

# OVERVIEW & PHASE I RESULTS

## OVERVIEW

The City of Tampa is conducting the *InVision: Tampa Streetcar Feasibility Study* to evaluate modernizing and extending the existing streetcar system. The study is designed to advance mobility, livability, and economic development goals presented in the *InVision: Tampa Center City Plan* and build on recent and on-going studies assessing transportation needs in the City and region.

## PROJECT GOALS

- » Provide a “One-Seat Trip” From Ybor City to Tampa Heights through the heart of Downtown Tampa.
- » Maximize exclusive guideway operations to avoid congestion, ensure travel time reliability, and minimize impacts on traffic operations.
- » Deliver high quality, accessible service with full day and late evening hours, high frequency service, and passenger amenities.
- » Design so other transit vehicles can share the guideway and stops.

## SYSTEM MODERNIZATION

The project calls for the modernization of the existing system and an extension to better connect downtown destinations. Modernization improvements include: the reconfiguration of existing stations, the reconstruction of several tight turns, upgrading of the traction power system, and expansion or replacement of the HART Streetcar Barn.

## PARTNERS



FDOT  
(Study Sponsor)



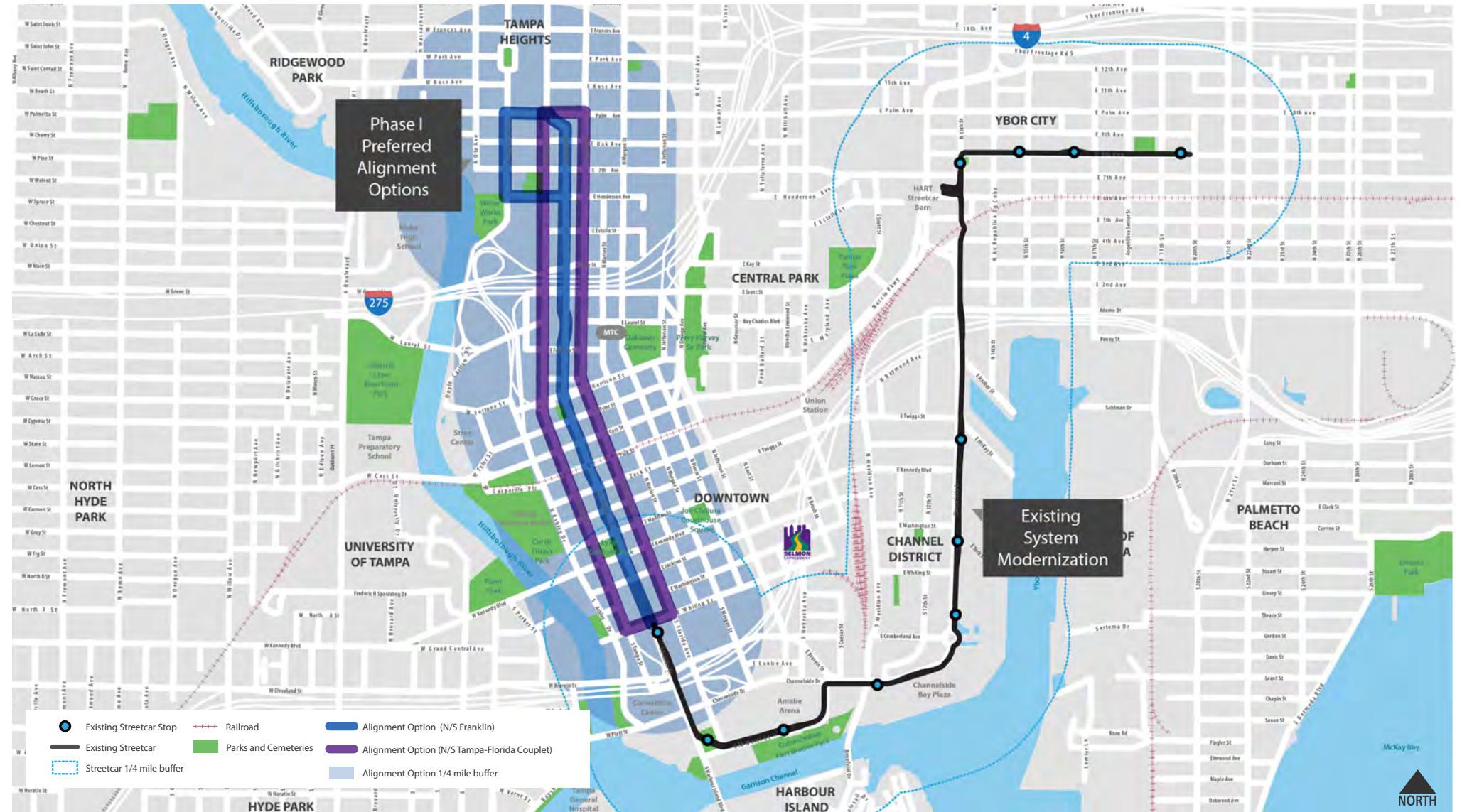
City of Tampa  
(Owner)



HART  
(Operator)

## CONTACT INFORMATION

Project information is available on the City of Tampa website at [www.tampagov.net/streetcar](http://www.tampagov.net/streetcar). Please direct questions or comments to Milton Martinez, P.E., 813.274.8998, [streetcar@tampagov.net](mailto:streetcar@tampagov.net), [www.tampagov.net/streetcar](http://www.tampagov.net/streetcar).



## PHASE I PREFERRED ALIGNMENT

During Phase 1, the City identified two north/south oriented alignments as the preferred alignment options for the extension. Along a combination of Tampa Street, Franklin Street, and Florida Avenue, these alignments extend enhanced transit service from the end of the existing line on Franklin Street through the core of Downtown, to the vicinity of Marion Transit Center, and north to Tampa Heights.

These preferred alignments have the potential to deliver these benefits:

- » Fill gaps in the existing transit network by providing a one-seat trip across greater Downtown for residents, workers, students, and visitors.

- » Provide convenient, congestion resistant connections between major residential areas; employment centers; and cultural, educational, and entertainment destinations.
- » Offer first mile/last mile link to destinations from regional parking resources and local and regional transit services.
- » Improve access to and connections between major public spaces and event venues.

Enhanced transit service along these preferred alignments also establishes a strong foundation for future extensions of the system, consistent with on-going regional transit planning initiatives.

# MODERNIZATION & EXTENSION

## PHASE 2 RECOMMENDATIONS

### MODERNIZATION OF THE EXISTING SYSTEM

To support modern streetcar operations, the following improvements will need to be completed to the existing system:

- » Reconstruct tight turns to accommodate turning radii of modern vehicles.
- » Upgrade stations to allow for level boarding and serve larger vehicles.
- » Expand or replace the HART Streetcar Barn to accommodate storage and maintenance for modern street vehicles.

### EXTENSION THROUGH DOWNTOWN TO TAMPA HEIGHTS

#### BROREIN STREET

- » Eastbound Brorein Street from the existing system on Franklin Street to Florida Avenue.

#### FLORIDA AVENUE

- » Northbound Florida Avenue in an exclusive guideway from Brorein Street to Harrison Street.
- » Northbound Florida Avenue in a shared travel lane from Harrison Street to Palm Avenue.

#### PALM AVENUE

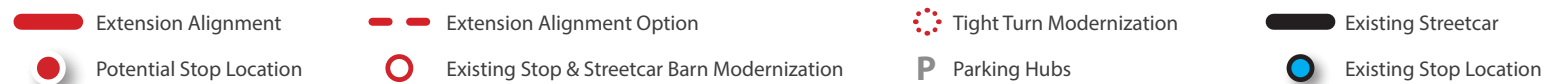
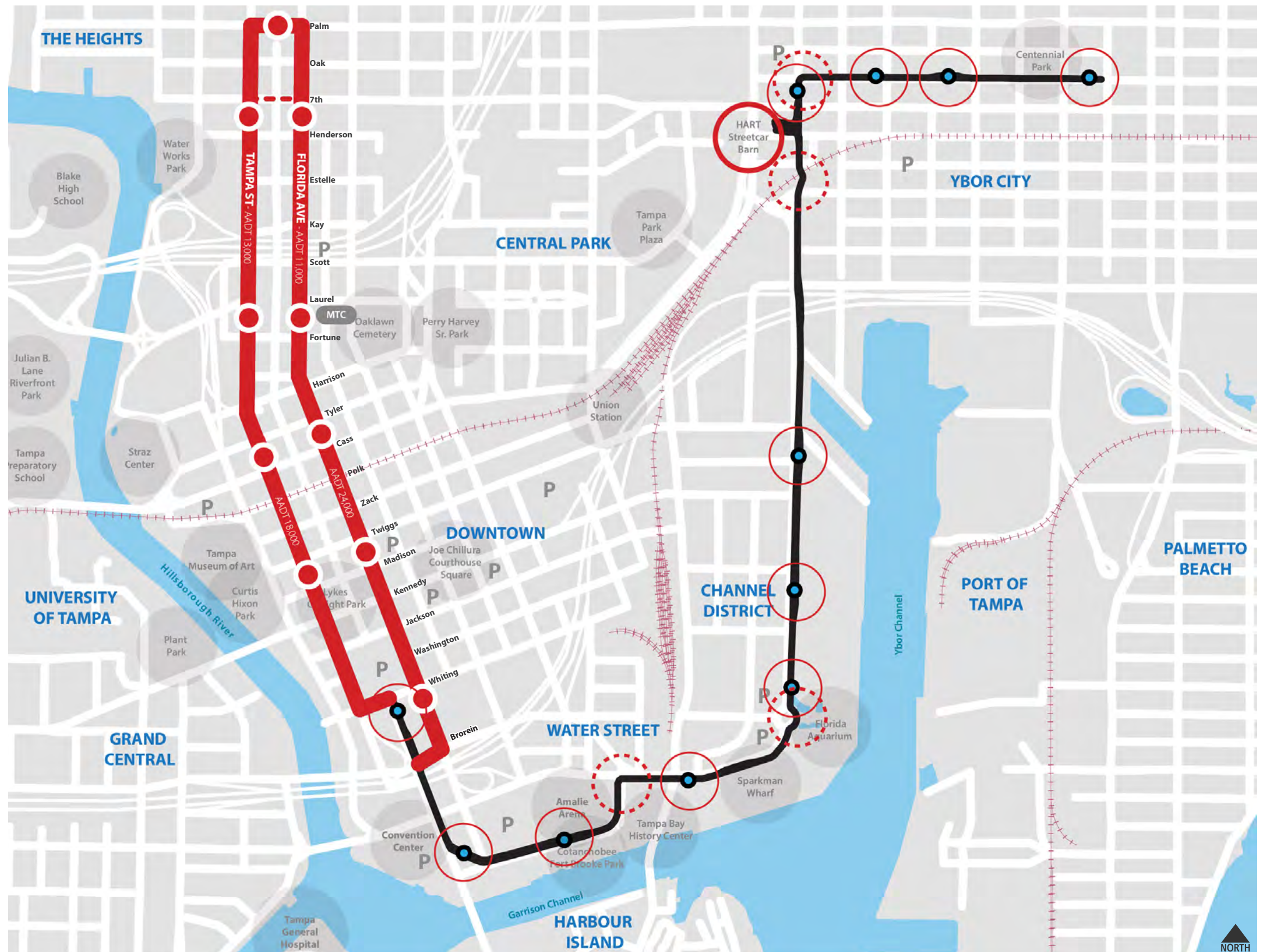
- » Westbound Palm Avenue in a shared lane from Florida Avenue to Tampa Street.

#### TAMPA STREET

- » Southbound Tampa Street in an exclusive guideway from Palm Avenue to Kennedy Boulevard;
- » Southbound Tampa Street in a shared lane from Kennedy Boulevard to Whiting Street;
- » Eastbound Whiting Street in a median to connect to the existing system on Franklin Street

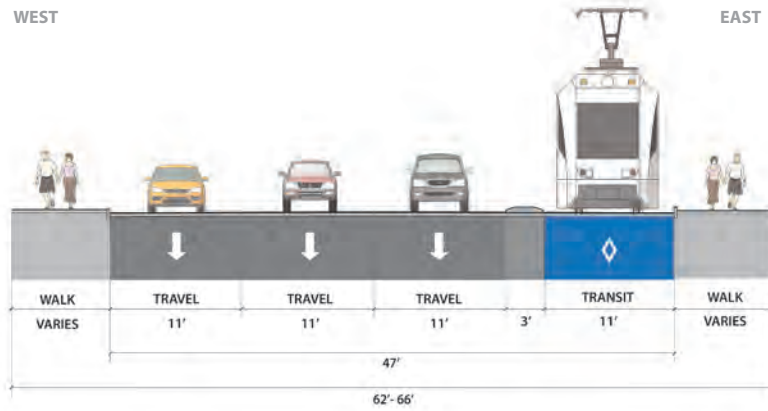
#### FRANKLIN STREET

- » Franklin Street alignment is not recommended.

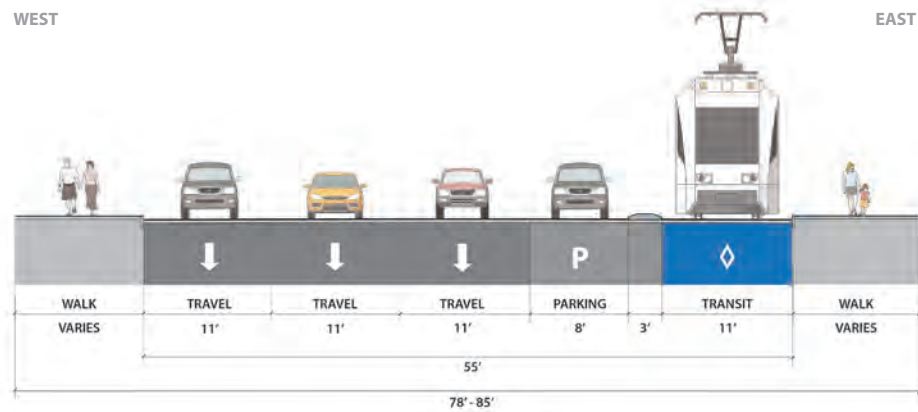


# RECOMMENDED GUIDEWAY

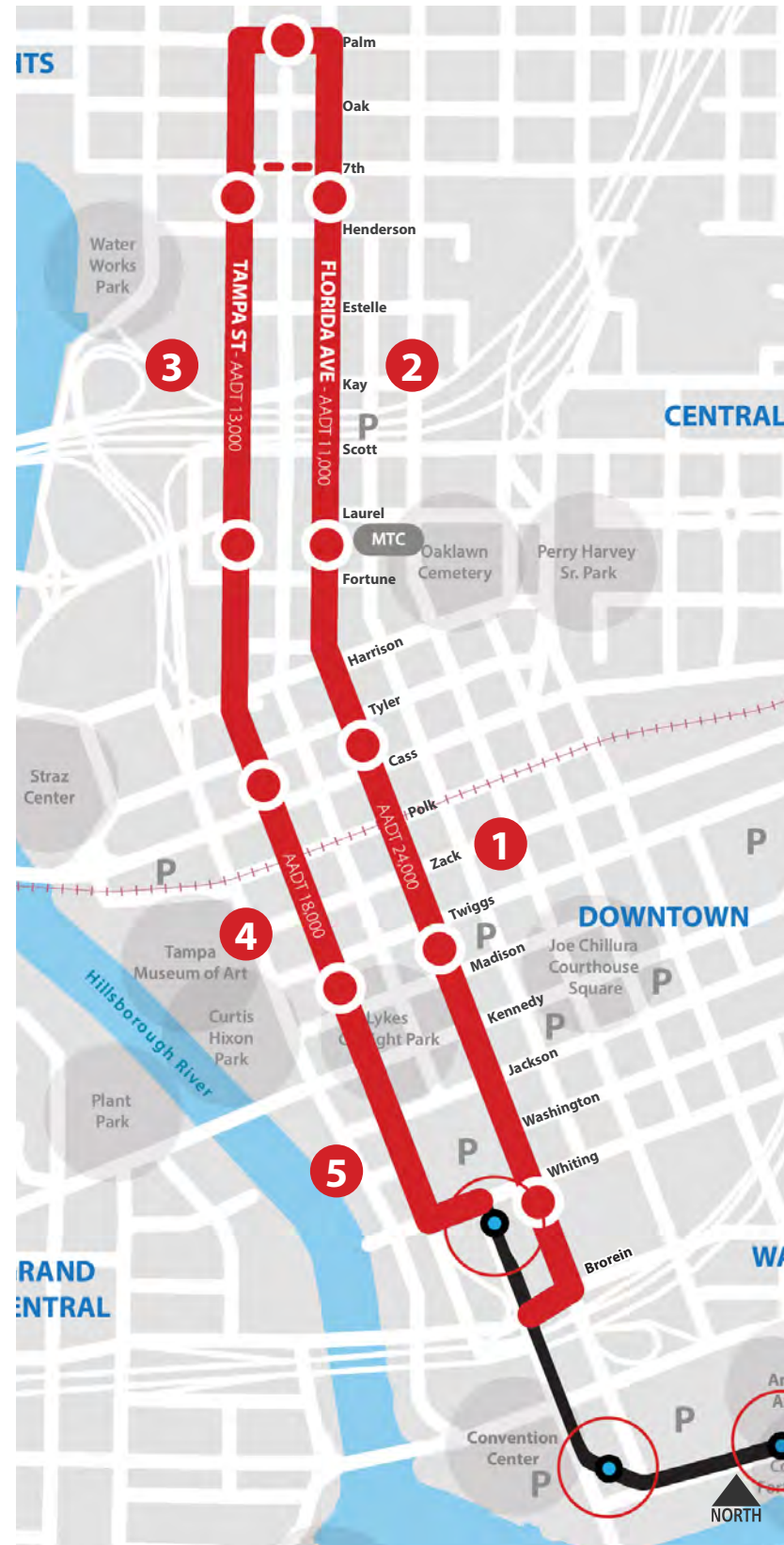
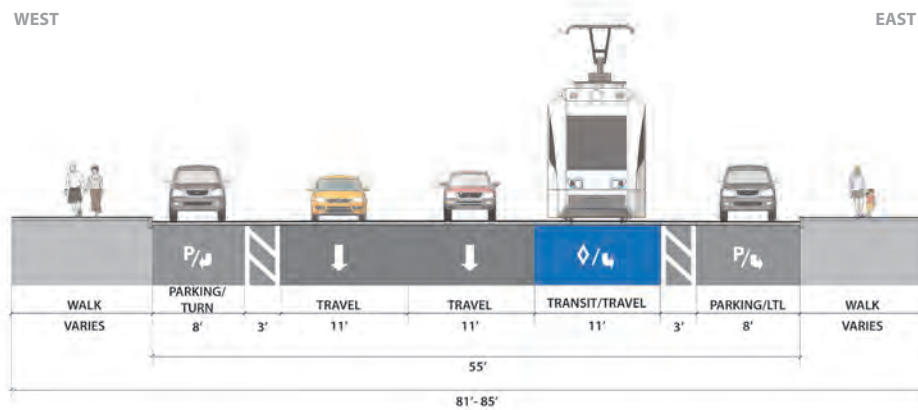
### 3 Tampa Street from Palm Avenue to Tyler Street East Side Running in Exclusive Transit Lane



### 4 Tampa Street from Tyler Street to Kennedy Boulevard East Side Running in Exclusive Transit Lane

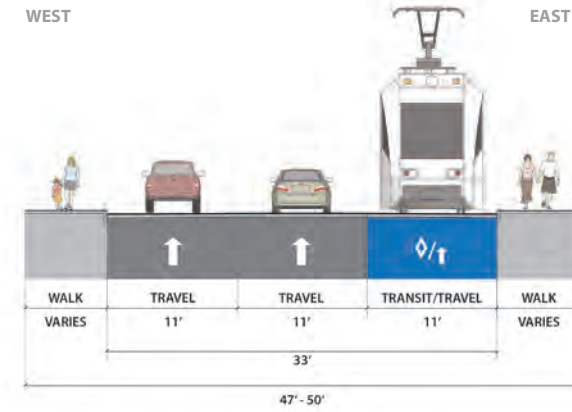


### 5 Tampa Street from Kennedy Boulevard to Whiting Street East Side Running in Shared Lane

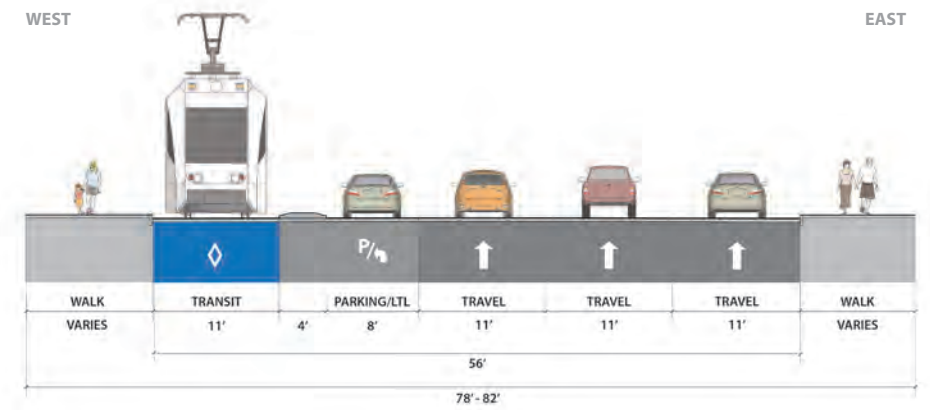


- Potential Stop Location
- Existing Stop Location
- Extension Alignment
- Existing Streetcar

### 2 Florida Avenue from Harrison Street to Palm Avenue East Side Running in Shared Lane



### 1 Florida Avenue from Borein Street to Harrison Street West Side Running in Exclusive Transit Lane



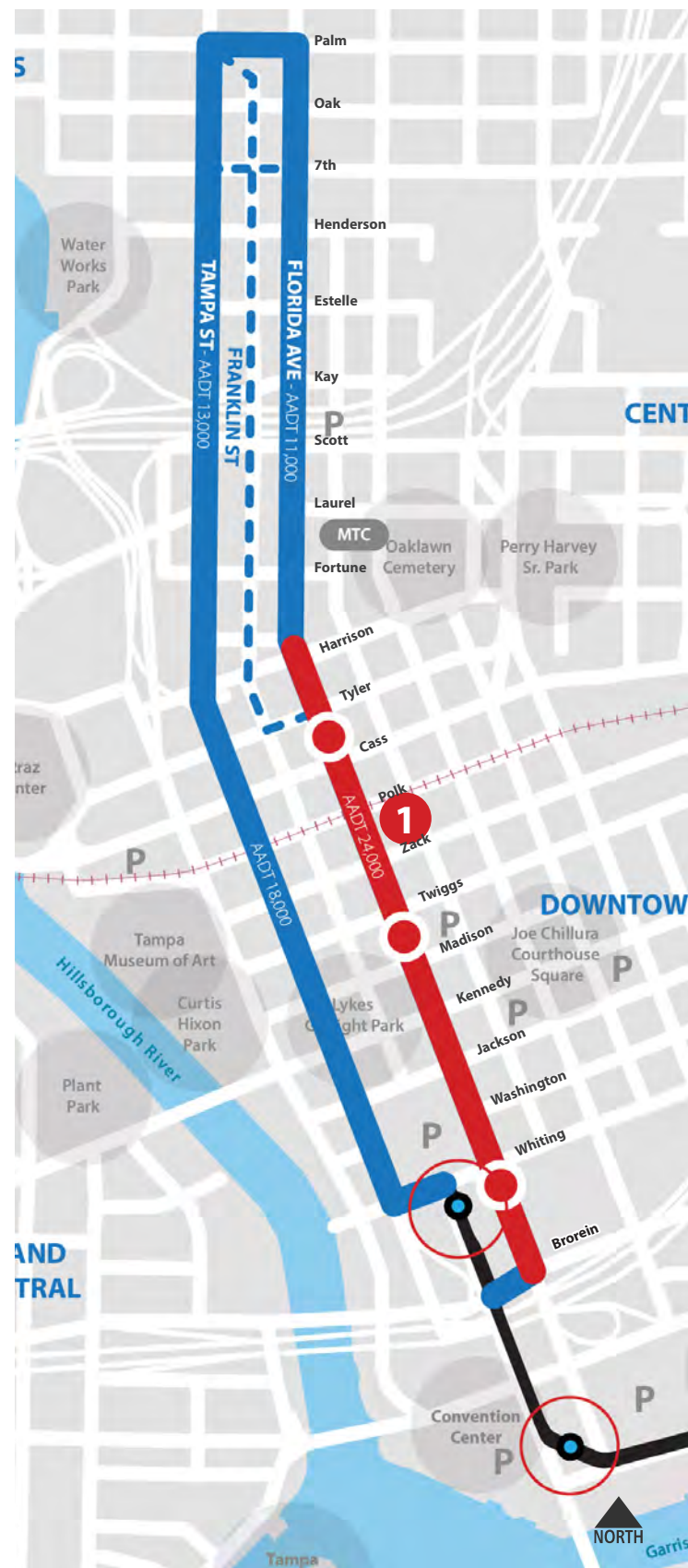
#### RECOMMENDED GUIDEWAY NOTES

- » All typical sections are within existing right-of-way.
- » Franklin Street alignment is not recommended.



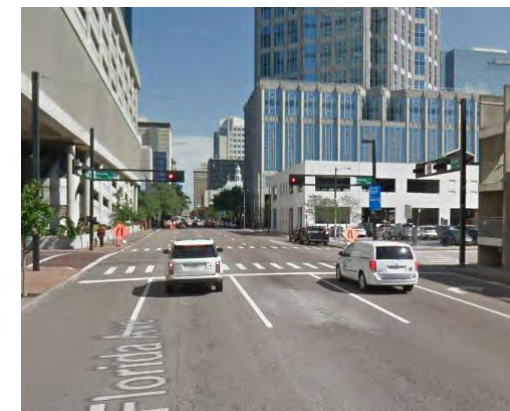
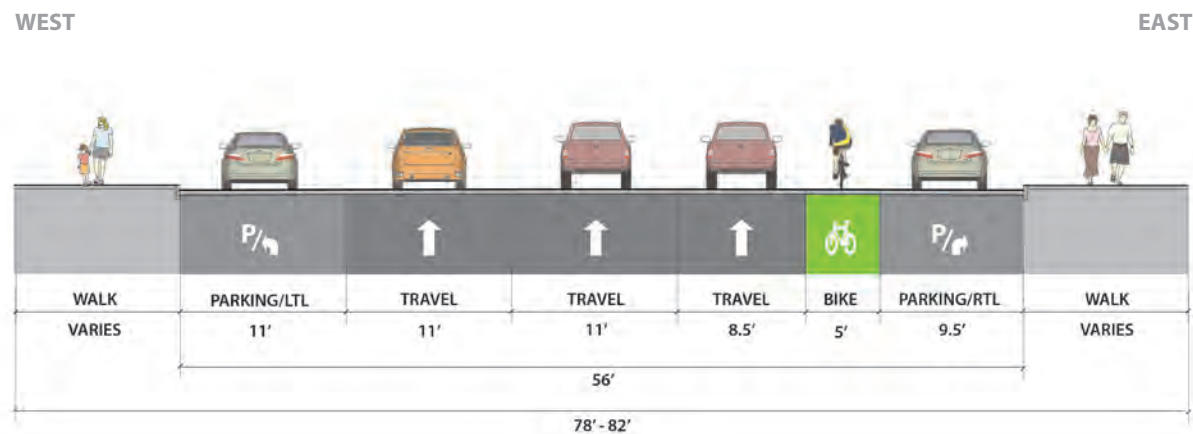
# 1 FLORIDA AVE BROREIN ST to HARRISON ST

## SEGMENT LOCATION

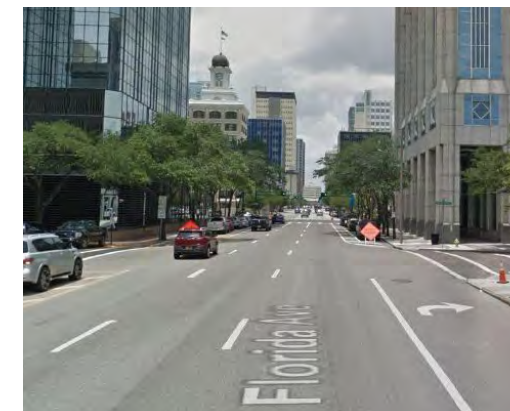


● Preliminary Stop Location    ■ Extension Segment

## EXISTING CONDITIONS



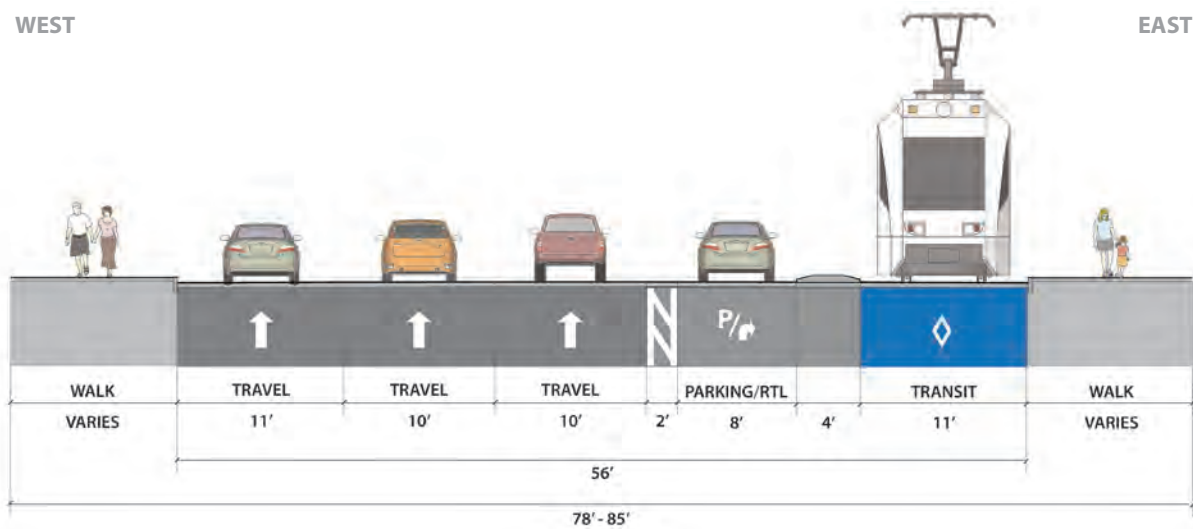
Looking North on Florida Ave at Whiting St.



Looking North on Florida Ave at Washington St.

## ALIGNMENT ALTERNATIVES & EVALUATION

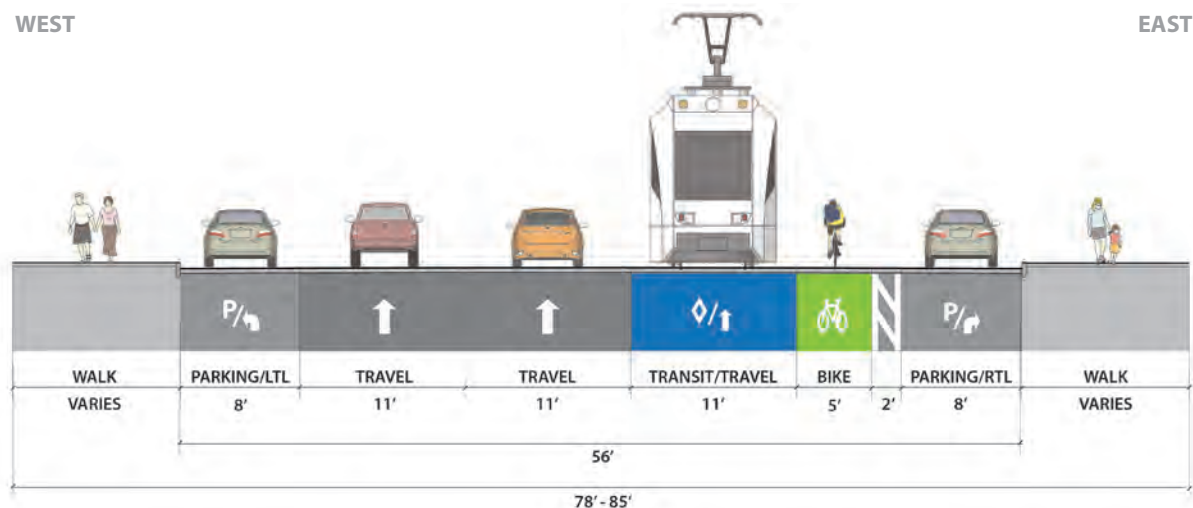
SCORE: ● HIGH    ◐ MODERATE    ○ LOW



### 1.3 - East Side Running in Exclusive Transit Lane

- Maximizes Transit Travel Time Reliability: ●
- Minimizes Traffic & Parking Impacts: ◐
- Allows for Shared Transit Use: ◐
- Minimize Costs for ROW & Street Reconstruction: ○

Maintains three travel lanes. West side parking and bike lane removed. Allows for right side stops on sidewalk but space is constrained. Right turns to Whiting and Washington displace east side parking.



### 1.4 - East Side Running in Shared Lane

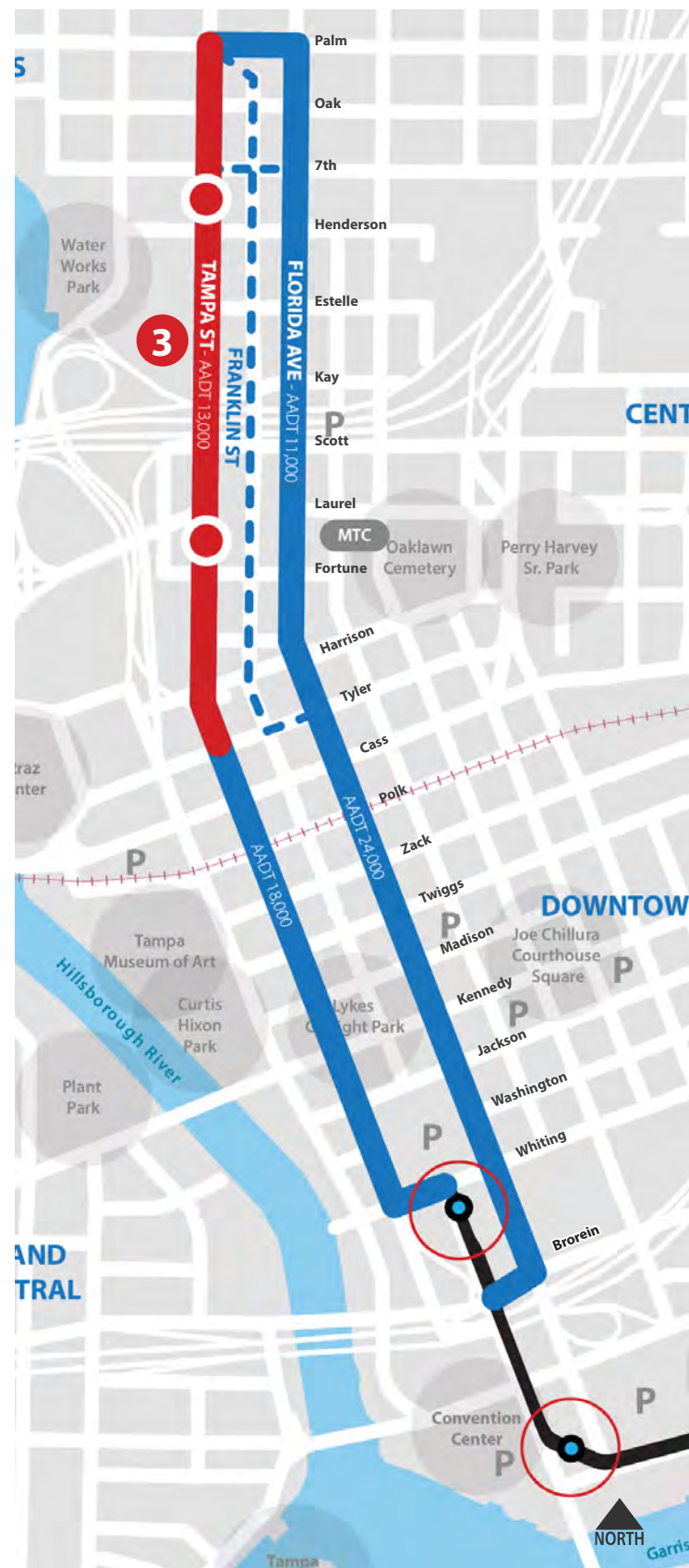
- Maximizes Transit Travel Time Reliability: ◐
- Minimizes Traffic & Parking Impacts: ●
- Allows for Shared Transit Use: ●
- Minimize Costs for ROW & Street Reconstruction: ◐

Maintains three travel lanes. Allows for right side stops with shift in bike lane. Potential for blocked streetcar service with shared travel lane and east side parking.

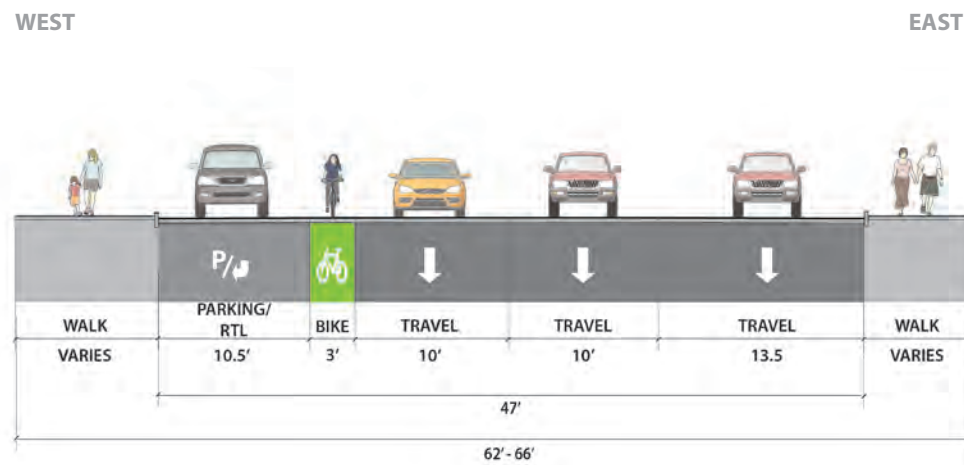


# 3 TAMPA ST PALM AVE to TYLER ST

## SEGMENT LOCATION



## EXISTING CONDITIONS



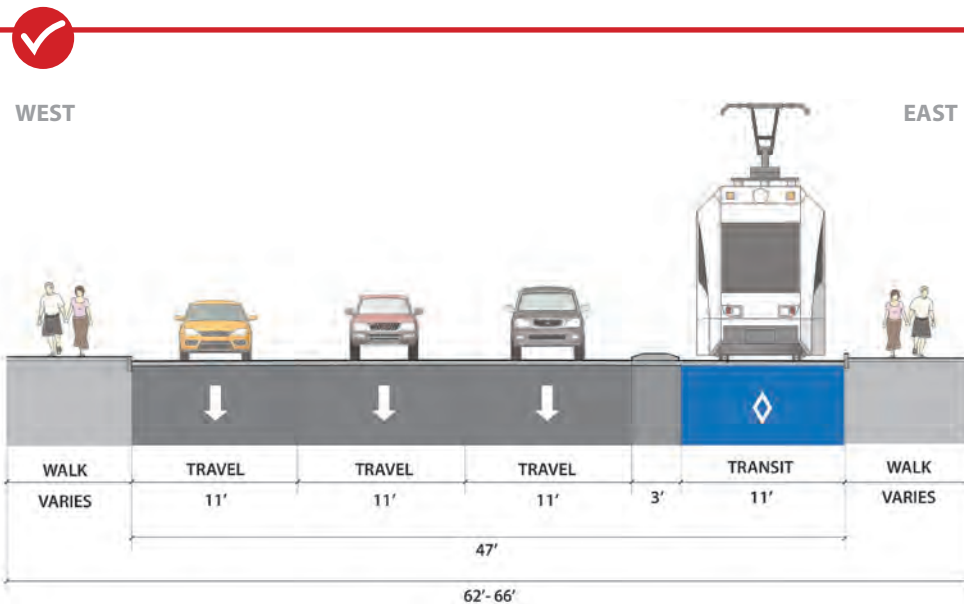
Looking North on Tampa St at Harrison St.



Looking North on Tampa St at Laurel St.

## ALIGNMENT ALTERNATIVES & EVALUATION

SCORE: ● HIGH ◐ MODERATE ○ LOW



### 3.1 - East Side Running in Exclusive Transit Lane

Maximizes  
Transit Travel Time  
Reliability



Minimizes  
Traffic & Parking  
Impacts



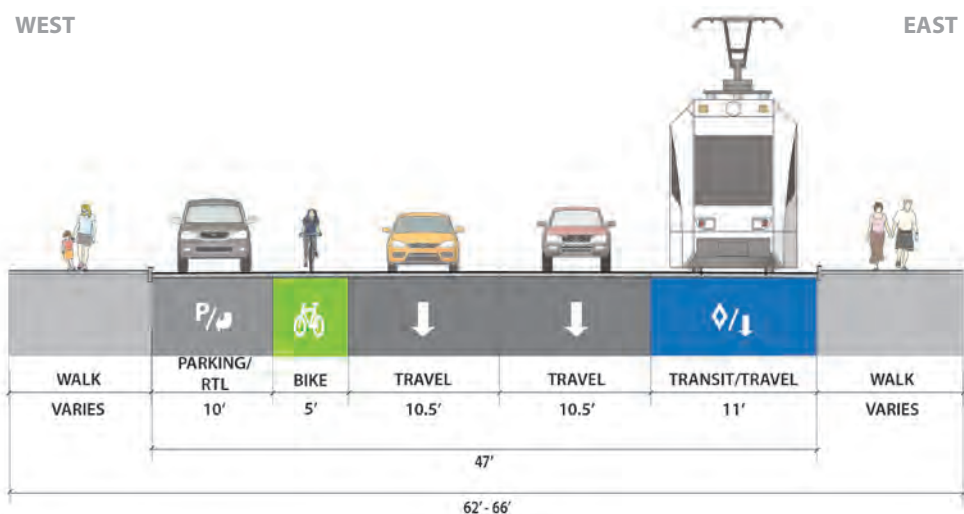
Allows for  
Shared  
Transit Use



Minimize Costs for  
ROW & Street  
Reconstruction



Maintains three travel lanes. West side parking and bike lane removed. Allows for right side stops in buffer. Avoids conflict with right turns to I-275 ramp. Avoids conflict with SB Ramps from I-275 at Harrison.



### 3.2 - East Side Running in Shared Lane

Maximizes  
Transit Travel Time  
Reliability



Minimizes  
Traffic & Parking  
Impacts



Allows for  
Shared  
Transit Use



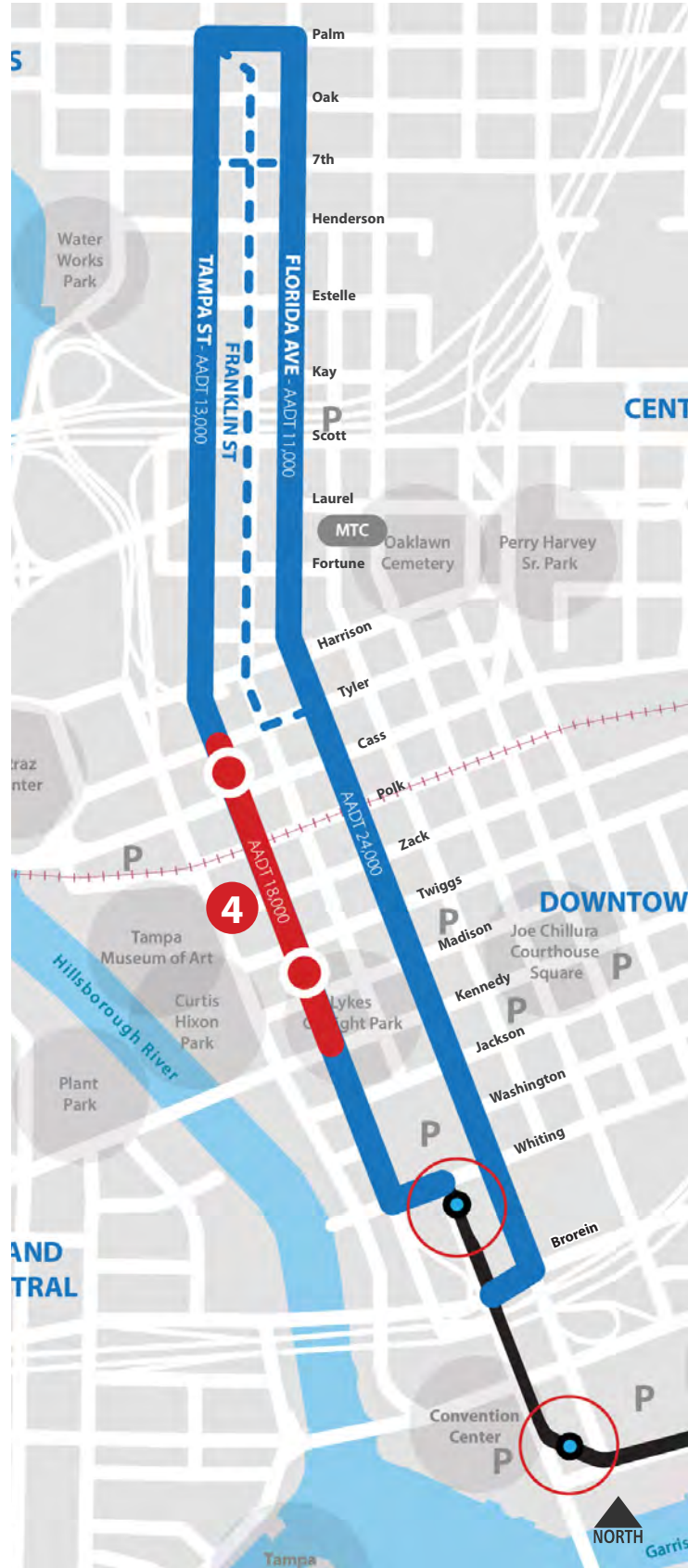
Minimize Costs for  
ROW & Street  
Reconstruction



Maintains three travel lanes. Does not allow for right side stops. Right turns to I-275 ramp displace west side parking. Potential for blocked streetcar service with shared travel lane.

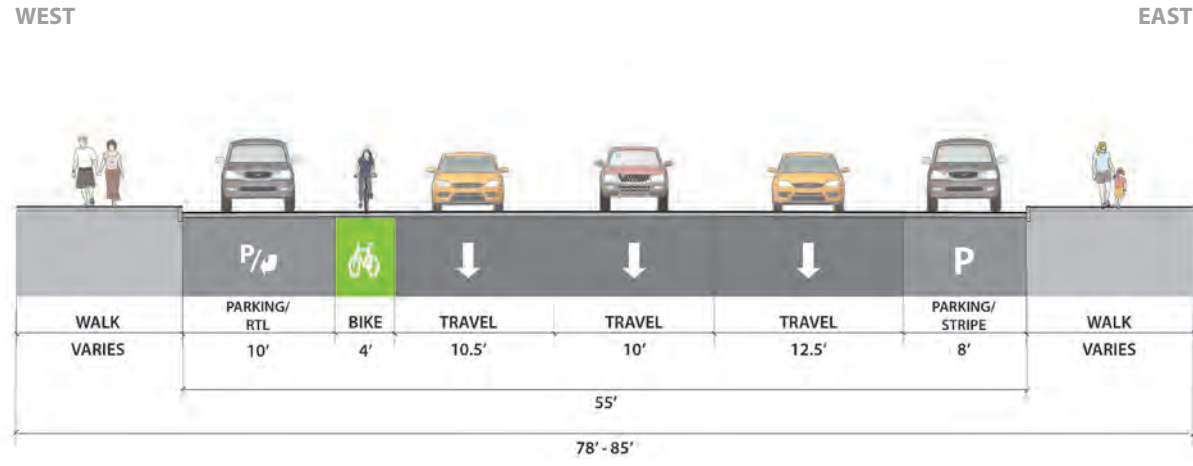
# 4 TAMPA ST TYLER ST to KENNEDY BLVD

## SEGMENT LOCATION



● Preliminary Stop Location    — Extension Segment

## EXISTING CONDITIONS



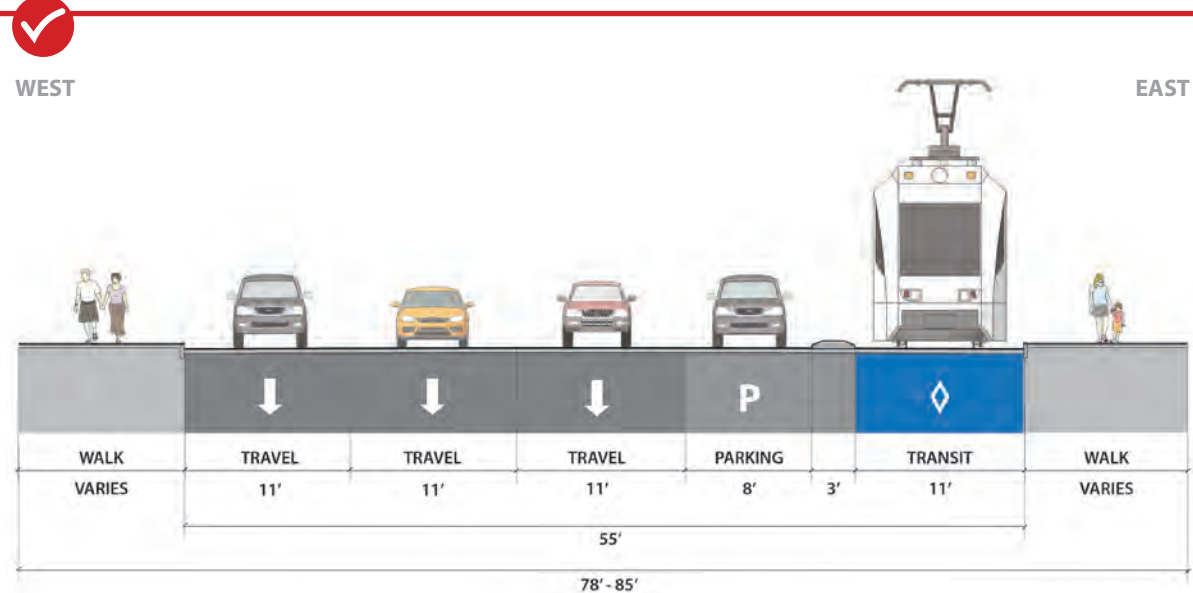
Looking North on Tampa St at Kennedy Blvd.



Looking North on Tampa St at Polk St.

## ALIGNMENT ALTERNATIVES & EVALUATION

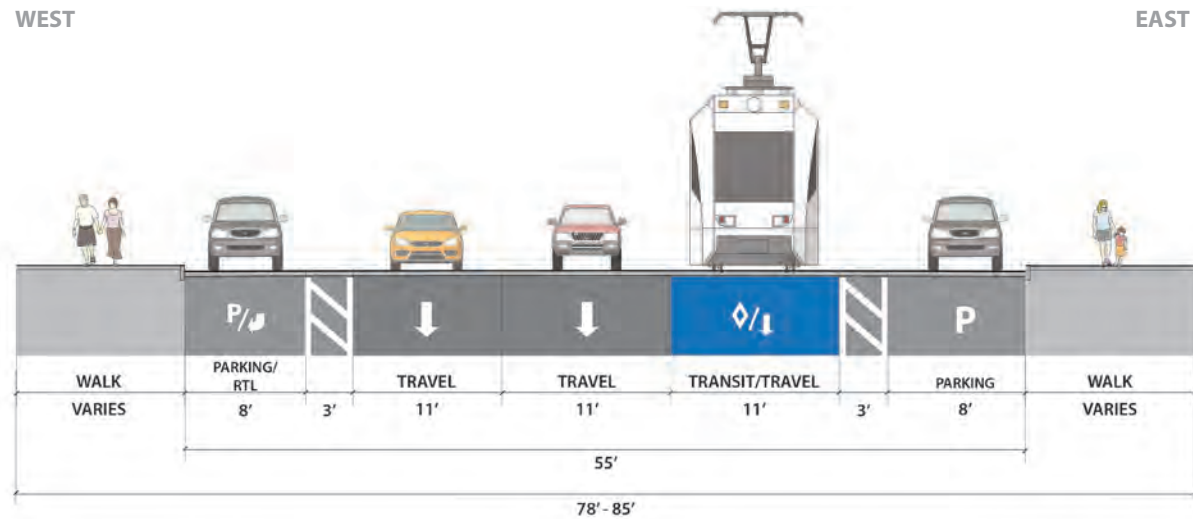
SCORE: ● HIGH    ◐ MODERATE    ○ LOW



### 4.1 - East Side Running in Exclusive Transit Lane

- Maximizes Transit Travel Time Reliability (High)
- Minimizes Traffic & Parking Impacts (Moderate)
- Allows for Shared Transit Use (High)
- Minimize Costs for ROW & Street Reconstruction (Moderate)

Maintains three travel lanes. West side parking and bike lane removed. Allows for right side stops in east side parking lane. Right turns can displace east side parking.



### 4.2 - East Side Running in Shared Lane

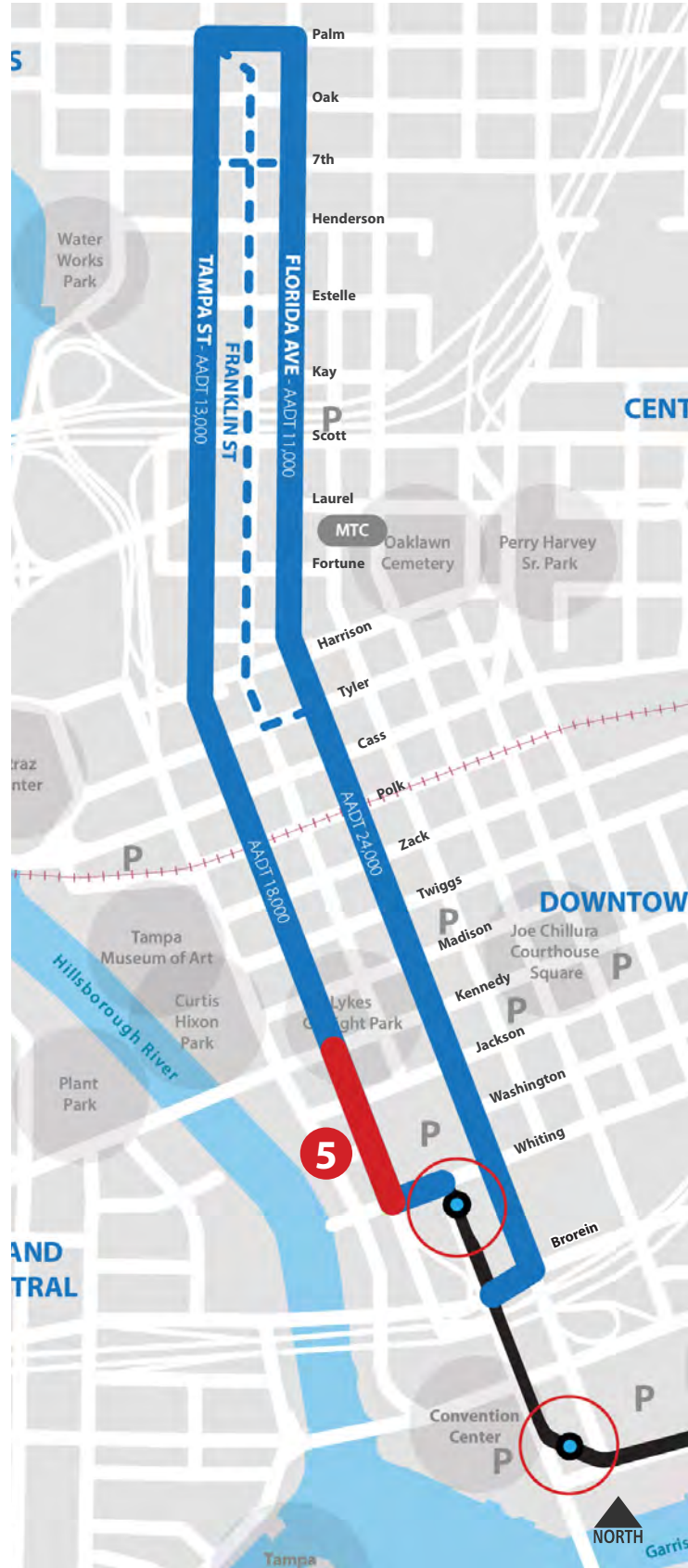
- Maximizes Transit Travel Time Reliability (Moderate)
- Minimizes Traffic & Parking Impacts (High)
- Allows for Shared Transit Use (Low)
- Minimize Costs for ROW & Street Reconstruction (Moderate)

Maintains three travel lanes. Does not allow for right side stops. Left turns at Kennedy and Cass displace east side parking. Potential for blocked streetcar service with shared travel lane and east side parking.



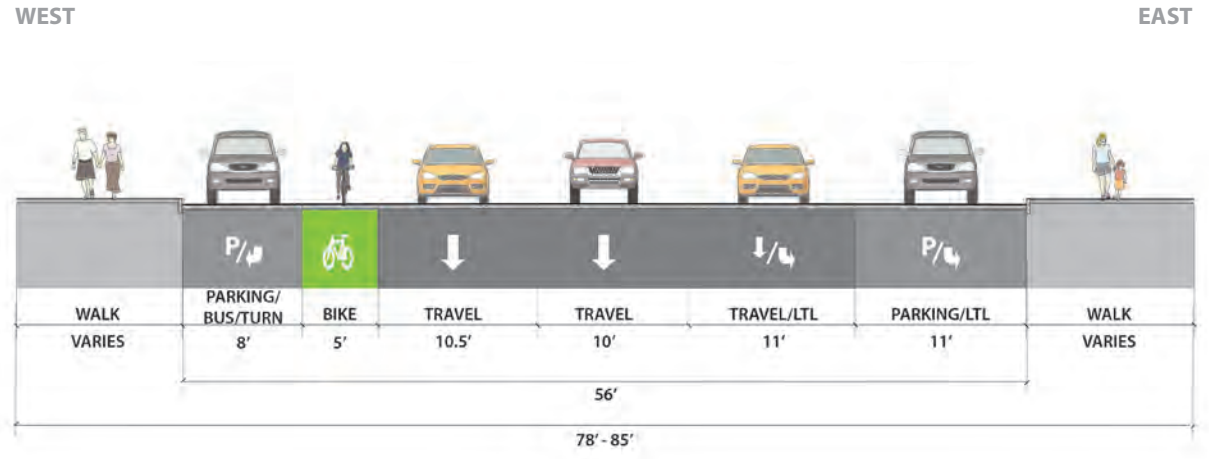
# 5 TAMPA ST KENNEDY BLVD to WHITING ST

## SEGMENT LOCATION



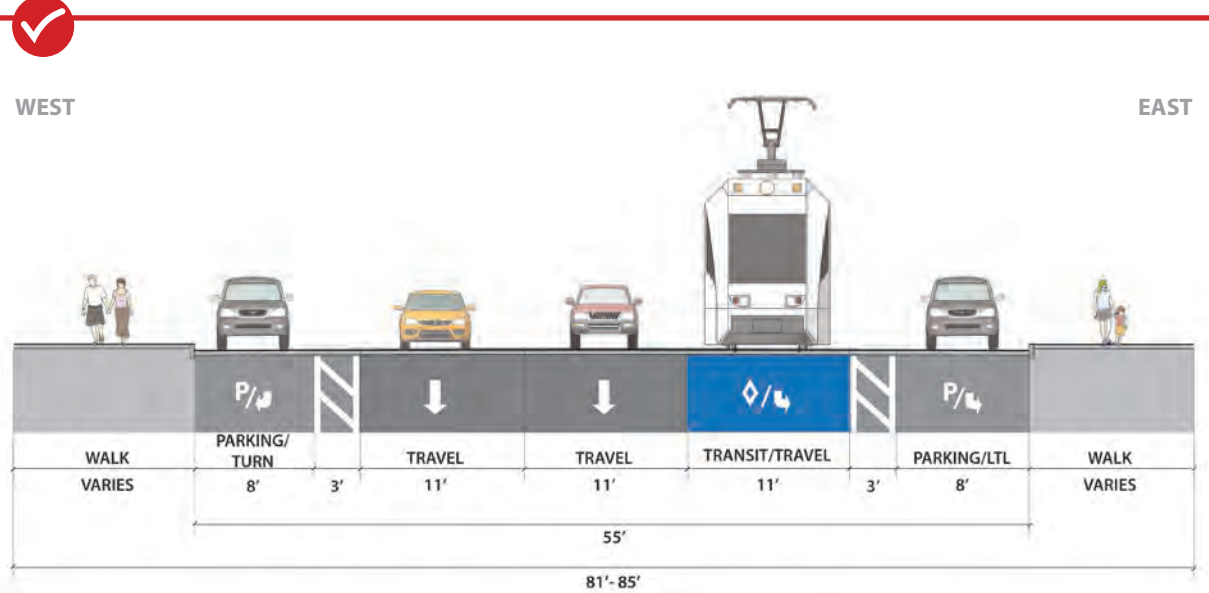
 Preliminary Stop Location  Extension Segment

## EXISTING CONDITIONS



## ALIGNMENT ALTERNATIVES & EVALUATION

SCORE: ● HIGH ◐ MODERATE ○ LOW



### 5.1 - East Side Running in Shared Lane

Maximizes  
Transit Travel Time  
Reliability



Minimizes  
Traffic & Parking  
Impacts



Allows for  
Shared  
Transit Use

**N/A**  
no stops planned here

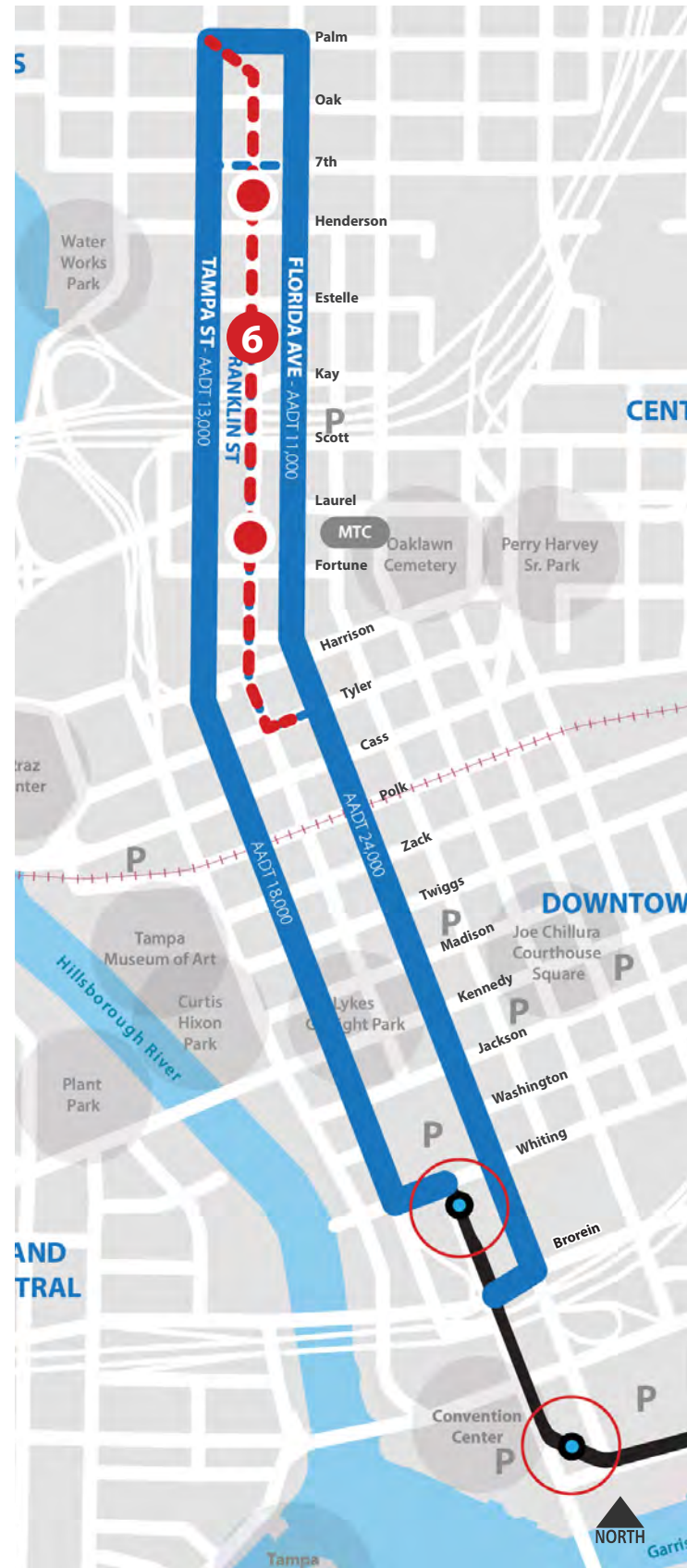
Minimize Costs for  
ROW & Street  
Reconstruction



Maintains three travel lanes. Does not allow for right side stops. Partially avoids left turn queuing at Jackson. Avoids passenger drop off and valet at the Hilton. Potential for blocked streetcar service with shared travel lane and east side parking and turn lanes.

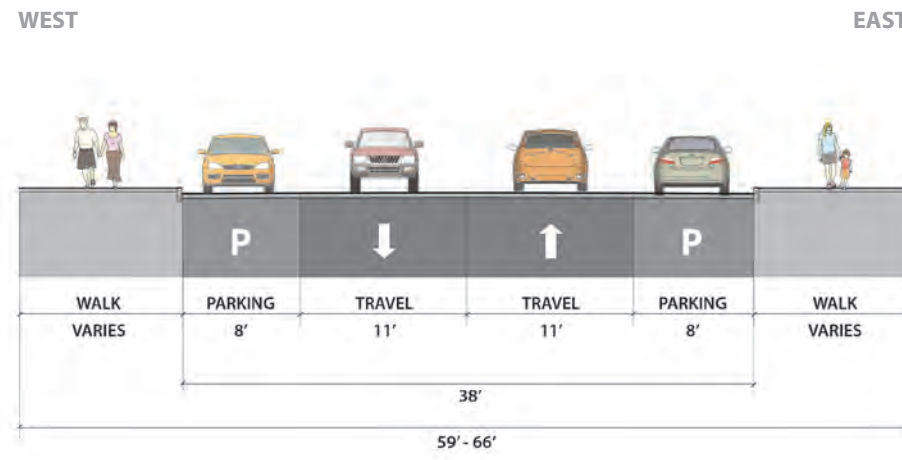
# 6 FRANKLIN ST TYLER ST to PALM AVE

## SEGMENT LOCATION



● Preliminary Stop Location      - - - - - Extension Segment

## EXISTING CONDITIONS



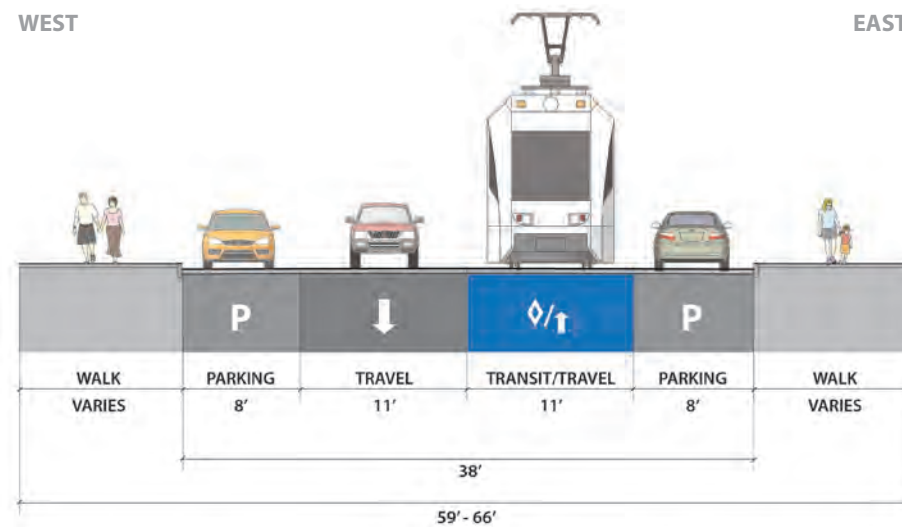
Looking North on Franklin St at Harrison St.



Looking North on Franklin St at Estelle St.

## ALIGNMENT ALTERNATIVES & EVALUATION

SCORE: ● HIGH    ◐ MODERATE    ○ LOW



### 6.1 - East Side Running in Shared Lane

Maximizes  
Transit Travel Time  
Reliability



Minimizes  
Traffic & Parking  
Impacts



Allows for  
Shared  
Transit Use



Minimize Costs for  
ROW & Street  
Reconstruction



Maintains existing travel lanes. Allows for right side stops in limited locations south of I-275. Potential for blocked streetcar service with shared travel lane and east side parking.

» NOTE: Franklin Street alignment is not recommended.

# VEHICLE TECHNOLOGY



DECISION FACTORS	REPLICA STREETCAR - Gomaco Birney Replica	PREMIUM BUS - New Flyer Xcelsior 60ft	MODERN STREETCAR - Siemens S70
<b>Vehicle Characteristics</b>			
Guideway Type	Fixed	Mixed	Fixed
Vehicle Dimensions	50'x10'	60'x8.5'	81'x8.7'
Vehicle Passenger Capacity	101	123	225
Boarding & Access	One boarding door. High floor entrance. Manual ramp.	Up to five boarding doors. Low floor entrance.	Eight boarding doors. Low floor entrance.
Average Life Span	Approximately 30 years	Approximately 15 years	Approximately 30 years
<b>Vehicle Operations &amp; Costs</b>			
Hourly System Capacity / Annual System Capacity (15 minute headway)	416 / 2.5M	507 / 3.1M	927 / 5.6M
Vehicle Trips Required for a Peak Demand of 2,000 Riders	20	16	9
Annual Operating Cost (in 2017 dollars)	\$5.2M High cost for parts. Low number of passengers carried in single vehicle means more drivers needed. High operating cost per rider.	\$4.7M Moderate number of passengers carried in single vehicle means fewer drivers needed. Moderate operating cost per rider.	\$5.6M High number of passengers carried in single vehicle means fewer drivers needed. Low operating cost per rider.
Capital Cost (in 2017 dollars)	\$102M	\$70M	\$154M
Annualized Capital Costs (in 2017 dollars) (based on 30-year life cycle)	\$3.4M Larger fleet size needed due to low capacity of individual vehicles. High infrastructure cost involved. Lowest vehicle cost.	\$2.4M Larger fleet size needed due to shorter life cycle of individual vehicles. Moderate infrastructure cost involved. Moderate vehicle cost.	\$5.2M Smaller fleet size needed due to high capacity of individual vehicles. High infrastructure cost involved. High vehicle cost.
<b>Rider Experience</b>			
Ease of Access	Low One boarding door, high floor entrance, and manually operated ramp limit ease of access for wheelchairs, bikes, and strollers.	Moderate Up to five boarding doors and low floor entrance allow ease of access for wheelchairs, bikes, and strollers.	High Eight wide boarding doors and low floor entrance allow for ease of access and fast boarding for wheelchairs, bikes, and strollers.
Ride Quality	Moderate	Moderate	High
Potential to boost ridership based on travel comfort, accessibility, ride quality, and travel time reliability	Low	Moderate	High
<b>Economic Development</b>			
Potential to influence property values and development potential along alignment	Moderate Lower perceived comfort, ease of access, and ride quality influences ridership. Fixed rail leads to evidence of permanence and confidence in investment.	Low Lower perceived comfort, ease of access, and ride quality influences ridership. Lower perception of permanence reduces development potential.	High Higher perceived comfort, ease of access, and ride quality influences ridership. Fixed rail leads to evidence of permanence and confidence in investment.

\*All costs are estimates for comparison purposes only