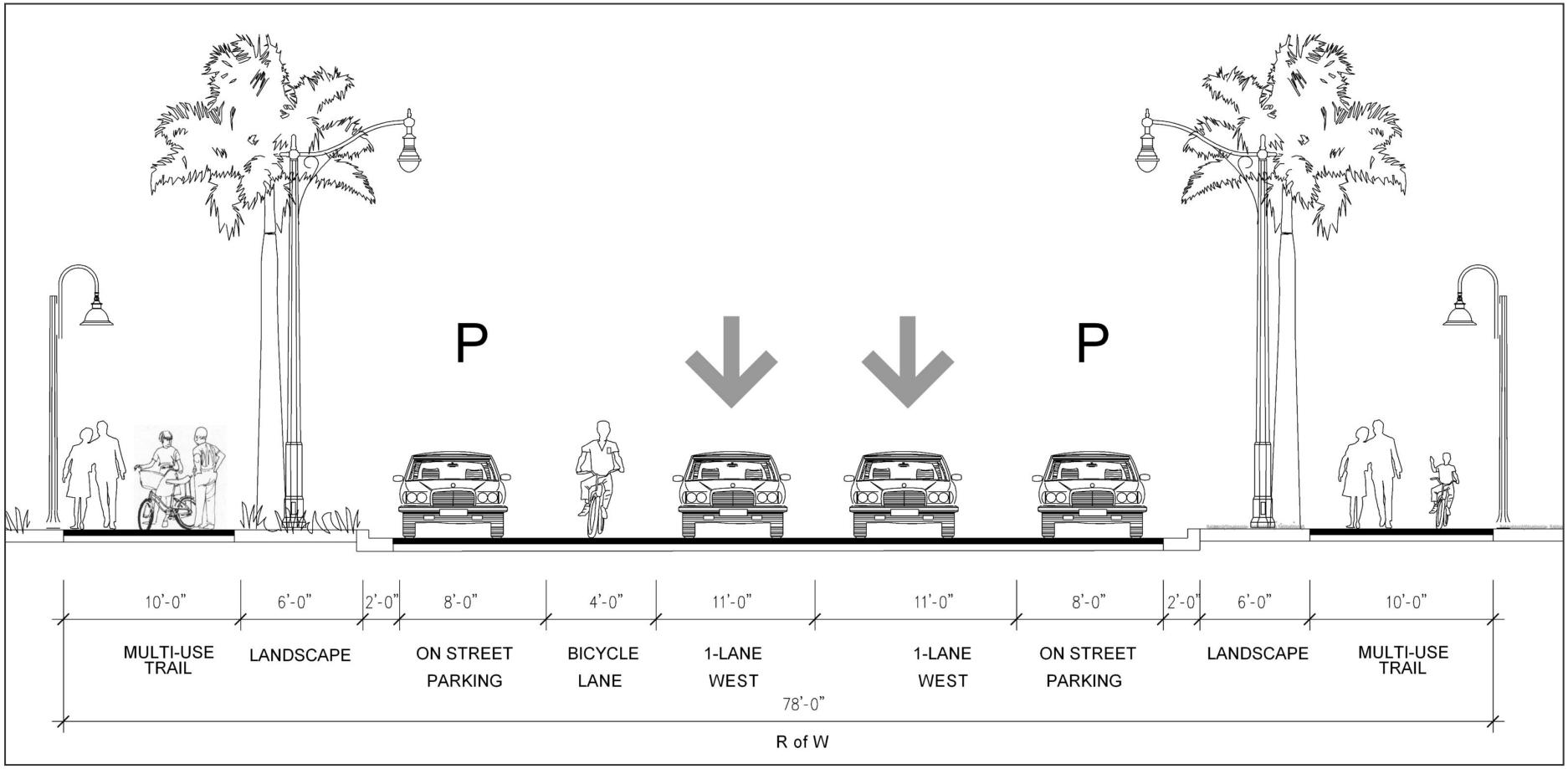


Figure 4-4
Typical Cross-section on the JFK Causeway in North Bay Village
Alternative 1 and Hybrid Alternative

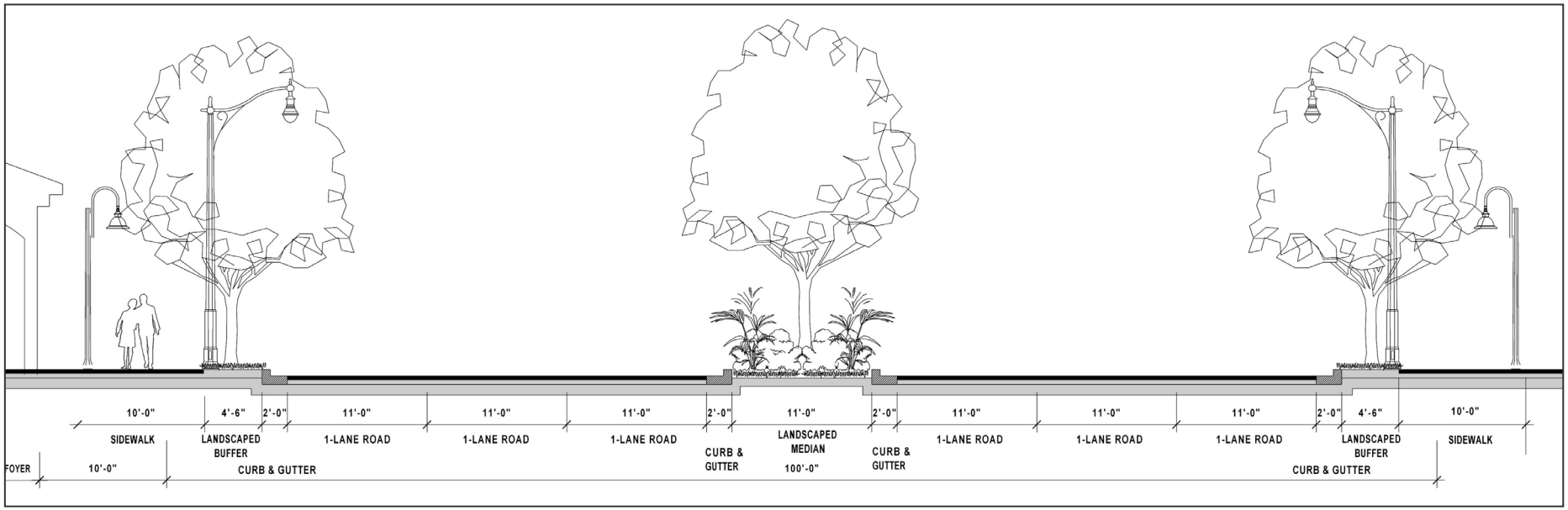
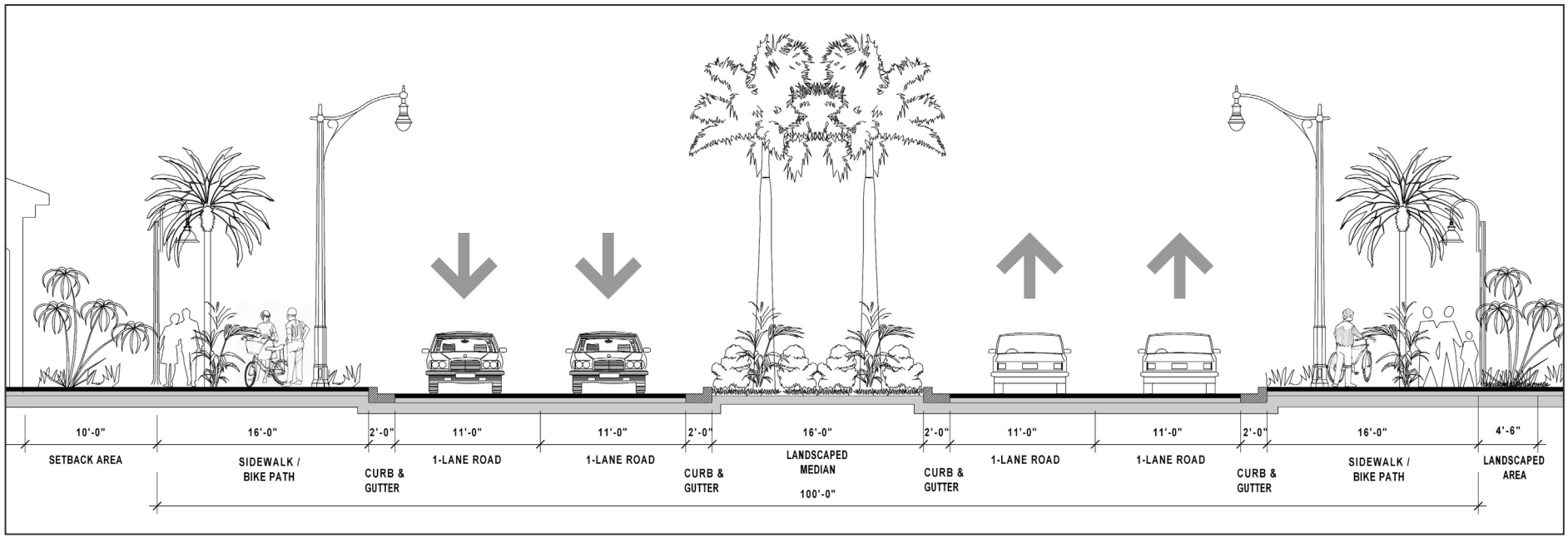


Figure 4-5
Typical Cross-section on the JFK Causeway in North Bay Village
Alternative 2



4.3.0. Evaluation Summary

All three corridor improvement alternatives and the No Build Alternative were evaluated for their consistency with the livability goals and mobility objectives established for the corridor. The livability goals are intended to measure how well each alternative meets the needs of stakeholders in the corridor, while the mobility objectives address the Department's responsibility to provide adequate mobility within the corridor and region.

The evaluation results are summarized in *Table 4-1*. For each livability goal and mobility expectation, the corridor alternatives were evaluated as very compatible, somewhat compatible, having little or no compatibility, somewhat incompatible or very incompatible. The estimated cost to implement each alternative is also shown.

4.3.1. No Build Alternative

The No Build Alternative performed the least favorably of the four. This alternative's existing six lane cross-section on the JFK Causeway is most incompatible with the livability goal for North Bay Village: high free-flow vehicle speeds, an unfriendly pedestrian environment and the need for aesthetic enhancements are all contributing factors. The No Build Alternative also has little or no compatibility with the livability goal for Normandy Island: the existing three lane cross-section on 71st Street and Normandy Drive encourages high free-flow vehicle speeds and creates barriers within the community. Finally, the prevailing unsafe pedestrian conditions, barriers to walking and lack of bicycle facilities makes the No Build Alternative very incompatible with the mobility objective of transportation choice through a balance of modes.

4.3.2. Alternative 1

Alternative 1 represents an improvement over the No Build Alternative. Under this option, the lane configurations stay the same throughout the corridor, but with several enhancements, including lane width reductions, wider sidewalks and medians and crossing enhancements. These enhancements make the corridor more compatible with the livability goals for all three of the unique areas in the corridor and the mobility expectation of transportation choice. The estimated cost to implement the recommendations of Alternative 1 is $3.5 to $10.0 million.

4.3.3. Alternative 2

Alternative 2 introduces lane reductions on the JFK Causeway in North Bay Village and on 71st Street and Normandy Drive in Normandy Island. The lane reductions not only slow vehicles and make the corridor less of a barrier in the community, but provide opportunities for multi-use trails and improved landscape enhancements. As a result, Alternative 2 has greater compatibility with the livability goals for North Bay Village and Normandy Island and the mobility expectation of transportation choice.

Table 4-1
Evaluation Summary

Goal/Expectation	No Build Alternative		Alternative 1 Keep existing number of lanes with enhancements		Alternative 2 Reduce lanes on 71st Street and Normandy Drive and on the JFK Causeway		Hybrid Alternative Reduce lanes on 71st Street and Normandy Drive	
Livability Goal Number 1 (North Beach Town Center) - Transform 71st Street into a neighborhood-oriented "Town Center" for North Beach that makes it the community's focal point for shopping, entertainment, cultural and recreational activities.	☑	❖ Street design, wide sidewalks and no/low building setbacks create a very walkable environment. ❖ Heavy traffic creates safety conflicts ❖ Barriers to beach, Normandy Village	☑	❖ Street design, wide sidewalks and no/low building setbacks create a very walkable environment. ❖ Crossing treatments, median refuges create a safer walking environment ❖ Linkages established with beach and Normandy Village	☑	❖ Street design, wide sidewalks and no/low building setbacks create a very walkable environment. ❖ Crossing treatments, median refuges create a safer walking environment ❖ Linkages established with beach and Normandy Village	☑	❖ Street design, wide sidewalks and no/low building setbacks create a very walkable environment. ❖ Crossing treatments, median refuges create a safer walking environment ❖ Linkages established with beach and Normandy Village
Livability Goal Number 2 (Normandy Island) - Enhance and promote the neighborhood character of 71st Street and Normandy Drive.	☒	❖ 71st Street and Normandy Drive promote higher speeds, create a barrier in the community	☑	❖ Narrow lanes slow vehicles down ❖ Intersection enhancements slow vehicles and create a safer walking environment ❖ Improved lighting and landscaping make the corridor more pedestrian friendly and aesthetically pleasing	☑	❖ Reduced lanes slow vehicles and make the corridor more safe and pedestrian friendly ❖ Intersection enhancements slow vehicles and create a safer walking environment ❖ Multi-use trails create opportunities for bicycle/pedestrian travel	☑	❖ Reduced lanes slow vehicles and make the corridor more safe and pedestrian friendly ❖ Intersection enhancements slow vehicles and create a safer walking environment ❖ Multi-use trails create opportunities for bicycle/pedestrian travel
Livability Goal Number 3 (North Bay Village) - Develop the JFK Causeway into a safe and attractive corridor that acknowledges the unique community of North Bay Village	☒	❖ Road design pushes vehicles through at higher speeds ❖ Narrow, unbuffered sidewalks make the corridor a dangerous place to walk	☑	❖ Narrow lanes, wider medians induce slower vehicle speeds ❖ Gateway treatments, intersection enhancements, median and buffer landscaping signify the presence of a unique community and make the corridor more aesthetically pleasing	☑	❖ Reduced and narrowed lanes and wider medians will induce significantly slower vehicle speeds ❖ Additional ROW creates opportunities for wider medians and sidewalk buffers with significant landscaping ❖ Additional ROW	☑	❖ Narrow lanes, wider medians induce slower vehicle speeds ❖ Gateway treatments, intersection enhancements, median and buffer landscaping signify the presence of a unique community and make the corridor more aesthetically pleasing

Table 4-1
Evaluation Summary

Goal/Expectation	No Build Alternative		Alternative 1 Keep existing number of lanes with enhancements		Alternative 2 Reduce lanes on 71st Street and Normandy Drive and on the JFK Causeway		Hybrid Alternative Reduce lanes on 71st Street and Normandy Drive	
				❖ Wider sidewalks, buffers, crossing treatments and slower vehicle speeds make the corridor more pedestrian friendly		could also facilitate the creation of a multi-use trail		❖ Wider sidewalks, buffers, crossing treatments and slower vehicle speeds make the corridor more pedestrian friendly
Mobility Expectation Number 1 - Maintain adequate capacity and safety for regional traffic flows.	✓	❖ Most of the corridor can be traversed without substantial delays ❖ Significant congestion-induced delays will occur at the Indian Creek intersection and on 71st Street in the North Beach Town Center	✓	❖ Most of the corridor can be traversed without substantial delays ❖ Significant congestion-induced delays will occur at the Indian Creek intersection and on 71st Street in the North Beach Town Center	✗	❖ Lane reductions on the JFK Causeway could result in significant congestion ❖ Significant congestion-induced delays will occur at the Indian Creek intersection and on 71st Street in the North Beach Town Center congestion and delay	✓	❖ Most of the corridor can be traversed without substantial delays ❖ Significant congestion-induced delays will occur at the Indian Creek intersection and on 71st Street in the North Beach Town Center
Mobility Expectation Number 2 - Promote choice in transportation through a balance of transportation modes within the corridor.	✗	❖ Narrow, unbuffered sidewalks make walking on the causeway difficult and unsafe ❖ Barriers to walking exist throughout the corridor ❖ Lack of adequate facilities makes bicycling very difficult and unsafe ❖ High level of transit service is present, but accessibility could be improved	✓	❖ Wider, buffered sidewalks, reduced vehicle speeds and crossing enhancements make the corridor more safe and pedestrian-friendly ❖ Bicycle lanes and multi-use trails enable safe bicycling on the corridor ❖ Improved access to transit stops	✓	❖ Wider, buffered sidewalks, reduced vehicle speeds and crossing enhancements make the corridor more safe and pedestrian-friendly ❖ Bicycle lanes and multi-use trails enable safe bicycling on the corridor ❖ Improved access to transit stops	✓	❖ Wider, buffered sidewalks, reduced vehicle speeds and crossing enhancements make the corridor more safe and pedestrian-friendly ❖ Bicycle lanes and multi-use trails enable safe bicycling on the corridor ❖ Improved access to transit stops
Cost		$0.0		$3.5 to $10.0 million		$7.3 to $14.3 million		$4.1 to $11.2 million

Unfortunately, there are also significant concerns about adequate capacity on the JFK Causeway under Alternative 2. Given existing and projected traffic volumes on the causeway, reducing the number of lanes from six to four could likely create congestion and automobile mobility problems. As a result, this alternative is not compatible with the mobility expectation of providing adequate capacity and mobility for regional traffic. The estimated cost to implement the recommendations of Alternative 1 is $7.3 to $14.3 million.

4.3.4. Hybrid Alternative

The Hyrbrid Alternative represents a compromise between the first two alternatives. It includes lane reductions on 71st Street and Normandy Drive in Normandy Island, but not on the JFK Causeway. As result, the Hybrid Alternative maintains compatibility with the mobility expectation of vehicular capacity and safety. It also includes more narrow travel lanes, wider sidewalks, multi-use trails (where feasible), crossing treatments and enhanced landscaping, making it compatible with all of the livability goals and mobility objectives.

Because the Hybrid Alternative has the greatest level of compatibility with the livability goals and mobility expectations, it is the recommended alternative. The estimated cost to implement the recommendations of the Hybrid Alternative is $4.1 to $11.2 million. A detailed discussion of the livability goals and mobility expectations is included in the next section.

4.4.0. Evaluation Measures

This section presents a discussion of the performance of the alternatives across the livability goals and mobility expectations established for the corridor. A set of evaluation measures have been identified for each goal and expectation to assess how compatible each alternative is. The development of the livability goals, mobility expectations and associated evaluation measures is described in Chapter Two.

4.4.1. Livability Goal Number 1 (North Beach Town Center)

Transform 71st Street into a neighborhood-oriented "Town Center" for North Beach that makes it the community's focal point for shopping, entertainment, cultural and recreational activities.

The 71st Street charrette was held in the Summer of 2001 and focused on 71st Street, the 72nd Street parcel one block north of the corridor and other areas surrounding the North Beach Town Center. The overall theme emanating from the 71st Street charrette was the desire on behalf of the residents to make 71st Street and the nearby 72nd Street parcel the focus of the North Shore area and the larger North Beach community. In contrast to South Beach, which is a prominent destination not only for the region but for visitors from around the world, residents articulated a vision for 71st Street that entails development on a smaller, neighborhood scale. Four evaluation measures will be used to assess this goal:

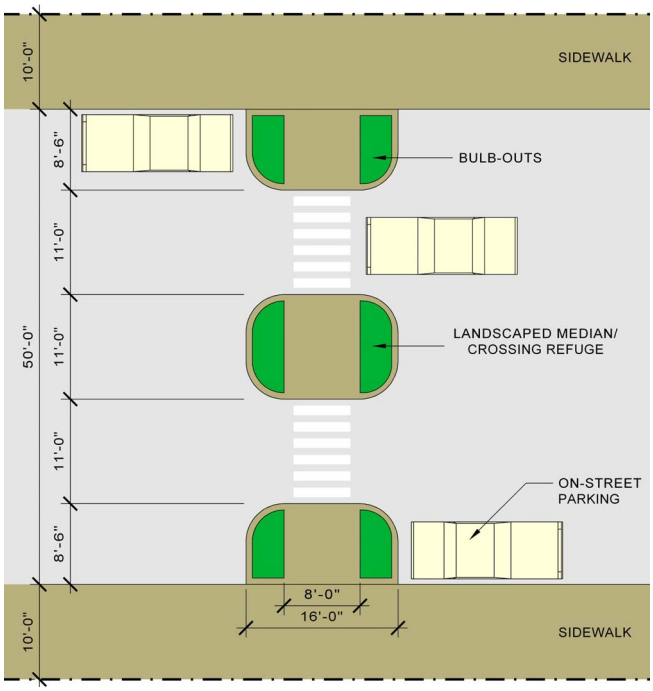
❖ **Corridor design that promotes development at a human scale**. As the focal point of the North Beach Town Center, 71st Street must continue to develop at a walkable, human scale. Essential design elements include closely spaced buildings that front the street and a small scale street cross-section (i.e. one lane in each direction). Since this section of the corridor already includes these characteristics, all three build alternatives include maintaining the existing cross-section.

❖ **Safe access for pedestrians and the elimination of barriers to walking**. A key component to the development of a walkable town center on 71st Street is the creation of a safe environment for pedestrians, including the elimination of barriers to walking. 71st Street, as part of SR 934, carries regional traffic from the mainland to the SR A1A one-way pair — Collins Avenue and Abbott Avenue) — the major north-south artery for Miami Beach. As a result, the road is heavily traveled and is congested at many times throughout the day.

Obviously, heavy traffic on 71st Street creates significant conflicts for pedestrians attempting to navigate the North Beach Town Center. The study team initially examined the potential for an alternative route for regional traffic attempting to reach SR A1A (many trips from the mainland do use Indian Creek Drive to reach southbound A1A). Unfortunately, a feasible alternative route does not exist, as the surrounding network is comprised of narrow, local streets fronted by apartments, single family residences and small scale mixed uses.

To make the corridor more safe for pedestrians and to eliminate barriers to walking, all three build alternatives include several enhancements. One such enhancement is the placement of landscaped medians aligned with bulb-outs at key mid-block locations in the corridor (see *Figure 4-6*). The medians and bulb-outs will reduce the amount of asphalt required to cross the street and provide a safe refuge. Additionally, they will limit the amount of

Figure 4-6
Landscaped Median and Bulb-outs on 72nd Street



walking required to cross the street (particularly on longer blocks) and, as a traffic calming measure, cause vehicles to slow down. The exact placement of the medians and bulb-outs will need to be closely coordinated to ensure that they do not adversely impact both traffic operations associated with the center turn lane and on-street parking.

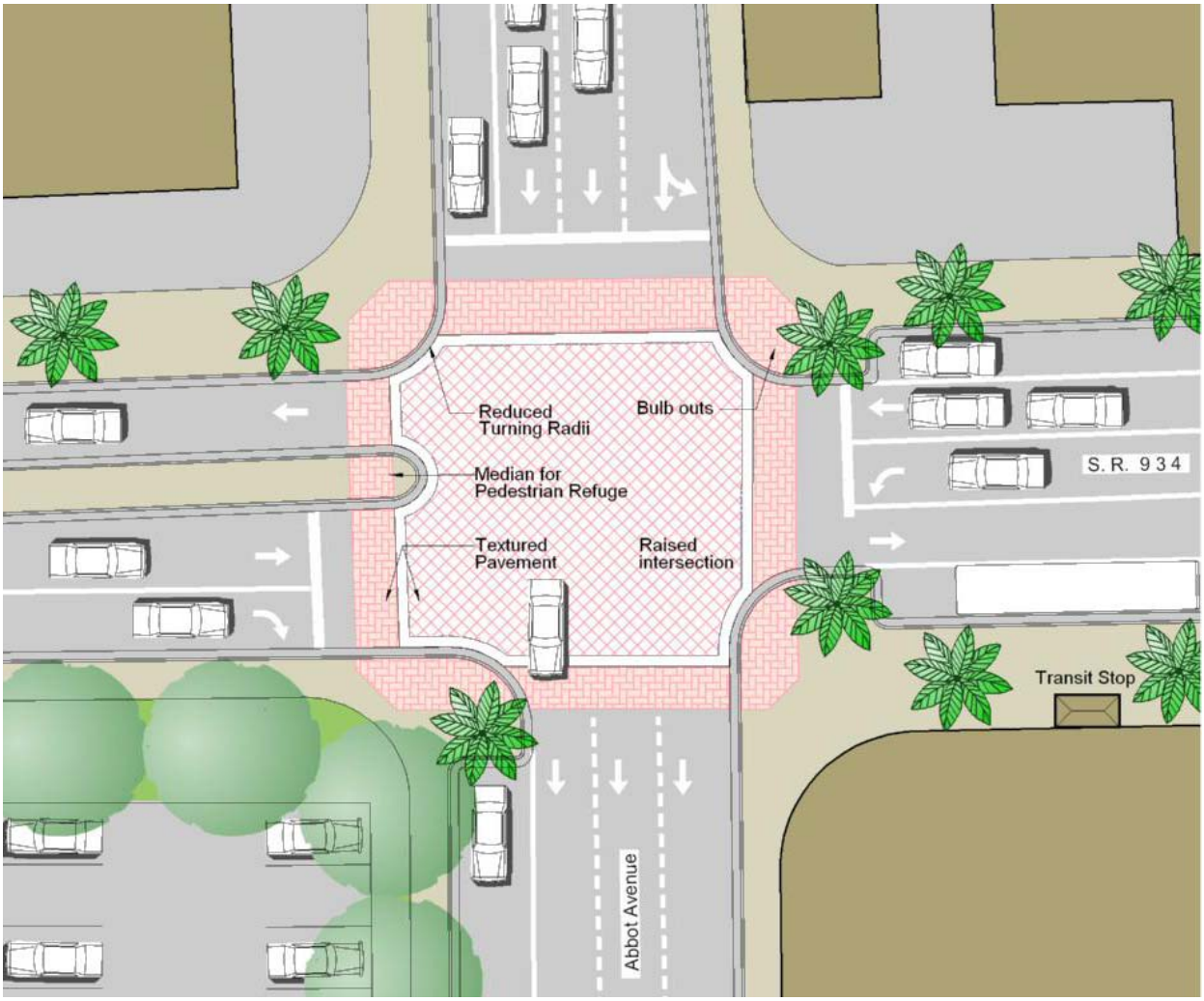
Another key element is crossing enhancements at major intersections. 71st Street is intersected by several major roads, including Collins Avenue, Harding Avenue, Abbott Avenue, Byron Avenue and Indian Creek Drive. These intersections carry significant amounts of traffic and have many turning movements. The potential for conflicts with pedestrians are greatest at these locations; they pose the greatest barrier to walking in this section of the corridor.

To make the major intersections on 71st Street safer for pedestrians, crossing enhancements are recommended for all three build alternatives. These elements include textured pavement at all four approaches and within the intersection and reduced turn radii at the corners. The textured pavement will create an established space for pedestrians and send a visual cue to drivers. In addition to being textured, the intersections may also be raised; however, this may not be feasible given the volume of traffic in the corridor and on the cross streets. The reduced turn radii, which requires reconstruction of the corners, will reduce the distance required for pedestrians to cross the street and cause drivers to make turns at a slower speed. Overall, the crossing enhancements will send a cue to drivers that they are entering a special place where walking is prominent. An example of what a crossing enhancement may look like on Abbott Avenue is included in *Figure 4-7*.

Finally, one significant finding that emerged from the both the 71st Street charrette and the community meetings held in the corridor is the need to link the North Beach Town Center and Normandy Village in Normandy Island (also in the study corridor). Since both areas attract very similar markets, a key strategy is to create a "park once" destination, where patrons can park in either area and walk to the other.

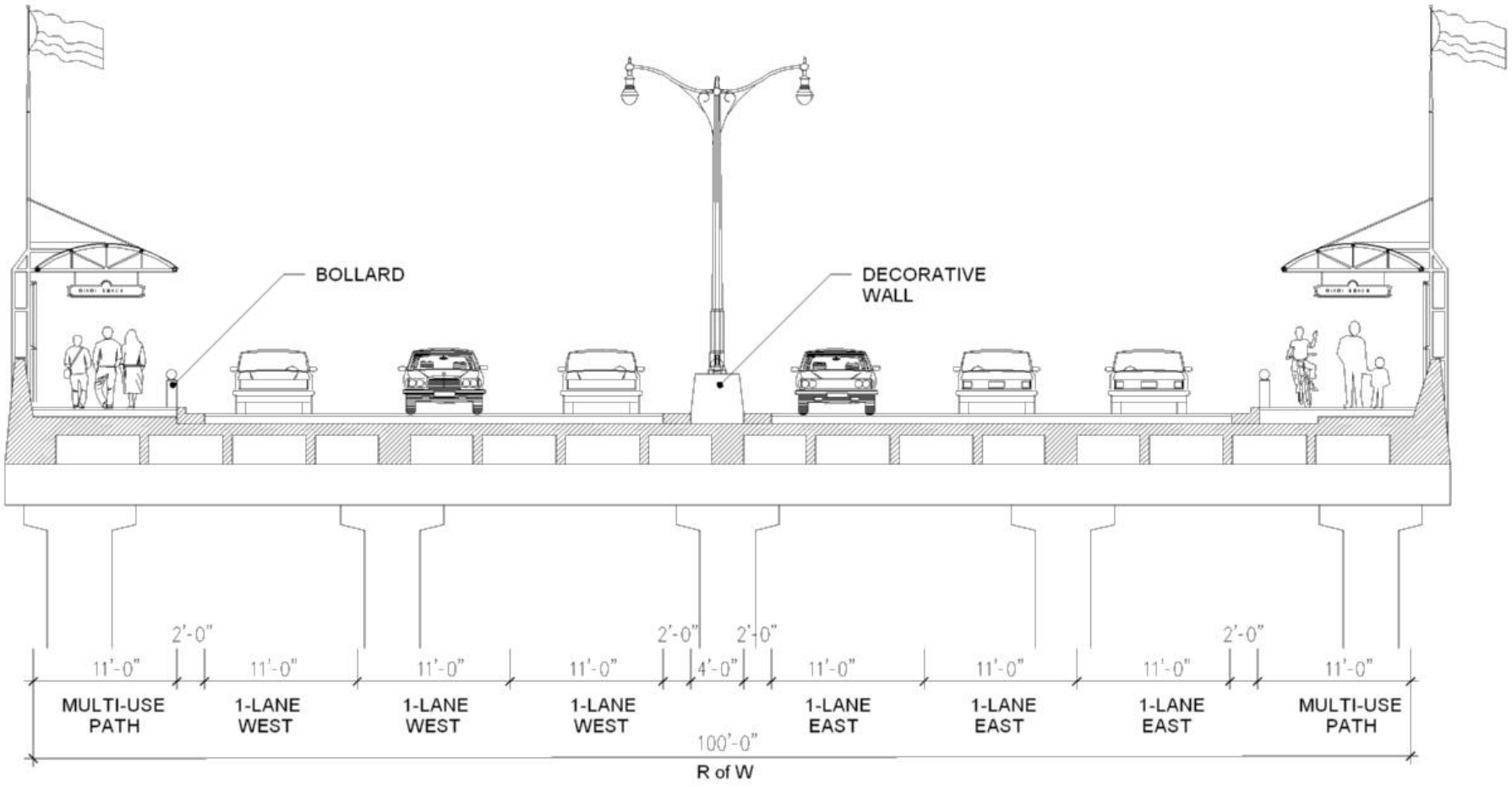
Integral to linking the North Beach Town Center and Normandy Village is the bridge on 71st Street over Indian Creek. The bridge carries three lanes of heavy traffic in each direction and includes a narrow sidewalk on each side. The bridge itself is a barrier to walking because it is unshaded and the narrow, unbuffered sidewalks provide very little protection from adjacent vehicles.

Figure 4-7
Crossing Enhancement at Abbott Avenue



For all three build alternatives, a redesigned cross-section is recommended for the Indian Creek bridge that will make it more pedestrian friendly and create a link between North Beach Town Center and Normandy Village. The recommended cross-section, which is illustrated in *Figure 4-8*, includes narrowed travel lanes and a wider, covered walkway that could accommodate both pedestrians and bicyclists. The narrowed travel lanes will slow vehicles, while the covered walkway will create a more pleasant and friendly environment for traveling between the two destinations. In essence, the bridge should become a "gateway" between the two areas in the corridor.

Figure 4-8
Recommended Cross-section for the Indian Creek Bridge



❖ **Design features that are aesthetically pleasing and create a unique identity**. By virtue of the existing corridor design, 71st Street already maintains a visually unique and aesthetically pleasing environment. The enhancements described in this section, particularly the intersection enhancements and recommended cross-section for the Indian Creek Bridge will further establish 71st Street as a unique area. These enhancements are recommended for all three build alternatives.

❖ **The provision of adequate parking.** A parking inventory performed as part of the study effort revealed that on-street parking on 71st Street is heavily used at most times throughout the day, particularly east of Byron Avenue. It is anticipated that, as the corridor continues to redevelop west of Byron Avenue, on-street parking use will become intensified in that area as well. While the creation of additional off-street parking is beyond the scope of this study, maintaining the existing on-street parking is included in the recommendations for 71st Street for all three build alternatives. It is important to note that the bulb-outs recommended as part of the study may be at conflict with existing on-street parking. In those cases, the tradeoffs between the bulb-outs and on-street parking should be carefully evaluated.

In summary, all of the alternatives are compatible with the livability goal for 71st Street in the North Beach Town Center because they maintain the existing corridor design. The three build alternatives further this goal through the addition of crossing enhancements that create a safer walking environment and eliminate barriers to walking and through the recommended redesign of the Indian Creek Bridge that will strengthen the linkage between the North Beach Town Center and Normandy Village.

4.4.2. Livability Goal Number 2 (Normandy Island)

Enhance and promote the neighborhood character of 71st Street and Normandy Drive.

At the first community meeting held in the corridor, participants pointed out that 71st Street and Normandy Drive should be more sensitive to the surrounding residential neighborhoods (and Normandy Village). Emphasis was also placed on improving the appearance of both streets and making them friendlier places to walk. Four evaluation measures have been established to assess this goal:

❖ **Reduced travel speeds.** The current design of 71st Street and Normandy Drive in Normandy Island — one-way with three travel lanes that are 12 feet or wider — facilitates high free-flow vehicle speeds and creates a barrier within the community. As a result, the No Build Alternative does not perform well on this evaluation measure.

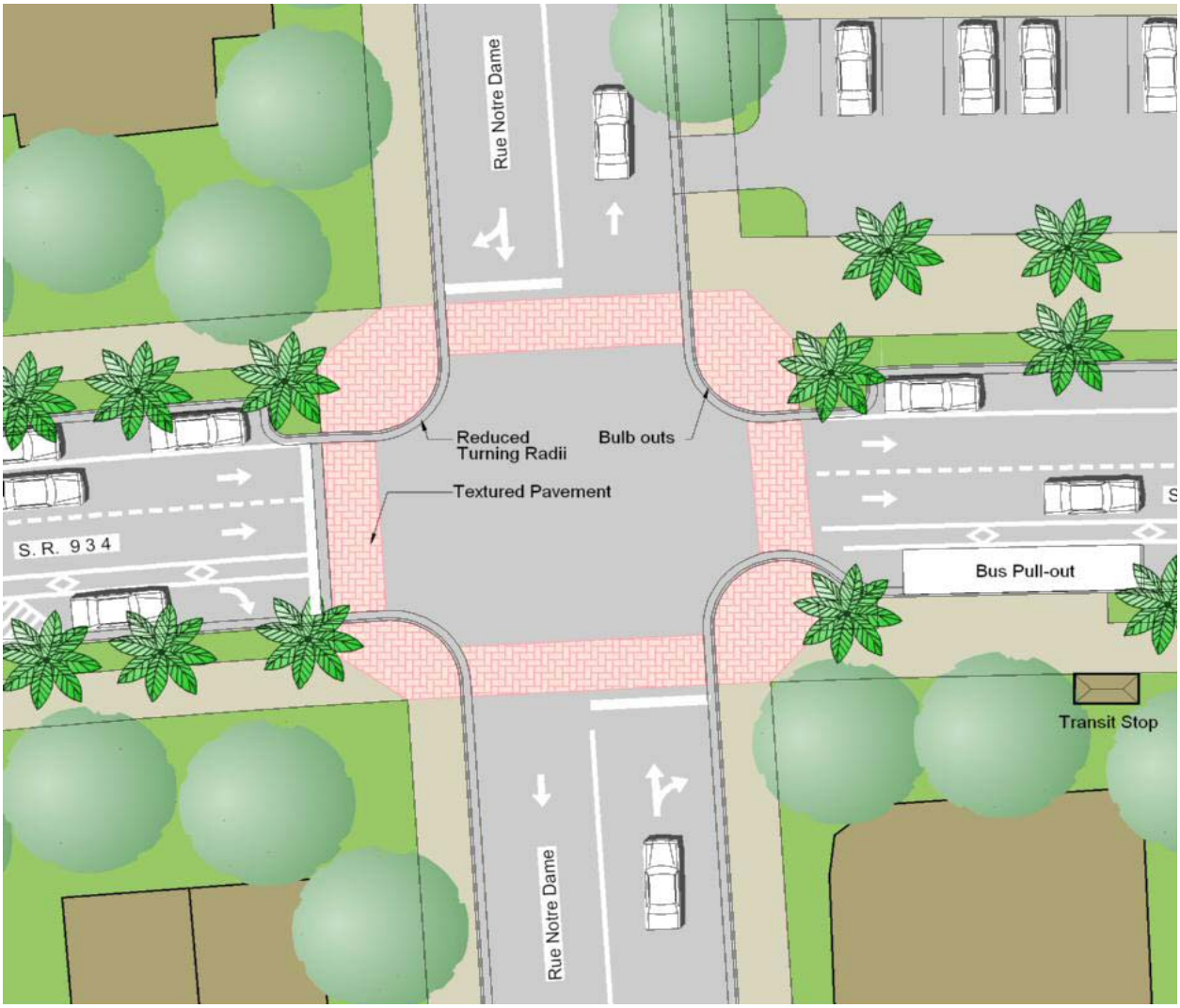
Alternative 1 includes a recommended cross-section that maintains three lanes on both roads, but also includes narrowed, 11 foot travel lanes that will induce slower free-flow vehicle speeds (see *Figure 4-2*). Thus, it represents an improvement over the No Build Alternative for this evaluation measure.

Alternative 2 and the Hybrid Alternative recommend cross-sections for 71st Street and Normandy Drive that not only include narrowed travel lanes, but also a reduction to two lanes on each road (see *Figure 4*). The lane reductions will have a significant effect on lowering free-flow vehicle speeds. These two alternatives perform most favorably for this evaluation measure.

All three build alternatives recommend enhancements at major intersections on 71st Street and Normandy Drive (see *Figure 4-9*) Among other things, the intersection enhancements include textured pavement at the crosswalks and reduced turn radii. The textured pavement will send a visual cue to drivers to slow down, while the reduced turn radii, achieved through ramp/corner modifications, will require drivers to slow down when accomplishing turns.

❖ **Neighborhood friendly street design and features, such as improved landscaping.** At the first community meeting, participants noted that, while 71st Street and Normandy Drive do include trees in many sections of the corridor, a more attractive and consistent landscaping pattern is desired. All three build alternatives recommend cross-sections that include improved landscaping, such street trees between the sidewalk and the road, and pedestrian scale lighting (see *Figures 4-4* and *4-5*). These cross-section features will better frame the roadway and give it more of

Figure 4-9
Intersection Enhancement at Rue Notre Dame



a neighborhood feel. For this evaluation measure, Alternatives 1 and 2 and the Hybrid Alternative all perform more favorably than the No Build Alternative.

Another concern raised during the community meetings was the conflict between the current design of 71st Street and Normandy Drive at Normandy Village on the east side of Normandy Island. That area consists of neighborhood-oriented, small-scale mixed use land uses, where patrons are encouraged to walk between shops and restaurants. The current roadway cross-section consists of three travel lanes and turn lanes, where moving vehicles are immediately adjacent to the sidewalk and storefronts. Alternative 2 and the Hybrid Alternative both recommend lane reductions on 71st Street and Normandy Drive; the lane reductions provide an opportunity to create a buffer between moving vehicles and the sidewalk.

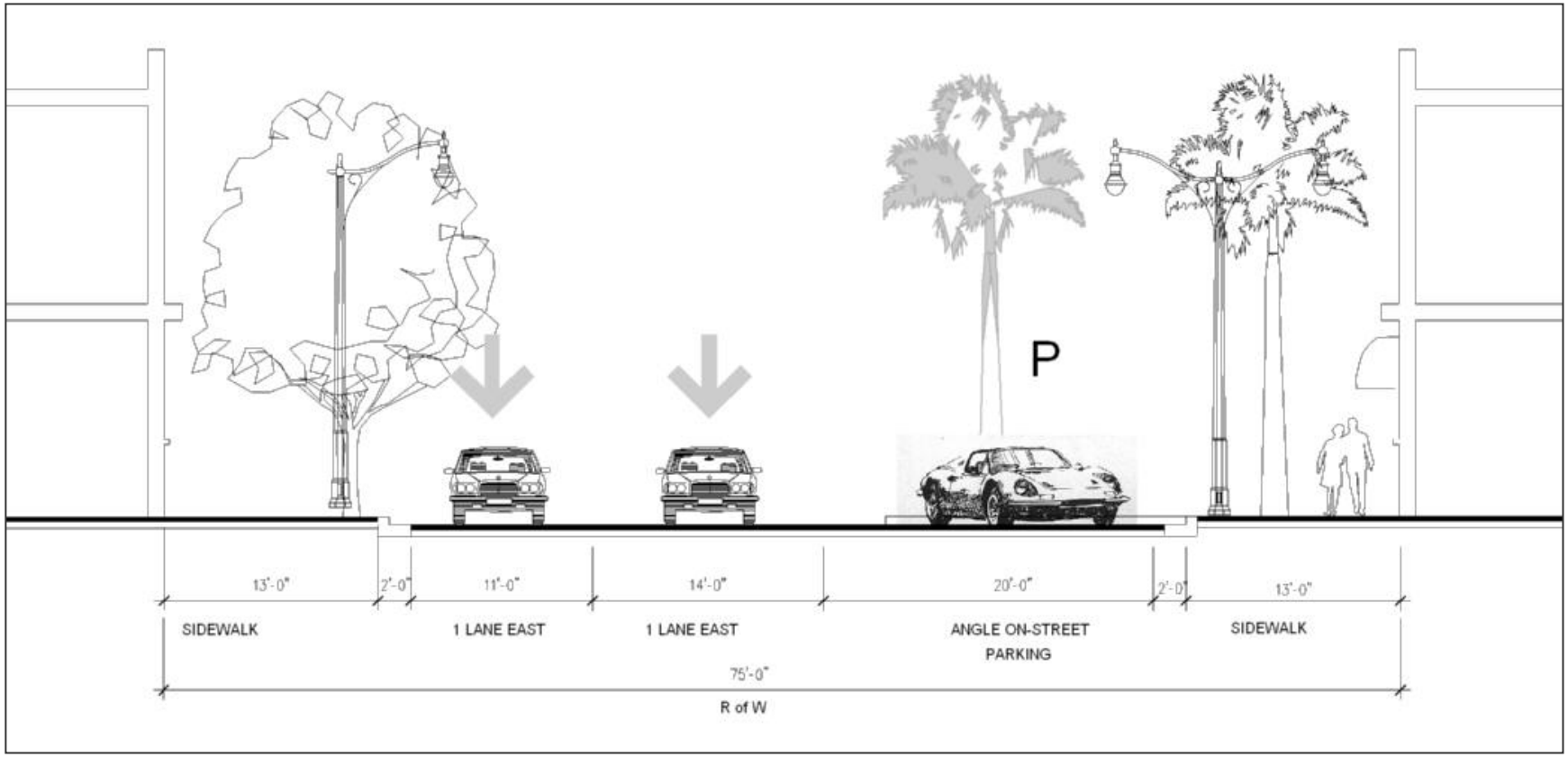
One possibility that is strongly desired by stakeholders in the area is to put angle on-street parking in the buffer zone, giving that area smaller scale look and feel (see *Figure 11*). It is important to note that there are safety and operational issues associated with angle parking, and this strategy would need to be evaluated in greater detail if considered for implementation.

❖ **Improved pedestrian facilities.** Sidewalks are included on both sides of 71st Street and Normandy Drive at an average width of five feet. The sidewalks are aged and cracking in many areas. In addition, a landscaped swale and on-street parking provide a buffer between the sidewalk and adjacent traffic (the swale and on-street parking are not present in the Normandy Village area of the corridor).

Under Alternative 1, the sidewalk width will not expand significantly because of right of way constraints (this alternative proposes no lane reductions). However, there are several elements associated with Alternative 1 that will make walking easier and safer along the corridor in Normandy Island. In addition to replacing aged and cracked sidewalks, this alternative proposes to place landscaping and lighting between the sidewalk and the roadway, reinforcing the buffer from the adjacent roadway and creating more of a pedestrian scale. Similar to improvements proposed for the North Beach Town Center under Alternative 1, the intersection enhancements proposed at major intersections in Normandy Island will include textured crosswalks that establish pedestrian space and reduced turning radii, which will shorten the amount of pavement required to cross the street (see *Figure 4-9)*

Alternative 2 and the Hybrid Alternative perform even better against this evaluation measure. These alternatives include many of the same pedestrian friendly components as Alternative 1, including pedestrian-scale lighting and landscaping and intersection enhancements. Perhaps even more important is the fact that both alternatives propose lane reductions on 71st Street and Normandy Drive, freeing up right of way to make facility enhancements. As shown in *Figure 4-4*, the lane reductions result in additional right of way that could be used to make wider multi-use trails. The trails, which could be up to 10 feet wide, clearly establish pedestrian space in the corridor and can accommodate many different types of users at different speeds and skill levels.

Figure 4-10
Angle Parking on Normandy Drive in Normandy Village



❖ **Provision of adequate parking.** A parking inventory performed as part of this study showed that on-street parking is used throughout the day in all areas of the corridor. All three build alternatives propose to leave on-street parking unchanged.

The most intense use of on-street parking is near the Normandy Village area, where parking reaches capacity on both 71st Street and Normandy Drive several times each day. Under Alternative 2 and the Hybrid Alternative, proposed lane reductions open up the possibility of creating on-street parking between East Bay Drive and Rue Vendome, the areas where parking demand would likely be greatest.

In summary, the No Build Alternative is least compatible with the livability goal for Normandy Island because it has a corridor design the promotes high free-flow vehicle speeds and does not acknowledge the surrounding neighborhoods. Additionally, the current design of the corridor makes walking very difficult.

Alternative 1 represents an improvement over the No Build Alternative because it recommends narrowed travel lanes, intersection enhancements and pedestrian scale lighting and landscaping. These elements will contribute to the reduction of free-flow vehicle speeds, give it more of a neighborhood look and feel and make walking in the corridor easier. As a result, this alternative is more compatible with the livability goal for Normandy Island.

Alternative 2 and the Hybrid Alternative, which both propose the same design for the Normandy Island section of the corridor, represents an improvement over both the No Build Alternative and Alternative. Not only do these two alternatives include the same design elements as Alternative 1, but also recommend lane reductions on 71st Street and Normandy Drive. The lane reductions will further slow vehicles and give the corridor a neighborhood look and feel. In addition, the residual right of way can be used to create multi-use trails on 71st Street and Normandy Drive, making the corridor very pedestrian friendly. Alternative 2 and the Hybrid Alternative are most compatible with the livability goal for Normandy Island.

4.4.3. Livability Goal Number 3 (North Bay Village)

Develop the JFK Causeway into a safe and attractive corridor that acknowledges the unique community of North Bay Village.

At the first community meeting, participants felt that the current design of the JFK Causeway places too much emphasis on through moving automobiles and completely ignores the surrounding community of North Bay Village. A significant amount of feedback also focused on improving the image of the corridor and making it safer for pedestrians. Three evaluation measures have been established to evaluate this section of the corridor:

❖ **Design features that are aesthetically pleasing and create a unique identity**. The current design of the JFK Causeway is six lanes with center median. Some landscaping is present on the medians at the bridges that connect the three islands of North Bay Village, but is largely absent on most of this section of the corridor; most medians are flat concrete. There is no buffer or landscaping between the sidewalks and the roadway, and most buildings are set back from the roadway. In essence, the JFK Causeway is

little more than a conduit for moving vehicles as quickly as possible from the mainland to Miami Beach, and the surrounding community is largely ignored. As a result, the No Build Alternative does not perform well against this evaluation measure.

Alternative 1 and the Hybrid Alternative, which both propose the same design for this section of the corridor, introduce several elements that will make the corridor more aesthetically pleasing and community friendly. These alternatives recommend that the existing lane configurations remain the same, but with enhancements, including narrowed lanes, landscaped medians, landscaped buffers with lighting, wider sidewalks and intersection enhancements (see *Figure 4-4*).

Lane widths on the JFK Causeway currently range in width between 11 and 14 feet. Alternative 1 and the Hybrid Alternative recommend lane widths of 11 feet for the entire section of the corridor. The residual right of way will enable slightly wider medians with more continuous landscaping. It will also enable the introduction of a landscaped buffer with smaller scale and enhanced lighting. These elements will not only discourage vehicle speeding, but also make the corridor more aesthetically pleasing and signal to drivers that they are passing through a unique community.

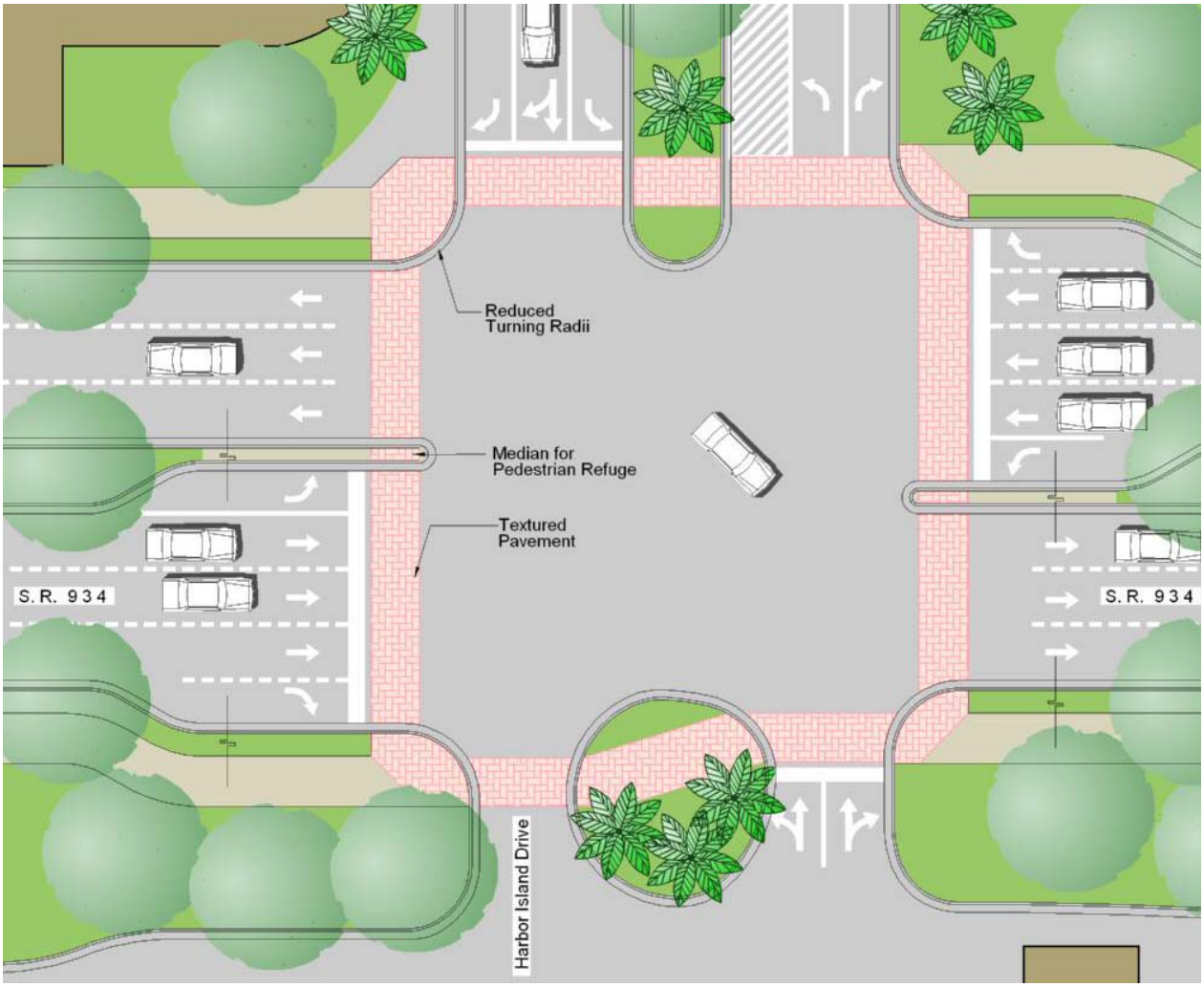
Enhancements at major intersections are also recommended for Alternative 1 and the Hybrid Alternative. These enhancements, which are similar to those recommended for the sections of the corridor in Normandy Island and the North Beach Town Center, include textured pavement at the crosswalks, which will send a visual cue to drivers that they are entering a unique area and to slow down (see *Figure 4-11)*

Finally, Alternative 1 and the Hybrid Alternative recommend gateway enhancements where the corridor enters North Bay Village: at Treasure Island coming off of the bridge from Normandy Island and at Harbor Island coming from the causeway from the mainland. These enhancements, which would likely include landscaping and signage, signify to travelers that they are entering the unique community of North Bay Village.

It is important to note that, in order to accommodate many of the design elements recommended for this section of the corridor, Alternative 1 and the Hybrid Alternative may require that a small amount of additional right of way may be required. A majority of the land adjacent to the Causeway consists of off-street parking lots and undeveloped land. Therefore, no buildings would be impacted. However, the right of way acquisition would entail additional cost.

Alternative 2 represents a significant improvement over the No Build Alternative, Alternative 1 and the Hybrid Alternative for this evaluation measure. This alternative recommends similar enhancements as the other two build alternatives, but also proposes lane reductions on the Causeway. The lane reductions will not only slow vehicles and make the corridor less of a barrier within the community, but will also enable wider medians (16 feet) and buffers with better landscaping. In addition, the lane reductions will create enough space within so that all of the design recommendations can be accomplished without acquiring additional right of way. As

Figure 4-11
Intersection Enhancement at Harbor Island Drive



a result, Alternative 2 performs most favorable for this evaluation measure.

❖ **A more even balance between through-moving vehicles and the surrounding community**. The previous evaluation measure discusses how the current design of the JFK Causeway places a large emphasis on moving vehicles from the mainland to Miami Beach, without regard to the surrounding community of North Bay Village. It is for this reason that the No Build Alternative does not perform favorably for this evaluation measure.

Alternative 1 and the Hybrid Alternative both introduce design elements, such as lane width reductions, landscaped medians and buffers and intersection enhancements that better integrate the corridor within North Bay Village and make it less of a barrier community. Alternative 2 takes the concept a step further by introducing lane reductions that enable

wider medians and buffers with improved landscaping.

❖ **The creation of safe pedestrian access along the corridor.** The current design of the Causeway places narrow sidewalks immediately adjacent to fast moving traffic, making walking very difficult and unsafe within the corridor. In addition, the major intersections are very wide and pedestrians must traverse almost 100 feet of pavement to cross the street. Large turning radii (25 feet or more) enable vehicles to accomplish turns at higher speeds and create conflicts with pedestrians crossing the Causeway and side streets. As a result, the No Build alternative does not perform favorably for this evaluation measure.

Alternative 1 and the Hybrid Alternative both represent an improvement over the No Build Alternative by including several enhancements that make the corridor a safer and more friendly place to walk. The Alternatives recommend wider sidewalks and include a landscaped buffer from the travel lanes. They also include textured crosswalks that establish pedestrian space within intersections. In addition, the intersection enhancements recommend reduced turn radii that require vehicles to slow down when making a turn and reduce the amount of pavement required to cross the street. The intersection enhancements also recommend that medians be extended, where feasible, into the crosswalk to provide a pedestrian refuge.

Alternative 2 represents a slight improvement over Alternative 1 and the Hybrid Alternative for this evaluation measure. The Hybrid alternative includes sidewalk buffers and intersection enhancements that will make the corridor more pedestrian friendly. In addition, this alternative includes the creation of a multi-use trail and, through lane reductions, results in even less pavement required for street crossing at intersections.

Overall, the No Build Alternative is not compatible with the livability goal for the JFK Causeway. The current design of this section of the corridor is oriented toward regional vehicular mobility and does little to acknowledge the unique community of North Bay Village. Walking in the corridor is very difficult and unsafe.

Alternative 1 and the Hybrid Alternative, which have similar recommendations for this section of the corridor, recommend several elements that acknowledge the unique community of North Bay Village by enhancing the corridor aesthetically, providing for a better balance between vehicles and the community and making the corridor a more friendly and safe place for pedestrians. These enhancements include reduced lane widths, wider, landscaped medians, the introduction of landscaped buffers with lighting, wider sidewalks, intersection enhancements and gateway enhancements. Alternative 1 and the Hybrid Alternative are significantly more compatible with the livability goal for North Bay Village than the No Build Alternative.

Alternative 2 performed most favorably against the evaluation measures for this livability goal. It includes many of the same elements as Alternative 1 and the Hybrid Alternative. In addition, this alternative lane reductions, that will make the corridor even less of a barrier within the community. As a result, Alternative 2 is most compatible with the livability goal for North Bay Village.

4.4.4. Mobility Expectation Number 1

Maintain adequate capacity and safety for regional traffic flows.

While the focus of this study is on making the SR 934 corridor more livable, the ultimate responsibility of the Florida Department of Transportation is to provide mobility for all forms of transportation. Two objectives have been development to ensure that the corridor alternatives do not adversely impact mobility.

The first mobility objective addresses the Department's responsibility for maintaining adequate mobility and safety for regional traffic flows. Four evaluation measures have been developed to assess how well each alternative meets this objective:

❖ **Automobile level of service on SR 934**. Peak hour, peak direction level of service was estimated for each corridor alternative using the Department's ART-PLAN software. Year 2025 traffic forecasts were prepared using the Miami-Dade Metropolitan Planning Organization (MPO) travel demand forecasting model. To simulate latent demand for traveling from the mainland to Miami Beach, traffic forecasts for each alternative assumed that the existing number of lanes remained the same on each section of the corridor. In other words, the No Build traffic volumes were used for each of the alternatives.

The results of the ART-PLAN analysis are shown in *Table 4-2*. To ensure that the ART-PLAN software is accurately replicating travel conditions in the corridor, base year ART-PLAN results were calibrated to actual travel time runs. Detailed ART-PLAN inputs, assumptions and outputs can be found in *Appendix A*.

Based on the results of this analysis, if nothing is done within the corridor between now and the year 2025 (e.g. the No Build Alternative), peak hour, peak direction automobile level of service will remain fair (LOS C) on the JFK Causeway, will degrade slightly from good (LOS B) to fair (LOS C) on 71st Street and Normandy Drive in Normandy Island and will continue to fail (LOS F) on 71st Street in the North Beach Town Center.

Despite increased traffic volumes on the JFK Causeway, LOS remains the same under the No Build Alternative. This is because traffic signal optimization was assumed in each of the alternatives as part of the intersection analysis, described in the next section (signal timing is an input to ART-PLAN).

Level of service declines slightly under the No Build Alternative on 71st Street and Normandy Drive because the increase in traffic volumes pushed it just over the threshold. However, LOS C is still considered an acceptable peak hour condition.

The failing level of service on 71st Street in the North Beach Town Center is attributed to high traffic volumes (relative to the number of lanes), closely spaced signals and high traffic volumes on cross-streets. This condition remains unchanged between now and the year 2025.

The ART-PLAN analysis produces virtually identical results for Alternative 1 as the No Build Alternative. This is because no significant roadway capacity changes are recommended as part of this alternative. As a result, there are no adverse automobile LOS impacts under this alternative.

Table 4-2
Year 2025 Level of Service

From	To	Existing						No Build						Alternative 1						Alternative 2						Hybrid					
		Daily Vol.	Peak Dir.	Lanes	DDHV	Speed (mph)	LOS	Daily Vol.	Peak Dir.	Lanes	DDHV	Speed (mph)	LOS	Daily Vol.	Peak Dir.	Lanes	DDHV	Speed (mph)	LOS	Daily Vol.	Peak Dir.	Lanes	DDHV	Speed (mph)	LOS	Daily Vol.	Peak Dir.	Lanes	DDHV	Speed (mph)	LOS
SR 934/JFK Causeway (Eastbound)																															
10th Ave.	Harbor Island Dr.	37,600	Eastbound	3	1,540	29.1	B	47,200	Eastbound	3	1,940	29.6	B	47,200	Eastbound	3	1,940	29.6	B	47,200	Eastbound	2	1,940	23.2	C	47,200	Eastbound	3	1,940	28.2	B
Harbor Island Dr.	Adventure Ave.	36,000		3	1,480	22.1	C	45,400		3	1,860	20.9	D	45,400		3	1,860	20.9	D	45,400		2	1,860	15.0	E	45,400		3	1,860	20.9	D
Adventure Ave.	Hispanola Ave.	36,000		3	1,480	28.9	B	45,400		3	1,860	27.7	C	45,400		3	1,860	27.7	C	45,400		2	1,860	23.1	C	45,400		3	1,860	27.7	C
Hispanola Ave.	W. Bay Dr.	36,000		3	1,480	26.1	C	41,300		3	1,695	25.4	C	41,300		3	1,695	25.4	C	41,300		2	1,695	22.5	C	41,300		3	1,695	25.4	C
	Arterial Average					27.2	C					26.8	C					26.8	C					21.5	D					26.2	C
SR 934/71st Street - Normandy Island (Eastbound)																															
W. Bay Dr.	Trouville Esp.	17,800	Eastbou	3	1,300	32.8	B	20,300	Eastbou	3	1,480	32.4	B	20,300	Eastbou	3	1,480	32.4	B	20,300	Eastbou	2	1,480	32.4	B	20,300	Eastbou	2	1,480	32.4	B
Trouville Esp.	Rue Notre Dame	14,500		3	1,060	35.2	A	20,300		3	1,480	34.2	B	20,300		3	1,480	34.2	B	20,300		2	1,480	34.3	B	20,300		2	1,480	34.3	B
Rue Notre Dame	E. Bay Dr.	14,500		3	1,060	24.2	C	22,900		3	1,670	20.2	D	22,900		3	1,670	20.2	D	22,900		2	1,670	18.2	D	22,900		2	1,670	17.8	D
	Arterial Average					30.4	B					28.0	C					28.0	C					26.8	C					28.2	C
SR 934/71st Street - North Shore (Eastbound)																															
E. Bay Dr.	Indian Creek Dr.	33,300	und	1	1,370	2.8	F	51,000	und	1	2,090	2.3	F	51,000	und	1	2,090	2.3	F	44,600	und	1	1,830	2.3	F	44,600	und	1	1,830	2.3	F
Indian Creek Dr.	Abbott Ave.	11,900		1	490	18.2	F	17,600		1	720	16.9	D	17,600		1	720	16.9	D	15,200		1	620	16.2	D	15,200		1	620	16.1	D
Abbott Ave.	Harding Ave.	10,300		1	420	13.4	E	17,600		1	720	9.0	F	17,600		1	720	9.0	F	15,200		1	620	9.7	E	15,200		1	620	15.6	D
Harding Ave.	Collins Ave.	11,500		1	470	7.0	E	15,700		1	640	11.1	E	15,700		1	640	11.1	E	12,600		1	520	10.0	E	12,600		1	520	11.1	E
	Arterial Average					5.5	F					4.7	F					4.7	F					4.6	F					4.8	F
SR 934/Normandy Drive - Normandy Island (westbound)																															
E. Bay Dr.	Rue Notre Dame	17,800	Westbou	3	1,300	33.7	B	22,600	Westbou	3	1,650	33.0	B	22,600	Westbou	3	1,650	33.0	B	22,600	Westbou	2	1,650	32.9	B	22,600	Westbou	2	1,650	32.9	B
Rue Notre Dame	Trouville Esp.	19,200		3	1,400	33.1	B	21,000		3	1,530	33.0	B	21,000		3	1,530	33.0	B	21,000		2	1,530	33.4	B	21,000		2	1,530	33.0	B
Trouville Esp.	W. Bay Dr.	21,200		3	1,550	28.5	B	21,000		3	1,530	21.7	D	21,000		3	1,530	21.7	D	21,000		2	1,530	17.0	E	21,000		2	1,530	20.3	D
	Arterial Average					31.4	B					27.7	C					27.7	C					24.6	C					26.9	C

Source: ART-PLAN Version 4.0; Miami-Dade MPO Year 2025 Cost Feasible Network; Renaissance Planning Group.

Under Alternative 2, LOS remains the same on 71st Street in the North Beach Town Center and on 71st Street and Normandy Drive in Normandy Island. However, level of service degrades to a poor condition (LOS D) on the JFK Causeway.

The fact that, even though lane reductions are assumed for 71st Street and Normandy Drive in Normandy Island under Alternative 2, level of service is not significantly impacted provides some indication that this section of the corridor does have some excess mainline capacity. The small amount of congestion that is present under both with and without the lane reductions is attributed to delay at the major intersections of East and West Bay Drive.

On the other hand, level of service does degrade to poor (LOS D) on the JFK Causeway when lane reductions are assumed. This provides an indication that the lane reductions on the Causeway do significantly impact mainline capacity. As a result, Alternative 2 does not perform favorably for this evaluation measure.

Under the Hybrid Alternative, level of service remains unchanged from both the No Build Alternative and Alternative 1 for all sections of the corridor. This confirms the analysis of the other alternatives in that lane reductions can be accomplished in Normandy Island without significantly impacting automobile level of service, while the Causeway will need to remain at six lanes to maintain an adequate level of service.

In many cases, congestion in a corridor can be pinpointed to a specific intersection where a high volume of turn movements and cross-street traffic can result in a "choke point" for the road. Opening year (2010) intersection conditions in the corridor were analyzed for all four alternatives using HCS Signals 2000.

Figure 4-12 shows existing and future year level of service and geometry at major intersections in the corridor. Detailed intersection LOS results can be found in *Appendix B*. Most intersections in the corridor are anticipated to experience an acceptable level of service under all four alternatives, a function of adequate turn lanes and low cross-street traffic.

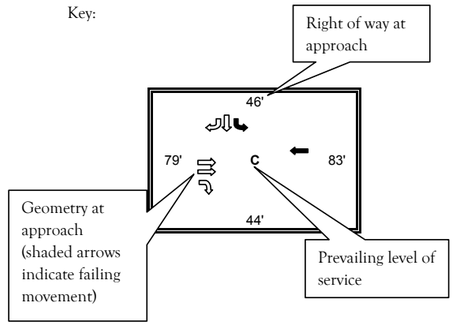
However, three intersections are anticipated to experience a failing condition (LOS E or F) under all four alternatives: at Indian Creek Drive, Harding Avenue and Collins Avenue. Not surprisingly, these three intersections are located on 71st Street in the North Beach Town Center, which is why the ART-PLAN analysis yielded a failing roadway level of service for this section of the corridor under all four alternatives. Indian Creek Drive and Collins Avenue are regional north-south arterials for Miami Beach, while Harding Avenue is a significant part of the local circulation system in the North Beach Town Center.

To allow the study team to better assess the tradeoffs between livability and mobility, the required intersection geometry to achieve an acceptable level of service at these intersections was determined and probable right of way impacts were identified for the three build alternatives (see *Figure 4-13*).

Figure 4-12
Intersection Geometry and Level of Service

Intersection	AM - Existing (2001)	PM - Existing (2001)	Opening Year (2010)					
			No Build	Alternative 1		Alternative 2		Hybrid
				Within Existing ROW [1]	ROW Expansion [2]	Within Existing ROW [1]	ROW Expansion [2]	
Harbor Island Drive	129' / 119' D 100' / 129'	129' / 119' D 100' / 129'	129' / 119' B 100' / 129'	129' / 119' B 100' / 129'	NA	129' / 119' D 100' / 129'	NA	129' / 119' D 100' / 129'
West Bay Drive	61' / 158' B 70' / 119'	61' / 158' B 70' / 119'	61' / 158' A 70' / 119'	61' / 158' A 70' / 119'	NA	61' / 158' A 70' / 119'	NA	61' / 158' A 70' / 119'
East Bay Drive	82' / 133' C 120' / 90'	82' / 133' C 120' / 90'	82' / 133' C 120' / 90'	82' / 133' C 120' / 90'	NA	82' / 133' C 120' / 90'	NA	82' / 133' C 120' / 90'
Indian Creek Drive	79' / 81' E 74' / 96'	79' / 81' F 74' / 96'	79' / 81' F 74' / 96'	79' / 81' F 74' / 96'	Not Acheivable	79' / 81' F 74' / 96'	Not Acheivable	79' / 81' F 74' / 96'
Abbot Avenue	60' / 70' B 74' / 63'	60' / 70' C 74' / 63'	60' / 70' A 74' / 63'	60' / 70' A 74' / 63'	60' / 70' NA 74' / 63'	60' / 60' B 74' / 63'	60' / 60' NA 74' / 63'	60' / 60' B 74' / 63'
Harding Avenue	59' / 82' B 78' / 58'	59' / 82' B 78' / 58'	59' / 82' D 78' / 58'	59' / 82' D 78' / 58'	59' / 82' C [1] 78' / 58'	59' / 82' E 78' / 58'	59' / 82' C [1] 78' / 58'	59' / 82' E 78' / 58'
Collins Avenue	66' / 76' C 55' / 71'	66' / 76' C 55' / 71'	66' / 76' F 55' / 71'	66' / 76' F 55' / 71'	66' / 76' D [2] 55' / 71'	66' / 76' E 55' / 71'	66' / 76' C [2] 55' / 71'	66' / 76' E 55' / 71'

Source: HCS Signals 2000; Renaissance Planning Group.



Notes:
[1] Building impacts on either side of the northbound approach are likely.
[2] Assumes no additional ROW will be taken, but westbound through will be converted to a left.

For Harding Avenue, the addition of a northbound left turn lane will achieve an acceptable intersection level of service (LOS C) for all three build alternatives. Unfortunately, the right of way required to accommodate the additional turn lane will likely impact buildings on both sides of the street, making this improvement unlikely.

For Collins Avenue, additional turn lanes are not necessary to achieve an acceptable level of service. Rather, converting the eastbound through lane on 71st Street to a left turn lane will result in acceptable level of service. This means that vehicles attempting to reach the drive that forms the westbound intersection approach will need to reach it via Collins Avenue instead (turn movement counts collected at the intersection revealed that very small number of vehicles made this movement).

At Indian Creek Drive, the volumes are very high at several approaches, resulting in severe delay under all four alternatives. An unconstrained capacity analysis was performed for the three build alternatives at this intersection, where lanes were added for all movements at all approaches. The latent demand is so significant at this intersection that even the unconstrained capacity analysis did not achieve an acceptable level of service. Regardless, any lane additions at this intersection are highly prohibitive because they would have a significant impact on adjacent buildings.

❖ **Automobile level of service on parallel state roads.** In addition to monitoring automobile level of service on SR 934, the Department must ensure that potential shifts in traffic induced by capacity reductions do not adversely impact LOS on parallel state roads. *Table 4-3* shows the results of a year 2025 LOS analysis on the Broad Causeway (SR 922), north of SR 934, and the Julia Tuttle Causeway (I-195), south of SR 934. Level of service was determined using daily traffic volumes and generalized LOS capacities.

Table 4-3
Level of Service on Parallel Regional Roads

		No Build Alternative				Alternative 1			
From	To	Volume	Capacity	V/C Ratio	LOS	Volume	Capacity	V/C Ratio	LOS
SR 922/Broad Causeway (four lanes)									
Begin Causeway	End Causeway	29,600	34,300	0.86	D	29,900	34,300	0.87	D
I-195/Julia Tuttle Causeway									
US 1	Alton Road	143,900	81,700	1.76	F	144,600	81,700	1.77	F

		Alternative 2				Hybrid Alternative			
From	To	Volume	Capacity	V/C Ratio	LOS	Volume	Capacity	V/C Ratio	LOS
SR 922/Broad Causeway (four lanes)									
Begin Causeway	End Causeway	31,000	34,300	0.90	D	29,900	34,300	0.87	D
I-195/Julia Tuttle Causeway									
US 1	Alton Road	147,400	81,700	1.80	F	147,400	81,700	1.80	F

Source: Miami-Dade MPO Year 2025 Cost Feasible Network; FDOT Generalized LOS tables; Renaissance Planning Group.

Level of service remains the same on both the Broad Causeway (LOS D) and the Julia Tuttle Causeway (LOS F) across all three alternatives. These results indicate that lane reductions proposed under Alternative 2 and the Hybrid Alternative will not induce a significant amount of traffic shifts to the parallel roads.

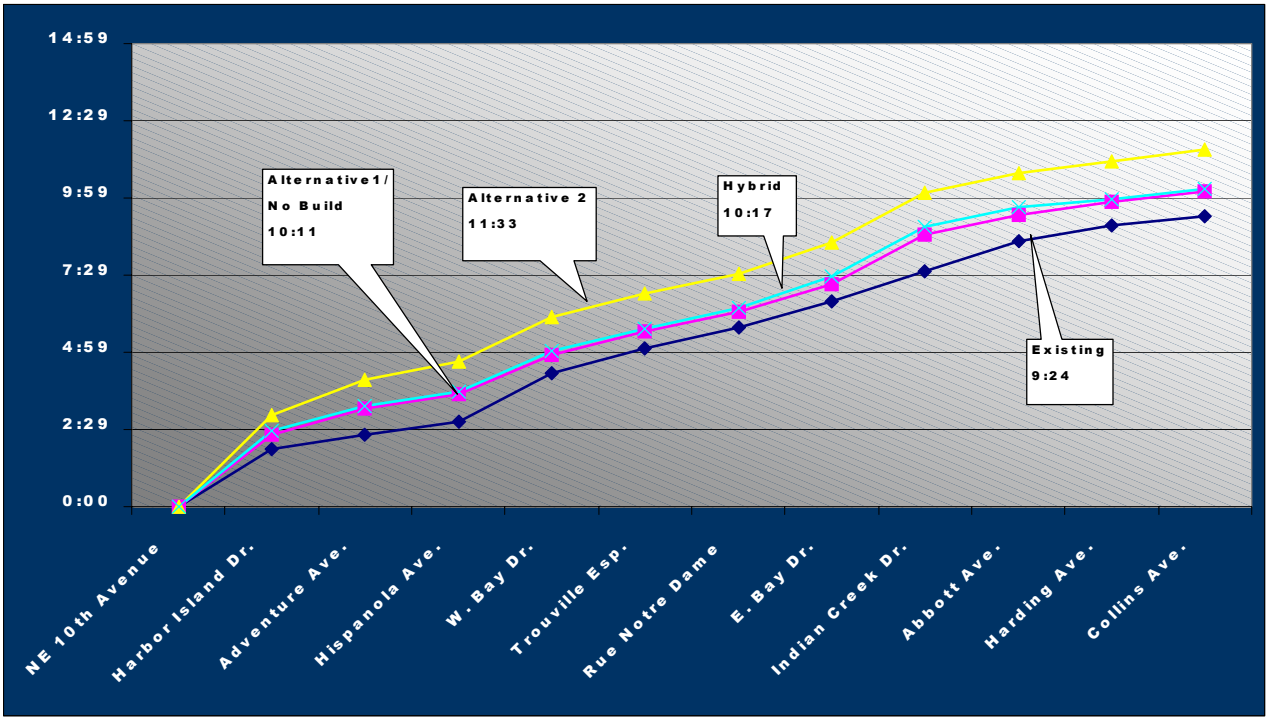
❖ **Travel time from Miami Beach to the mainland.** The section of SR 934 that is the focus of this study is a hurricane evacuation route. Therefore, any proposed changes to the corridor must not significantly affect the cumulative travel time from Miami Beach to the mainland.

Future year (2025) corridor travel times were estimated for each of the alternatives using the results of the ART-PLAN analysis (see *Figure 4-13*). One of the key outputs ART-PLAN uses to measure level of service is vehicle speed. The speeds were used to derive travel times.

Based on recent travel time analyses performed in the corridor, in takes just under nine and a half minutes to travel from Collins Avenue in Miami Beach to NE 10th Avenue on the mainland using SR 934. By the year 2025, it is estimated that, if nothing is built within the corridor, the travel time will degrade to just over 10 minutes, or an increase of approximately 45 seconds.

Alternative 1, which proposes no capacity changes in the corridor, and the Hybrid Alternative, which proposes lane reductions on 71st Street and Normandy Drive in North Bay Village both have an estimated travel time similar to the No Build Alternative. The results are consistent with the results of the corridor level of service analysis.

Figure 4-13
Cumulative Corridor Travel Time



By contrast, travel time degrades significantly under Alternative 2 to approximately eleven minutes and thirty seconds. This is a direct result of the lane reductions on the JFK Causeway.

❖ **The potential for operational conflicts on SR 934.** Beyond capacity and level of service issues, the Department must also consider potential operational conflicts in the corridor. Because no major reconfigurations (converting one-way to two-way, adding/removing medians, adding/removing turn lanes) are proposed under any of the alternatives, operational conflicts are not anticipated to be an issue.

In summary, the No Build Alternative, Alternative 1 and the Hybrid Alternative are all compatible with the objective of automobile mobility and safety for SR 934. None of the alternatives significant degrades level of service or travel time within the corridor. Further, because no major lane configurations (other than lane reductions) are proposed, none of the three alternatives are anticipated to create operational or safety issues.

The Hybrid Alternative, despite recommended lane reductions on 71st Street and Normandy Drive in Normandy Island, does not experience significantly degraded capacity or LOS in comparison to the No Build Alternative. This indicates that there is currently excess capacity on that section of the corridor.

By contrast, lane reductions proposed for the JFK Causeway under Alternative 2 result in significantly degraded travel LOS and travel time in the corridor. This indicates that the lane reductions will have a significant effect on automobile mobility in the corridor. As a result, Alternative is not compatible with this mobility objective.

4.4.5 Mobility Expectation Number 2

Promote choice in transportation through a balance of transportation modes within the corridor.

The Department is responsible for ensuring adequate mobility for all transportation modes. This mobility expectation focuses on alternative forms of transportation, including riding transit, bicycling and walking. Evaluation measures for multi-modal transportation mobility include:

❖ **Transit level of service and operations.** ART-PLAN was used to estimate bicycle, pedestrian and transit level of service in the corridor for the four alternatives. The results are shown in *Table 4*.

Route L, operated by Miami-Dade Transit (MDT), currently provides local bus service every ten minutes in the corridor during peak periods and operates from 5 AM to 1 AM. Route L is one of the most heavily used routes in the county because it provides a link between Miami Beach and the Hialeah and Northside Metrorail stations. The transit level of service in the corridor is excellent (LOS A), attributed to the high frequencies and hours of service that exist in the corridor.

Table 4
Bicycle, Pedestrian and Transit Level of Service

From	To	Existing						No Build						Alternative 1						Alternative 2						Hybrid					
		Bicycle						Bicycle						Bicycle						Bicycle						Bicycle					
		Lane/ Shoulder Present?	LOS	Avg. Sidewalk Width	LOS	Buses/ Hour	LOS	Lane/ Shoulder Present?	LOS	Avg. Sidewalk Width	LOS	Buses/ Hour	LOS	Facility	LOS	Avg. Sidewalk Width	LOS	Buses/ Hour	LOS	Lane/ Shoulder Present?	LOS	Avg. Sidewalk Width	LOS	Buses/ Hour	LOS	Lane/ Shoulder Present?	LOS	Avg. Sidewalk Width	LOS	Buses/ Hour	LOS
SR 934/JFK Causeway (Eastbound)																															
10th Ave.	Harbor Island Dr.	No	D	5'	C	6	A	No	D	5'	D	6	B	Path	B	12'	C	6	A	Path	B	16'	C	6	A	Path	B	12'	C	6	A
Harbor Island Dr.	Adventure Ave.	No	D	5'	C	6	A	No	D	5'	C	6	A	Path	B	10'	C	6	A	Path	B	16'	C	6	A	Path	B	10'	C	6	A
Adventure Ave.	Hispanola Ave.	No	D	5'	C	6	A	No	D	5'	C	6	A	Lane	B	8'	C	6	A	Path	B	16'	C	6	A	Lane	B	8'	C	6	A
Hispanola Ave.	W. Bay Dr.	No	D	5'	C	6	A	No	D	5'	C	6	A	Path	B	10'	C	6	A	Path	B	16'	C	6	A	Path	B	10'	C	6	A
	Arterial Average		D		C		A		D		D		A		B		C		A		B		C		A		B		C		A
SR 934/71st Street - Normandy Island (Eastbound)																															
W. Bay Dr.	Trouville Esp.	No	D	5'	B	6	A	No	D	5'	B	6	A	Path	B	5'	B	6	A	Path/lane	B	10'	B	6	A	Path/lane	B	10'	C	6	A
Trouville Esp.	Rue Notre Dame	No	D	5'	B	6	A	No	D	5'	B	6	A	Path	B	5'	B	6	A	Path/lane	B	10'	B	6	A	Path/lane	B	10'	C	6	A
Rue Notre Dame	E. Bay Dr.	No	D	5' - 15'	B	6	A	No	D	5' - 15'	B	6	A	Path	B	5' - 15'	C	6	A	Path/lane	B	10'	C	6	A	Path/lane	B	10'	C	6	A
	Arterial Average		D		B		A		D		B		A		B		C		A		B		C		A		B		C		A
SR 934/71st Street - North Beach Town Center (Eastbound)																															
E. Bay Dr.	Indian Creek Dr.	No	D	5' - 15'	E	6	A	No	D	5' - 15'	E	6	A	Path	C	5' - 15'	F	A		Path	C	10'	F	6	A	Path	C	10'	F	6	A
Indian Creek Dr.	Abbott Ave.	No	D	10'	B	6	A	No	D	10'	B	6	A	Lane	B	10'	C	A		Lane	B	10'	C	6	A	Lane	B	10'	C	6	A
Abbott Ave.	Harding Ave.	No	D	10'	B	6	A	No	D	10'	B	6	A	Lane	B	10'	C	A		Lane	B	10'	C	6	A	Lane	B	10'	C	6	A
Harding Ave.	Collins Ave.	No	D	10'	B	6	A	No	D	10'	B	6	A	Lane	B	10'	C	A		Lane	B	10'	B			Lane	B	10'	C	6	A
	Arterial Average		D		D		A		D		D		A		B		E	A			C		E	A			C		E		A
SR 934/Normandy Drive - Normandy Island (westbound)																															
E. Bay Dr.	Rue Notre Dame	No	D	5' - 15'	B	6	A	No	D	5' - 15'	B	6	A	Path	B	5' - 15'	C	6	A	Path/lane	B	10'	C	6	A	Path/lane	B	10'	C	6	A
Rue Notre Dame	Trouville Esp.	No	D	5'	B	6	A	No	D	5'	B	6	A	Path	B	5'	C	6	A	Path/lane	B	10'	C	6	A	Path/lane	B	10'	C	6	A
Trouville Esp.	W. Bay Dr.	No	D	5'	C	6	A	No	D	5'	C	6	A	Path	B	5'	C	6	A	Path/lane	B	10'	C	6	A	Path/lane	B	10'	C	6	A
	Arterial Average		D		C		A		D		C		A		B		C		A		B		C		A		B		C		A

Source: ART-PLAN Version 4.0; Renaissance Planning Group

From a transit operations perspective, the intersection enhancements recommended for the corridor will improve transit service. They include the placement of bus pull-outs at the far side of each intersection (see *Figures 8, 10 and 12*). The pull-outs will minimize conflicts between stopped buses and moving traffic, while their location at the far side of the intersection will enable buses to pull back into travel lanes during breaks in traffic.

❖ **Access to transit stops.** The current design of the corridor makes access to transit stops very difficult, primarily because of the lack of pedestrian facilities, difficulty in crossing the road and lack of a safe buffer from adjacent travel lanes.

The recommendations of the three build alternatives will each result in improved access to transit stops along the corridor. Design elements such as wider sidewalks, landscaped buffers, pedestrian scale lighting and crossing enhancements at intersections will make walking to transit stops and waiting safer and more convenient.

❖ **The presence of bicycle facilities.** There are currently no bicycle facilities in the corridor. Under Alternative 1, the lane width reductions on 71st Street and Normandy Drive in Normandy Island would enable the placement of bicycle lanes on both roads. Under Alternative 2 and the Hybrid Alternative, the lane reductions on that section of the corridor would enable both in-street bicycle lanes and a multi-use trail for less experienced users.

A multi-use trail is also recommended for the JFK Causeway under Alternative 2, enabled by the lane reductions proposed under that alternative. Combined with the multi-use trail on 71st Street and Normandy Drive in Normandy Island, Alternative 2 provides an opportunity to create a continuous bicycle corridor between the mainland and Miami Beach. No such facility currently exists in Miami-Dade County. The bicycle corridor concept could also be accomplished under Alternative 1 and the Hybrid Alternative, but an off-corridor route would need to be established in North Bay Village.

❖ **The presence of sidewalks, crossing treatments, etc.** The evaluation of the livability goals established for the corridor provides ample discussion on how each of the three build alternatives will significantly improve pedestrian facilities in the corridor over the No Build Alternative. The improvements include wider sidewalks, landscaped buffers, pedestrian scale lighting, crossing enhancement at major intersections and crossing refuges.

Alternative 2 performed most favorably for this alternative because it recommends multi-use trails on the JFK Causeway and North Bay Village and on 71st Street and Normandy Drive in North Bay Village. The Hybrid Alternative performed more favorably than Alternative 1 because it recommends multi-use trails on 71st Street and Normandy Drive.

Overall, the three build alternatives are compatible with the Department's mobility expectation of balanced transportation modes. They include high levels of transit service, crossing enhancements, wider sidewalks, multi-use trails (under Alternative 2 and the Hybrid Alternative), landscaped buffers, lighting enhancements and improved access to transit that will all make the corridor a better place to walk, bike and ride transit.

Alternative 2 is most compatible with this mobility objective. The lane reductions proposed under this alternative will provide for off-road walking and bicycling opportunities for almost the entire length of the corridor. The Hybrid Alternative also includes opportunities for off-road bicycle and pedestrian travel on 71st Street and Normandy Drive in Normandy Island.

4.5.0. Cost Estimates

Table 4-5 shows a range of planning-level cost estimates for each of the alternatives. Alternative 1 ranges in cost from a low of approximately $3.5 million to a high of approximately $10.1 million. A large part of the difference in cost is the level of landscaping and whether right of way is acquired in North Bay Village.

Alternative 2 is more expensive, ranging in cost from $7.3 million to $14.3 million. Much of the difference in cost depends on how much reconstruction occurs as part of the lane reduction on 71st Street and Normandy Drive in Normandy Island and on the JFK Causeway.

The Hybrid Alternative is closer in cost to Alternative 1: $4.1 to $11.2 million. Similarly, the primary difference in the cost ranges is whether right of way is acquired on the JFK Causeway. Cost estimates for individual elements are included in *Appendix F*.

Table 4-5
Cost Estimates

Cost Component	Cost					
	Alternative 1		Alternative 2		Hybrid	
	Low	High	Low	High	Low	High
North Beach Town Center						
Intersection crossing enhancements	$98,000	$195,000	$98,000	$195,000	$98,000	$195,000
Indian Creek Drive intersection	$125,000	$250,000	$125,000	$250,000	$125,000	$250,000
Medians and bulb-outs	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000
Landscaping (medians and bulb-outs)	$11,000	$11,000	$11,000	$11,000	$11,000	$11,000
Total North Beach Town Center	$264,000	$486,000	$264,000	$486,000	$264,000	$486,000
Normandy Island						
Restripe 71st Street and Normandy Drive	$312,000	$312,000	$0	$0	$0	$0
Partial reconstruction, sidewalk, restripe (both roads)	$0	$0	$832,000	$0	$832,000	$0
Reconstruct curb, sidewalk, restripe (both roads)	$0	$0	$0	$1,404,000	$0	$1,404,000
Intersection crossing enhancements	$50,000	$235,000	$50,000	$235,000	$50,000	$235,000
Landscaping	$988,000	$1,977,000	$988,000	$1,977,000	$988,000	$1,977,000
Lighting	$173,000	$692,000	$173,000	$692,000	$173,000	$692,000
Total Normandy Island	$1,523,000	$3,216,000	$2,043,000	$4,308,000	$2,043,000	$4,308,000
North Bay Village/JFK Causeway						
Partially reconstruct curb, medians, sidewalk, restripe	$1,205,000	$0	$4,300,000	$0	$1,205,000	$0
Reconstruct curb, medians, sidewalk, restripe, ROW	$0	$5,258,000	$0	$0	$0	$5,258,000
Reconstruct to two lanes with median, off-road path	$0	$0	$0	$8,063,000	$0	$0
Intersection crossing enhancements	$150,000	$345,000	$150,000	$345,000	$150,000	$345,000
Landscaping (inc. gateway treatments)	$221,000	$441,000	$401,000	$801,000	$221,000	$441,000
Lighting	$171,000	$343,000	$171,000	$343,000	$171,000	$343,000
Total North Bay Village/JFK Causeway	$1,747,000	$6,387,000	$5,022,000	$9,551,000	$1,747,000	$6,387,000
Total all sections	$3,534,000	$10,089,000	$7,329,000	$14,345,000	$4,054,000	$11,181,000

4.6.0. SUMMARY

The purpose of this study is to develop a balanced plan for mobility and livability on SR 934 in Miami Beach and North Bay Village. It seeks to develop strategies for the corridor that both enhance livability for residents and business owners in the corridor and satisfy mobility expectations established by the Department. The strategies presented and evaluated in this chapter are the result of a collaborative process that involved the Department, key stakeholders and the community at large.

Three alternatives have been proposed that encompass the corridor strategies. Alternative 1, which proposes to keep the same number of lanes in each of the three unique areas of the corridor but with enhancements, represents a significant improvement in corridor livability compared to existing conditions. It includes enhancements that will better the balance the corridor within the existing communities, landscaping and lighting enhancements that will improve the corridor aesthetically and make unique areas stand out and strategies to make the corridor a friendlier place to live work or play.

Because Alternative 1 does not include any major corridor capacity changes, there are no automobile mobility impacts; level of service is fairly consistent from existing conditions to the No Build Alternative to Alternative 1. Wider sidewalks, landscaped buffers, pedestrian scale lighting, crossing enhancements at intersections and on-street bike lanes make the corridor a friendlier place to walk, bike and ride transit, making Alternative 1 compatible with the Department's mobility expectation for a balance of transportation modes in the corridor.

Alternative 2, which includes many of the same elements as Alternative 1, proposes to reduce the number of lanes on 71st Street and Normandy Drive in Normandy Island and on the JFK Causeway in North Bay Village. The lane reductions are very compatible with the livability objectives for Normandy Island and North Bay Village because they create an even greater balance between the corridor and the surrounding community.

However, the lane reduction on the JFK Causeway raises serious questions with respect to automobile mobility in the corridor. When lanes are reduced on the Causeway, level of service degrades to an unacceptable level. As a result, Alternative 2 is incompatible with the Department's mobility objective for capacity and safety.

The Hybrid Alternative, which is a mix between Alternatives 1 and 2, is most successful in balancing livability and mobility in the corridor. The Hybrid Alternative recommends lane reductions on 71st Street and Normandy Drive in Normandy Island only, and does so without significantly impacting level of service and capacity in the corridor.

CHAPTER FIVE:
RECOMMENDATIONS AND IMPLEMENTATION

5.1.0 Overview

This final chapter presents the recommended strategy for the SR 934 Corridor based on the results from the alternatives evaluation and input from stakeholders in the community. It includes recommendations on improvements that can be completed in the near term, gives consideration to strategies that are the responsibility of agencies other than the Department and identifies issues for further study.

5.2.0 Community Meeting Number Three

On September 18 and 19, 2002, Community Meeting Number Three was held at the North Shore Activities Center in Miami Beach and at Treasure Island Elementary in North Bay Village, respectively. Participants viewed the corridor alternatives and the results of the evaluation. They were then given the opportunity to rank each alternative from one to four based on their preference.

Figure 5-1 shows the results from the alternatives ranking at the meeting held at the North Shore Activities center in Miami Beach. Participants at that meeting overwhelmingly voted Alternative 2 number one, the Hybrid Alternative number two, Alternative 1 number three and the No Build Alternative last. This trend carried through to the average alternative ranking, which is an average of all rankings received for a given alternative.

Figure 5-2 shows the results from the alternatives ranking at the meeting held at Treasure Island Elementary in North Bay Village. The ranking results at this meeting were decidedly less clear-cut than at the Miami Beach meeting. The No Build Alternative received the most number one rankings, with Alternative 1 close behind. Alternative 1 also received significantly more number two rankings than the other alternatives, while Alternative 2 received the most number three rankings. Interestingly, the No Build Alternative also received the most number four rankings, with the Hybrid Alternative close behind. When the total rankings received for each alternative are averaged, Alternative 1 emerges with the lowest average ranking by far, followed in order by the No Build Alternative, Alternative 2 and the Hybrid Alternative.

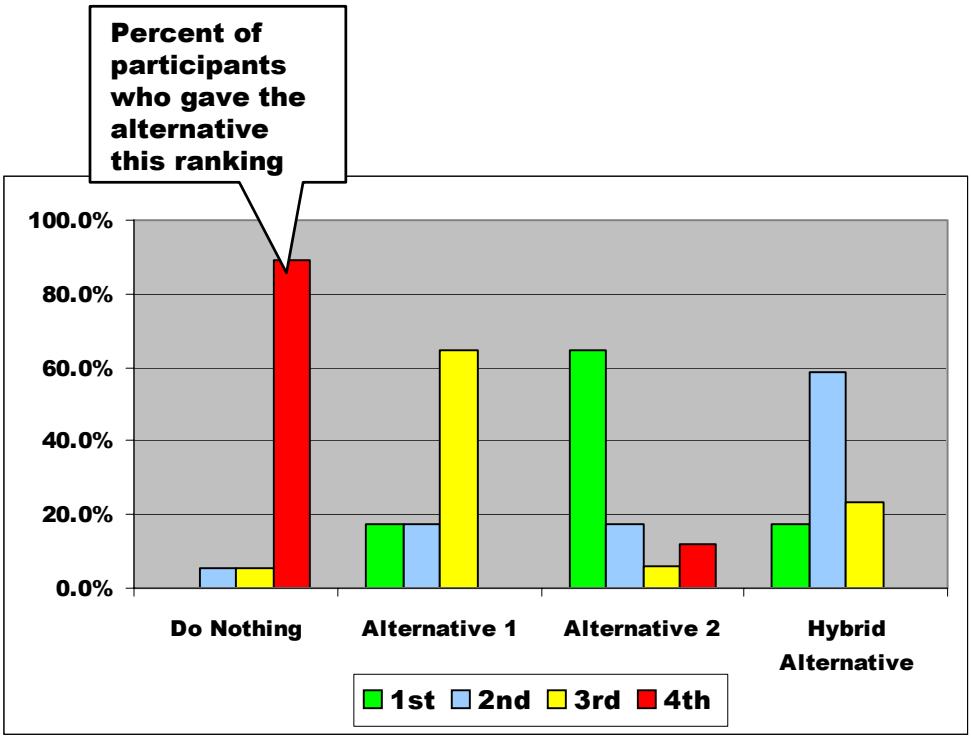
Figure 5-3 shows the ranking results from both meetings combined. Obviously, the combined rankings reveal no clear trend. Alternative 2 received the most number one rankings, while Alternative 1 and the Hybrid Alternative received virtually the same number of number two rankings. The No Build Alternative received the majority of number four rankings. When the total rankings received for each alternative are averaged, Alternative 1 emerges with the lowest average ranking, followed closely by Alternative 2 and the Hybrid Alternative. The No Build Alternative is a distant fourth.

Based on the results of the alternatives ranking, two distinct conclusions can be drawn:

- Participants at the Miami Beach meeting clearly favored the two alternatives that entailed lane reductions, with Alternative 2 (lane reductions in Normandy Island and on the JFK Causeway) receiving the majority of one rankings and the Hybrid Alternative (lane reductions in Normandy Island only) receiving the majority of number two rankings.

- While not as clear cut as the results of the Miami Beach meeting, participants at the Normandy Island meeting seemed to favor alternatives that entailed no lane reductions (Alternative 1 and the No Build Alternative) based on the average alternative rankings. It is important to note that the vast majority of meeting participants ranked the No Build Alternative last, indicating that most want to see at least some degree of change in the corridor.

Figure 5-1
Community Ranking Summary
North Shore Activities Center in Miami Beach



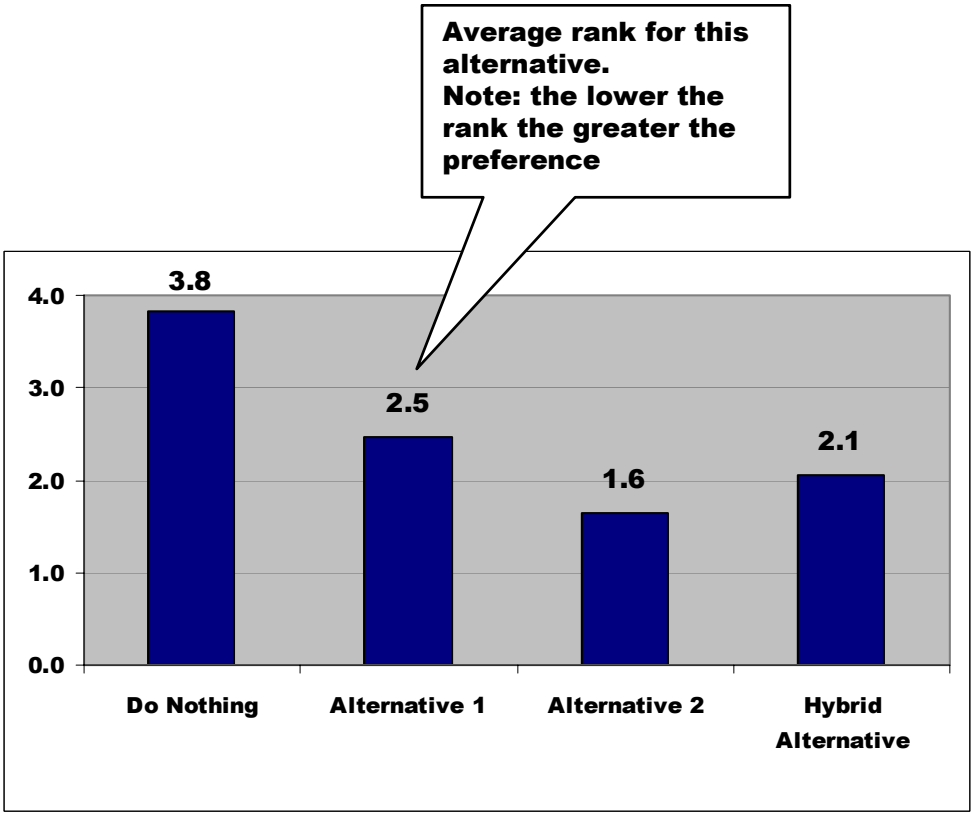
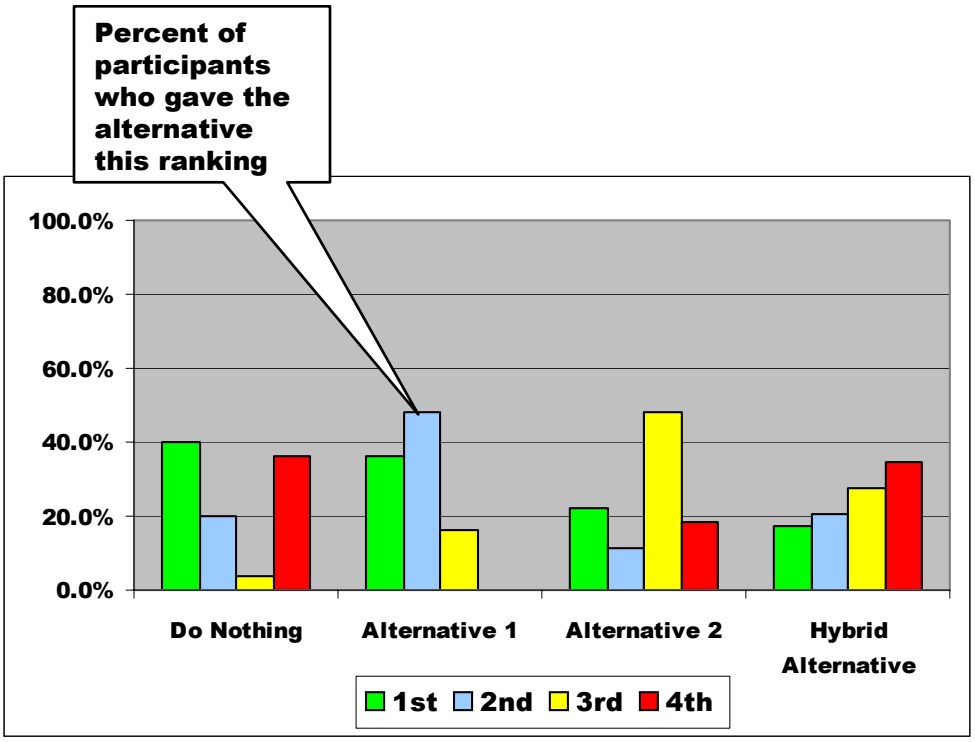


Figure 5-2
Community Ranking Summary
Treasure Island Elementary in North Bay Village



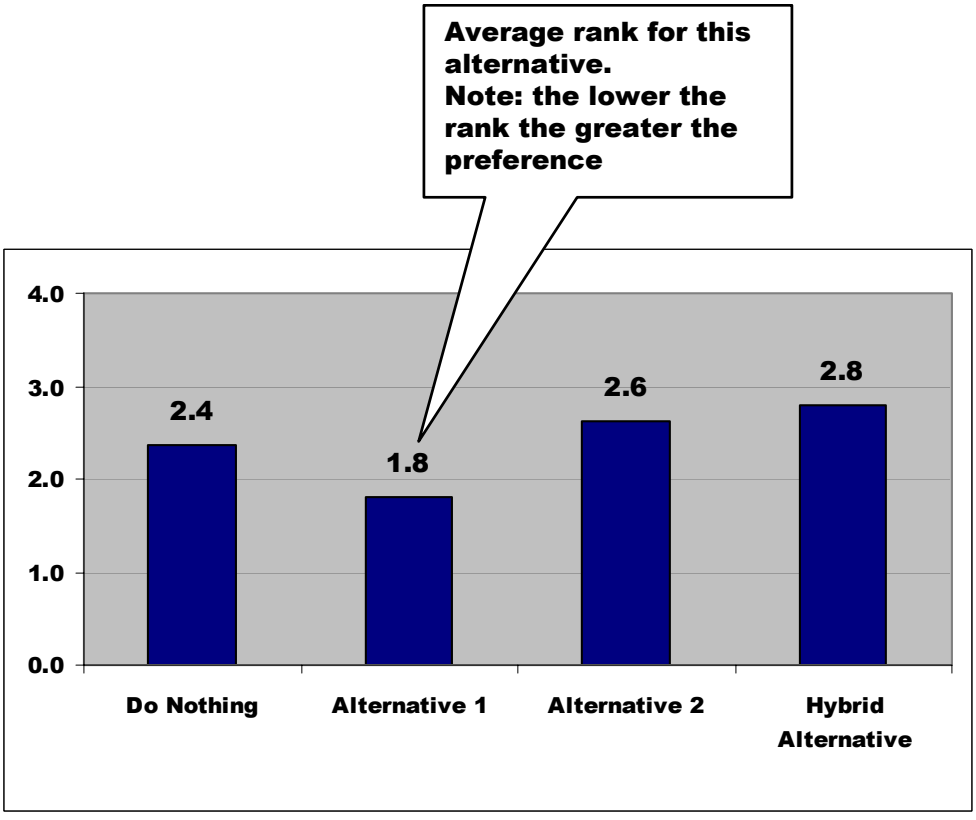
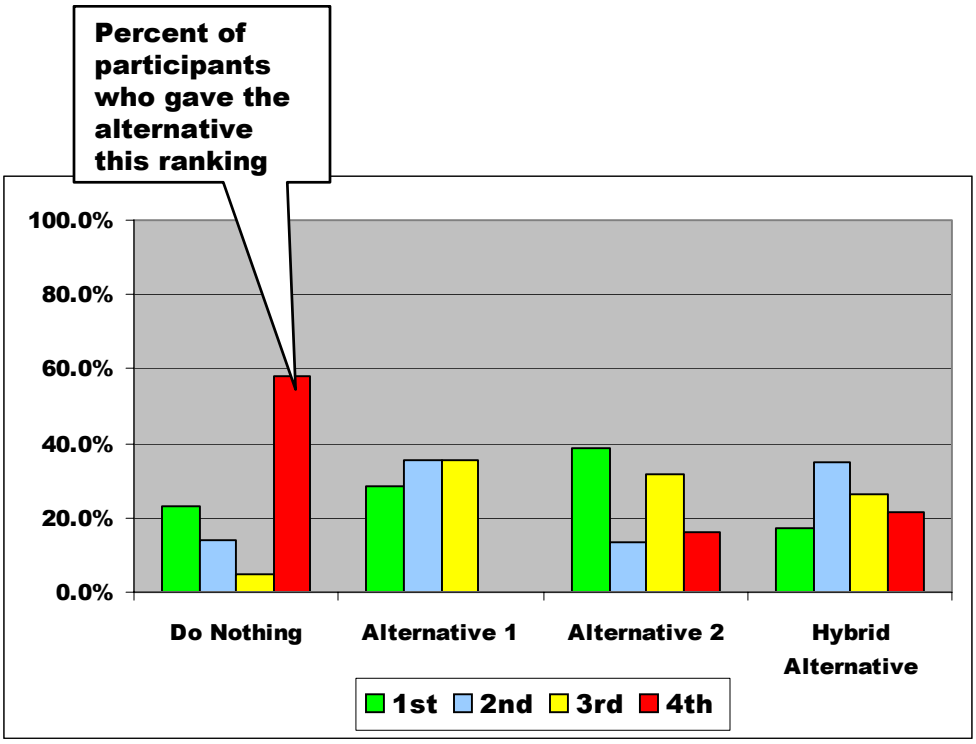
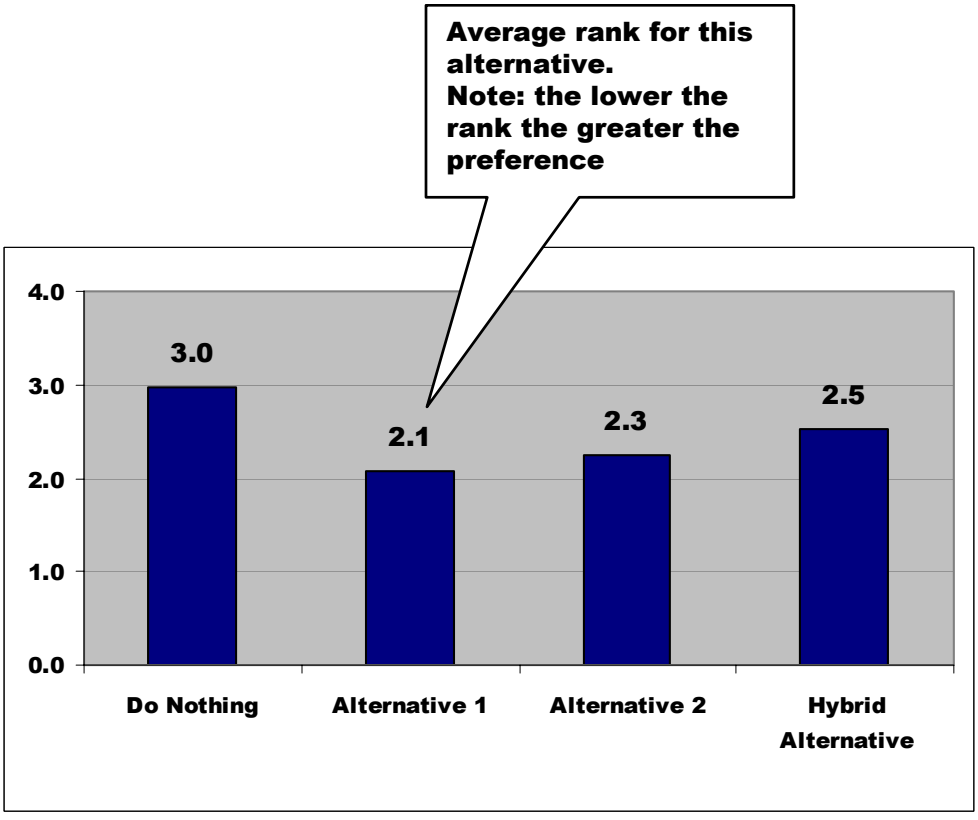


Figure 5-3
Community Ranking Summary
Both Meetings Combined





5.3.0. Recommended Alternative

Based on the results of the alternatives evaluation and feedback received at the final series of community meetings, the Hybrid Alternative is recommended for implementation in the corridor. This alternative achieved the greatest balance between the livability goals and mobility expectations for the corridor. Additionally, it is the most reasonable compromise given the difference in community preferences identified at the final community meetings.

While Alternative 2 performed most favorably against the livability goals, automobile mobility concerns associated with the proposed lane reductions on the JFK Causeway proved to be the fatal flaw of this alternative. By contrast, the Hybrid Alternative, which proposes lane reductions only on the 71st Street and Normandy Drive one-way pair in Normandy Island, does not significantly impact automobile mobility relative to the No Build Alternative or Alternative 1. For the livability goals and alternative mode mobility expectation, the Hybrid Alternative performed at a level equal to or better than the other three alternatives. Chapter Four provides a detailed discussion of the alternatives evaluation.

During the community meetings, the rankings exercise revealed a difference in preferences between participants at the two locations. Participants at the Miami Beach meeting preferred alternatives that propose lane reductions on the JFK Causeway and/or in Normandy Island (Alternative 2 and the Hybrid Alternative). By contrast, participants at the North Bay Village meeting seemed to prefer keeping the existing lane configurations, but with corridor enhancements (Alternative 1).

Given these findings, the alternative that best meets the preferences of the community overall is the Hybrid Alternative. Assuming that the participants at each meeting location were representative of their respective communities (a review of meeting sign-in sheets suggests that this was generally the case), the Hybrid Alternative is the best compromise. For example, while this alternative does propose lane reductions in Normandy Island, which is located in Miami Beach, it does not propose lane reductions on the JFK Causeway, which is located in North Bay Village.

When compared to the Hybrid Alternative, Alternative 1, which proposes corridor enhancements with no lane reductions, would be inconsistent with the preferences of the Miami Beach meeting participants. Alternative 2, on the other hand, proposes lane reductions on both the JFK Causeway and in Normandy Island, which would be inconsistent with the preferences of the North Bay Village Meeting participants. The No Build Alternative, which proposes no enhancements to the corridor, was received the least favorably by the participants of both meetings when compared to the other three alternatives.

Figure 5-4
Recommended Corridor Plan

5.4.0. Implementation Strategy

The Hybrid Alternative recommends improvements to each of the three unique sections of the corridor, including lane reductions in Normandy Island, intersection enhancements, curb and median modifications and lighting and landscaping enhancements. Combined, these improvements could cost anywhere from $4 million to just over $11 million.

Collectively, it may take several years for all of the recommended improvements to make their way through the planning, project development and environmental (PD&E). funding procurement and programming processes. Rather than attempt to implement all of the recommendations in one big "chunk", the implementation strategy divides the improvements into two distinct "phases":

- **Short term improvements** – these are generally lower-cost improvements that can be implemented in the next one to three year and produce immediate results;

- **Long term improvements** – these are improvements that will take longer to implement, either because they are costly and/or will require more detailed analysis.

5.4.1. Short Term Recommendations

The recommendations described here have been identified for the short term because they have a low relative cost and don't require a tremendous amount of additional analysis. As a result, they can be implemented within a relatively short time frame and produce immediate results in the corridor. Short term recommendations include:

- Intersection enhancements – The intersection enhancements identified at all locations along the corridor (with the exception of Indian Creek Drive) can be completed in the short term. They can be completed without substantial additional analysis and will have a significant impact in the corridor relative to their estimated cost (approximately $320,000 to $820,000).

- Medians and bulb-outs on 71st Street in the North Beach Town Center – Similar to the intersection enhancements, the medians and bulb-outs on 71st Street will have an immediate effect on calming traffic and making the area more pedestrian friendly and can be implemented at relatively minimal cost (approximately $40,000). It should be noted, however, that impacts to on-street parking will need to be carefully considered prior to implementation.

- Landscaping and lighting in key areas – The cost to improve landscaping and lighting on a corridor-wide basis will be relatively expensive (approximately $1.0 to $2.4 million) and may take a considerable amount of time to procure funding. In the short term, focusing the landscaping and lighting enhancements to just the key areas in the corridor will lessen the estimated immediate cost (approximately $430,000 to $680,000). Key areas may include Normandy Village, around Harbor Drive and the gateway treatments in North Bay Village.

- Restriping 71st Street and Normandy Drive to two lanes each – Prior to reconstructing or partially reconstructing 71st Street and Normandy Drive in Normandy Island to two lanes each in the short term, they should first be

restriped. Obviously, this will be less costly (approximately $310,000 versus $830,000 to $1.4 million). However, the primary reason to restripe first in the short term is to serve as a sort of "test" to better determine the impacts of the lane reductions. If the impacts prove to be adverse, both roads can be restriped back to three lanes.

The total estimated cost to implement the short term recommendations is $1.1 to $1.8 million. *Table 5-1* summarizes the short term recommendations and associated costs.

5.4.2. Long Term Recommendations

While the short term recommendations tend to focus on key areas, or nodes, within the corridor, the long term recommendations will fully implement the Hybrid Alternative, and will require a longer period of time to complete likely additional analysis and procure funding. The long term recommendations include:

- Enhancements at Indian Creek Drive – While virtually all of the intersection enhancements in the corridor are recommended for the short term, enhancements to Indian Creek Drive will likely take longer to implement. This is because of the relatively higher estimated cost (approximately $125,000 to $250,000) and the additional analysis and maintenance of traffic likely required due to the complex movements at this intersection.

Table 5-1
Short Term Improvements
Cost Estimates

Cost Component	High	Low
North Beach Town Center		
Intersection crossing enhancements	$98,000	$195,000
Medians and bulb-outs, including landscaping	$41,000	$41,000
Total North Beach Town Center	$139,000	$236,000
Normandy Island		
Restripe 71st Street and Normandy Drive (interim)	$312,000	$312,000
Intersection crossing enhancements	$50,000	$235,000
Landscaping, lighting in key areas	$222,000	$272,000
Total Normandy Island	$584,000	$819,000
North Bay Village/JFK Causeway		
Intersection crossing enhancements	$150,000	$345,000
Gateway treatments	$20,000	$40,000
Landscaping, lighting in key areas	$186,000	$372,000
Total North Bay Village/JFK Causeway	$356,000	$757,000
Total Short Term Cost	$1,079,000	$1,812,000

- Complete landscaping and lighting enhancements corridor-wide – Over the long term, landscaping and lighting enhancements should be expanded from the key areas to the entire corridor. This will be significantly more costly (approximately $920,000 to $2.2 million), but will improve the appearance and scale of the corridor.

- Recontruct or partially reconstruct 71st Street and Normandy Drive – If the short term restriping of 71st Street and Normandy Drive proves to be a success, both roads should be reconstructed or partially reconstructed over the long term. This will enable the accommodation of wider sidewalks, lighting and landscaping enhancements, etc. (this should be coordinated with the landscaping enhancements). The estimated cost to reconstruct 71st Street and Normandy Drive is $830,000 to $1.4 million.

- Reconstruct or partially reconstruct the JFK Causeway in North Bay Village – In order to accommodate wider medians and sidewalks and a landscaped buffer, the JFK Causeway will need to be reconstructed or partially reconstructed. This may or may not entail the acquisition of minor right of way. This improvement should be accomplished over the long term, both because of the cost ($805,000 to $4.5 million, depending if right of way purchase is required) and the need to carefully evaluate right of way impacts. This improvement will need to be coordinated with the lighting and landscaping upgrade.

- Construct off-road path on the Pelican Park section of the JFK Causeway – Currently, there is enough right of way to construct an off-road path on the causeway between the mainland and Harbor Island in North Bay Village. The improvement, which is estimated to cost between $260,000 and $400,000, will enable this section of the corridor to more safely accommodate bicyclists, pedestrians and other non-motorized forms of transportation.

The total estimated cost to implement the long term recommendations is $2.9 to $8.7 million. *Table 5-2* summarizes the long term recommendations and associated costs.

5.5.0. Additional Considerations

The recommendations presented in the previous section address strategies that are directly related to the corridor and will largely fall under the purview of the Department. In addition to these, there are other considerations that aren't the direct responsibility of the corridor. While peripheral to this study, these considerations can play an important role in enhancing livability.

5.5.1. Land Use and Urban Design

New development and re-development in the North Beach Town Center and on Normandy Island should continue to reinforce existing land use and urban design patterns. In North Bay Village, new development and redevelopment should become more oriented toward the corridor to encourage walking and limit direct driveway access to the corridor. Land use and urban design plans/regulations on the causeway are the responsibility of the City of North Bay Village.

Table 5.2
Long Term Improvements
Cost Estimates

Cost Component	Low	High
North Beach Town Center		
Indian Creek Drive intersection	$125,000	$250,000
Normandy Island		
Reconstruct or partially reconstruct road	$832,000	$1,404,000
Full landscaping/lighting	$618,000	$1,581,000
Total Normandy Island	$1,450,000	$2,985,000
North Bay Village/JFK Causeway		
Reconstruct or partially reconstruct road	$805,000	$4,473,000
Construct off-road path on Pelican Park causev	$261,000	$404,000
Full landscaping/lighting	$303,000	$606,000
Total North Bay Village/JFK Causeway	$1,369,000	$5,483,000
Total Short Term Cost	$2,943,000	$8,718,000

5.5.2. Regional Bicycle and Pedestrian Corridor

By providing good facilities for bicycles and pedestrians, the proposed strategies have the opportunity to elevate the corridor as the only regional bicycle and pedestrian corridor across Biscayne Bay in the county, connecting the mainland with the North Beach Recreational Corridor in Miami Beach. Such a designation will bolster the viability of the proposed strategies and increase the chances of funding.

In order to make this happen, several things need to occur. The corridor should be officially designated by the Miami-Dade Metropolitan Planning Organization (MPO) in its Bicycle and Pedestrian Program. MPO staff have generally given a positive reaction to developing a regional bicycle and pedestrian corridor on SR 934.

In addition, supporting facilities should be in place, including the placement of trailhead parks at key locations along the corridor and bicycle lockers to make areas along the corridor more feasible destinations for bicyclists. Depending on their location, these facilities would be the responsibility of the cities of Miami, North Bay Village and Miami Beach and/or Miami-Dade County.

5.5.3. Transit

The SR 934 Phase I Corridor Study identified the potential for a locally oriented transit service to occur concurrently with redevelopment on 79th Street in Miami. As that potential service comes closer to reality, consideration should be given to extending the service to Miami Beach. Options for implementing the service are discussed in the Phase I report, one of which could be operating as part of the Electrowave Shuttle,

a joint development project of the Miami Beach, the Department, the Federal Highway Administration (FHWA) and the MPO.

Regardless of whether new transit service is implemented in the corridor, access to transit should be improved to compliment the high level of service the corridor currently receives. Transit treatments such as pull-outs and turn bays should be integrated within the proposed reconstruction within the corridor.

5.5.4. Multi-Modal Hub

The proposed regional bicycle and pedestrian corridor would tie in to the North Beach Recreational Corridor at North Shore Park. This location is also served by several major north-south and east-west routes operated by Miami-Dade Transit. The creation of a multi-modal hub at this location would facilitate the convergence of the different modes and services and support redevelopment efforts in the corridor. The hub would include provisions for buses, bicycles, pedestrians and other forms of recreational transportation, such as roller blading.

5.5.5. Draw Bridge Coordination

During the third series of community workshops, concerns were raised with respect to automobile traffic delays in the corridor caused by both draw bridges on the JFK Causeway. One possibility is to place restrictions on draw bridge operation during peak automobile travel periods. Currently, the bridge operates on an on-demand basis for water vessels throughout the day.

5.6.0. Issues for Further Study

This study has identified several improvements for implementation within the corridor. Prior to implementation, there are two areas that will likely need further analysis:

- Capacity on 71st Street and Normandy Drive – This study recommends lane reductions on both 71st Street and Normandy Drive in Normandy Island. While planning level analysis shows that this can be accomplished with negligible effects on capacity, a more detailed traffic analysis may need to be performed to confirm the findings. One option may be to implement the short term recommendation of restriping the roads, then closely scrutinizing the results.

- Right of way impacts on the JFK Causeway – This study also recommends livability enhancements to the JFK Causeway in North Bay Village, including wider medians and sidewalks and a landscaped buffer. In some cases, it is unknown if the recommended cross-section can be accomplished within the existing right of way (although any potential ROW impacts would be minor). Additional analysis will be required to assess ROW impacts, if any.

5.7.0. Summary

The SR 934 Phase II Corridor Study has resulted in a set of recommendations that best meet the community's livability goals and the Department's mobility expectations. Within this set of recommendations, short term strategies have been identified that can be implemented within the next few years and long term strategies have been identified that will take several years to procure funding and make their way through the planning and programming processes.

In addition to the roadway design elements that are the primary responsibility of the Department, this study identifies strategies that will be the primary responsibility of other agencies. These strategies include land use and urban design transit service/access, the development of a regional bicycle and pedestrian corridor and the creation of a multi-modal hub. Agencies responsible in some part for these strategies include the cities of Miami Beach and North Bay Village, the Miami-Dade MPO and Miami-Dade Transit.

Prior to fully implementing the recommendations of this study, there are several issues that will require further analysis, including capacity on 71st Street and Normandy Drive in Normandy Island and ROW impacts on the JFK Causeway in North Bay Village..

Appendix A: ART-PLAN Results

SR 934 Phase II Strategy Screen
Level 1 Strategies: Land Use

Strategy	Result	Conclusion
GROWTH MANAGEMENT/ACTIVITY CENTERS		
Land use policies/regulations		
1. Is significant land available for development?	**No.** Virtually all land in the study corridor is developed or planned for redevelopment.	**Strategy is not applicable.** A majority of the corridor is already developed or is the subject of specific redevelopment plans.
2. Is projected population and/or employment growth high?	**No.** Current population and employment projections place only a moderate amount of growth within the corridor.	
3. Has the corridor been designated as a redevelopment or growth area?	**Yes.** The North Shore area of the corridor (71st Street) is in the process of being redeveloped.	
4. Is the corridor's SOV share for work trips high?	**Yes.** Although a relatively high amount of transit loadings were observed in the corridor, a majority of work trips (>90%) occur in SOV's.	
5. Is the corridor's transit share for work trips low?	**Yes.** Despite a high number of transit loadings in the corridor, the relative share of transit trips is low.	
6. Does the corridor pass the transit enhancement /expansion criteria?	To be determined.	
7. Will alternative travel modes be available within the corridor?	**Yes.** Several routes operate within the corridor and traverse the corridor.	
Design standards		

Strategy	Result	Conclusion
1. Is commercial office space being developed in the corridor?	**Yes.** The corridor includes an office district.	**Strategy may be applicable.** Although the City of Miami Beach already has design standards that address the relationship between the corridor and adjacent buildings, study recommendations may entail new or revised design standards.
2. Are there pending building permits in the corridor? (Also see Land use policies/regulations above.)	**Most likely.**	
Locations of jobs and housing		
1. Is commercial office space being developed in the corridor?	**No.** There is not a significant amount of office space being developed in the corridor.	**Strategy is not applicable.**
2. Has the corridor been designated as a redevelopment or growth area?	**Yes.**	
CONGESTION PRICING		
Road user fees		
1. Is the v/c ratio on at least 70% of corridor freeway/arterial lane miles greater than 1.1 (or CMS threshold)?	**NA.**	**Strategy is not applicable.** Road user fees are only applicable to limited access facilities.
2. Is the answer to question 1 still affirmative if proposed roadway for congestion pricing is excluded?	**NA.**	
3. Is a limited access facility available in corridor?	**NA.**	
4. Are alternative travel modes available within the corridor?	**NA.**	
5. Will revenues be used for transportation improvement projects?	**NA.**	

Strategy	Result	Conclusion
6. Are tolls on the facility politically acceptable?	**NA.**	
Parking fees		
1. Are there primarily commercial or retail land uses in the congested area?	**Yes.**	**Strategy is not applicable.** Parking fees, used to encourage a shift to non-automobile modes, are beyond the scope of this study, which focuses on livability rather than congestion reduction.
2. Are alternative travel modes available within the corridor?	**Yes.**	
TRANSPORTATION DEMAND MANAGEMENT		
Telecommuting		
1. Is the type of employment at activity center/downtown suitable for telecommuting?	**NA.**	**Strategy is not applicable.**
2. Is public agency participation likely?	**NA.**	
Trip reduction ordinances		
1. See Employee Trip Reduction Ordinances strategies in Level 3.		

Appendix B:
HCS Intersection Analysis Results

Appendix C:
Parking Inventory

Appendix D: Community Meeting One Summary

BACKGROUND

Public input is vital to the process of community planning. The community workshop held at Treasure Island Elementary School on January 31, 2002 was the first workshop in a series of three. These workshops are designed to involve the members of the community in the SR 934 corridor study.

The first workshop focused on defining the transportation and community issues along the SR 934 corridor from Collins Avenue to the terminus of the JFK Causeway. The workshop used a consensus building process called the *Nominal Group Technique (NGT)* to identify relevant issues in the study corridor.

The Nominal Group Technique allows ideas and concerns to be presented and discussed in a non-biased way and minimizes the influence by vocal group members. The actual process entails each group member raising one issue in a round-robin fashion. The facilitator records all issues so that they will be visible to all members of the group. Each group member is then asked to choose what he or she believes to be the five most important issues. They are then ranked from 1 to 5, with five being the most important, and assigned that score. Once all members of a group have ranked the issues, the facilitator tallies the combined scores for each issue. The highest scoring issues provide the study team with a first-hand perspective on the issues that the community would like addressed.

PRIORITY ISSUES

Meeting participants were divided into three different sets of groups, each representing the three unique areas of the corridor: the North Shore area, Normandy Island and North Bay Village. The following priority issues were identified by each of the groups.

North Shore Area

- Demolition of 63rd Street/Collins flyover is not desired
- Improve pavement, sidewalks, street lights, and landscape maintenance
- Do not allow vehicles to be repaired on streets/do not allow non-operational vehicles to be parked on streets
- Restrict bus and delivery vehicle traffic on Collins Avenue from 63rd to 71st Street
- Better enforcement of code compliance
- Intersection of Abbot Ave and 63rd Street is heavily congested and needs signalization
- Add left turn lanes at the intersection of Indian Creek and 71st Street
- Pedestrian friendly measures should be instituted at the intersection of Indian Creek and 71st Street
- Review similar projects
- Improve streetscaping

Normandy Island

- Stricter enforcement of posted speeds
- Deteriorating roads, landscaping and sidewalks
- Dirty streets, poor maintenance, landscaping
- Insufficient street lighting
- Flooding at Rue Notre Dame after storms

North Bay Village Number One

- Improve streetscaping along causeway
- Improve overall appearance of causeway
- Narrow causeway and widen the median
- Install toll booth west of North Bay Island
- A more retail friendly environment needs to be developed along the corridor
- Traffic calming measures need to be installed

North Bay Village Number Two

Appendix E:
Corridor Strategy Screen

SR 934 Phase II Strategy Screen
Level 1 Strategies: Land Use

Strategy	Result	Conclusion
GROWTH MANAGEMENT/ACTIVITY CENTERS		
Land use policies/regulations		
1. Is significant land available for development?	**No.** Virtually all land in the study corridor is developed or planned for redevelopment.	**Strategy is not applicable.** A majority of the corridor is already developed or is the subject of specific redevelopment plans.
2. Is projected population and/or employment growth high?	**No.** Current population and employment projections place only a moderate amount of growth within the corridor.	
3. Has the corridor been designated as a redevelopment or growth area?	**Yes.** The North Shore area of the corridor (71st Street) is in the process of being redeveloped.	
4. Is the corridor's SOV share for work trips high?	**Yes.** Although a relatively high amount of transit loadings were observed in the corridor, a majority of work trips (>90%) occur in SOV's.	
5. Is the corridor's transit share for work trips low?	**Yes.** Despite a high number of transit loadings in the corridor, the relative share of transit trips is low.	
6. Does the corridor pass the transit enhancement /expansion criteria?	To be determined.	
7. Will alternative travel modes be available within the corridor?	**Yes.** Several routes operate within the corridor and traverse the corridor.	
Design standards		

Strategy	Result	Conclusion
1. Is commercial office space being developed in the corridor?	**Yes.** The corridor includes an office district.	**Strategy may be applicable.** Although the City of Miami Beach already has design standards that address the relationship between the corridor and adjacent buildings, study recommendations may entail new or revised design standards.
2. Are there pending building permits in the corridor? (Also see Land use policies/regulations above.)	**Most likely.**	
Locations of jobs and housing		
1. Is commercial office space being developed in the corridor?	**No.** There is not a significant amount of office space being developed in the corridor.	**Strategy is not applicable.**
2. Has the corridor been designated as a redevelopment or growth area?	**Yes.**	
CONGESTION PRICING		
Road user fees		
1. Is the v/c ratio on at least 70% of corridor freeway/arterial lane miles greater than 1.1 (or CMS threshold)?	**NA.**	**Strategy is not applicable.** Road user fees are only applicable to limited access facilities.
2. Is the answer to question 1 still affirmative if proposed roadway for congestion pricing is excluded?	**NA.**	
3. Is a limited access facility available in corridor?	**NA.**	
4. Are alternative travel modes available within the corridor?	**NA.**	
5. Will revenues be used for transportation improvement projects?	**NA.**	

Strategy	Result	Conclusion
6. Are tolls on the facility politically acceptable?	**NA.**	
Parking fees		
1. Are there primarily commercial or retail land uses in the congested area?	**Yes.**	**Strategy is not applicable.** Parking fees, used to encourage a shift to non-automobile modes, are beyond the scope of this study, which focuses on livability rather than congestion reduction.
2. Are alternative travel modes available within the corridor?	**Yes.**	
TRANSPORTATION DEMAND MANAGEMENT		
Telecommuting		
1. Is the type of employment at activity center/downtown suitable for telecommuting?	**NA.**	**Strategy is not applicable.**
2. Is public agency participation likely?	**NA.**	
Trip reduction ordinances		
1. See Employee Trip Reduction Ordinances strategies in Level 3.		

SR 934 Phase II Strategy Screen
Level 2 Strategies: Alternative (Non-Auto) Modes

Screening Question	Result	Conclusion
PUBLIC TRANSIT CAPITAL IMPROVEMENTS		
Exclusive ROW – Rapid Rail to the Northside Metrorail station /downtown Miami		
1. Will the corridor's net residential density be at least 12 dwelling units (d.u.) per acre, or alternatively, is the gross population density at least 8,600 persons per square mile?	**No.** There are a mix of single family and multi-family land uses throughout the SR 934 corridor, pockets of which exceed this threshold, although the corridor as a whole does not.	**Strategy not applicable.** Although downtown Miami (the ultimate destination of any fixed guideway system) meets employment thresholds for rapid rail transit, the corridor does not contain sufficient residential densities.
2. Will the corridor's major employment area (downtown, activity center) have at least 50 million square feet of non-residential floor space?	**Yes.** Downtown Miami meets this threshold.	
3. Will the corridor's major employment area (downtown, activity center) have at least 70,000 employees?	**Yes.**	
4. Will the corridor's major employment area (downtown, activity center) have an employment intensity of at least 15,000 employees per square mile?	**Yes.**	

Screening Question	Result	Conclusion
Exclusive ROW – Commuter Rail (Tri-Rail) to West Palm Beach, Fort Lauderdale and Miami		
1. Will the corridor's net residential density be at least 1 dwelling unit (d.u.) per acre, or alternatively, is the gross population density at least 350 persons per square mile?	**Yes.** The residential areas in the corridor meet this threshold.	**Strategy is not applicable.** Although the corridor meets the residential and employment thresholds, there is not sufficient right of way within the corridor for commuter rail. It should be noted that during the Phase I study, a station on 79th Street near Biscayne Boulevard was identified as a possibility should commuter rail be implemented on the F.E.C. rail line.
2. Will the corridor's major employment area (downtown, activity center) have at least 75 million square feet of non-residential floor space?	**Yes.** Downtown West Palm Beach, Fort Lauderdale and Miami, will collectively well exceed this threshold by the year 2025.	
3. Will the corridor's major employment area (downtown, activity center) have at least 150,000 employees?	**Yes.** Downtown West Palm Beach, Fort Lauderdale and Miami, will collectively well exceed this threshold by the year 2025.	
4. Will the corridor's major employment area (downtown, activity center) have an employment intensity of at least 15,000 employees per square mile?	**Yes.** Downtown West Palm Beach, Fort Lauderdale and Miami, will each exceed this threshold by the year 2025.	
Exclusive ROW – Light Rail to the Northside Metrorail station/downtown Miami or South Beach		
1. Will the corridor's net residential density be at least 9 dwelling unit (d.u.) per acre, or alternatively, is the gross population density at least 6,550 persons per square mile?	**Yes.** Many areas of the corridor meet this threshold.	**Strategy may be applicable.** Although right of way constraints make it doubtful, the corridor has sufficient residential densities to support light rail transit, either west to the Hialeah Metrorail station or to South Beach (should light rail transit be initiated there).
2. Will the corridor's major employment area (downtown, activity center) have at least 20 million square feet of non-residential floor space?	**Yes.** See rapid rail screening question number 2.	

Screening Question	Result	Conclusion
3. Will the corridor's major employment area (downtown, activity center) have at least 42,000 employees?	**Yes.** See rapid rail screening question number 3.	
4. Will the corridor's major employment area (downtown, activity center) have an employment intensity of at least 10,000 employees per square mile?	**Yes.** See rapid rail screening question number 4.	
Exclusive ROW – Busway to the Northside Metrorail station/downtown Miami or South Beach		
1. Will the corridor's net residential density be at least 3 dwelling units (d.u.) per acre, or alternatively, will the gross population density be at least 1,900 persons per square mile?	**Yes.** See rapid rail screening question number 1.	**Strategy may be applicable.** Similar to light rail, although the corridor meets the thresholds for a busway, right of way constraints make it doubtful. One alternative may be for buses to operate exclusively in an existing lane.
2. Will the corridor's major employment area (downtown, activity center) have at least 20 million square feet of non-residential floor space?	**Yes.** See rapid rail screening question number 2.	
3. Will the corridor's major employment area (downtown, activity center) have at least 42,000 employees?	**Yes.** See rapid rail screening question number 3.	
4. Will the corridor's major employment area (downtown, activity center) have an employment intensity of at least 10,000 employees per square mile?	**Yes.** See rapid rail screening question number 4.	
5. Will the corridor have any sections with a volume to capacity (V/C) ratio of at least 0.80 with bus headways of 4 minutes or less in the peak hour?	**Yes.** Most sections of the corridor have or will have a V/C ratio of 0.80 or greater; Miami-Dade Transit Route L operates every 10 minutes in the peak hour.	

Screening Question	Result	Conclusion
Bus Bypass Ramps		
1. Does the corridor pass the exclusive ROW busway screen?	**Yes.**	**Strategy not applicable.** The character of the corridor is inconsistent with elevated bus bypass ramps.
2. Will the corridor have any exclusive busway sections? If yes, then go to question 5.	**Unkown.**	
3. Will the corridor have any HOV lane sections? If yes, are there 15 or more buses scheduled on any of these sections in the peak hour?	**No.** HOV lanes are not applicable to the corridor because it is not a limited access, freeway facility.	
4. Does the corridor pass the HOV lane screen?	**No.** See the previous screening question.	
5. Does the corridor have any freeway sections with a V/C of at least 0.80 and 15 or more buses scheduled in the peak hour.	**No.**	
Fleet Expansion		
1. Does the corridor pass the service enhancement/expansion screen identified later in this table?	**.**	**Strategy not applicable.** See the service enhancement/expansion screen.
Vehicle Replacement/Upgrade		
1. Does transit service currently exist in the corridor?	**Yes.** Miami-Dade Transit Route L connects Miami Beach to the Northside Metrorail station via 79th Street. Numerous routes traverse the corridor via SR A1A, including routes G, H, J, K, L, R, S and T.	**Strategy not applicable.**

Screening Question	Result	Conclusion
2. Is the corridor's transit mode share at least two percent for work trips?	**Unknown.** The transit mode share within the corridor is unknown, although observations of passenger loading in the corridor reveal that this threshold is very likely.	
3. Does the corridor's number of transit vehicles in peak hour revenue operation exceed 20?	**No.**	
4. For the transit operator's entire system, is the average age of the bus fleet greater than seven years, or is the average age of the rail fleet greater than 15 years?	**No.**	
Transit Park and Ride Facilities		
1. Does transit service currently exist in the corridor?	**Yes.** See vehicle replacement/upgrade screening question 1.	**Strategy is not applicable.** Trip characteristics in the corridor are not appropriate for park and ride facilities.
2. Is there at least one express bus in the corridor with a one-way trip length of at least eight miles?	**No.**	
3. Is the corridor's HOV mode share greater than 15% for work trips?	**No.**	
4. Is there rapid rail, light rail or commuter rail service in the corridor?	**No.**	
5. Does the corridor pass the HOV lane, rapid rail, light rail, commuter rail or exclusive ROW bus screens?	**Yes.**	
Other Intermodal Facilities		
1. Is there any location in the corridor where there is not an existing	**No**.	**Strategy is not applicable.**

Screening Question	Result	Conclusion
intermodal facility and at least two of the following modes converge: rapid rail, light rail, commuter rail, exclusive ROW bus, express bus, local bus or intercity bus?		
Paratransit services		
1. Are there any areas in the corridor not currently served by paratransit?	**No.**	**Strategy is not applicable.**
2. Will requests for paratransit service be denied because of capacity restrictions?	**No.**	
Increased Transit Security		
Has the number of crimes related to transit service, or security-related complaints received by the transit agency serving the corridor, increased in each the last two years?	**NA.**	**Strategy is not applicable.**
PUBLIC TRANSIT OPERATIONAL IMPROVEMENTS		
Service enhancement/service expansion		
1. Are there any routes for which the peak hour load factor is greater than 0.8?	**No,** although Route L is one of the most heavily traveled routes in the system with load factors in the 0.5 to 0.8 range.	**Strategy is not applicable.** The corridor already receives a very high level of transit service.
2. Is the population density of any zone or census tract in the corridor greater than 3,150 persons per square mile or the percentage of low income residents in the corridor greater than 20%.	**Yes.**	

Screening Question	Result	Conclusion
Traffic signal preemption		
1. Does the corridor have transit service?	**Yes.**	**Strategy may be applicable.** If the corridor continues to intensify the level of transit service, signal preemption may be a viable mobility strategy.
2. Are there any routes for which the peak hour load factor is greater than 0.8?	**No** – see service enhancement question 1.	
3. Will the frequency of any of these routes be greater than six buses per hour (10 minute headway)?	**Yes.** Route L operates up to six buses per hour.	
Fare reductions		
1. Is the transit mode split for work trips in the corridor greater than 0.8?	**No.**	**Strategy may be applicable**, but is beyond the scope of this study.
2. Is the average population density in zones adjacent to these routes greater than 1,575 persons per square mile of the percentage of low income residents in these zones greater than 10%.	**Yes.**	
Transit Information Systems		
1. Is the peak hour load factor on any route in the corridor greater than 0.8? If yes, are there at least three transfer points on any of these routes?	**No** – see service enhancement question 1.	**Strategy is not applicable.** There is not enough transit service or demand in the corridor to warrant a transit information system.
2. Does the corridor have any transfer center serving at least three routes?	**No.**	
Transit Coordination		
1. Are there at least two transit agencies/operators providing service within the corridor?	**No.** The Miami-Dade Transit Agency is the only transit provider in the corridor.	**Strategy is not applicable**.

Screening Question	Result	Conclusion
2. If yes, will the fare payment methods or the transit schedules be coordinated? (Negative answer implies potential application)	**NA.**	
3. Are there at least four possible transfers within the corridor?	**NA.**	
Transit Marketing		
1. Will there be at least one activity center with more than 500 employees in the corridor accessible by transit?	**No.**	**Strategy is not applicable.**
2. Will the difference in travel time between competing modes be less than 30 percent?	**Not known.**	
3. Can the transit system handle more patrons?	**Yes.**	
ADVANCED PUBLIC TRANSPORTATION SYSTEMS		
Intelligent Bus Stops		
1. I the average population density in any of the zones within one quarter mile greater than 1,575 persons per square mile or is the percentage of transportation disadvantaged in these zones greater than 10 percent?	**Yes.** Some TAZs within the corridor will exceed this population threshold.	**Strategy may be applicable.** If the corridor continues to intensify the level of transit service, intelligent bus stops may be a viable mobility strategy.
2. If yes, is the peak hour load factor in any route in the corridor greater than 0.8?	**No –** see service enhancement question 1.	

Screening Question	Result	Conclusion
ENCOURAGE THE USE OF NON-MOTORIZED MODES		
Bicycle Facilities		
1. Does the corridor have any jurisdictions with a bicycle plan?	**Yes.** The Miami-Dade Metropolitan Planning Organization (MPO) has a Bicycle Facilities Plan; the SR 934 corridor is currently not designated as a bicycle route.	**Strategy is applicable.** Observed bicycle trips and overall demand for short trips within the corridor warrant the potential addition of bicycle facilities..
2. Will at least 15 percent of the corridor's work trips be under five miles or 10 minutes in length?	**Yes.** Although there is no empirical evidence to support such trips, the relative balance of residential and employment land uses suggests that at 15 percent of the corridor's work trips will below this threshold.	
3. Does the corridor have any rail or express bus service?	**No.**	
4. Will the corridor's net residential density be at least 4.5 dwelling units per acre or, alternatively, will the gross population density be at least 3,150 persons per square mile?	**Yes.**	
5. Will the corridor's employment density be at least 4,000 persons per square mile?	**No.**	
6. Does the corridor have a college campus?	**No**.	
Bicycle Storage Systems		
1. Does the corridor have exclusive ROW bicycle facilities?	**No.**	**Strategy may applicable.** Bicycle storage

Screening Question	Result	Conclusion
2. Does the corridor pass the bicycle facilities screen?	**Yes.**	systems should be considered if and when bicycle facilities are implemented within the corridor.
3. Is the corridor's bicycle mode share be at least 0.5% for work trips?	**Potentially.** If bicycle facilities are implemented as part of the study recommendations, the mode share for bicycle work trips may increase, given the presence of short work trips along the corridor.	
Pedestrian Facilities		
1. Does the corridor have any rail or fixed route bus service?	**Yes.**	**Strategy is applicable.** Enhanced pedestrian facilities should be considered to provide better access to transit and to satisfy the demand for short trips within the corridor.
2. Will the corridor's net residential density be at least 4.5 dwelling units per acre or, alternatively, will the gross population density be at least 3,150 persons per square mile?	**Yes.**	
3. Will the corridor's employment density be at least 4,000 persons per square mile.	**No.**	
TRANSPORTATION DEMAND MANAGEMENT		
1. Is there any kind of transit service in the corridor?	**Yes.**	**Strategy is not applicable.** Corridor-focused TDM strategies are intended to address corridors at a larger scale.
2. Are there any HOV lanes in the corridor or does the corridor pass the HOV lane screen?	**No.**	

Screening Question	Result	Conclusion
3. Are there any park-and-ride lots in the corridor or does the corridor pass either the HOV or transit park-and-ride lot screen?	**No.**	

Appendix F:
Cost Estimates